United States Department of Agriculture

A Series of Systematic Reviews on the Relationship Between Dietary Patterns and Health Outcomes

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Submitted by:
Evidence Analysis Library Division
Center for Nutrition Policy and Promotion
U.S. Department of Agriculture
3101 Park Center Drive
Alexandria, Virginia

www.NEL.gov

Table of Contents

Acknowledgements

Nutrition Evidence Library Systematic Review Management Team

Eve Essery Stoody, PhD (Project Manager)
Joanne M. Spahn, MS, RD, FADA (Director)
Mary M. McGrane, PhD (Lead Analyst)
Patricia C. MacNeil, MS, CNS (Lead Analyst)
Thomas V. Fungwe, PhD (Lead Analyst)
Jean M. Altman, MS (Lead Analyst)
Joan Lyon, MS, RD (Technical Advisor)
Julie E. Obbagy, PhD, RD (Technical Advisor)
Yat Ping Wong, MLS, MPH (Research Librarian)

Technical Expert Collaborative

Larry Appel, MD, MPH
The Johns Hopkins University

Karen Weber Cullen, DrPH, RD
Baylor College of Medicine

Teresa Fung, ScD, RD, LDN
Simmons College/Harvard School of Public Health

Susan M. Krebs-Smith, PhD, MPH
U.S. Department of Health and Human Services

Jill Reedy, PhD, MPH, RD
U.S. Department of Health and Human Services

Joan Sabaté, MD, DrPH
Loma Linda University

Linda Van Horn, PhD, RD
Northwestern University Feinberg School of Medicine

Project Stakeholder Group

The Stakeholder Group included representatives from the following U.S. Departments of Agriculture and Health and Human Services agencies:

- U.S. Department of Agriculture: Center for Nutrition Policy and Promotion, Food and Nutrition Service, Economic Research Service, National Institute of Food and Agriculture, Agricultural Research Service
- U.S. Department of Health and Human Services: Office of Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, National Institutes of Health

Peer Reviewers

Peer Reviewers included representatives from the following U.S. Department of Agriculture agencies:

- Food and Nutrition Service: Allison Magness, PhD, RD
- Center for Nutrition Policy and Promotion: Patricia Britten, PhD

Nutrition Evidence Library Dietary Patterns Project Abstractors

Cynthia Blanton, PhD, RD
Marie Boyle, PhD, RD
Sheau Ching Chai, PhD
Jennifer Chapman, MPH
Karen Chapman–Novakofski, PhD, LDN, RD
Pamela Ching, ScD, MS, RD/LD
Mridul Datta, MS, RD, LDN, PhD Candidate
Carol C. Giesecke, PhD, RD, MS, BS
Melanie Hingle, PhD, MPH, RD
James Philip Karl, MS, RD, CSSD, LDN
Alexandra Kazaks, RD, CDE, PhD
Julie Kennel, PhD, RD, LD, CSSD
Linda Knol, PhD, RD
Marie Latulippe, MS, RD
Brandy Joe Millron, PhD
Christina Rollins, MS, RD, LDN
Alisha Rovner, PhD
Alison Ventura, PhD
Marquitta Webb, PhD, LN

Chapter 1. **Executive Summary**

Consuming a healthy diet can help individuals achieve and maintain a healthy weight, reduce the risk of developing chronic diseases, and promote good health. Research in the field of nutrition often focuses on single nutrients, foods, and/or food groups. While looking at components of the diet individually is important to examine the effects of various aspects of the diet on health, foods and nutrients are eaten in a variety of combinations and can have interactive and potentially cumulative or confounding relationships. Thus, when developing guidance on the types of foods, beverages, and nutrients to consume, it is important to consider research on individual components of the diet, as well as research that examines dietary patterns. For the purpose of this systematic review project, a dietary pattern is defined as the quantities, proportions, variety, or combination of different foods, drinks, and nutrients (when available) in diets, and the frequency with which they are habitually consumed. As noted in the *2010 Dietary Guidelines for Americans,*[1] there are several ways that a healthy diet can be achieved. The purpose of this project was to examine the relationship between dietary patterns and outcomes of public health concern.

Background and Methodology

USDA's Nutrition Evidence Library (NEL) conducted these systematic reviews. The NEL uses a rigorous, transparent, and reproducible methodology to conduct systematic reviews on food- and nutrition-related topics to support Federal nutrition policies and programs. The six-step process includes:

1. Systematic review question development
2. Literature search, screening, and selection
3. Data extraction and quality assessment
4. Describing the evidence and evidence synthesis
5. Developing conclusion statements and grading the evidence
6. Identifying research recommendations.

This NEL systematic review project was planned, organized, and guided by a NEL Systematic Review Management Team composed of Federal nutritionists trained in systematic review methodology. The NEL Systematic Review Management Team worked with a Technical Expert Collaborative (TEC) that consisted of seven national nutrition experts with knowledge in various aspects of dietary patterns. A broad range of expertise was needed to address specific issues related to the topic of dietary patterns and to guide synthesis of the body of evidence to answer the systematic review questions posed. A Stakeholder Group, which included Federal employees who represented end-users of the review and possessed varying perspectives and expertise related to dietary patterns, provided input throughout the process.

Systematic Review Questions

At the initiation of the project, the NEL held a workshop with the TEC members, Stakeholder Group, and invited speakers to discuss the various methodologies used to assess dietary patterns and to help inform the approach for the project. Following the workshop, the TEC identified and prioritized specific systematic review questions addressing dietary patterns and outcomes of public health concern. The NEL Systematic Review Management Team helped to focus the questions on outcomes of public health importance that could potentially inform Federal nutrition policies and programs. The questions were also reviewed by the Stakeholder Group to ensure that they were relevant to policy needs.

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[1] U.S. Department of Agriculture and U.S. Department of Health and Human Services. *Dietary Guidelines for Americans, 2010.* 7th Edition, Washington, DC: U.S. Government Printing Office, December 2010.

The systematic review questions included in this project were organized based on (1) dietary pattern methodology and (2) health outcomes:

- **Dietary pattern methodology:** Dietary patterns can be assessed in a number of ways, including numerical indices designed to gauge adherence to a particular pattern (e.g., Healthy Eating Index [HEI]) or data-driven approaches that use mathematics to empirically derive food intake patterns inherent among the study population (e.g., factor or cluster analysis) (appendix A). Dietary patterns can also be tested in trials or observed in observational studies. Because each methodology provides information about dietary patterns from a different perspective, the systematic review questions included in this project were organized based on dietary pattern assessment: (1) index analysis, (2) factor/cluster analysis, (3) reduced rank regression, and (4) other methods.
- **Health outcomes:** The TEC identified three top priority outcomes for consideration: (1) body weight and obesity, (2) cardiovascular disease, and (3) type 2 diabetes. For each outcome, specific intermediate and clinical outcomes were defined (appendix B). A fourth outcome, cancer, was also identified but was not completed.

In total, 12 systematic review questions were completed in this project:

Body Weight or Risk of Obesity

1. What is the relationship between adherence to dietary guidelines/recommendations or specific dietary patterns, assessed using an index or score, and body weight or risk of obesity?
   - *A priori* index
2. Are prevailing patterns of diet behavior in a population related to body weight or risk of obesity?
   - Factor analysis, principal component analysis; cluster analysis
3. What combinations of food intake explain the most variation in a risk of obesity?
   - Reduced rank regression; discriminant analysis
4. What is the relationship between adherence to a specific dietary pattern and body weight or risk of obesity?
   - Included studies that did not use the methodologies captured in the other systematic review questions

Risk of Cardiovascular Disease

5. What is the relationship between adherence to dietary guidelines/recommendations or specific dietary patterns, assessed using an index or score, and risk of cardiovascular disease?
   - *A priori* index
6. Are prevailing patterns of diet behavior in a population related to risk of cardiovascular disease?
   - Factor analysis, principal component analysis; cluster analysis
7. What combinations of food intake explain the most variation in a risk of cardiovascular disease?
   - Reduced rank regression; discriminant analysis
8. What is the relationship between adherence to a specific dietary pattern and risk of cardiovascular disease?
   - Included studies that did not use the methodologies captured in the other systematic review questions

Risk of Type 2 Diabetes

9. What is the relationship between adherence to dietary guidelines/recommendations or specific dietary patterns, assessed using an index or score, and risk of type 2 diabetes?
   - *A priori* index
10. Are prevailing patterns of diet behavior in a population related to risk of type 2 diabetes?
    - Factor analysis, principal component analysis; cluster analysis
11. What combinations of food intake explain the most variation in a risk of type 2 diabetes?
    - Reduced rank regression; discriminant analysis
12. What is the relationship between adherence to a specific dietary pattern and risk of type 2 diabetes?
    - Included studies that did not use the methodologies captured in the other systematic review questions

Literature Selection

A broad range of studies assessing dietary patterns were considered in order to answer the systematic review questions. PubMed, Embase, Navigator (BIOSIS, CAB Abstracts, and Food Science and Technology Abstracts), and Cochrane databases were searched for original research articles published in English in peer-reviewed journals. Studies published since January 1980 with subjects who were healthy or at elevated chronic disease risk from countries with high or very high scores on the Human Development Index,[2] a measure of social and economic development, were considered. Study designs included in the review were randomized and nonrandomized controlled trials, including crossover studies, and prospective cohort studies. Cross-sectional studies, before and after studies, case-control studies, and reviews were excluded. Reviews were hand-searched for relevant primary research studies. Trials were required to have ≥30 subjects per arm and a follow-up of ≥80 percent. Studies that examined low-calorie diets and other treatment diets were excluded. Finally, studies were required to include a description of the foods and beverages eaten by study participants. The searches resulted in a total of 23,403 citations. Of these, 2,921 articles underwent dual abstract review, and a total of 176 articles met all of the criteria and were included in the reviews.

Description of the Evidence

The evidence considered in this systematic review project was diverse. The number of articles included in each review varied, with 5 reviews including less than 10 articles, 6 reviews including 11 to 22 articles, and 1 review including 55 articles. Studies were conducted around the world, including the United States, Europe, Japan, and Australia, and ranged in sample size from 49 to over 380,000. Most studies were conducted in adults, with few studies available that examined dietary patterns in children or adolescents. The preponderance of evidence was from large prospective cohort studies; although some well-controlled randomized controlled trials were also included. The prospective cohort studies generally examined the relationship between dietary patterns and clinical health outcomes, while the trials often considered intermediate outcomes. Dietary intake was most often assessed with food frequency questionnaires, and in many studies, dietary intake was only assessed at baseline. Most articles were rated positive-quality, with fewer articles of neutral-quality. No negative-quality articles were included in the reviews.

Conclusion Statements

Following a qualitative review of the evidence, conclusions were drawn and the strength of the body of evidence supporting the conclusion statement was graded. More robust evidence was available for the questions examining the relationship between dietary patterns and risk of cardiovascular disease. Moderate evidence supported conclusions related to dietary patterns and body weight or risk of obesity, while limited evidence was available related to dietary patterns and risk of type 2 diabetes.

Across the methodologies, the strongest, most consistent evidence was from positive-quality cohort studies using an *a priori* index or score and randomized controlled trials testing specific patterns. For all three of the questions that considered studies using factor or cluster analyses, limited conclusions were drawn primarily due to the variability in the dietary patterns identified in these studies, which made comparisons challenging. Similarly, the disparate nature of the studies that used reduced rank regression to assess dietary patterns made it difficult to compare results, and no conclusions could be drawn related to the relationship between dietary patterns and health outcomes using reduced rank regression.

Overall, not one specific dietary pattern was found to be more favorably associated with health outcomes. Rather, several dietary patterns were shown to be beneficial in reducing the risk of cardiovascular disease, obesity, and/or type 2 diabetes. The patterns that were most consistently associated with positive health outcomes were Mediterranean-style, Dietary Approaches to Stop Hypertension (DASH), and Dietary Guidelines-related patterns. Over the course of the review, the Technical Expert Collaborative and the Systematic Review Management Team

[2] United Nations Development Programme. 2011 Human Development Reports. Available at http://hdr.undp.org/en.

noted that there were not universal definitions for these and other dietary pattern labels or for terms that were often found in this literature, including plant-based, nutrient-dense, or minimally processed. For example, a Mediterranean diet may vary somewhat from study to study, and a vegetarian pattern is typically defined based on what is excluded from the diet, rather than what is consumed. As such, the review conclusion statements were stated in terms of the food components observed consistently across the dietary patterns, rather than focusing on the label of the pattern. Additionally, the team found that the meaning of terms, such as low, moderate, and high, used to describe levels of food group, component, or nutrient intakes varied somewhat across studies. For example, low might mean lower than median intake, lower than recommended intake levels, or lower than the typical American or population intake. Depending on the body of included literature for each systematic review question, usage of these terms in this report's conclusion statements and key findings may represent a composite of these meanings.

Dietary Patterns and Risk of Cardiovascular Disease

Dietary patterns associated with decreased risk of cardiovascular disease were characterized by regular consumption of fruits, vegetables, whole grains, low-fat dairy, and fish and were low in red and processed meat and sugar-sweetened foods and drinks. Regular consumption of nuts and legumes and moderate consumption of alcohol were also shown to be beneficial in most studies. Additionally, research that included specific nutrients in their description of dietary patterns indicated that patterns that were low in saturated fat, cholesterol, and sodium and rich in fiber and potassium may be beneficial for reducing cardiovascular disease risk.

Conclusion Statements: Dietary Patterns and Risk of Cardiovascular Disease

Strong or Moderate Evidence:

There is strong and consistent evidence that in healthy adults increased adherence to dietary patterns scoring high in fruits, vegetables, whole grains, nuts, legumes, unsaturated oils, low-fat dairy, poultry, and fish; low in red and processed meat, high-fat dairy, and sugar-sweetened foods and drinks; and moderate in alcohol is associated with decreased risk of fatal and non-fatal cardiovascular diseases, including coronary heart disease and stroke. (Grade: I - Strong) (Index Analysis)

There is strong and consistent evidence that consumption of a DASH diet results in reduced blood pressure in adults with above optimal blood pressure, up to and including stage 1 hypertension. A dietary pattern consistent with the DASH diet is rich in fruits, vegetables, low-fat dairy, fish, whole grains, fiber, potassium, and other minerals at recommended levels, and low in red and processed meat, sugar-sweetened foods and drinks, saturated fat, cholesterol, and sodium. There is limited evidence that adherence to vegetarian diets is associated with decreased death from ischemic heart disease, with the association being stronger in men than in women. (Grade: I - Strong - DASH and Blood Pressure; Grade: III - Limited - Vegetarian and Ischemic Heart Disease) (Other Methods)

Limited or Insufficient Evidence:

Limited evidence from epidemiological studies indicates that dietary patterns, assessed using cluster or factor analysis, characterized by vegetables, fruits, whole grains, fish, and low-fat dairy products are associated with decreased risk of cardiovascular disease in adults. Evidence of a relationship between dietary patterns characterized by red and processed meat, sugar-sweetened foods and drinks, and fried foods and an increased risk of cardiovascular disease is limited and less consistent. (Grade: III - Limited) (Cluster or Factor Analysis)

Insufficient evidence, due to a small number of studies, was available to examine the relationship between dietary patterns derived using reduced rank regression and risk of cardiovascular disease. The disparate nature of the methods used made it difficult to compare results, and therefore, no conclusions were drawn. (Grade: IV - Not Assignable) (Reduced Rank Regression)

Dietary Patterns and Body Weight or Risk of Obesity

More favorable outcomes related to body weight or risk of obesity were observed when there was increased adherence to a diet that emphasized fruits, vegetables, and whole grains. Some studies also reported more favorable body weight status over time with regular intake of fish and legumes, moderate intake of dairy products (particularly low-fat dairy) and alcohol, and low intake of meat (including red and processed meat), sugar-sweetened foods and drinks, refined grains, saturated fat, cholesterol, and sodium.

Conclusion Statements: Dietary Patterns and Body Weight or Risk of Obesity

Moderate Evidence:

There is moderate evidence that in adults increased adherence to dietary patterns scoring high in fruits, vegetables, whole grains, legumes, unsaturated oils, and fish; low in total meat, saturated fat, cholesterol, sugar-sweetened foods and drinks and sodium; and moderate in dairy products and alcohol is associated with more favorable outcomes related to body weight or risk of obesity, with some reports of variation based on gender, race, or body weight status. (Grade: II - Moderate) (Index Analysis)

There is moderate evidence that adherence to a dietary pattern that emphasizes vegetables, fruits, and whole grains is associated with modest benefits in preventing weight gain or promoting weight loss in adults. (Grade: II - Moderate) (Other Methods)

Limited or Insufficient Evidence:

Limited and inconsistent evidence from epidemiological studies examining dietary patterns derived using factor or cluster analysis in adults found that consumption of a dietary pattern characterized by vegetables, fruits, whole grains, and reduced-fat dairy products tends to be associated with more favorable body weight status over time than consumption of a dietary pattern characterized by red meat, processed meats, sugar-sweetened foods and drinks, and refined grains. (Grade: III - Limited) (Factor or Cluster Analysis)

There are a number of methodological differences among the studies examining the relationship between dietary patterns derived using reduced rank regression and body weight status. The disparate nature of these studies made it difficult to compare results, and therefore, no conclusions were drawn. (Grade: IV - Not Assignable) (Reduced Rank Regression)

Dietary Patterns and Risk of Type 2 Diabetes

The bodies of evidence examining the relationship between dietary patterns and risk of type 2 diabetes were limited or insufficient, but they generally supported consumption of a dietary pattern rich in fruits and vegetables and low in high-fat dairy and meats.

> **Conclusion Statements: Dietary Patterns and Risk of Type 2 Diabetes**
>
> **Limited or Insufficient Evidence:**
>
> There is limited evidence that adherence to a dietary pattern rich in fruits, vegetables, legumes, cereals/whole grains, nuts, fish, and unsaturated oils and low in meat and high-fat dairy, assessed using an index or score, is associated with decreased risk of type 2 diabetes. (Grade: III - Limited) (Index Analysis)
>
> Limited and inconsistent evidence from epidemiological studies indicates that in adults, dietary patterns derived using factor or cluster analysis, characterized by vegetables, fruits, and low-fat dairy products tend to have an association with decreased risk of type 2 diabetes and those patterns characterized by red meat and sugar-sweetened foods and drinks, French fries, refined grains, and high-fat dairy products tended to show an increased association for risk of type 2 diabetes. Among studies, there was substantial variation in food group components and not all studies with similar patterns showed significant association. (Grade: III - Limited) (Factor or Cluster Analysis)
>
> There is insufficient evidence on a relationship between adherence to a Mediterranean-style or vegetarian diet pattern and incidence of type 2 diabetes. There is limited, inconsistent evidence that adherence to a Mediterranean-style, DASH or modified DASH, or Nordic dietary pattern results in improved glucose tolerance and insulin resistance. (Grade IV - Not Assignable - Incidence of type 2 diabetes; Grade: III – Limited - Glucose tolerance and insulin resistance) (Other Methods)
>
> There is insufficient evidence, due to a small number of studies, to examine the relationship between dietary patterns derived using reduced rank regression and risk of type 2 diabetes. The differences in the methods used and populations studied made it difficult to compare results, and therefore no conclusions were drawn. (Grade: IV - Not Assignable) (Reduced Rank Regression)

Limitations and Research Recommendations

The systematic reviews highlighted overarching limitations in the research on dietary patterns. The following limitations and research recommendations were identified:

- Many studies only assessed dietary intake once at baseline. Dietary patterns are likely to change over time due to a myriad of factors, including trends in the food supply, population and individual-level changes in food choices, and individual circumstances and physical needs. Future studies that examine dietary patterns over time in relation to the life course would be beneficial to understand the relationship between dietary patterns, critical periods of exposure, and health.
- There was variability in how studies grouped foods and assessed the types and amounts of foods consumed; therefore, it was difficult to compare food and beverage intakes across studies. Additional research is needed to better quantitate the components of dietary patterns.
- A number of studies, particularly studies examining vegetarian diets, were excluded from the reviews because they did not provide sufficient description of the dietary pattern consumed. Complete description of the foods and beverages consumed is essential for comparing studies and understanding the characteristics of the dietary patterns.

- Many of the studies were conducted with predominantly Caucasian adults. Additional research should be conducted to examine if and how race/ethnicity, age, and sex might influence the relationship between dietary patterns and health outcomes.

Additionally, more research is recommended to:

- Advance dietary pattern methodologies to better elucidate the indispensible components, or the “drivers,” of dietary patterns that are instrumental in promoting health and preventing disease.
- Investigate other aspects of dietary patterns, including where and when foods and beverages are consumed.
- Test the effectiveness of dietary patterns identified in observational studies in randomized controlled trials.
- Examine the effects of different methods by which components are chosen, grouped, and scored and the effect those different methods have on the resulting relationships with health outcomes, regarding *a priori* scores.
- Evaluate and standardize methods used to assess, organize, aggregate, and adjust food variables to facilitate interpretation of findings across studies, regarding *a posteriori* approaches.

Chapter 2. **Introduction**

Consuming a healthy diet can help individuals achieve and maintain a healthy weight, reduce the risk of developing chronic diseases, and promote good health. Research in the field of nutrition often focuses on single nutrients, foods, and/or food groups. Considering individual nutrients and foods in the development of guidance on the types and amounts of foods, beverages, and nutrients to consume is challenging for a number of reasons:[3]

- It is difficult to attribute health effects to a single dietary component;
- Dietary components may interact with each other; and
- When manipulating the diet, there may be substitution effects (e.g., high intake of one dietary component is accompanied by changes in other aspects of the diet).

By studying dietary patterns, these potential cumulative and interactive effects of individual components of the diet can be accounted for. Studying dietary patterns is a complementary strategy to examining individual foods and nutrients or food components. Additionally, because people consume foods, beverages, and nutrients, in combination and not just individually, the study of dietary patterns has real-world application.

As methods used to assess dietary patterns have been advancing, researchers have been able to examine the relationship between complex dietary patterns and health. The 2010 Dietary Guidelines Advisory Committee (DGAC) acknowledged that the state of the evidence and the methodologic rigor of the studies examining dietary patterns had advanced; thus, research on this topic was summarized in the 2010 DGAC Report[4] in a chapter titled *The Total Diet: Combining Nutrients, Consuming Food*, which was subsequently used as the foundation for a chapter in the *2010 Dietary Guidelines for Americans*[5] titled *Building Healthy Eating Patterns*.

Rationale

The inclusion of dietary patterns in the DGAC 2010 Report and the subsequent 2010 Dietary Guidelines was supported within and outside of the government. Following the 2010 Dietary Guidelines release, the Nutrition Evidence Library (NEL) conducted interviews with various Federal stakeholders, and dietary patterns was identified as a topic that should be monitored. Based on this feedback, the NEL initiated this systematic review project to examine the relationship between dietary patterns and health outcomes. Systematic reviews are conducted to aid compliance with the Consolidated Appropriations Act of 2001[6] or Data Quality Act, which mandates Federal agencies ensure the quality, objectivity, utility, and integrity of the information used to form federal guidance. Systematic reviews of dietary patterns research may help USDA agencies in the development and support of nutrition-related policies and programs.

Framing the Project

The NEL Systematic Review Management Team collaborated with a Technical Expert Collaborative (TEC) and a group of Federal Stakeholders to complete the review. The TEC included seven national nutrition experts who were convened to review, evaluate, and synthesize research on dietary patterns, and a Federal Stakeholder group was identified to ensure that the review would be valuable for informing future diet-related policies and programs.

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[3] Schulze MB, Hoffmann K. Methodological approaches to study dietary patterns in relation to risk of coronary heart disease and stroke. Br J Nutr. 2006 May;95(5):860-9. Review. PubMed PMID: 16611375.
[4] Dietary Guidelines Advisory Committee. 2010. Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2010, to the Secretary of Agriculture and the Secretary of Health and Human Services. U.S. Department of Agriculture, Agricultural Research Service, Washington, DC.
[5] U.S. Department of Agriculture and U.S. Department of Health and Human Services. *Dietary Guidelines for Americans, 2010.* 7th Edition, Washington, DC: U.S. Government Printing Office, December 2010.
[6] Consolidated Appropriations Act (2001) Pub.L. 106−554, 114 Stat. 2763 (2000).

To inform the design and objectives of the project, USDA's Center for Nutrition Policy and Promotion supported a workshop titled, "Dietary Patterns Research Methods: Strengths and Limitations of Various Approaches to Inform a Systematic Review." The workshop was held on September 1, 2011 in Alexandria, VA. The Dietary Patterns Systematic Review Management Team, Technical Expert Collaborative, and several Stakeholders attended the workshop along with invited speakers identified by the Technical Expert Collaborative.

Expert presentations included the following:

- Using factor and cluster analysis to derive dietary patterns
  - P.K. Newby, ScD, MPH, Boston University
- Using index analysis to assess dietary patterns
  - Beth Dixon, PhD, MPH, New York University
- Using reduced rank regression to identify dietary patterns
  - Angela Liese, PhD, University of South Carolina
- Dietary patterns from a clinical trials perspective
  - Larry Appel, MD, MPH, The Johns Hopkins University
- Dietary patterns from an epidemiological perspective
  - Matthias Schulze, DrPH, German Institute of Human Nutrition (via webinar)

A facilitated panel discussion followed the presentations and included dialogue related to the operational definition of dietary patterns for the purposes of this systematic review project and the appropriateness of using various research methods for answering systematic review questions related to dietary patterns and health. The Dietary Patterns Systematic Review Management Team and Technical Expert Collaborative used the discussion from this workshop to frame the approach and questions for this project.

For the purpose of this systematic review project, dietary patterns is defined as:***The quantities, proportions, variety, or combination of different foods, drinks, and nutrients (when available) in diets, and the frequency with which they are habitually consumed.***

Objectives

The purpose of the Dietary Patterns Systematic Review project was to examine the relationship between dietary patterns and outcomes of public health concern. The initial goal of this project is to continue the work initiated by the 2010 DGAC to assess the association of several dietary patterns with blood pressure, cardiovascular disease, stroke, and total mortality. Additional objectives were identified and prioritized by the TEC with input from the Systematic Review Management Team and key stakeholders.

The systematic review questions included in this project were organized based on (1) dietary pattern methodology and (2) health outcomes:

- **Dietary pattern methodology:** Dietary patterns can be assessed in a number of ways, including indices that assess adherence to a particular pattern (e.g., Healthy Eating Index [HEI]) or data-driven approaches that use mathematics to empirically derive food intake patterns (e.g., factor or cluster analysis) (appendix A). Dietary patterns can also be tested in trials or observed in observational studies. Because each methodology provides information about dietary patterns from a different perspective, the systematic review questions included in this project were organized based on dietary pattern assessment: (1) index analysis, (2) factor/cluster analysis, (3) reduced rank regression, and (4) other methods.
- **Health outcomes:** The TEC identified three top priority outcomes for consideration: (1) body weight and obesity, (2) cardiovascular disease, and (3) type 2 diabetes. For each outcome, specific intermediate and

clinical outcomes were defined (appendix B). A fourth outcome, cancer, was also identified but was not completed due to resource constraints.

In total, 12 systematic review questions were completed in this project:

Body Weight or Risk of Obesity

1. What is the relationship between adherence to dietary guidelines/recommendations or specific dietary patterns, assessed using an index or score, and body weight or risk of obesity?
   - *A priori* index
2. Are prevailing patterns of diet behavior in a population related to body weight or risk of obesity?
   - Factor analysis, principal component analysis; cluster analysis
3. What combinations of food intake explain the most variation in a risk of obesity?
   - Reduced rank regression; discriminant analysis
4. What is the relationship between adherence to a specific dietary pattern and body weight or risk of obesity?
   - Included studies that did not use the methodologies captured in the other systematic review questions

Risk of Cardiovascular Disease

5. What is the relationship between adherence to dietary guidelines/recommendations or specific dietary patterns, assessed using an index or score, and risk of cardiovascular disease?
   - *A priori* index
6. Are prevailing patterns of diet behavior in a population related to risk of cardiovascular disease?
   - Factor analysis, principal component analysis; cluster analysis
7. What combinations of food intake explain the most variation in a risk of cardiovascular disease?
   - Reduced rank regression; discriminant analysis
8. What is the relationship between adherence to a specific dietary pattern and risk of cardiovascular disease?
   - Included studies that did not use the methodologies captured in the other systematic review questions

Risk of Type 2 Diabetes

9. What is the relationship between adherence to dietary guidelines/recommendations or specific dietary patterns, assessed using an index or score, and risk of type 2 diabetes?
   - *A priori* index
10. Are prevailing patterns of diet behavior in a population related to risk of type 2 diabetes?
    - Factor analysis, principal component analysis; cluster analysis
11. What combinations of food intake explain the most variation in a risk of type 2 diabetes?
    - Reduced rank regression; discriminant analysis
12. What is the relationship between adherence to a specific dietary pattern and risk of type 2 diabetes?
    - Included studies that did not use the methodologies captured in the other systematic review questions

The topic of dietary patterns is a growing area of research relevant to nutrition policy and programs. The results of this project can be used to inform Federal guidance related to foods and beverages, including the *Dietary Guidelines for Americans*. It can also help identify areas where more research is needed.

Chapter 3. **Methods**

The Nutrition Evidence Library (NEL) was launched in July 2008 by the U.S. Department of Agriculture's Center for Nutrition Policy and Promotion. The NEL uses a rigorous, transparent, and reproducible methodology to conduct systematic reviews on food- and nutrition-related topics to support Federal nutrition policies and programs. The following section describes the systematic review methodology used to conduct a series of systematic reviews on dietary patterns and health.

Dietary Patterns Systematic Review Project: Roles and Responsibilities

When conducting systematic reviews, NEL staff are assigned to a NEL Project Systematic Review Management Team and work with a Technical Expert Collaborate (TEC), a Stakeholder Group, Abstractors, and Peer Reviewers. The roles and responsibilities of each of these groups and individuals are outlined below.

NEL Systematic Review Management Team

This NEL systematic review project was planned, organized, and guided by a NEL Systematic Review Management Team composed of Federal nutritionists trained in systematic review methodology. This team was led by the Director of the Evidence Analysis Library Division (EALD) and included a Project Manager, Lead Analysts, Technical Advisors, and a Research Librarian. The Project Manager was responsible for leading, planning, organizing, and facilitating the work necessary for execution of the systematic review project. The Lead Analysts led the review of the individual research questions, and the NEL Research Librarian developed and implemented the search strategy for the scientific articles. The Technical Advisors provided advice to help guide the project and served as reviewers of the materials prepared by the Lead Analysts. Specific responsibilities of the NEL Systematic Review Management Team included the following:

- Facilitated the initial planning and led development of the systematic review project protocol.
- Directed the execution and quality control of the NEL systematic review project based on input from the TEC and Stakeholders in accordance with the principles and procedures outlined in the NEL systematic review methodology manual.
- Developed and disseminated products of the review, including website content, this systematic review report, and peer-reviewed publications.

The NEL Systematic Review Management Team met regularly throughout the systematic review project from conceptualization of the project through completion of the final products. They coordinated regular meetings with the TEC and Stakeholder Groups through conference call and webinar. They also served as the conduit between the TEC and the Stakeholder Group, Abstractors, and Peer Reviewers.

Technical Expert Collaborative

The Technical Expert Collaborative (TEC) consisted of seven national nutrition experts. A list of TEC members and their affiliations is found in the Acknowledgements section (on page 5). TEC members assisted the NEL Systematic Review Management Team by reviewing and providing expert feedback to refine systematic review materials. Their expertise was needed to address specific issues related to the topic of dietary patterns and to guide synthesis of the body of evidence to answer the systematic review questions. TEC members guided the systematic review process in the following ways:

- Reviewed and refined materials drafted by the NEL Systematic Review Management Team, including:
  - Analytical framework and systematic review questions
  - Literature search strategy, including guidance on potential search terms and databases
  - Criteria used to select articles included in the review
  - Lists of included and excluded articles

    - Data extraction plan, including guidance on relevant information that should be extracted from each article and summarized in evidence paragraphs and tables
    - A description of the body of evidence, including evidence worksheets with quality ratings
    - A synthesis of the body of evidence, including identification of themes apparent in the body of evidence
    - Conclusion statements and grades assigned based upon the body of evidence
- Additionally, the TEC:
    - Provided input on limitations and research recommendations
    - Served as co-authors of manuscript(s) submitted for peer-review publication.

NEL Project Stakeholder Group

Members of the Stakeholder Group included Federal employees who represent end-users of the review and possessed varying perspectives and expertise related to dietary patterns. The Stakeholder Group was instrumental in the initiation of the project to ensure that the products from the reviews would be valuable for informing policies and programs. Specifically, the Stakeholder Group:

- Assisted in refining and prioritizing systematic review questions
- Provided input on suggested inclusion and exclusion criteria.

NEL Abstractors

NEL Abstractors are National Service Volunteers from across the United States with advanced degrees in nutrition or a related field. They received training to review individual research articles included in the systematic reviews and rate the methodological rigor (quality) of each study. They extracted evidence from the research articles and posted this information to data fields in evidence worksheet templates in the NEL online portal. The methodological rigor of each included study was assessed using the Research Design and Implementation Checklist. Worksheets prepared by the Abstractors were reviewed by the NEL Systematic Review Management Team and provided a templated presentation of each article to assist the TEC in their review of the evidence.

Peer Reviewers

Peer reviewers were individuals from USDA who reviewed and provided comment on the systematic review products. The peer reviewers provided written input after this draft report was produced. Peer review was sought to ensure that this report provides a transparent and comprehensive description of the review. The NEL Systematic Review Management Team, particularly the Project Manager, coordinated the peer-review and developed responses to comments.

Dietary Patterns Systematic Reviews: Methodology

Research Protocol

The NEL uses a rigorous, transparent, and reproducible methodology that was informed by the Agency for Healthcare Research Quality (AHRQ), the Academy of Nutrition and Dietetics (AND) (formerly the American Dietetic Association), and the US Cochrane Collaboration process. The NEL utilizes a six-step systematic review process to conduct systematic reviews. The steps include:

1. Systematic review question development
2. Literature search, screening, and selection
3. Data extraction and quality assessment
4. Describing the evidence and evidence synthesis
5. Developing conclusion statements and grading the evidence
6. Identifying research recommendations.

Each step of these NEL processes and how it was applied to the Dietary Patterns Systematic Review Project is described below.

Develop Systematic Review Questions and Analytical Frameworks

The first step of the evidence analysis process was the development of systematic review questions. This step of the process was informed by the Dietary Patterns Workshop, which was held by the NEL to inform the initial aspects of the review. During the Workshop, invited experts spoke on various methodologies used to assess dietary patterns, and then a facilitated discussion occurred to help identify the questions of interest that might benefit from a systematic review. Following the Workshop, the TEC finalized and prioritized their questions of interest, and the questions were presented by the NEL to the Stakeholder Group to ensure that the questions addressed policy and program needs.

Once key topic areas were identified, the PICO (**P**opulation, **I**ntervention, **C**omparator, and **O**utcomes) method was used in order to focus each of the systematic review questions. In addition, an analytical framework was created to provide a visual map of key variables, such as the population, interventions, comparators, outcomes, and potential confounders, to be addressed within each review (appendix A). For the purposes of this review "dietary patterns" was defined as "the quantities, proportions, variety, or combination of different foods, drinks, and nutrients (when available) in diets, and the frequency with which they are habitually consumed." For each systematic review question developed, the following PICO components were used:

- **P**opulation: Children, adolescents, and adults aged 2 years and older
- **I**ntervention/Exposure: A dietary pattern
- **C**omparator: Low adherence to a particular dietary pattern (control) or a different dietary pattern (comparison)
- **O**utcomes: Health outcomes

The systematic review questions included in this project were organized based on (1) dietary pattern methodology and (2) health outcomes.

Create and Implement Literature Search and Sort Plans

After the systematic review questions were developed, the NEL Project Management Team developed the literature search and sort plan used to identify scientific articles to answer each systematic review question. The search and sort plan includes the development of inclusion and exclusion criteria, identification of databases and search terms used to identify relevant articles, implementation of the search strategy, and selection of studies to include in each systematic review. The TEC reviewed and provided feedback on inclusion and exclusion criteria, the literature search strategy, and the list of articles included and excluded for each review.

Inclusion and Exclusion Criteria

Inclusion criteria for the dietary patterns systematic reviews included the following:

- Human subjects
- Subject populations from countries with high or very high human development, according to the Human Development Index[7]
- Children, adolescents, and adults aged 2 years and older
- Subjects who were healthy or at elevated chronic disease risk
- Randomized or nonrandomized controlled trial with at least 30 subjects per study arm and a follow-up rate of at least 80 percent, or a prospective cohort study
- A description of the dietary pattern(s) consumed by subjects

In addition, articles were included if they were published in English in a peer-reviewed journal between January 1980 and August 2013 (see appendices F-H for the date of the last search update for each question). If an author is included on more than one primary research article that is similar in content, the paper with the most pertinent data/endpoints was included. If data/endpoints from both papers are appropriate, it was made clear that results are from the same intervention.

Exclusion criteria for the dietary patterns systematic reviews included:

- Animals and in vitro models
- Subject populations from countries with medium or low human development, according to the Human Development Index
- Children under the age of 2 years
- Subjects who were hospitalized, diagnosed with disease, and/or receiving medical treatment
- Low-calorie intervention (defined as <1,600 kcal/day for women and <2,000 kcal/day for men)
- Systematic review, meta-analysis, narrative review, before and after, cross-sectional, or case-control designs

Articles were excluded if they were not published in English, or were published before January 1980. Articles, abstracts, and presentations not published in peer-reviewed journals (e.g., websites, magazine articles, Federal reports) were also excluded. Finally, if an author was included on more than one review article or primary research article that is similar in content, the paper with the most pertinent data/endpoints was included, and others were excluded.

Search Strategy

The search strategy was developed by the NEL Research Librarian and reviewed by the Lead Analyst and TEC members. PubMed, Embase, Navigator (BIOSIS, CAB Abstracts, Food Science and Technology Abstracts), and Cochrane databases were searched using a wide variety of search terms and key words, including subject headings such as MeSH and thesauri terms. The search strategies included specific terms for dietary patterns (e.g., vegetarian, Mediterranean), dietary pattern methodologies (e.g., factor analysis), and health outcomes of interest. The specific strategy for each search is described in appendices F-H.

The first outcome considered in this project was body weight/obesity. As shown in appendix F, three searches were conducted for articles examining the relationship between dietary patterns and body weight using (1) index analysis, (2) factor/cluster analysis or reduced rank regression, and (3) other methods. Appendices G and H provide the search strategies to identify articles examining the relationship between dietary patterns and cardiovascular disease and

[7] United Nations Development Programme. 2011 Human Development Reports. Available at http://hdr.undp.org/en.

type 2 diabetes, respectively. In each case, one search was conducted and relevant articles were divided based on dietary pattern methodology. When needed, supplementary and update searches were conducted.

Study Selection

The NEL librarian conducted all database searches and performed initial title sorts to exclude articles that clearly did not address the question. A second member of the Systematic Review Management Team reviewed the articles excluded during the title sort and recommended articles that should be moved forward for further review. Two members of the NEL staff independently sorted abstracts and full text articles based upon approved criteria and developed a list of included and excluded articles (citing rationale for exclusion). The lists of included and excluded articles were compared, and the two reviewers reached consensus on articles for which there was discrepancy. When consensus could not be reached, a third member of the Systematic Review Management Team was asked to review the article. When needed, articles in question were brought to the full Systematic Review Management Team and/or the TEC for final inclusion or exclusion. Additionally, reference lists from review and primary articles were hand searched. TEC members reviewed and provided feedback on the sort lists. If TEC members identified relevant articles that were not on the sort list, or if search results were too expansive or too limited, the Systematic Review Management Team refined the search strategy and the search was rerun. NEL staff continued to monitor the literature for new articles through August 2013.

Develop Evidence Portfolios for Each Systematic Review Question

Relevant information from all included articles in each systematic review was assembled into evidence portfolios. For each study in a systematic review, the evidence portfolio includes an evidence worksheet with a study quality rating that reflects the assessment of methodological rigor of the study, as well as a data extraction grid and in some cases an evidence paragraph that summarizes the study methodology and results as it relates to the systematic review question being addressed. The components of the evidence portfolio are described in more detail below.

Each article included in a review was assigned to a NEL Abstractor to analyze and extract key data into an evidence worksheet template. The quality, or methodological rigor, of each article was assessed using the Research Design and Implementation (RDI) Checklist, developed by the Academy of Nutrition and Dietetics. The RDI checklist is based on criteria outlined in the Agency for Healthcare Research and Quality (AHRQ) report on *Systems to Rate the Strength of Scientific Evidence* (West et al., 2002[8]). The RDI checklist for primary research articles includes 10 scientific validity questions (ADA, 2009)[9] (appendix C). Based on responses to the checklist, each article was assigned a quality rating, positive, neutral, or negative that reflects the methodological rigor with which the research was designed and executed. NEL staff reviewed the accuracy and quality of each evidence worksheet and RDI checklist.

The NEL staff worked with the TEC to define the content of data extraction grids and evidence paragraphs for each systematic review question. Using the evidence worksheets, RDI checklists, and full text articles, NEL staff drafted evidence paragraphs and grid entries to summarize the evidence in a uniform way for study-to-study evaluation and comparison. The evidence paragraphs briefly summarized each included study and reported relevant data including: authors, publication year, rating; population, location, sample size and subject age; purpose of the study; description of study design and groups; methods used to assess dietary intake; dietary pattern methodology; brief description of the dietary patterns examined in the study; outcomes considered; and results related to the outcomes of interest in this review project. Use of evidence paragraphs was discontinued during the project and paragraph elements were incorporated into the description of the evidence. The data extraction grid provided information parallel to the evidence paragraphs, as well as additional information about study subjects (sex, race/ethnicity, and socioeconomic

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[8] West S, King V, Carey TS, Lohr KN, McKoy N, Sutton SF, Lux L. *Systems to Rate the Strength of Scientific Evidence. Evidence Report/Technology Assessment No. 47*. Prepared by the Research Triangle Institute-University of North Carolina Evidence-based Practice Center under Contract No. 290-97-0011. AHRQ Publication No. 02-E016. Rockville, MD: Agency for Healthcare Research and Quality; April 2002.
[9] American Dietetic Association, Research and Strategic Business Development. *Evidence Analysis Manual Adapted for the USDA Nutrition Evidence Library*. Chicago, IL: American Dietetic Association; 2009.

status) and key confounders and limitations of each included study. The Lead Analyst created a Description of the Evidence for each question that enumerated the number, type, quality, and descriptive characteristics of the included studies.

Synthesize the Body of Evidence

TEC members were asked to review the portfolio of evidence for each question and independently answer a series of questions to identify key trends in the body of evidence (appendix D). The Key Trends questionnaire was designed to identify patterns of agreement and disagreement among the studies as well as identify rationale for differences observed in the body of evidence. The Key Trends document also asked questions related to the generalizability and public health impact of the findings observed across the studies.

The NEL Systematic Review Management Team used the responses from the TEC members on the Key Trends questionnaire to develop evidence summary overviews that identified the key findings or trends, potential rationale for variations observed, and strengths and limitations of the body of evidence. TEC members reviewed the evidence synthesis and suggested refinement, as needed.

Develop and Grade the Conclusion Statement

The Key Trends questionnaire also asked the TEC members to independently identify themes they thought should be included in the conclusion statement. The NEL Systematic Review Management Team drafted a conclusion statement to answer the systematic review question based on their responses. Each conclusion statement was reviewed by the TEC and refined, as needed. Conclusion statements focused on areas of general agreement among the studies and when evidence addressed only one sex, age group, ethnicity, or level of health risk, this was reflected in the conclusion statement. Other findings from the body of evidence that helped to frame the conclusion statement or that were important to the review, but were not included in the conclusion statement, were summarized as Key Findings.

The NEL Systematic Review Management Team then facilitated an evaluation by the TEC members of the strength of the body of evidence supporting each conclusion using a pre-established set of criteria. These criteria were adapted and validated by the American Dietetic Association (now the Academy of Nutrition and Dietetics) based upon the original work by Greer and colleagues.[10] Grading criteria included: quality, quantity, consistency, generalizability, and public health impact. The following grades were used to describe the strength of the evidence supporting their conclusion statements: I – Strong, II – Moderate, III – Limited, and IV – Grade Not Assignable. Appendix E provides more detail on the grading criteria.

Define Research Recommendations

The Key Trends questionnaire also asked the TEC members to independently identify research recommendations related to the question or topic area. The NEL Systematic Review Management Team compiled these recommendations, which were reviewed by the TEC members and refined, as needed.

[10] Greer N, Mosser G, Logan G, Halaas GW. A practical approach to evidence grading. *The Joint Commission Journal on Quality Improvement.* 2000;26:700-712.

Chapter 4-A. **The Relationship Between Dietary Patterns and Body Weight**

Section I: Index Analysis

By Mary M. McGrane, Joan Lyon, and Eve Essery Stoody

What is the relationship between adherence to dietary guidelines/recommendations or specific dietary patterns, assessed using an index or score, and measures of body weight or obesity?

TECHNICAL ABSTRACT

Background

The goal of this systematic review project was to identify dietary patterns of food and beverage intake that promote health and prevent disease. Dietary patterns are defined as the quantities, proportions, variety, or combination of different foods, drinks, and nutrients in diets, and the frequency with which they are habitually consumed. Researchers have used scores (or indices) to measure adherence to healthy dietary patterns, such as a Mediterranean style diet, or adherence to dietary guidelines. The scores are then used to examine associations between a given dietary pattern and health outcomes. Because of the increased prevalence of overweight and obesity in the United States, with associated co-morbidities, it is important to determine which dietary patterns may be associated with prevention or decreases in obesity, and how this information can be translated to nutrition policy recommendations. The objective of this systematic review question was to determine the association between adherence to a specific dietary pattern, assessed using an index or score, and measures of body weight or obesity.

Conclusion Statement

There is moderate evidence that, in adults, increased adherence to dietary patterns scoring high in fruits, vegetables, whole grains, legumes, unsaturated oils, and fish; low in total meat, saturated fat, cholesterol, sugar-sweetened foods and beverages, and sodium; and moderate in dairy products and alcohol is associated with more favorable outcomes related to body weight or risk of obesity, with some reports of variation based on gender, race, or body weight status. (Grade: II Moderate)

Methods

Literature searches were conducted using PubMed, Embase, Navigator (BIOSIS, CAB Abstracts, and Food Science and Technology Abstracts) and Cochrane databases to identify studies that evaluated the association between dietary patterns (using an *a priori* index or score) and risk of obesity. Studies that met the following criteria were included in the review: randomized controlled trials, non-randomized controlled trials, or prospective cohort studies; subjects aged 2 to18 years; subjects who were healthy or at elevated chronic disease risk; subjects from countries with high or very high human development (2011 Human Development Index); and published in English in peer-reviewed journals. The date range was unlimited. Diet exposure was assessed by adherence to a hypothesis-based dietary pattern, defined using a numerical scoring system.

A group of technical experts were involved in a qualitative synthesis of the body of evidence, development of a conclusion statement, and assessment of the strength of the evidence (grade) using pre-established criteria including evaluation of the quality, quantity, consistency, magnitude o f effect, and generalizability of available evidence.

Findings

- Fourteen studies met the inclusion criteria for this systematic review and the body of evidence consisted primarily of large prospective cohort studies. Two major categories of diet exposure were identified: Mediterranean style and dietary guidelines-related dietary patterns.
- Adherence to a Mediterranean diet score or a dietary guidelines-related score was associated with decreased risk of obesity, with some reported variation based on gender or body weight status.
- Adherence to a Mediterranean diet score or a dietary guidelines-related score was associated with decreased body weight, BMI, waist circumference, or percent body fat, with some variation based on gender and race.
- Mediterranean or dietary guidelines-related dietary patterns share many beneficial characteristics and generally reflect a plant-based, minimally processed, nutrient-dense dietary pattern. Consistent components across the scores were beneficial foods including vegetables, fruits, whole grains, legumes, and sources of unsaturated fats (particularly fish); foods that were beneficial in moderation including dairy products and alcohol, and foods and nutrients presumed to be detrimental including total meat, saturated fat, cholesterol, sugar-sweetened foods and beverages, and sodium.

Discussion

The scores that were associated with decreased risk of obesity were the Mediterranean Diet Score (MDS), the relative Mediterranean Diet Score (rMED), the Healthy Eating Index (HEI)-1995 and a customized HEI-2005, the Diet Quality Index–International (DQI-I), the Dietary Guidelines Adherence Index (DGAI), and the French Programme National Nutrition Santé Guideline Score (PNNS-GS). Taken together, the positive components of scores that were associated with decreased risk of obesity were fruits, vegetables, whole grains, legumes, and fish. Alcohol was commonly included as a positive component when consumed in moderation. Meat and dairy, with some variations, were negative components in Mediterranean scores or recommended within specific ranges for dietary guidelines indices. The dietary guidelines indices also included saturated fat and cholesterol, or added non-vegetable fats, as negative components above a specified level of intake. Sugar-sweetened food and drink components were included and scored negatively in most of the dietary guidelines indices. Overall, there were a large variety of dietary pattern scores used that were difficult to compare because foods were aligned, described, or scored in dissimilar ways.

PLAIN LANGUAGE SUMMARY

Is adherence to dietary guidelines or specific dietary patterns, assessed by a predetermined score, related to the likelihood of becoming overweight or obese?

The analysis of dietary patterns takes into account overall diet intake, including all foods and beverages that an individual consumes over a specified period of time. Dietary patterns that have been identified as healthy or protective against disease have been identified, such as a Mediterranean style diet. Additionally, dietary guidelines recommend a specific dietary pattern that is healthy. Many researchers examine how well individuals follow a specific dietary pattern or set of dietary guidelines by creating a score that measures high, medium, and low adherence to the specified diet. These scores have been used to examine the relationship between specific dietary patterns and health outcomes. The objective of this question was to determine the relationship between adherence to a dietary pattern, assessed using a score, and measures of body weight or obesity.

Conclusion

There is moderate evidence that, in adults, increased adherence to dietary patterns scoring high in fruits, vegetables, whole grains, legumes, unsaturated oils, and fish; low in total meat, saturated fat, cholesterol, sugar-sweetened foods and drinks, and sodium; and moderate in dairy products and alcohol is associated with more favorable outcomes related to body weight or risk of obesity, with some reports of variation based on gender, race, or body weight status.

What the research says

- In adults, individuals who had a high Mediterranean diet or dietary guidelines score were at lower risk of becoming obese than those who had a low score. A few studies reported some differences in men compared to women or differences in normal weight compared to overweight individuals.
- Mediterranean or dietary guidelines-related patterns share many foods and beverages, and generally reflect a plant-based, minimally processed diet that is high in nutrients. Common foods, beverages, and nutrients were: (1) beneficial foods including vegetables, fruits, whole grains, legumes, and sources of unsaturated fats (particularly fish); (2) foods that were beneficial in moderation including dairy products and alcohol; and (3) foods and nutrients presumed to be harmful including total meat, saturated fat, cholesterol, sugar-sweetened foods and drinks, and sodium.

EVIDENCE PORTFOLIO

Conclusion Statement

There is moderate evidence that, in adults, increased adherence to dietary patterns scoring high in fruits, vegetables, whole grains, legumes, unsaturated oils, and fish; low in total meat, saturated fat, cholesterol, sugar-sweetened foods and drinks, and sodium; and moderate in dairy products and alcohol is associated with more favorable outcomes related to body weight or risk of obesity, with some reports of variation based on gender, race, or body weight status.

Grade

II - Moderate

Key Findings:

- Two major categories of dietary pattern scores were identified in the literature: (1) studies that examined exposure based on a Mediterranean dietary pattern and (2) studies that examined exposure based on dietary guidelines recommendations.
- In adults, adherence to a Mediterranean diet score or a dietary guidelines-related score is associated with decreased risk of obesity, with some reported variation based on gender or body weight status.
- This protective association in adults is further supported by consistent evidence indicating that an increased Mediterranean diet score or dietary guidelines-related score is associated with decreased body weight, BMI, waist circumference, or percent body fat, with some variation based on gender and race.

Evidence Summary Overview

Description of the Evidence

A total of 14 studies met the inclusion criteria for this systematic review and were categorized based on dietary pattern exposure. Two major categories were identified (appendix A): (1) studies that examined exposure based on a Mediterranean dietary pattern and (2) studies that examined exposure based on dietary guidelines recommendations. Taken together, there were six studies on Mediterranean diet scores (Beunza, 2010; Estruch, 2006; Mendez, 2006; Romaguera, 2010; Rumawas, 2009; Tortosa, 2007), five studies on dietary guidelines-based indices (Berz, 2011; Cheng, 2010; Gao, 2008; Kesse-Guyot, 2009; Zamora, 2010), two studies on Mediterranean scores and dietary guidelines indices (Lassale, 2012; Woo, 2008) and one study that used a trial-based customized score (Jacobs, 2009). Two of the studies were RCTs of positive quality (Estruch, 2006; Jacobs, 2009). Twelve of the studies were prospective cohort studies; of these, ten were of positive quality (Berz, 2011; Beunza, 2010; Cheng, 2010; Gao, 2008; Kesse-Guyot, 2009; Lassale, 2012; Mendez, 2006; Romaguera, 2010; Rumawas, 2009; Zamora, 2010) and two were of neutral quality (Tortosa, 2007; Woo, 2008). The studies were carried out between 2006 and 2012. The sample sizes for the RCTs were from 187 to 769 subjects. The sample sizes for prospective cohort studies ranged from 732 to 373,803 participants (2 studies <1,000, 7 studies >1,000, 2 studies >10,000, and 1 study >100,000). RCT duration ranged from 3 to 12 months and observational study follow-up times from 1.5 to 20 years.

Studies were conducted in the United States, Hong Kong, and Europe, including the ten European countries (Denmark, France, Germany, Greece, Italy, the Netherlands, Norway, Spain, Sweden, and the United Kingdom) of the EPIC-PANACEA project. Of the six studies on the Mediterranean dietary pattern alone, four studies were conducted in Spain (Beunza, 2010; Estruch, 2006; Mendez, 2006; Tortosa, 2007), one study was the European multicenter study that was part of EPIC-PANACEA (Romaguera, 2010), and one study was conducted in the United States (Rumawas, 2009). Of the six studies conducted on dietary guidelines-based indices, three studies were conducted in the United States with U.S.-based indices (Berz, 2011; Gao, 2008; Zamora, 2010), one study was conducted in Germany with an index developed in the United States (Cheng, 2010), and one study was conducted in France using a French index (Kesse-Guyot, 2009). The studies that compared Mediterranean diet scores and dietary-guidelines based indices were conducted in France (Lassale, 2012) and Hong Kong (Woo, 2008), and the one study that used a trial-based customized diet score was conducted in Norway (Jacobs, 2009).

Ten out of twelve of the prospective cohort studies were conducted with generally healthy adults with a mean age of 25 to 63 years; however, two studies were conducted with children and adolescents (one with girls) (Berz, 2011; Cheng, 2010). The two RCTs were conducted in adults with elevated chronic disease risk: one study with a Mediterranean diet intervention on older adults at increased CVD risk with >90 percent overweight or obese (Estruch, 2006), and one study using an *a priori* diet intervention on men with metabolic syndrome (Jacobs, 2009). Studies varied in baseline weight status and ranged from <10 percent to >90 percent of subjects being overweight or obese, with the mid-range between 20 to 40 percent overweight or obese. Lastly, one of the studies was focused on Black, Caucasian, Hispanic, and Chinese participants (Gao, 2008), and one study was focused on Black and Caucasian young adults (Zamora, 2010); both of these studies examined ethnic/racial-specific differences in outcomes.

Evidence Summary Paragraphs

Mediterranean Dietary Pattern

1. Estruch et al., 2006 (positive quality) conducted a parallel, multicenter randomized controlled trial (RCT) in Spain, the Prevencion con Dieta Mediterranea (PREDIMED) study, to assess the effects of a Mediterranean diet on primary prevention of cardiovascular disease in a high-risk group of men and women. Subjects either had type 2 diabetes or three cardiovascular disease risk factors and 90 percent were overweight or obese. The PREDIMED trial assigned participants to three interventions: (1) Mediterranean diet with olive oil, (2) Mediterranean diet with mixed nuts, and (3) low-fat diet. This was the first report at 3 months of a 4-year clinical trial. The trial included 769 subjects with average age of 69 years. Dietary intake was assessed with a validated 137-item FFQ and the degree of adherence was assessed with a 14-item Mediterranean diet score that is based on a version of the MDS that assesses a cardio-protective Mediterranean diet. The Mediterranean diet score increased in the two Mediterranean diet groups of the trial and remained unchanged in the low-fat group. There were no significant changes in body weight and adiposity within or between groups from baseline to the 3 months. The authors concluded that because the subjects had CVD risk factors, the fact that body weight did not increase was positive because there was no weight gain, even though the Mediterranean diet interventions involved *ad libitum* diets supplemented with unsaturated fats, such as those contained in olive oil and nuts.

2. Beunza et al., 2010 (positive quality) reported on a prospective cohort study in Spain, the Seguimiento Universidad de Navarra (SUN) study, to examine the association between adherence to a Mediterranean dietary pattern and long-term weight change and incidence of overweight or obesity. This analysis of the SUN cohort of university graduates included 10,376 participants with a mean age of 38±11 years who were followed for approximately 6 years. Dietary intake was assessed with a semi-quantitative 136-item FFQ validated in Spain and adherence to a Mediterranean dietary pattern was assessed using the Trichopoulou MDS (2003). Dietary intake was assessed biennially. Subject exposure was assessed in tertiles of low (0-3), medium (4-6), and high (7-9) adherence to the MDS. Participants with highest adherence to the MDS had lower average yearly weight gain, -0.059 kg/y (95% CI = -0.111 to -0.008 kg/y; P for trend = 0.02), than participants in the lowest adherence group. However, the MDS was not associated with incidence of overweight or obesity in participants who were normal weight at baseline. The authors concluded that adherence to the Mediterranean dietary pattern was significantly associated with reduced weight gain. Further, the authors interpret their results in a highly educated Mediterranean population (i.e., low risk) to indicate that this dietary pattern could be recommended to slow age-related weight gain.

3. Lassale et al., 2012 (positive quality) conducted on a prospective cohort study in France to examine the relationship between diet quality and development of obesity by comparing the predictive value of six different dietary scores on weight change and risk of obesity. Subjects were participants in the SUpplementation en VItamines et Minereaux AntioXydants (SU.VI.MAX) study. This analysis included 3,151 adults, aged 45 to 60 years, followed for 13 years. Dietary intake was assessed with 24-hour diet records collected every 2 months and records for the first 2 years of the study were used to determine baseline dietary habits. Diet quality was assessed using the MDS, rMED, MSDPS, the Diet Quality Index-International (DQI-I), the 2005 Dietary Guidelines for Americans Adherence Index (DGAI), and the French Programme National Nutrition Sante-Guidelines Score (PNNS-GS). Overall, better adherence to a Mediterranean diet (except for the MSDPS) or dietary guidelines was associated with lower weight gain in men who were normal weight at baseline (P for trend = <0.05). In addition, among the 1,569 non-obese men at baseline, the odds of becoming obese associated with one standard deviation increase in dietary score ranged from OR = 0.63 (95% CI = 0.51 - 0.78) for the DGAI to OR = 0.72 (95% CI = 0.59 - 0.88) for the MDS, only the MSDPS was non-significant. In women, no association between diet scores and weight gain or incidence of obesity was found. The authors concluded that adherence to a Mediterranean diet or dietary guidelines, except MSDPS score, were associated with lower 13-year weight gain and lower obesity risk for men, while no associations were observed for women.

4. Mendez et al., 2006 (positive quality) reported on a prospective cohort study in Spain, the European Prospective Investigation into Cancer and Nutrition (EPIC)-Spain study, to examine if adherence to a Mediterranean diet pattern was associated with reduced incidence of obesity. Analysis of the EPIC-Spain cohort included 27,827 participants, age range 29 to 69 years that were followed for approximately 3 years. Dietary intake was assessed with a validated, computerized diet-history instrument with >600 items. Mediterranean dietary pattern adherence was assessed using a slight modification of the Trichopoulou MDS (2003), with exposure expressed in tertiles of low (0-3), medium (4-5), and high (6-8) adherence. Participants with highest MDS adherence had reduced incidence of obesity when overweight at baseline. Women were 27 percent and men 29 percent less likely to become obese (women OR = 0.69 [95% CI = 0.54 - 0.89]; men OR = 0.68 [95% CI = 0.53 - 0.89]). High MDS adherence was not associated with incidence of overweight in subjects who were normal weight at baseline. When individual MDS score components were assessed, obesity incidence was higher in women who consumed more meat and lower in men who consumed more cereals (P<0.05). The authors concluded that promoting eating habits consistent with a Mediterranean dietary pattern may be useful in efforts to combat obesity.

5. Romaguera et al., 2010 (positive quality) reported on a multicenter prospective cohort study conducted in ten countries across Europe, the EPIC-Physical Activity, Nutrition, Alcohol Consumption, Cessation of Smoking, Eating out of Home, and Obesity (EPIC-PANACEA) study. This study examined the association between adherence to a Mediterranean dietary pattern, prospective weight change, and the incidence of overweight or obesity. Analysis of the EPIC-PANACEA cohort included 373,803 participants, age range 25 to 70 years, followed for 5 years. Dietary intake was assessed with country-specific FFQs and adherence was assessed using the relative Mediterranean Diet Score (rMED), a variation on the Trichopoulou MDS (2003), that assessed 9 components in g/1000 kcal for energy density. Subject exposure was assessed in tertiles of low (0-6), medium (7-10), and high (11-18) adherence to the rMED. Participants with high rMED adherence gained less weight in 5 years than did participants with low rMED adherence (-0.16 kg [95% CI: -0.24 to -0.07 kg]). The contribution of each rMED scoring component was also assessed and it was found that the association between rMED and weight change was no longer significant when meat and meat products were not part of the score. The likelihood of becoming overweight or obese in participants with high rMED adherence was OR = 0.90 (95% CI = 0.82 - 0.96) when compared to the low adherence group. Lastly, a meta-analysis of the OR scores of all 10 European countries showed that a 2-point increase in rMED score was associated with 3 percent (95% CI = 1 - 5%) lower odds of becoming overweight or obese over 5 years. The authors concluded that promoting the Mediterranean dietary pattern as a model of healthy eating may help prevent weight gain and the development of obesity.

6. Rumawas et al., 2009 (positive quality) conducted a prospective cohort study using a subset of the Framingham Offspring and Spouse (FOS) study, which was conducted in the United States. The study examined the association between adherence to a Mediterranean dietary pattern and metabolic syndrome, including abdominal adiposity. The study analyzed 2,730 participants with a mean age of 54 years for metabolic syndrome traits including waist circumference, and subgroup of 1,918 participants for incidence of metabolic syndrome, over a 7-year period. Dietary intake was assessed using the Harvard semi-quantitative FFQ of 126 items and adherence was assessed using the Mediterranean-style dietary pattern score (MSDPS) based on the Mediterranean diet pyramid. The MSDPS has 13 components scored 0 to 10 based on servings per day or servings per week. Subject exposure was assessed in quintiles of low to high adherence to the MSDPS. Participants with a higher MSDPS had significantly lower waist circumference (P for trend < 0.001). The authors concluded that their study suggests that consumption of a diet consistent with the principles of a Mediterranean-style diet may protect against metabolic syndrome in Americans.

7. Tortosa et al., 2007 (neutral quality) reported on a prospective cohort study in Spain, the Seguimiento Universidad de Navarra (SUN) study, to examine the association between adherence to a Mediterranean dietary pattern and metabolic syndrome, including abdominal adiposity. This analysis of the SUN cohort of university graduates included 2,563 participants initially free of metabolic syndrome (mean ages not reported) who were followed for 6 years. Dietary intake was assessed with a semi-quantitative 136-item FFQ validated in Spain and adherence to a Mediterranean dietary pattern was assessed using the MDS of Trichopoulou. Dietary intake was assessed biennially. Subject exposure was assessed in tertiles of low (0-2), medium (3-5), and high (6-9) adherence to the MDS. Participants in the highest tertile of adherence to the MDS had lower waist circumference, -0.05 cm over 6 years (P for trend = 0.038), compared to the lowest tertile. The authors concluded that this study provided evidence of an inverse relationship between MDS adherence and cumulative incidence of metabolic syndrome.

8. Woo et al., 2008 (neutral quality) reported on a prospective cohort study in Hong Kong to examine dietary factors that predispose people to overweight or obesity. The study analyzed 732 participants with a mean age of 45 years over a period of 5 to 9 years. Dietary intake was assessed using a validated FFQ and adherence to the Mediterranean diet was assessed using the Trichopoulou MDS (2003). In addition, food variety was assessed by the ratio of variety of snacks to the variety of grains and meat. Diet quality was also assessed using the Diet Quality Index International (DQI-I). Incidence of overweight or obesity was calculated by dividing the number of subjects with normal BMI at baseline who became overweight or obese (N - >Ow/Ob) by the number with normal BMI at baseline. In multivariate analysis, increased adherence to either the MDS or DQI-I was associated with a slight, but not significant, increase in the risk of becoming overweight (OR =1.35 [95% CI = 0.94 - 1.93] and OR = 1.32 [95% CI = 0.92 - 1.89, respectively) when defined by the Asian criteria (BMI >23 kg/m^2). Increased snack and food variety ratios were associated with increased risk of becoming overweight when defined by the Asian criteria (BMI >23 kg/m^2), however, there was no association when overweight defined as BMI >25 kg/m^2 was used. This study showed no association between Mediterranean diet adherence, or diet quality assessed by DQI-I, and the development of overweight. The authors concluded that increased variety of snack consumption may predispose to weight gain over a 5- to 9-year period.

Dietary Guidelines-Related Patterns

Note: Lassale 2012 et al. (2012) and Woo et al. (2008) (described above) conducted studies that assessed both Mediterranean diet pattern scores and dietary-guidelines related indices.

9. Berz et al., 2011 (positive quality) reported on a prospective cohort study to assess the effects of the Dietary Approaches to Stop Hypertension (DASH) eating pattern on BMI in adolescent females in the United States. The

Prospective National Growth and Health Study followed 2,327 girls aged 9 to 10 years over a 10-year period. Dietary intake was assessed using a 3-day food record collected for each year of the study. Diet quality was assessed using a modified DASH food group score, reflecting adherence to a DASH eating pattern as described in the 2005 *Dietary Guidelines for Americans*. The score contained 10 food groups, three of which were excluded for the modified score used in this study: added sugars, discretionary fats and oils, and alcohol. The seven DASH-related groups in the modified score included fruits, vegetables, low-fat dairy, total and whole grains, lean meats, and nuts, seeds, and legumes. Subject exposure was assessed as quintiles of DASH score. Overall, girls in the highest vs. lowest quintile of DASH score had an adjusted mean BMI of 24.4 vs. 26.3 kg/m^2 ($P<0.05$). The strongest individual food component predictors of BMI were total fruit and low-fat dairy. Whole-grain consumption was more weakly, but inversely, associated with BMI. The authors concluded that adolescent girls whose diet more closely resembled the DASH eating pattern had smaller gains in BMI over the 10-year period. This suggests that this eating pattern could help prevent excess weight gain during adolescence.

10. Cheng et al., 2010 (positive quality) analyzed data from a prospective cohort study conducted in Germany, the Dortmund Nutritional and Anthropometric Longitudinally Designed (DONALD) study, to examine if the diet quality of healthy children prior to puberty was associated with body composition at onset of puberty. The final sample included 222 children, mean age 7.4 years, who were followed until the onset of pubertal growth spurt (Age at Take-Off = ATO). Dietary intake was assessed with 3-day weighed food records. Adherence to a diet pattern was assessed by the Nutritional Quality Index (NQI) or the Revised Children's Diet Quality Index (RC-DQI). The NQI determine the extent to which a child meets the nutritional recommendation for particular nutrients. The RC-DQI rated diet quality by scoring childrens' intakes in relation to the U.S. dietary intake recommendations. Thirteen dietary components were considered, including a proxy for energy balance. Subject exposure was assessed as high, medium, and low diet quality for both indices. Results showed that for both indices, a higher dietary quality was associated with a higher energy intake. Children with a lower diet quality according to their RC-DQI score had lower BMI and Fat Mass Index (FMI) Z-scores at baseline ($P<0.01$) but not at ATO. Lower NQI in pre-puberty was associated with a ~0.4 year-earlier ATO than children with a higher diet quality ($P=0.02$). The authors concluded that diet quality was not independently associated with body composition at ATO. Children with lower diet quality according to a nutrient density-based index appear to enter puberty at an earlier age, independent of pre-pubertal body composition.

11. Gao et al., 2008 (positive quality) reported on a prospective cohort study of White, African American, Hispanic, and Chinese men and women in the Multi-Ethnic Study of Atherosclerosis (MESA) in the United States. The objective of the study was to assess the diet quality of a multiethnic population using and comparing the HEI-1995 and a modified version, the HEI-05, in ability to predict obesity outcomes, as well as whether their predictive ability differed by ethnicity. A total of 6,236 subjects with mean age of 63 years were recruited from four ethnic populations and followed-up at 18 months. Dietary intake was assessed using a 120-item FFQ that included typical Hispanic and Chinese foods. Diet quality was determined using the HEI-1995 and the HEI-05, a modified HEI developed by the authors and based on the 2005 DGA, but distinct from HEI-2005. The HEI-05 used the same components, weighting, and scoring rules as the original HEI, but further adjusted the food group components to incorporate levels of caloric need based on gender, age, and activity level, as specified in the 2005 DGA. For the overall population, there was an inverse association between quintiles of each HEI score and BMI and waist circumference (WC) ($P<0.001$). The risk of obesity in normal weight participants was inversely associated with HEI scores only for Whites ($P<0.05$). A comparison of the HEI-1995 and HEI-05 scores indicated that beta-coefficients, as predictors of body weight and BMI, were higher for the HEI-05 scores in Whites. The authors concluded that their changes to the original HEI resulted in an HEI that was better at predicting obesity outcomes in a multi-ethnic population, although the improvement was primarily seen in the White population. The authors qualified this conclusion in the Discussion and stated that the HEI-05 was only slightly better than the original HEI in predicting both cross-sectional baseline and follow-up obesity outcomes.

12. Kesse-Guyot et al., 2009 (positive quality) conducted a prospective cohort study in France to examine the association between adherence to a dietary score based on nutritional guidelines and changes in body weight, body fat distribution, and obesity risk. Subjects were participants in the SUpplementation en VItamines et Minereaux AntioXydants (SU.VI.MAX) study and the score was the Programme National Nutrition Sante´ guidelines score (PNNS-GS), based on assessing adherence to 2001 French national guidelines for the general population. This study followed a total of 3,531 adults, aged 45 to 60 years, for 6 years. Dietary intake was assessed using 24-hour diet records every 2 months, covering all days of the week and seasons. Adherence to dietary guidelines was assessed using the PNNS-GS that includes 12 nutritional components: fruit and vegetables, starchy foods, whole grains, dairy products, meat, seafood, added fat, vegetable fat, sweets, water and soda, alcohol, and salt. The last PNNS-GS component is physical activity. In fully adjusted models, an increase of one PNNS-GS unit was associated with lower weight gain (P=0.004), lower waist circumference gain (P=0.01), lower waist-to-hip ratio gain (P=0.02), and lower BMI gain (P=0.002). An increase of 1 PNNS-GS unit was associated with a lower probability of becoming overweight (including obese), OR = 0.93 (95% CI: 0.88 - 0.99). Similarly, an increase of 1 PNNS-GS unit was associated with a lower probability of becoming obese, OR = 0.89 (95% CI: 0.80 - 0.99). The authors concluded that their study showed that nutritional guidelines can play a role in the prevention of age-related weight increase and the development of obesity.

13. Zamora et al., 2010 (positive quality) analyzed data from the prospective cohort study, Coronary Artery Risk Development in Young Adults (CARDIA), which was conducted in the United States, to examine the association between diets consistent with the 2005 DGAs and subsequent weight gain in Black and White young adults. The CARDIA study followed 4,913 participants (average age 25 years) over 20 years. Dietary intake was assessed with a quantitative 100-item diet-history questionnaire. Diet quality was assessed using DQI-2005 to determine adherence to 10 components of the 2005 DGAs: total fat, saturated fat, cholesterol, added sugars, reduced-fat milk, fruit, vegetables, whole grains, nutrient-dense foods, and limited sodium and alcohol intake. The study results differed by race. A 10-point increase in DQI score was associated with a 10 percent lower risk of gaining 10 kg in normal-weight Whites, but with a 15 percent higher risk in obese Blacks (P<0.001). The mean adjusted 20-year weight change was +19.4 kg for Blacks and +11.2 kg for Whites with high DQI (DQI>70) and +17.8 kg for Blacks and +13.9 kg for Whites with a low DQI (DQI<50) (P<0.05). The authors concluded that a diet consistent with the 2005 DGAs was associated with more weight gain in Blacks, particularly obese Blacks, but with less weight gain in Whites. However, even Whites with a high DQI score gained weight over the 20-year study period. Therefore, they concluded that a diet consistent with the 2005 DGAs was not beneficial for long-term weight maintenance in young American adults.

Other Scores:

14. Jacobs et al., 2009 (positive quality) conducted a randomized controlled trial in Norway, the Oslo Diet and Exercise Study (ODES), to examine the effect of changes in diet patterns on body weight and other intermediate metabolic markers of chronic disease risk. The final sample included 187 men, mean age 45 years, who met the criteria for metabolic syndrome. Subjects were randomly assigned to: (1) the diet protocol, (2) the exercise protocol, (3) the diet + exercise protocol, or (4) the control protocol. The trial duration was 12 months. Dietary intake was assessed with a validated 180-item FFQ. An *a priori* diet score, developed by the authors, was used to determine adherence to the intervention. The diet score was based on summing tertile rankings of 35 food-group variables with postulated beneficial, neutral, or adverse effects on health. A higher score reflected the recommended dietary changes in the ODES trial. Over the year of the study, the diet score increased by 2±5.5 in both diet groups, with a decrease of an equivalent amount in the exercise and control groups. The weight change was -3.5 kg/10-point change in diet score (P<0.0001). Similarly, per 10-point change in diet score, waist circumference decreased by 2.8 cm (P<0.0001) and percent body fat decreased by 1.3 percent (P<0.0001). Additionally, when the results related to diet score were adjusted for intervention group these body size changes were attenuated, but still significant. Subjects with a higher diet score also had more favorable changes in other markers of metabolism. The authors concluded that a more favorable diet pattern was associated with improved body size and metabolic profile.

Qualitative Synthesis of the Collected Evidence

Themes and Key Findings for Total Scores and Indices

Intermediate Outcomes: Body Weight, BMI, Waist Circumference, Percent Body Fat

The intermediate outcomes included in this review were body weight, BMI, waist circumference, and percent body fat. Overall, seven studies reported on body weight, four reported on BMI, five reported on waist circumference, and one reported on percent body fat (table 4-A-I-1).

*Body Weight***:** Six out of seven studies that examined body weight found that an increase in Mediterranean diet score or dietary guideline index was associated with improved body weight in adults. Based on total scores, four studies reported a protective association, including an association between the MDS (Beunza, 2010), rMED (Romaguera, 2010), PNNS-GS (Kesse-Guyot, 2009), and a customized *a priori* score (Jacobs, 2009) and body weight. Two studies reported mixed results. Lassale et al. found a protective association between the MDS, rMED, (but not MSDPS), DQI-I, DGAI, and PNNS-GS and body weight in men, but not in women. Zamora et al. found a protective association between the DQI-2005 and body weight in normal weight Caucasians but increased body weight in obese Blacks. One study found no effect of a Mediterranean diet intervention on body weight in at-risk elderly (Estruch, 2006).

*BMI***:** Of the four studies that assessed BMI independent of risk of overweight or obesity, two were conducted with adults using HEI scores or the PNNS-GS (Gao, 2008; Kesse-Guyot, 2009) and two were conducted with children and adolescents using the Revised Children's (RC)-DQI or a DASH score (Cheng, 2010; Berz 2011). The two studies in adults found an association between an increased dietary guidelines index and decreased BMI over time, although the multiethnic MESA study found this primarily in Caucasians (Gao, 2008). The two studies in children and adolescents examined pre-puberty to puberty onset (Cheng, 2010) or the adolescent period (Berz, 2011) with differing results. Although Cheng et al. found no association between the RC-DQI score and BMI at puberty onset in boys and girls, Berz et al. found that girls in the highest quintile of DASH score had the smallest gains in BMI throughout adolescence.

*Waist Circumference and Percent Body Fat***:** Waist circumference was measured as a component of metabolic syndrome and five studies assessed this measure of abdominal adiposity. All of these studies were consistent in that they found an inverse association between a score or index and waist circumference over time (Jacobs, 2009; Kesse-Guyot, 2009; Rumawas, 2009 [MSDPS]; Tortosa, 2007 [MDS]), although the MESA study found this association primarily in Caucasians (Gao, 2008). Jacobs et al. also assessed changes in percent body fat and found that an increase in a customized *a priori* diet score was associated with a decrease in percent body fat in subjects with metabolic syndrome.

Taken together, the majority of studies found that an increase in Mediterranean diet score or dietary guideline-related index was associated with some measure of improved body weight or composition in adults. The MDS, followed by the rMED and PNNS-GS were the most commonly applied scores associated with a protective outcome.

Table 4-A-I-1 Summary of Findings

Hypothesis that increased adherence to dietary pattern improves measures of body weight and risk of obesity

Study/ Cohort/ Index or Score	Body Weight	Body Mass Index	Waist Circumference and Percent Body Fat	Incidence of Overweight or Obesity
Estruch 2006/ PREDIMED/***a priori* Med**	(∅)			
Zamora 2010/CARDIA/**DQI-2005**	(+) Whites*			
Jacobs 2009/ODES/***a priori* diet score**	(+)		(+) for WC (+) for %Body Fat	
Beunza 2010/SUN/**MDS**	(+)			(∅) N → Ow + Ob
Lassale 2012/SU.VI.MAX/ **MDS, rMED, MSDPS, DQI-I, DGAI, PNNS-GS**	(+) Men (∅) Women			(+) N + Ow → Ob Men (∅) Women
Romaguera 2010/ EPIC-PANACEA/ **rMED**	(+)			(+) N → Ow + Ob
Kesse-Guyot 2009/SU.VI.MAX/ **PNNS-GS**	(+)	(+)	(+) for WC	(+) N → Ow + Ob (+) N + Ow → Ob
Cheng 2010/DONALD/**RC-DQI**		(∅)		
Berz 2011/PNGHS/**DASH score**		(+)		
Gao 2008/MESA/**HEI-95, -05**		(+) Whites**	(+) for WC Whites	(+) Whites, N → Ob (∅) N → Ow
Tortosa 2007/ SUN/**MDS**			(+) for WC	
Rumawas 2009/ Framingham/**MSDPS**			(+) for WC	
Mendez 2006/EPIC-Spain/**MDS**				(+) Ow → Ob (∅) N → Ow
Woo 2008/Hong Kong/**MDS and DQI-I**				(∅) N → Ow

(+) Indicates that study supports the hypothesis; (-) Indicates that study does not support the hypothesis;
(∅) Indicates no change; Blank cells indicate the relationship was not examined
*Normal weight Whites & (-) in Ob Blacks; ** (∅) in Blacks, Hispanics, Chinese

Endpoint Outcomes: Incidence of Overweight and Obesity

Seven studies included in this review considered the relationship between dietary patterns and the clinical outcome of incident overweight or obesity. The results varied across the studies on the Mediterranean diet scores and dietary guideline indices (tables 4-A-I-1 and 4-A-I-3).

*Association***:** Two studies found a protective, inverse relationship between either a Mediterranean score (rMED) or dietary guidelines index (PNNS-GS) and risk of normal weight individuals becoming overweight or obesity over 5 to 6 years (Romaguera, 2010; Kesse-Guyot, 2009). The Romaguera (2010) study included a meta-analysis of the ten EPIC-PANACEA countries and showed an association between a continuous increase in rMED score and a decrease in odds of normal weight individuals becoming overweight or obese.

Mixed Association: There were varied results in three studies. Lassale et al. found an inverse association between the MDS, rMED, (but not MSDPS), DQI-I, DGAI, and PNNS-GS scores and odds of non-obese individuals becoming obese over 13 years only in men. For women, there was no association of any diet score with obesity risk; however, there was a non-significant reduction in obesity risk with an increase in rMED or PNNS-GS. Other studies reported no differences by gender or did not assess men and women separately. Gao et al. examined Black, Caucasian, Hispanic, and Chinese Americans in the MESA study to determine if ethnicity impacted the association between either of two HEI scores and incidence of overweight or obesity. They found that the ability of HEI scores to predict risk of obesity was significant only in Caucasians. Mendez et al. examined the 3-year incidence of normal weight individuals developing overweight *and* overweight individuals developing obesity. They found an inverse association between MDS score and likelihood of overweight individuals becoming obese, but no association for normal weight individuals becoming overweight. The mixed results in these three studies are discussed further below related to methodological differences in weight categories across studies.

Null Association: There were null findings reported in two studies. Woo et al. assessed adherence to the MDS and DQI-I and incidence of normal weight individuals becoming overweight or obese in an ethnic Chinese population from Hong Kong. They found no association between the MDS or DQI-I and development of overweight, even by the Asian standard of BMI ≥23 kg/m^2, or obesity over 5 to 9 years. Beunza et al. assessed adherence to the MDS and incidence of normal weight individuals becoming overweight or obese and found the MDS was not associated with incidence of overweight or obesity over 6 years. These studies are discussed further below related to methodological differences in weight categories across studies.

Differences in weight categories across studies: The method by which these studies assessed risk of overweight or obesity varied in terms of how weight categories at baseline and follow-up were operationalized. As indicated in Table 4-A-I-1, analysis of weight gain included changes from (1) normal weight to overweight; (2) normal weight to obese; (3) normal weight to overweight and obese; or (4) non-obese to obese. Three studies that followed normal weight individuals for development of overweight (BMI ≥25 to <30 kg/m^2) found no protective effect of adherence to the MDS (Mendez, 2006; Woo, 2008), HEI (Gao, 2008), or DQI-I (Woo, 2008). Gao et al. and Woo et al. also assessed normal weight individuals becoming obese (BMI ≥30 kg/m^2); Gao reported an association only in Caucasians; whereas, Woo reported no association between dietary guidelines index and obesity. The three studies that assessed normal weight individuals for development of overweight or obesity (BMI ≥25 kg/m^2) found inconsistent results. Beunza et al., found no association between the MDS and incidence of overweight or obesity. However, Romaguera et al. and Kesse-Guyot et al. found there was an inverse association between the rMED or the PNNS-GS, respectively, and risk of becoming overweight or obese. These studies were all conducted in Europe and compared the same weight status over a similar time period, although they used different scores to assess diet exposure. Additionally, the SUN cohort examined by Beunza et al. was relatively young (mean age 38.4 years) with >90 percent non-obese participants. A fourth weight status comparison was assessing the risk of non-obese (BMI ≤30 kg/m^2) individuals becoming obese. Both Lassale et al. and Kesse-Guyot et al. assessed non-obese individuals becoming obese in the same SU.VI.MAX cohort. Kesse-Guyot found an inverse association between the PNNS-GS and obesity incidence; whereas, Lassale found an inverse association between several diet scores and obesity incidence in men but not women.

When viewed based on the method by which weight categories were operationalized, three studies showed that adherence to a dietary pattern was *not* associated with risk of normal weight individuals becoming overweight (Gao, 2008; Mendez, 2006; Woo, 2008), although the Gao study showed that adherence was associated with risk of normal weight individuals (Caucasians) becoming obese (Gao, 2008); two out of three studies showed an association with risk of normal weight individuals developing overweight or obesity (Romaguera, 2010; Kesse-Guyot, 2009); two out of two studies found an association with risk of non-obese individuals becoming obese (Kesse-Guyot, 2009; Lassale, 2012), although Lassale found this only in men; and one study showed an association with risk of overweight individuals becoming obese (Mendez, 2006).

Themes and Key Findings for Components of Scores and Indices:

Components of Mediterranean Diet Pattern Scores and Dietary Guidelines-Related Indices

Three studies assessed the association between individual components of a Mediterranean diet score or dietary guidelines index and weight change or incidence of overweight and obesity. Mendez et al. found that when individual components of the MDS were assessed, overweight and obesity incidence was higher in women, but not men, who consumed more meat; whereas, obesity incidence was lower in men, but not women, who consumed more cereals. Romaguera et al. found that the association between rMED adherence and weight change was only significant when the meat and meat products component was included in the score. Both the MDS and rMED are population-based scores, with the cereal component including whole and refined grains, and the meat component defined as meat and poultry in the MDS and total meat including processed meat in the rMED. In the Prospective National Health and Growth study in girls, BMI was assessed throughout adolescence for association with average intake of four DASH food groups: total fruits, vegetables, whole grains, and low-fat dairy over 10 years (Berz, 2011). Total fruit, low-fat dairy, and to a lesser extent whole grains had a beneficial association with BMI over this time period.

Components across All Scores and Indices

The scores or indices that were associated with the clinical endpoint of interest—risk of overweight or obesity—were the MDS, rMED, HEI-1995 and a customized HEI-05, DQI-I, DGAI, and PNNS-GS. (Although, some studies found no association with MDS (Beunza, 2010; Woo, 2008) or DQI-I (Woo, 2008) in low-risk or Asian populations, respectively.) Scores or indices that were associated with decreased risk of overweight or obesity in adults were selected to examine commonalities in components across scores related to the clinically significant outcome, rather than intermediate or surrogate markers of outcomes. (The components of these scores are described in detail in table 4-A-I-2.) These scores include the MDS, rMED, and PNNS-GS that were also the most commonly applied scores associated with a protective outcome in body weight, BMI, or waist circumference in adults. The MSDPS was not associated with either endpoint obesity outcomes or intermediate outcomes including body weight and BMI, although Rumawas et al. found an inverse association between MSDPS and waist circumference. Lastly, although this review included a study that utilized the DASH score (Berz, 2011), they did not consider the clinical outcomes of overweight or obesity in analyses, and thus, the DASH score was not included in the comparison below. Berz et al. reported that the DASH score was associated with BMI in girls throughout adolescence, but they did not assess adults.

Table 4-A-I-2 Comparison of Dietary Components Across Dietary Pattern Scores and Indices

Components	Med Diet Score (MDS) Trichopolou et al. 2003 EPIC-Greece	Relative Med Diet Score (rMED) Buckland et al. 2009 EPIC-Spain	Healthy Eating Index (HEI)* Kennedy et al. 1995 1990 DGAs	Diet Quality Index International (DQI-I) Kim et al. 2003 US(CSFII) and China (CHNS)	DGA Adherence Index (DGAI)[††] Fogli-Cawley et al. 2006 2005 DGAs	Programme National Nutrition Santé Guideline Score (PNNS-GS) Estaquio et al. 2009 2001 PNNS
	Total Score 0-9	Total Score 0-18	Total Score 0-100	Total Score 0-100	Total Score 0-20	Total Score 0-15
Vegetables	≥Median = 1 <Median = 0	Vegetables (except potatoes) 0,1,2 (low to high)	0-10 3-5 serv/d=10	0-5 3-5 serv/d=5 0 serv/d=0	Meets DGA=1 Meets >33%=0.5 Meets<33%=0 + Dark green, orange, starchy[‡‡]	Fruit & Vegetables 0,0.5,1,2
Legumes	≥Median = 1 <Median = 0	0,1,2			0,0.5,1	
Fruits and/or Nuts	≥Median = 1 <Median = 0	Fruits (+nuts & seeds, not juice) 0,1, 2	Fruits 2-4 serv/d=10	Fruits 2-4 serv/d=5 0 serv/d=0	Fruit, variety of fruit & vegetables 0,0.5,1	Fruit & Vegetables 0,0.5,1,2
Cereals and Whole Grains	≥Median = 1 <Median = 0	Whole grain & refined flour, pasta, rice, bread, grains 0,1,2	Grains 6-11 serv/d=10	Grains 6-11 serv/d=5; 0 serv/d=0 Fiber 20-30g/d=5;0 g/d=0	Grains, Whole grains ≥50% whole=1 Fiber 14g/1000kcal=1	Bread, cereal, potatoes, legumes 0-1 Whole Grains 0-1
Fish or Fresh Fish	≥Median = 1 <Median = 0	0,1,2		*Fish is included in "Variety"*		Seafood ≥2 serv/wk=1
Fat	MUFA/SFA ≥Median = 1 <Median = 0	Olive Oil 0,1,2	Total Fat 10-0 <30%E - >45%E SFA 10-0 <10%E - >15%E	Total Fat 6-0 ≤20%E=6; 20-30%E=3; >30%E=0 SFA 6-0 ≤7%E=6; 7-10%E=3 >10%E=0	Total fat 20-35%E=1, SFA<10%E=1, > or <=0, Low-fat choices ≥75%=0.5 [meat & milk each]	Vegetable Fat Veg/total ≤0.5 = 0 Veg/total >0.5 = 1 Added Fat ≥16%E = 0 <16%E = 1
Alcohol	5-25♀, 10-50♂ g/d =1	Moderate=2 >or < moderate=0 (mod defined using MDS cutoffs)		Empty calorie foods ≤3%E=6; 3-10%E=3; >10%E=0	≤2 drinks/d ♂=1 ≤1 drinks/d ♀=1 >above=0	Wine ≤3 glasses/d ♂=0.8; >=0 ≤2 glasses/d ♀=0.8; >=0 Abstainers or <1x/wk=1
Total Meat	≥Median = 0 <Median = 1 Meat & Poultry	Total + proc meat 2,1,0 (low to high)	Meat 2-3 serv/d=10 [legumes if needed for 10]	*Meat is included in "Variety"*	Meat & Legumes 0,0.5,1,0.5 [legumes if needed to meet 1.0]	Meat, poultry, seafood, eggs 0,0.5,1,0
Dairy Products	≥Median = 0 <Median = 1	Low & high fat milk, yogurt, cheese, desserts 2,1,0	Milk 2-3 serv/d=10	*Dairy is included in "Variety"*	Milk & Milk products 0,0.5,1	Milk & Dairy products 0,0.5,1,0.5
Sweets or Sugar Products				Empty calorie foods ≤3%E=6; 3-10%E=3; >10%E=0	Added sugar <5%E=1 5-8.5%E=0.5 >8.5%E=0	Sweetened foods -0.5,0,1 Soda 0,0.5,0.75,1
Sodium			10-0 <2400mg - >4800mg	≤2400mg/d=6 2400–3400mg/d=3 >3400mg/d=0	<2300 mg=1 >2300 mg=0	Salt -0.5 – 1.5
Cholesterol			10-0 <300 mg - >450 mg	Cholesterol 6-0 ≤300mg=6; 300-400mg=3; >400mg=0	Cholesterol <300mg=1 >300mg=0	
***Trans* fat**					<1%E naturally occurring=1	

Table 4-A-I-2 Comparison of Dietary Components Across Dietary Pattern Scores and Indices—continued

Components	Med Diet Score (MDS) Trichopolou et al. 2003 EPIC-Greece	Relative Med Diet Score (rMED) Buckland et al. 2009 EPIC-Spain	Healthy Eating Index (HEI)* Kennedy et al. 1995 1990 DGAs	Diet Quality Index International (DQI-I) Kim et al. 2003 US(CSFII) and China (CHNS)	DGA Adherence Index (DGAI)†† Fogli-Cawley et al. 2006 2005 DGAs	Programme National Nutrition Santé Guideline Score (PNNS-GS) Estaquio et al. 2009 2001 PNNS
	Total Score 0-9	Total Score 0-18	Total Score 0-100	Total Score 0-100	Total Score 0-20	Total Score 0-15
Protein				10% E=5 0% E=0		
CHO:PRO:FAT				0-6 55-65:10-15:15-25 = 6		
PUFA:MUFA:SFA				P/S & M/S=1-1.5=4 P/S & M/S=0.8-1.7=2 Other=0		
Iron, Calcium, Vitamin C				100% RDA (or AI)=5 0%=0		
Variety			10-0 16 dif foods/3 d=10 <6 dif foods/3 d	Overall food variety 0-15 (meat/poultry/fish/eggs; dairy/beans;grain;fruit;vegetables) Protein food variety 0-5 (meat,poultry,fish,dairy,beans, eggs)	Variety based on score for fruit and vegetables	
Physical Activity					Included in determining subject calorie level	Adherence to physical activity recommendations 0-1.5

*Gao et al. compared the original HEI with their customized version, HEI-05, based on the levels of calorie need specified by the 2005 DGAs (men and women 45-50 y - active, mod active, sedentary; men and women >50 y - active, mod active, sedentary).

‡Along with other diet scores, both Lassale et al. and Woo et al. used the DQI-I that has 4 groups of components as follows:

- Variety: overall food group variety (0-15 points); within-group variety for protein source (0-5 points).
- Adequacy: vegetables, fruits, cereals, fiber, protein, Fe, Ca, vitamin C (0-5 points each). Nutritional recommendations are specific to the country where the score is applied, here France.
- Moderation: total fat, saturated fat, cholesterol, Na, empty-energy foods (0-6 points each).
- Overall balance: macronutrient ratio (carbohydrate: protein: fat, 0-6 points); fatty acid ratio (PUFA:MUFA:SFA, 0-4 points).

‡‡DGAI penalized for overconsumption for energy dense (ED) foods (in grey) w/ -0.5 pt for exceeding recommended intakes ≥ 5 servings

(+) Positive components

(−) Negative components

(+m) Positive in moderation

Component score based on correspondence to recommendations: maximum points for meeting guidelines and proportional points for percent deviation, (+) and (-)

Food components that were common across these scores or indices were operationalized differently in that foods were aligned, described, or scored in dissimilar ways. Given this caveat, the food groups, as well as foods or nutrients, that were included as positive components in these scores were fruits (MDS and rMED specified fruits and nuts; DQI-I and DGAI added fruit variety), vegetables (rMED excluded potatoes; DGAI gave positive points for dark-green and orange vegetables and penalized for overconsumption of starchy vegetables; DQI-I and DGAI added vegetable variety); whole grains, in some combination with refined grains in cereals, flour, pasta, rice, and bread; legumes; fish (MDS and rMED) or seafood (PNNS-GS); and dietary fat as olive oil (rMED), MUFA/SFA (MDS), PUFA/MUFA/SFA (DQI-I), percent total fat and percent SFA (HEI, DQI-I, DGAI), or added fats and added vegetable fats (PNNS-GS). Moderate alcohol intake was commonly included as a positive component, with different cut-offs for men and women; exceptions were the HEI that did not include alcohol and the DQI-I that included alcohol as part of the empty calorie foods.

There was inconsistency in the way meat and dairy were evaluated. The Mediterranean diet scores assessed meat (MDS included meat and poultry; rMED included meat and processed meats) and dairy (rMED included low- and high-fat milk, yogurt, cheese, and desserts) negatively. For dietary guidelines indices, meat and dairy were scored based on meeting recommended servings, with maximum points for meeting guidelines and proportional negative points for percent deviation (with the exception of the HEI that did not deduct points for overconsumption). The DQI-I included meat and dairy in both the food group and protein *variety* components.

There were additional components included only in some indices. The DGAI, PNNS-GS, and DQI-I included added sugar, sweetened foods, or empty-calorie foods (foods low in nutrient density, including sugar), respectively; these were scored negatively above a specified percent energy intake or below a specified level of nutrient density for the DQI-I. The PNNS-GS also negatively scored sweetened beverages, in relation to water consumption, under a separate beverage component. The dietary guidelines-related indices had additional components including sodium (or salt), cholesterol (not PNNS-GS), and *trans* fats (only DGAI). Three of the dietary guidelines indices included diet variety (DQI-I, DGAI, and HEI). Furthermore, the DQI-I score that predicted the lowest odds of non-obese men becoming obese in the Lassale et al. study included many components not present in other scores or indices. These were food group variety and within-group variety in dietary protein (both noted above for meat and dairy); adequacy that included vegetables, fruits, cereals, fiber, protein, iron, calcium, and vitamin C; the above empty-energy foods; and in addition to a PUFA/MFA/SFA ratio, a macronutrient carbohydrate/protein/fat ratio. Overall, the DQI-I was more nutrient-based than food-based, compared to the other scores and indices. Woo et al., in addition to the MDS and DQI-I, also looked at food variety and found that variety in snack consumption was associated with weight gain.

Taken together, the positive components of the scores or indices that were associated with decreased risk of obesity in one or more studies were fruits (MDS and rMED included nuts with the fruit component), vegetables, whole grains, legumes, unsaturated fats, and fish. Alcohol was commonly included as a positive component when consumed in moderation. Meat and dairy, with some variations, were negative components in Mediterranean scores or recommended within specific ranges for dietary guidelines indices. The dietary guidelines indices also included saturated fat and cholesterol, or added non-vegetable fats, as negative components above a specified level of intake. Lastly, the sugar or sweets component was included and scored negatively in three out of the four dietary guidelines-related indices, although similar components were not included in either the MDS or rMED.

Qualitative Assessment of the Collected Evidence

Quality and Quantity

Quality assessment for the studies included in this systematic review involved determining the validity of each study. Validity was assessed by examining the scientific soundness of study design and execution to avoid potential bias in the findings related to outcomes. This can include selection, performance, attrition, detection, or reporting bias. As the preponderance of the evidence consisted of positive quality studies (12 out of 14 studies), this indicates a low risk of bias. In terms of quantity, the majority of these studies were prospective cohort studies with large numbers of participants in nationally recognized cohorts.

Consistency

The evidence of a protective association between a dietary pattern score and change in body weight over time was consistent in the majority of studies that used either a Mediterranean diet score or dietary guidelines index in healthy adult populations, although there were differences reported based on gender and race. The evidence related to other intermediate markers such as changes in BMI and waist circumference was also consistent. However, there was more variation in the endpoint outcome of incidence of overweight or obesity, including within study variation based on gender, race, and weight status, and between study variations in health outcomes. Inconsistency across these studies could be due to differences in the health outcomes measured, variability in the study populations, or differences in assessment of adherence to a given dietary pattern. Although overweight and obesity were similarly defined according to BMI cutoff points (except Woo et al.), there were differences in the way baseline weight status (e.g., normal weight or non-obese) and follow-up weight status were categorized, which could have contributed to inconsistency in results. This variation could also contribute to risk of bias due to outcome measures. Furthermore, some studies calculated overweight and obesity risk separately by gender or race, while others only assessed the pooled population. Across the studies, there were differences in populations as well. The two RCTs were conducted in different at-risk populations. Although the majority of prospective cohort studies were conducted in Europe, there were differences in cohorts; for example, age and weight status of the baseline population in the SUN cohort compared to EPIC cohorts. Lastly, the assessment of dietary exposure in these studies was determined using a large number of different Mediterranean diet pattern scores and dietary guidelines-related indices.

Impact

This body of evidence directly addressed the interventions/exposures and health outcomes of interest for this systematic review. Overall, several large prospective cohort studies found a decrease in incidence of overweight and obesity associated with adherence to a Mediterranean diet score or dietary guidelines index. Although not clinical trials, these cohort studies reported results that are applicable in free-living populations. For example, in the largest study, EPIC-PANACEA, Romaguera et al. reported that a change from lowest to highest rMED adherence reduced the likelihood of normal weight individuals becoming overweight or obese in 5 years by 10 percent. It should be noted, however, that not all studies found this protective association.

Generalizability/External Validity

The preponderance of the evidence related to the Mediterranean dietary pattern involved large prospective cohort studies conducted in Europe, with four out of eight studies conducted in Spain. In terms of generalizability related to the American population, one study was conducted in the United States, and this study assessed waist circumference as a component of metabolic syndrome (Rumawas, 2009). Therefore, although there was evidence with high quality studies on the Mediterranean dietary pattern in Europe, there was limited data regarding the U.S. population and intermediate outcomes and no data on incidence of overweight and obesity.

Related to dietary guidelines patterns, four studies examined U.S. populations, but only two studies focused on healthy adults. Both of these studies included more heterogeneous ethnic/racial groups than the European studies, as one focused on multi-ethnic outcomes from the MESA cohort (Gao, 2008) and one, the CARDIA study, focused on differences between Black and Caucasian young adults (Zamora, 2010). Both of these studies found a protective effect of adherence to an *a priori* index only in Caucasians. The remaining dietary guidelines related studies were conducted in France, Hong Kong, Germany, and Norway.

Given the limited evidence involving U.S. cohorts, the relevance of this body of evidence to U.S. policy on dietary patterns and risk of overweight and obesity would seem to depend on the extent to which results from studies conducted with large European cohorts can be applied to the United States. One of the benefits of doing an index/score-based analysis is that investigators can compare across cohorts because food components are chosen *a priori* and are independent of specific populations (although the numeric scoring of dichotomous scores, such as the MDS, are based on median population intakes). Studies, such as that conducted by Lassale et al. that assessed both

Mediterranean diet scores and U.S.-based (as well as French) dietary guidelines indices, with similar predictive values for obesity, at least in men, provide some further evidence that findings from studies conducted with large European cohorts may be applicable to U.S. populations. This is supported by the fact that the European countries and the United States are classified as “very high” Human Development Index countries. Furthermore, although individual studies may not be representative of the population of interest, consistent findings across studies may suggest broad applicability of the results (Viswanathan, 2012).

Limitations of the Evidence

Limitations of the studies included in this systematic review, and potential reasons for differences and inconsistencies in results, include the use of different scores; differences between scores that are based on median population intakes versus indices that are based on recommended intakes; the use of different confounding factors or lack of sufficient adjustment for confounding factors; the problems associated with the use of different FFQs and validation related to other methods of diet assessment; and the handling of underreporting. Furthermore, in the majority of studies, total scores or indices were used and there was no separate analysis of individual score components and their potential association with outcomes. The application of the total score to the diet pattern analysis has the potential to “dilute” the effect of individual components. However, the assessment of individual components without interaction terms assumes that a given component has an independent association which potentially contradicts the theoretical rationale for examining the overall dietary pattern. Lastly, another common limitation was the single measurement of dietary intake at baseline. This does not take into account that diets change over time due to trends in the food supply and population-level and individual-level changes in food choices.

Abbreviations

Scores & Indices: Dietary Approaches to Stop Hypertension (DASH); Dietary Guidelines Adherence Index (DGAI); Diet Quality Index (DQI); DQI-International (DQI-I); Revised Children’s (RC)-DQI; Healthy Eating Index (HEI), Alternate Healthy Eating Index (AHEI); Mediterranean Diet Score (MDS); Mediterranean Style Diet Pattern Score (MSDPS); Relative Mediterranean Diet Score (rMED); Programme National Nutrition Santé Guideline Score (PNNS-GS)
Cohorts: Coronary Artery Risk Development in Young Adults (CARDIA); Dortmund Nutritional and Anthropometric Longitudinally Designed (DONALD); European Prospective Investigation into Cancer and Nutrition (EPIC); EPIC-Physical Activity, Nutrition, Alcohol Consumption, Cessation of Smoking, Eating out of Home, and Obesity (EPIC-PANACEA); Framingham Offspring and Spouse (FOS); Multi-Ethnic Study of Atherosclerosis (MESA); Prevencion con Dieta Mediterranea (PREDIMED); Seguimiento Universidad de Navarra (SUN); SUpplementation en VItamines et Minereaux AntioXydants (SU.VI.MAX)

Table 4-A-I-3 Overview Table: Body Weight and Obesity

Author, Year Quality Rating Study Design	Sample Size Location Duration Dietary Assessment	Population Age/Gender Weight Status Cohort	Exposure Index/Score	Results: Intermediate BW, BMI, WC	Results: Endpoint Overweight or Obesity Incidence
Mediterranean Dietary Pattern					
Estruch et al., 2006 Positive RCT	Initial N = 772 Final N = 769 Spain 3 m FFQ (137 item)	50–80 y 50–60% Women 90% Ow or Ob PREDIMED	Consumption of Mediterranean foods: olive oil, vegetables, fruits, wine, shellfish, nuts, legumes, tomato sauce as well as non-Mediterranean foods: red meats, butter, carbonated beverages, pastries	↑ Adh MDS (+OO): ↓BW -0.19 kg (CI: -0.46 to 0.07) ↓BMI -0.12 kg/m² (CI: -0.24 to 0.06) ↓WC :-0.82 cm (CI: -1.80 to 0.14) All not significant ↑ Adh MDS (+nuts): ↓BW –0.26 kg (CI: -0.59 to 0.08) ↓BMI –0.09 kg/m² (CI: -0.24 to 0.05) ↓WC –0.29 cm (CI: -0.95 to 0.37) All not significant	Not Reported
Buenza et al., 2010 Positive Prospective Cohort	N = 10,376 Spain 6 y FFQ (136 item)	Mean = 38±11 y 54% Women BMI range 23±3 to 24±3 SUN	MDS (+) vegetables, fruit & nuts, legumes, cereals, fish, MUFA/SFA; (+m) alcohol; (-) meat, dairy	↑ Adh MDS: ↓ BW -0.059 kg/y; (CI: -0.111 to -0.008); P for trend = 0.02 ↑ Adh MDS: ↓ risk >5kg weight gain/4 y follow-up; OR=0.76 (CI: 0.64 - 0.90)	No assoc w/ ↑ Adh MDS and incidence of Ow or Ob (BMI > 25 kg/m²) in participants normal weight (BMI <25 kg/m²) at baseline
Lassale et al., 2012 Positive Prospective Cohort	N = 3,151 France 13 y Multiple 24-hr diet records	Mean = 51.7±4.6 y 47% Women BMI (%): 61.8% Normal 32.0% Ow 6.25% Ob SU.VI.MAX	MDS rMED MSDPS DQI-I DGAI PNNS-GS	↑ Adh MDS, rMED, DQI-I, PNNS-GS assoc w/ ↓BW in normal BW ♂; P for trend <0.05 MSDPS – not significant ♀ - not significant	↑ Adh MDS, rMED, DQI-I, PNNS-GS by 1 sd ↓odds of becoming Ob: OR = 0.63 (CI: 0.51 - 0.78) for DGAI to OR = 0.72 (CI: 0.59 - 0.88) for MDS in non-Ob ♂ MSDPS – not significant ♀ - not significant
Mendez et al., 2006 Positive Prospective Cohort	N = 27,827 Spain 3 y Computerized 600 item diet history	29–69 y 62% Women Normal and Ow (numbers not specified) EPIC-Spain	MDS (+)vegetables, fruit, legumes, cereals, fish, MUFA/SFA; (+m) alcohol; (-) meat; dairy and nuts were not included in scores, but were analyzed separately	Not Reported	↑ Adh MDS: Ow ->Ob OR = 0.69 (CI: 0.54 - 0.89) ♀ OR = 0.68 (CI: 0.53 - 0.89) ♂ ↑ Adh MDS: Normal ->Ob, NS Components: ↑ Ob incidence, ♀ who consumed more meat ↓ Ob incidence, ♂ who consumed more cereal

Table 4-A-I-3 Overview Table: Body Weight and Obesity—continued

Author, Year Quality Rating Study Design	Sample Size Location Duration Dietary Assessment	Population Age/Gender Weight Status Cohort	Exposure Index/Score	Results: Intermediate BW, BMI, WC	Results: Endpoint Overweight or Obesity Incidence
Romaguera *et al.*, 2010 Positive Prospective Cohort	N = 373,803 10 European countries 5 y Dietary questionnaires were country specific	25–60 y 72% Women Baseline wt reported by gender for each country: ♂ BMI = 24.2 to 28.4 ♀ BMI = 22.9 to 28-6 EPIC- PANACEA	rMED (+) whole grains, vegetables, fruit/nuts/ seeds, legumes, fish, OO; (+m) alcohol; (-) meat & proc meat, dairy	↑ Adh rMED: gained less weight in 5 y, -0.16 kg (CI: -0.24 to -0.07 kg)	↑ Adh rMED: normal -> Ow / Ob OR = 0.90 (CI: 0.82 - 0.96) Meta-analysis: OR scores of 10 EPIC countries showed ↑ Adh rMED of 2 pts assoc w/ 3% (CI: 1 to 5%) ↓ odds Ow or Ob over 5 y
Rumawas et al., 2009 Positive Prospective Cohort	N = 2,730 U.S. 7 y FFQ (Harvard Semi-quantitative)	Mean = 54 y 55% Women Mean BMI = 26.3 to 27.0 across quintiles Framingham Offspring and Spouse (FOS)	MSDPS whole-grain cereals, fruit, vegetables, dairy, wine, fish, poultry, olives/legumes/ nuts, potatoes, eggs, sweets, meat, and OO	↑ Adh MSDPS: ↓WC; P for trend = 0.001	Not Reported
Tortosa et al., 2007 Neutral Prospective Cohort	N = 3,497 Spain 6 y FFQ (136 item)	Not Reported BMI <30 kg/m² SUN	MDS (+) vegetables, fruit & nuts, legumes, cereals, fish, MUFA/SFA; (+m) alcohol; (-) meat, dairy	↑ Adh MDS: ↓WC , -0.05 cm/6 y; P for trend = 0.038	Not Reported
Woo et al., 2009 Neutral Prospective Cohort	N = 732 Hong Kong 5-9 y FFQ (7 categories)	Mean = 45 y 53% Women ♂ = 232 Ow (BMI≥23 kg/m²); 115 normal BMI range ♀ = 222 Ow; 163 normal BMI range	MDS (+) vegetables, fruit & nuts, legumes, cereals, fish, MUFA/SFA; (+m) alcohol; (-) meat, dairy DQI-I 4 groups of components*	Not Reported	Adh to MDS or DQI-I was not significantly associated with risk of becoming Ow; OR = 1.35 (CI: 0.94 - 1.93) and 1.32 (CI: 0.92 - 1.89) for MDS and DQI-I, respectively [defined by Asian criteria (BMI >23 kg/m²)]

Table 4-A-I-3 Overview Table: Body Weight and Obesity—continued

Author, Year Quality Rating Study Design	Sample Size Location Duration Dietary Assessment	Population Age/Gender Weight Status Cohort	Exposure Index/Score	Results: Intermediate BW, BMI, WC	Results: Endpoint Overweight or Obesity Incidence
Dietary Guidelines-Related Patterns					
Lassale et al., 2012, and Woo et al., 2008, described above, also assessed dietary-guidelines related indices.					
Berz et al., 2011 Positive Prospective Cohort	N = 2,327 U.S. 10 y 3-day diet record each exam year	9–10 y 100% Girls Baseline wt not reported Prospective National Growth and Health Study	DASH Food Group Score: fruits, vegetables, low-fat dairy, total and whole grains, lean meats, and nuts/ seeds/ legumes	↑ Adh DASH score: ↓ BMI 24.4 vs 26.3 kg/m² (P<0.05) <u>Components</u>: Total fruit (BMI, 26.0 vs 23.6 for <1 vs >=2 serv/day; P<0.001) Low-fat dairy (BMI, 25.7 vs 23.2 for <1 vs >=2 serv/day, P<0001) Whole grain weakly but beneficially associated with BMI.	Not Reported
Cheng et al., 2010 Positive Prospective Cohort	N = 222 Germany Followed to onset of pubertal growth spurt (Age at Take-Off = ATO) Parents kept 3-day food record	Mean = 7.4 y 54% Girls BMI Z-score by NQI tertiles −0.2 (−0.7, 0.4) 0.2 (−0.5, 0.8) 0.3 (−0.4, 0.7) P=0.2 DONALD study	Revised Children's (RC) DQI (+) vegetables, fruits, total & whole grains, dairy, LA and ALA, DHA and EPA, iron, E balance, (-) sugar, total fat	↓Adh RC-DQI: ↓ BMI and Fat Mass Index (FMI) Z-scores at baseline (P<0.01), not at ATO	Not Reported
Gao et al., 2008 Positive Prospective Cohort	N = 5,516 U.S. 18 mos FFQ (120 item)	Mean = 63 y 53% Women Mean BMI = 28.2 kg/m²; White = 27.7, Chinese = 24.0, Black = 30.0, Hispanic = 29.4 MESA study	HEI-1995/05 (+)vegetables, fruits, grains, meat, milk, variety (-) total fat, SFA, cholesterol, sodium	↑ Adh HEI scores: ↓ BMI and WC (P<0.001)	↑ Adh HEI scores: ↓risk of obesity (N ->Ob) only for Whites (P<0.05)
Kesse-Guyot et al., 2009 Positive Prospective Cohort	N = 3,531 France 6 y 24-h Food Records	45–60 y 45% Women BMI (%): 60.4% Normal 33.0% Ow 6.6% Ob SU.VI.MAX	PNNS-GS 12 nutritional components: fruit & vegetables, starchy foods, whole grains, dairy products, meat, seafood, added fat, vegetable fat, sweets, water & soda, alcohol, and salt; 1 physical activity component	↑ 1 PNNS-GS unit associated w/ ↓ weight gain (P = 0.004), ↓ WC gain (P = 0.01), ↓ waist-to-hip ratio gain (P = 0.02), and ↓ BMI gain (P = 0.002)	↑ 1 PNNS-GS unit assoc w/ ↓ probability of becoming Ow (incl Ob), OR = 0.93 (95% CI: 0.88 - 0.99) ↑ 1 PNNS-GS unit assoc w/ ↓ probability of becoming Ob, OR = 0.89 (95% CI: 0.80 - 0.99)

Table 4-A-I-3 Overview Table: Body Weight and Obesity—continued

Author, Year Quality Rating Study Design	Sample Size Location Duration Dietary Assessment	Population Age/Gender Weight Status Cohort	Exposure Index/Score	Results: Intermediate BW, BMI, WC	Results: Endpoint Overweight or Obesity Incidence
Zamora et al., 2010 Positive Prospective Cohort	N = 4,913 U.S. 20 y Quantitative diet history	Mean = 25.4±3.4 y 55% Women Mean BMI: Black = 25.3 White = 23.7 % Ow: Black 24.5% White 21.4% % Ob: Black16.8% White 6.8% CARDIA study	DQI-2005 (+) vegetables, fruit, whole grains, low-fat milk, (-) total fat, SFA, cholesterol, sodium, sugar, alcohol	Overall, having a high (compared with low) diet quality was associated with a 25% lower risk of major weight gain (HR= 0.75, 95% CI= 0.65-0.87) ↑ Adh DQI score (DQI >70): 20 y weight change = +19.4 kg for blacks and +11.2 kg for whites vs ↓ Adh DQI score (<50): +17.8 kg for blacks and +13.9 kg for whites (p<.05).	10-point increase in DQI score:10% ↓ risk of gaining 10 kg in normal-weight whites, but a 15% ↑ risk in obese Blacks (P<0.001)
Other Scores					
Jacobs *et al.*, 2008 Positive RCT	Initial N = 219 Final N = 187 Norway 1 y FFQ (180 item)	Mean = 45 y 100% Men BMI = 28.6±3.4 kg/m² Subjects w/ metabolic syndrome	*a priori* score 35 food components**	Weight change = -3.5 kg/10-point change in diet score (P<0.0001)	Not Reported

Research Recommendations

Given the combined evidence from this systematic review, several research recommendations can be advanced. Most striking is the need for consensus on a single index or score that is applicable across populations for a diversity of outcomes. If it is not feasible that one index can adequately assess the diversity of populations related to dietary patterns, research should be conducted to determine the best method by which components are chosen, grouped, and scored and whether or not the research tool is population based or independent of the population, so that there is uniformity across scores. The studies included in this review were focused on total scores, rather than component scores and their association with health outcomes. To strengthen the analysis of component scores, the interaction terms across components need to be assessed in order to maintain a dietary patterns approach. For prospective cohort studies, diet intake should be measured at multiple time points with assessment of dietary changes over the time as they relate to health outcomes.

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Section II: Factor and Cluster Analysis
By Patricia C. MacNeil, Joan Lyon, and Joanne M. Spahn

Are prevailing patterns of diet behavior in a population, assessed using factor or cluster analysis, related to body weight or risk of obesity?

TECHNICAL ABSTRACT

Background

The goal of this systematic review project is to identify patterns of food and beverage intake that promote health and prevent disease. Historically, most dietary guidance has been based on research conducted on individual food components or nutrients. Dietary patterns are defined as the quantities, proportions, variety, or combination of different foods, drinks, and nutrients (when available) in diets, and the frequency with which they are habitually consumed. Factor and cluster analysis allow examination of the relationship between prevailing dietary patterns of a population and outcomes of public health concern. The objective of this systematic review was to assess the relationship between patterns of food and beverage intake identified using factor and cluster analysis, and risk of obesity.

Conclusion Statement

Limited and inconsistent evidence from epidemiological studies examining dietary patterns derived using factor or cluster analysis in adults found that consumption of a dietary pattern characterized by vegetables, fruits, whole grains, and reduced-fat dairy products tends to be associated with more favorable body weight status over time than consumption of a dietary pattern dominated by red meat, processed meats, sugar-sweetened foods and drinks, and refined grains. (Grade: III-Limited).

Methods

Literature searches were conducted using PubMed, Embase, Navigator (BIOSIS, CAB Abstracts, and Food Science and Technology Abstracts) and Cochrane databases to identify studies that evaluated the association between dietary patterns defined using factor or cluster analysis and risk of obesity. Studies that met the following criteria were included in the review: Human subjects; Ages: 2 years and older; Populations: Healthy and those with elevated chronic disease risk; subjects from countries with high or very high human development (based on the 2011 Human Development Index); randomized controlled trials, non-randomized controlled trials, or quasi-experimental studies; Sample size: Minimum of 30 subjects per study arm; Dropout rate less than 20 percent; Study assesses dietary intake using factor and cluster analysis; study considered body weight and risks of overweight and obesity; published in English in a peer-reviewed journal. The date range for the conduct of studies was unlimited.

The results of each included study were summarized in evidence worksheets (including a study quality rating) and evidence table. A group of subject matter experts were involved in a qualitative synthesis of the body of evidence, development of a conclusion statement, and assessment of the strength of the evidence (grade) using pre-established criteria including evaluation of the quality, quantity, consistency, magnitude of effect, and generalizability of available evidence.

Findings

Eleven prospective cohort studies, ranging in length from 3 to 20 years, examined dietary patterns and their association with body weight. To derive dietary patterns, seven studies used factor analysis and four studies used cluster analysis. Eight studies were conducted in the United States, with three additional studies from the United Kingdom, Iran, and Denmark. Sample sizes ranged from 206 to 51,670 participants.

- Variability in the studies included in this review, including populations considered, dietary assessment methods used, the number and type of food groupings included in the analyses, and the statistical techniques employed, made comparisons among studies challenging.
- The number of patterns identified in the studies ranged from 2 to 6 and some similarities emerged among them. The patterns were not consistently defined by specific foods but rather by a range of foods with overlap among the patterns. What differentiated the patterns was the amount or frequency of each food consumed.
- Dietary patterns derived from factor or cluster analysis that were associated with lower risk of obesity were characterized by the presence of vegetables, fruit, whole grains, and reduced-fat dairy. In adults, results pointed toward a more favorable weight status, lower weight/waist circumference (WC) gain, and lower body mass index (BMI) over time.
- Dietary patterns that emerged in factor or cluster analysis associated with a higher risk of obesity were characterized by the presence of red meat and processed meats, sugar-sweetened foods and drinks, and refined grains. Results related to consumption of these patterns pointed toward increased body weight and waist circumference measures over time.

Discussion

The ability to draw strong conclusions was limited due to the following issues:

- In factor and cluster analysis, the consolidation of food items into food groups, the number of factors or clusters to extract, and even the labeling of components are subjective. Furthermore, patterns derived from either factor or cluster analysis may not be reproducible across studies because elements of dietary patterns and analytic decisions differ.
- Dietary pattern analysis using factor or cluster methods may not be very informative in determining which elements of the diet or which biological relationships between these elements are responsible for the health outcome.
- Some studies completed over long periods of time did not account for changes to subjects' diets or seasonal variations in food supplies, which may have influenced the food components of patterns.
- The patterns derived through analyses may not represent the most beneficial or detrimental patterns relative to the health outcome of interest.

PLAIN LANGUAGE SUMMARY

How combinations of foods and beverages, or dietary patterns, impact body weight

In the past, researchers looked at the relationship between individual foods and nutrients and health. Today, there is interest in looking at how combinations of foods and beverages, or dietary patterns, impact health. Statistical methods called factor and cluster analyses can be used to describe the patterns of foods and beverages people eat. This summary of a NEL review presents what we know about dietary patterns of certain groups of people described using factor and cluster analysis and the likelihood of becoming overweight or obese.

Conclusion

Limited and inconsistent evidence from epidemiological studies examining dietary patterns derived using factor or cluster analysis in adults found that consumption of a dietary pattern characterized by vegetables, fruits, whole grains, and reduced-fat dairy products tends to be associated with more favorable body weight status over time than consumption of a dietary pattern characterized by red meat, processed meats, sugar-sweetened foods and drinks, and refined grains.

What the Research Says

- Results from the 11 studies included in this review tell us that dietary patterns high in vegetables, fruits, low-fat dairy products, and whole grains may prevent adults from gaining weight.
- Consuming a diet pattern high in red meat, processed meats, sugar-sweetened foods and drinks, and refined grains may increase the likelihood of weight gain in adults.

EVIDENCE PORTFOLIO

Conclusion Statement

Limited and inconsistent evidence from epidemiological studies examining dietary patterns derived using factor or cluster analysis in adults found that consumption of a dietary pattern characterized by vegetables, fruits, whole grains, and reduced-fat dairy products tends to be associated with more favorable body weight status over time than consumption of a dietary pattern characterized by red meat, processed meats, sugar-sweetened foods and drinks, and refined grains.

Grade

III – Limited

Key Findings:

- Cluster and factor analyses are data-driven approaches that describe the dietary patterns consumed by the study population. Variability in the studies included in this review, including populations considered, dietary assessment methods used, the number and type of food groupings included in the analyses, and the statistical techniques employed, made comparisons among studies challenging.
- The number of patterns identified in the studies ranged from 2 to 6 and some similarities emerged among them. The patterns were not consistently defined by specific foods, but rather by a range of foods with overlap among the patterns. What differentiated the patterns was the amount or frequency of each food consumed.
- Dietary patterns that emerged in factor or cluster analysis that were associated with lower risk of obesity were characterized by the presence of vegetables, fruit, whole grains, and reduced-fat dairy. In adults, results pointed toward a more favorable weight status, lower weight/waist circumference (WC) gain, and lower body mass index (BMI) over time.
- Dietary patterns derived from factor or cluster analysis associated with a higher risk of obesity were characterized by the presence of red meat and processed meats, sugar-sweetened foods and drinks, and refined grains. Results related to consumption of these patterns pointed toward increased body weight and waist circumference measures over time.
- Ethnicity and socioeconomic status were often not reported or included in analyses. Insufficient evidence was available to support conclusions related to children and adolescents.

Evidence Summary Overview

Description of the Evidence

Factor and cluster analyses are data-driven approaches that empirically derive food intake patterns (appendix A). A total of 11 studies met the inclusion criteria for this systematic review (table 4-A-II-1). All studies were prospective cohort studies, and 10 of 11 received a positive quality rating. Eight of the eleven studies were conducted in the United States, with additional studies from the United Kingdom. (McNaughton, 2007), Iran (Hosseini-Esfahani, 2011), and Sweden (Newby, 2006). The sample sizes for the studies were from 206 to 51,670 participants (3 studies <500, 4 studies <2,500, 1 study <4500, and 3 >30,000). The follow-up times for these observational studies ranged from 3 to 20 years. The majority of the studies were conducted with generally healthy adult men and women (Duffey, 2012; Hosseini-Esfahani, 2011; McNaughton, 2007; Newby, 2003; Newby, 2004; Togo, 2003), while five studies focused on dietary patterns in women only (Boggs, 2011; Bewby, 2006; Quatromoni, 2002; Ritchie, 2007; Schulze, 2006). Finally, one study (Ritchie, 2007) was conducted in children to examine weight gain in adolescence over the period of follow-up. In general, the strengths of these studies include their prospective design and length of follow-up.

Dietary intake in these prospective cohort studies was assessed using various methods. Six studies used food frequency questionnaires ranging from 26 to 168 items (Boggs, 2011; Hosseini-Esfahani, 2011; Newby, 2006; Quatromoni, 2002; Schulze, 2006; Togo, 2003). The dietary assessment of three cohorts was by diet records of 3, 5, or 7 days (McNaughton, 2007; Newby, 2003; Newby, 2004). One study assessed intake using a diet history questionnaire (Duffey, 2012). To derive dietary patterns, seven studies used factor analysis (Boggs, 2011; Hosseini-Esfahani, 2011; McNaughton, 2007; Newby, 2004; Newby, 2006; Schulze, 2006; Togo, 2003) and four studies used cluster analysis (Duffey, 2012; Newby, 2003; Quatromoni, 2002; Ritchie, 2007).

The endpoint outcomes of interest in this review were measures of weight status. Three studies examined change in body weight; seven studies reported on BMI; and six studies reported on waist circumference.One study each examined percent body fat and incidence of overweight/obesity. In eight of the studies, the outcomes were measured by study personnel; in three studies, body weight was self-reported (Boggs, 2011; Newby, 2006; Schulze, 2006).

Evidence Summary Paragraphs

Boggs et al., 2011 (positive quality) conducted a prospective cohort study in the U.S.to assess dietary patterns in relation to weight gain using data from the Black Women's Health Study (BWHS) in 1995, 2001, and 2009. Participants (n = 41,351), ranging in age from 21 to 54 years old, self-administered a 68-item FFQ in 1995 and an 85-item FFQ in 2001. FFQ items were aggregated into 35 predefined food groups on the basis of similarity of nutrient content. Two major dietary patterns were identified using factor analysis (principal components analysis):

- “Vegetables/Fruit” (vegetables, fruit, legumes, fish, and whole grains)
- “Meat/Fried Foods” (red meat, meat, fries, fried chicken, and added fat)

Overall, there was no significant association between 14-year weight gain and the “Vegetables/Fruit” pattern. In a subsample (12,736) of women who maintained approximately the same dietary patterns over time (remained within one quintile of their 1995 dietary patterns), the “Vegetables/Fruit” pattern was associated with significantly less 14-year weight gain overall (highest compared with lowest quintile: 10.88 and 11.94 kg, respectively; P for trend = 0.003). The “Meat/Fried Foods” pattern was not significantly associated with 14-year weight gain overall. However, mean weight gain was significantly greater in the highest quintile relative to the lowest quintile of the “Meat/Fried Foods” pattern among women with normal weight at baseline (10.77 compared with 10.09 kg; P for trend = 0.002). Among women who maintained the same dietary patterns over time, the “Meat/Fried Foods” pattern was associated with significantly greater 14-year weight gain overall (highest compared with lowest quintile: 12.02 and 10.15 kg, respectively; P for trend < 0.001). The authors concluded that these findings indicate that African American women may achieve long-term weight maintenance by consuming a diet high in vegetables and fruit and low in red meat and fried foods.

Duffey et al., 2012 (positive quality) conducted a prospective cohort study in the United States to examine the association of different dietary patterns with or without diet beverage consumption and the risk of cardiometabolic outcomes, using data from the Coronary Artery Risk Development in Young Adults (CARDIA) study. Participants (n = 4,161), ranging in age from 18 to 30 years old, responded to a validated, interviewer-administered CARDIA diet history questionnaire, followed by a quantitative diet history. Foods and beverages from the baseline diet history were categorized into 43 food groups by using the Nutrition Coordinating Center algorithm, measured as energy per day from food group. The "diet beverages" food group (measured by servings per day) was used to identify baseline consumers of diet beverages, and these groups were labeled "consumers" and "nonconsumers." Two distinct baseline dietary patterns were identified using cluster analysis:

- "Prudent diet" (fruit, milk, yogurt, cheese, nuts, seeds, fish, and whole grains)
- "Western diet" (meats, poultry, refined grains, soda, fast food, fruit drinks, egg and egg dishes, legumes, and snacks)

Results related to waist circumference (WC) showed no significant differences between "Prudent diet" and "Western diet" pattern for diet beverage nonconsumers. "Prudent diet" nonconsumers had lower risk of high waist circumference than "Western diet" consumers. The authors concluded that overall dietary pattern and diet beverage consumption are important, to various degrees, for different metabolic outcomes.

Hosseini-Esfahani et al., 2011 (positive quality) extracted a subset of data from the Tehran Lipid and Glucose Study (TLGS), a prospective cohort study conducted in Iran, and used factor analysis to determine whether changes in food patterns were related to obesity. The data was from two periods of the TLGS survey: 1999-2001 and 2005-2007. Participants (n = 206), mean age 42 years old, answered a 168-item FFQ. FFQ items were then aggregated into 21 food groups according to macronutrient composition. During the two stages of study, three dietary patterns were identified:

- "Healthful" (high intake of fruit, vegetables, dairy, oil, whole grains, poultry, and fish)
- "Western" (high intake of processed meats, fat, salty snacks, fatty sauces, and sweet beverages)
- "Mix" (high-fat red meats, legumes, nuts and seeds, sweets, tea, and coffee)

Changes in each food pattern score were calculated by subtracting each factor score obtained in 1999-2001 from the corresponding values obtained in 2005-2007. In a multivariate adjusted model, overweight/obese individuals (β=0.41 R^2=0.22, $P<0.01$) and the total population (β=0.30 R^2=0.21, $P<0.05$) who had increased "Western" pattern scores showed increases in BMI. No significant relationship was found between change in the "Mix" pattern score and alterations in BMI or WC. Subjects in the highest quartile for changes in the "Healthful" pattern score showed a significantly smaller change in waist-to-hip ratio (WHR) compared to those in the lowest quartile, the reference group (β=-0.77 R^2=0.43, $P<0.01$). This trend was seen before and after adjusting for confounding variables. No significant relationship was observed between changes in WHR and changes in the scores for either the "Western" or the "Mix" patterns. The authors concluded that increased adherence to the "Western" pattern and decreased adherence to the "Healthful" pattern could contribute to obesity.

McNaughton et al., 2007 (positive) analyzed data from the Medical Research Council (MRC) National Survey of Health and Development (NSHD), also known as the 1946 British Birth Cohort, to assess the relationship between dietary patterns during adult life (at ages 36, 43, and 53 years) and risk factors for chronic disease at age 53. The dietary data was collected in 1982, 1989, and 1999 and risk factors were measured in 1999, when subjects were age 53 years. Dietary intake was assessed at each time point using a 5-consecutive-day food diary. Foods and beverages consumed in 1982, 1989, or 1999 were allocated to one of 126 food groups. The distribution of foods and beverage item consumption was highly skewed, so a binary variable was created for each item (consumers or nonconsumers).

Exploratory factor analysis was conducted and dietary patterns consistent across the three time points were identified (described further in Mishra, 2006).

For women, three dietary patterns were identified:

- “Ethnic foods and alcohol” (Indian and Chinese meals, rice and pasta, oily fish and shellfish, olive oil, some vegetables, and alcoholic beverages (particularly red and white wine)
- “Meat, potatoes, and sweet foods” (red meat, bacon and ham, all types of potato and potato dishes, sweet pies, cakes, puddings, and desserts with negative loadings for pasta and skimmed milk)
- “Fruit, vegetables, and dairy” (low-fat/reduced-fat dairy products, fruit, some vegetables, and whole meal bread, with negative loadings for meat, meat products, and white bread)

For men, two dietary patterns were identified:

- “Ethnic foods and alcohol” (Indian and Chinese meals, rice and pasta, shellfish, olives, some vegetables and legumes, and alcoholic beverages [particularly red and white wine], with negative loadings for meat pies, fried chips, and animal fats)
- “Mixed” (many fruits and vegetables, low-fat/low-calorie yogurt and soya milk and a range of sweet foods including cakes, sweet biscuits, sweet pies, puddings, desserts, confectionery, and ice cream)

Stability assessment of agreement between tertile categories over the three time points showed that the “ethnic foods and alcohol,” “fruit, vegetables, and dairy,” and the “mixed” patterns presented fair to moderate agreement (k = 0.28-0.44); agreement for the “meat, potatoes, and sweet foods” pattern was poor. Overall, in women, the “fruit, vegetables, and dairy” pattern was inversely associated with BMI ($P<0.004$), and waist circumference ($P=0.0007$). In men the “mixed” pattern score and waist circumference were significantly inversely associated ($P=0.02$). However, BMI was not significant after adjustment for confounders. The authors concluded that specific dietary patterns throughout adult life were associated with chronic disease risk factors.

Newby et al., 2003 (positive quality) **and Newby et al., 2004** (positive quality) conducted a prospective cohort study in the United States to evaluate the nutritional etiology of changes in BMI and WC by dietary intake pattern, using data from the Baltimore Longitudinal Study of Aging. Participants (n = 459), age range 30 to 80 years old in 1980, completed 7-day dietary records. Then, cluster and factorial analysis were used to define dietary patterns:

In 2003, the food intake data were aggregated into 41 food groups based on macronutrient composition and culinary use, and five food patterns were identified using cluster analysis:

- “Healthy" (high-fiber cereal, fruit, and reduced-fat dairy)
- “White bread” (refined grains, poultry, meat, and high-fat dairy)
- “Alcohol” (refined grains and alcohol)
- “Sweets” (refined grains, fruits, high-fat baked goods, meat, and high-fat dairy)
- “Meat and potatoes” (refined grains, fruit, meat, and high-fat dairy)

Results showed that the mean annual change in BMI was 0.05±0.06 kg/m^2 for the “Healthy” pattern; 0.30±0.06 kg/m^2 for the “Meat-and-potatoes” pattern, which showed a greater annual increase in BMI (β=0.25; 95% CI: 0.07 - 0.43; $P<0.05$) than the “Healthy” pattern. The WC mean annual change was 0.43±0.27 cm for the “Healthy” pattern ($P<0.05$), and 1.32±0.29 cm for the “White-bread” pattern, which showed a significantly greater annual increase in WC (β=0.90 cm; 95% CI: 0.12 - 1.68; $P<0.05$) than the “Healthy” pattern. The authors concluded that consuming a diet high in fruit, vegetables, reduced-fat dairy, and whole grains and low in red and processed meat, fast food, and soda was associated with smaller gains in BMI and waist circumference.

In 2004, the food intake data were aggregated into 40 food groups according to macronutrient composition and culinary use, and six factors or patterns were identified using principal component analysis, and then patterns were treated categorically (i.e., divided into quintiles):

- "Factor 1: Reduced-fat dairy products, fruits, and fiber" (nuts, seeds, legumes, white bread, and refined grains)
- "Factor 2: Protein and alcohol" (seafood and poultry)
- "Factor 3: Sweets" (sweetened juices, dairy desserts, and fast food)
- "Factor 4: Vegetable fats and vegetables" (starchy vegetables, white bread, and refined grains)
- "Factor 5: Fatty meats" (organ meats, nonwhite bread, vegetables, fruits, and processed meats)
- "Factor 6: Eggs, bread, and soup" (whole grains)

For all subjects, the mean annual change in BMI was 0.11 kg/m^2, and the mean annual change in WC was 0.84 cm. The smallest annual change in BMI was in the highest quintile of factor 1 for women (-0.12±0.09; P<0.05), but not significantly for men (0.02±0.08; P>0.05). Mean annual change in WC was smallest in quintile 5 of factor 1 (0.18±0.28 cm; P>0.05) for both sexes. Because BMI was significantly modified by sex, analysis was separated: for women, quintile 5 of factor 1 was inversely associated with an annual change in BMI in comparison with quintile 1 (β=-0.51: 95% CI: -0.82, -0.20; P<0.05); test for trend was P<0.01. For men, BMI annual change was not significantly different in factor 1. Factor 2 was directly associated with change in BMI (quintile 5 vs. 1); (β=0.20; 95% CI: 0.04, 0.36; P<0.05); test for trend was P=0.05. The authors concluded that a pattern rich in reduced-fat dairy products and high-fiber foods may lead to smaller gains in BMI in women and smaller gains in waist circumference in both women and men.

Newby et al., 2006 (positive quality) conducted a prospective cohort study in Sweden to examine whether changes in food patterns were associated with changes in BMI using data of the Swedish Mammography Cohort in 1987 and 1997. Participants (n = 33,840 women), mean age 52.5 years old, self-administered a 65-item FFQ in 1987 and a 97-item FFQ in 1997. Food groups were created according to fat and fiber content, culinary use, and previous research on the study of food patterns and body composition. Due to minor differences in dietary assessment at each time, 29 groups were created in 1987, while 32 groups were created in 1997. Confirmatory factor analysis was used to derive food patterns in each set of food groups:

- "Healthy" (vegetables, fruit, whole grains, fruit juice, and cereals)
- "Western/Swedish" (meat, processed meat, liver, potatoes, and refined grains)
- "Alcohol" (wine, spirits, snacks, beer, and chocolate)
- "Sweets" (sugary foods, sweet baked goods, soda, chocolate, fruit soup, refined grains, and dairy desserts)

The strongest effects of the relation between change in food pattern and change in BMI were observed in women who were obese at baseline. The "Healthy" pattern factor score analyses found that obese women had larger decreases in BMI (β= -0.18 kg/m^2 for a unit increase in SD score, CI: -0.26 to -0.10; P<0.0001), while normal-weight and overweight women showed smaller increases in BMI (-0.05 kg/m^2 and -0.11 kg/m^2, respectively; P<0.05 for both). The "Sweets" pattern analyses found that obese subjects who increased their factor scores had the smallest decreases in BMI (β=0.17 kg/m^2 for a unit increase in SD score, CI: 0.07 to 0.26; P=0.0008), compared with BMI increase of 0.04 kg/m^2 (P<0.005) in overweight women. No significant differences were found in normal-weight women. In all BMI groups, women whose "Healthy" pattern score decreased more than three standard deviations gained the most weight. The authors concluded that changes in eating patterns were significantly related to changes in BMI over 9 years, and the effect was modified by baseline BMI.

Quatromoni et al., 2002 (positive quality) conducted a prospective cohort study in the United States to explore relationships between dietary patterns and the development of overweight (BMI ≥25) over a period of 12 years using data from female participants in the Framingham Offspring-Spouse study (FOS). Participants (n = 737), age range 30 to 89 years old, answered a 145-item FFQ. FFQ items were classified into 42 foods groups based on similar levels of macronutrients and key micronutrients, and then 13 food groupings were identified, each containing multiple food categories. In a second step, women were separated into groups with no overlap groups based on similarities in their frequency of consumption of the 13 food groupings. Five clusters were identified through this process:

- “Heart healthy" (vegetables, fruits, low-fat milk, other low-fat and fiber-rich foods, whole grains, fish, low-fat cheeses, lean poultry, legumes, and fewer servings of diet beverages)
- “Light eating” (more moderate eating patterns and higher consumption of beer and poultry with skin)
- “Wine and moderate” (more moderate eating patterns and higher consumption of wine)
- “High fat” (high amounts of animal and vegetables fats, sweet desserts, meat, and mixed dishes)
- “Empty-calorie” (high amounts of animal and vegetables fats, sweet desserts, meat, mixed dishes, and sweetened beverages)

Among women who were not overweight (BMI<24), after 12-year follow-up, overweight rates were lowest in the “Wine and moderate” and “Heart healthy” clusters and highest among those in the “Empty-calorie” cluster. Overall, there was a 17 percent absolute increase in risk among women who ate an “Empty calorie” diet pattern compared with those who followed a “Heart healthy” pattern. The relative risk for developing overweight was higher among women in the “Empty calorie” pattern compared with women in the “Heart healthy” pattern (RR=1.4; 95% CI=0.9 - 2.2). These results were attenuated in the multivariate model, adjusting for age, menopausal status, and other behavioral factors. There was no observed increased risk associated with any of the other dietary patterns. The authors concluded that behavioral interventions for weight management and obesity prevention may be enhanced by targeting differences in eating patterns, dietary quality, and other lifestyle factors of distinct groups of the population.

Ritchie et al., 2007 (positive quality) analyzed data from a prospective cohort study conducted in the United States to determine the relation of dietary patterns with nutrient intakes and measures of adiposity over a period of 10 years using data from the National Heart, Lung, and Blood Institute Growth and Health Study (NGHS) Cohort. Participants were Black and White girls (n = 2,371), age range 9 to 10 years old at baseline, who recorded their dietary intake for 3 days (2 weekdays, 1 weekend) on an annual basis. Food intakes were combined into 40 food groupings based on frequency of usage, contribution to total energy intake, and customary use in the diet. Cluster analysis was used to define four separate patterns for Black girls and White girls.

For Black girls, the patterns were:

- “Customary” (low intakes of diet drinks, coffee/tea, yogurt, cheese, plain grains, crackers, fish/poultry [not fried], red meat, other soups, and most vegetables)
- “Snack-type foods” (high intakes of diet drinks, coffee/tea, yogurt, crackers, pretzels, other soups, and green salads, and low intakes of flavored milks, several other grain groupings, and processed meats/sandwiches)
- “Meal-type foods” (high intakes of plain breads and grains, other breakfast grains, and most types of sandwiches and protein sources, including legumes, fried and not fried potatoes)
- “Sweets and cheese pattern” (large amounts of sweets and flavored milk and cheese, with relatively small amounts of many other foods, for example, eggs, fried fish/poultry, and fried potatoes)

For White girls, the patterns were:

- “Convenience” (high intakes of pizza, fried fish/poultry, and ramen, with relatively low intakes of juice, plain milk, many of the grain-type groupings, eggs, unfried fish/poultry, cheese/spread sandwiches, other soups, fruit, and most of the vegetable-rich groupings)
- “Sweets and snack-type foods” (high intakes of sweetened and diet drinks, juice, cheese, other desserts, candy, crackers, pretzels, nuts/popcorn, peanut butter and cheese-spread sandwiches, and mixed dishes, with low intakes of flavored milk, processed meats/sandwiches, and mixed dishes)
- “Fast-food pattern” (high intakes of flavored milk, burgers, fried potatoes, eggs, red meat, processed meats/sandwiches, chips, legumes, and baked desserts, with low intakes of diet drinks, yogurt, cheese, candy, other desserts, crackers, pretzels, and peanut butter sandwiches)

- “Healthy” (low intakes of sweetened drinks, baked desserts, chips, fried fish/poultry, red meat, burgers, pizza, and fried potatoes, with relatively high consumption of plain milk, yogurt, plain breads and grains, cereal, other breakfast grains, mixed dishes, other soups, fruit, green salads, unfried potatoes, and other vegetables)

For Black girls, mean BMI, percent body fat, and WC at final follow-up did not differ significantly by dietary patterns. Among White girls, those following the “Healthy” pattern had significantly smaller mean WC values at the final follow-up, as well as change in WC, compared with the “Sweets and snack-type foods” pattern (P = 0.037). In conclusion, given that most of the dietary patterns identified were far from optimal, it is not surprising that few were found to be protective against obesity. A notable exception was the “Healthy” pattern identified among White girls.

Schulze et al., 2006 (positive quality) conducted a prospective cohort study in the United States to examine the association between adherence to dietary patterns and weight change using data from the Nurse’s Health Study II from 1991 to 1999. Participants, age range 26 to 46 years old, self-administered a 133-food item FFQ in 1991, 1995, and 1999. Foods from the FFQ were then classified into 39 food groups based on nutrient profiles or culinary usage. The final sample included 51,670 women. Eating patterns defined by principal component analysis for each time-point were described as:

- “Prudent pattern” (higher intakes of fruits, vegetables, whole grains, fish, poultry, and salad dressing)
- “Western pattern” (higher intakes of red and processed meats, refined grains, sweets and desserts, and potatoes)

Average weight gain adjusted for baseline age was largest among those women who increased their “Western” pattern score (1991 to 1995, 5.20 kg; 1995 to 1999, 3.23 kg; 1991 to 1999, 7.81 kg) and smallest among women who decreased their “Western” pattern scores (1991 to 1995, 2.10 kg; 1995 to 199, 0.85 kg; 1991 to 1999, 4.04 kg; P<0.001). This difference persisted after adjusting for baseline and changes in confounders. The authors concluded that a dietary pattern characterized by frequent consumption of red and processed meats, refined grains, sweets and desserts, French fries, and potatoes may be associated with larger weight gain, while increased consumption of fruits, vegetables, whole grains, fish, poultry, legumes, and oil and vinegar salad dressing may be associated with less weight gain.

Togo et al., 2003 (positive quality) conducted a prospective cohort study in Denmark to assess associations between food-intake factor scores and BMI changes, as well as longitudinal associations between changes in food-intake patterns and subsequent changes in BMI using data from the Monitoring of Trends and Determinants in Cardiovascular Diseases (MONICA) study from 1982 to1994. Participants, age range 30 to 60 years old, answered a 26-item FFQ, and factor analysis was used to identify dietary patterns separated by gender.

For women, two patterns were found and named as:

- “Green” (high intakes of fruits, vegetables, whole grains, fish, and cheese)
- “Sweet-Traditional” (more meat and foods of higher energy density, with fewer vegetables)

For men, three patterns were found and named as:

- “Green” (high intakes of fruit, vegetables, whole grains, fish, and cheese)
- “Sweet” (baked goods, candy, soft drinks, ice cream, honey, or jam)
- “Traditional” (more meat and foods of higher energy density, with fewer vegetables)

Multivariate analyses of the association between food factor scores at baseline and subsequent 5- and 11-year change in BMI, respectively, revealed inconsistent and minor associations. For example, in men the “Traditional” factor score at baseline was inversely associated with subsequent 11-year change in BMI [β (95% CI) = -0.40 (-0.78, 0.01); P<0.05], while the 5-year difference was not significantly associated with any of the factors scores at baseline [β (95% CI) = -0.06 (-0.33, 0.21)]. In women, the 5-year change in BMI was inversely associated with the “Sweet-traditional” factor score at baseline [β (95% CI) = -0.33 (-0.54, -0.13); P<0.01], while the association was not significant for the 11-year change [β (95% CI) = -0.26 (-0.55, 0.03)]. Neither the baseline factor scores nor the change in factor scores between baseline and 5-year follow-up were found to be associated with obesity at 11-year follow-up, in the fully adjusted model. The authors concluded that in this longitudinal study of a Danish population, food-intake factors could not consistently predict changes in BMI or obesity development.

Table 4-A-II-1 Summary of Findings

Dietary patterns identified using factor analysis or cluster analysis (shaded rows) and association with body weight status and obesity

Author, Year, Quality Rating, Study Design, Cohort	Sample Size, Location, Duration, Dietary Assessment, Methodology/ No. Patterns	Age (y), % Female, Race/Ethnicity, Outcome, Comparison	Dietary Patterns Associated with Lower Risk of Obesity	Dietary Patterns with No Significant Association with Obesity	Dietary Patterns Associated with Higher Risk of Obesity
Dietary Pattern Analyses Conducted with Women and Men Combined					
Duffey et al., 2012 Neutral Prospective cohort CARDIA study	4,161 U.S. 20 y Diet History questionnaire CA, 2 patterns	18–30 y 53% 53% African American Waist circumference, "Prudent diet" vs. "Western diet"		Waist circumference • **"Prudent diet"** (low-fat whole grains, fruit, yogurt, cheese, nuts/seeds, milk). • **"Western diet"** (meats/poultry, low-fat refined grains, high-fat refined grains, fats, condiments, fat food, regular soda).	
Hosseini-Esfahani et al., 2011 Positive Prospective cohort Tehran Lipid and Glucose Study (TLGS)	206 Iran 6 y 168-item FFQ FA, 3 patterns	42 y 60% Not reported WC, BMI, WHR; Q4 vs Q1	WHR • **"Healthful"** (high intake of fruit, vegetables, dairy, oil, whole grains, poultry, and fish). (β = -0.77 R^2= 0.43, P<0.01).	BMI , WC, WHR • **"Mix"** (high-fat red meats, legumes, nuts and seeds, sweets, tea, and coffee). WHR • **"Western"** (high intake of processed meats, fat, salty snacks, fatty sauces, and sweet beverages)	Change in BMI • **"Western"** (high intake of processed meats, fat, salty snacks, fatty sauces, and sweet beverages) All: β = 0.30, R^2 = 0.21, P<.05) Overweight/obese: (β=0.41. R^2 = 0.22, P<0.01 WC • **"Western"** β = 0.24, R^2 = 0.18, P<.05); Normal wt subjects (β = 0.49, R^2 = 0.21, P<.01

Table 4-A-II-1 Summary of Findings—continued

Dietary patterns identified using factor analysis or cluster analysis (shaded rows) and association with body weight status and obesity

Author, Year, Quality Rating, Study Design, Cohort	Sample Size, Location, Duration, Dietary Assessment, Methodology/ No. Patterns	Age (y), % Female, Race/Ethnicity, Outcome, Comparison	Dietary Patterns Associated with Lower Risk of Obesity	Dietary Patterns with No Significant Association with Obesity	Dietary Patterns Associated with Higher Risk of Obesity
Newby et al., 2003 Positive Prospective cohort Baltimore Longitudinal Study of Aging (same cohort as Newby et al 2003, but CA results)	N = 459 U.S. 1 y 7-d dietary record CA, 5 patterns	30–80 y 48% White: Men=96% Women=94% African American: Men=3.8% Women=5.9% WC and BMI change; comparison: healthy pattern	BMI change ("Healthy" vs "Meat and potatoes") • **"Healthy"** (reduced-fat dairy, fruit, high-fiber cereal)		BMI (regression coefficient β and 95% CI); compared to "Healthy pattern" • "Meat and potatoes"(high-fat dairy, meat, fruit, white bread or refined grains), β=0.25(0.07, 0.43), P<0.05 WC (regression coefficient β and 95% CI); compared to "Healthy pattern" • **"White bread"** (high-fat dairy, meat, poultry, white bread or refined grains)). WC annual change (β=0.90 cm; 95% CI: 0.12, 1.68; P<0.05
Newby et al., 2004 Positive Prospective cohort Baltimore Longitudinal Study of Aging (same cohort as Newby et al 2003, but FA results)	459 U.S. 1 y 7-d dietary record FA, 6 patterns	30–80 y 48% White: Men=96% Women=94% African American: Men=3.8% Women=5.9% WC and BMI change, Regression Q5 vs Q1 food patterns predicting change	BMI (regression coefficient β and 95% CI) Women only • **"Factor 1: Reduced-fat dairy products, fruit and fiber"** (Reduced-fat dairy products, ready-to-eat cereal, fruit), β = -0.51 (-0.82, -0.20); *P* for trend <0.05; *P* for trend <0.01 WC (regression coefficient β and 95% CI) Both sexes: • **"Factor 1: Reduced-fat dairy products, fruit and fiber"** (Reduced-fat dairy products, ready-to-eat cereal, fruit), β = -1.06 cm (-1.88, -0.24cm); *P*<0.05; *P* for trend <0.04	BMI and WC • **"Factor 4: Vegetable fats and vegetables"** (margarine, vegetable oils, starchy vegetables) • **"Factor 5: Fatty meats"** (liver and organ meat, nonwhite bread) • **"Factor 6: Eggs, bread, and soup"** (eggs, white bread and refined grains, miscellaneous fats, soups and chowders) WC only • **"Factor 2: Protein and alcohol "** (seafood, poultry, vegetables) BMI only • **"Factor 3: Sweets"** (sweetened juices, dairy desserts, fast food) • **"Factor 1: Reduced-fat dairy products, fruit and fiber"** men only	WC (regression coefficient β and SE) • **"Factor 3: Sweets"** (sweetened juices, dairy desserts, fast food) β =0.94 cm (0.39 cm); *P*<0.05; *P* for trend <0.04 BMI • **"Factor 2: Protein and alcohol "** (seafood, poultry, vegetables) (β = 0.20; 95% CI: 0.04, 0.36; P<0.05); test for trend was P=0.05

Table 4-A-II-1 Summary of Findings—continued

Dietary patterns identified using factor analysis or cluster analysis (shaded rows) and association with body weight status and obesity

Author, Year, Quality Rating, Study Design, Cohort	Sample Size, Location, Duration, Dietary Assessment, Methodology/ No. Patterns	Age (y), % Female, Race/Ethnicity, Outcome, Comparison	Dietary Patterns Associated with Lower Risk of Obesity	Dietary Patterns with No Significant Association with Obesity	Dietary Patterns Associated with Higher Risk of Obesity
Dietary Pattern Analyses Conducted with Women					
Boggs et al., 2011 Positive Prospective cohort Black Women's Health Study	41,351 U.S. 14 y 68-item FFQ (1995) and 85-item FFQ (2001) Principal Component Analysis, 2 patterns	21–54 y 100% 100% African American Changes in body weight, Q5 vs Q1	Mean weight gain: Subsample (12,736) who maintained the same dietary pattern over time: • **"Vegetables/fruit"** (noncruciferous vegetables, cruciferous vegetables, fruit). 10.88 and 11.94kg, respectively; P for trend = 0.003	Mean weight gain: All: • **"Vegetables/fruit"** (noncruciferous vegetables, cruciferous vegetables, fruit). • **"Meat/fried foods"** (red meat, processed meat, regular mayonnaise/salad dressing, French fries, Fried chicken).	Mean weight gain: Subsample (12,736) who maintained the same dietary pattern over time: • **"Meat/fried foods"** (red meat, processed meat, regular mayonnaise/salad dressing, French fries, Fried chicken), 12.02 and 10.15 kg, respectively; P for trend <0.001
McNaughton et al., 2007 Positive Prospective cohort Medical Research Council (MRC) National Survey of Health and Development (NSHD)--1946 British Birth Cohort	1,265 Women 696 U.K. 17 y 5-day food diary FA, 3 patterns for women; 2 patterns for men	53 y 55% Not reported BMI and WC, longitudinal analysis	Women, pattern association with BMI and WC • **"Fruit, vegetables, and dairy"** (Soya milk, meat alternatives, low/reduced fat cheese, dried fruit) BMI, P<0.004;WC, P=0.0007	Women, pattern association with BMI and WC • **"Ethnic foods and alcohol"** (red wine, avocados and olives, white wine, other vegetables, fried Indian and Chinese foods, rice dishes) • **"Meat, potatoes, and sweet foods"** (fried potatoes and potato products, sauces and dressings, red meat and game)	

Table 4-A-II-1 Summary of Findings—continued

Dietary patterns identified using factor analysis or cluster analysis (shaded rows) and association with body weight status and obesity

Author, Year, Quality Rating, Study Design, Cohort	Sample Size, Location, Duration, Dietary Assessment, Methodology/ No. Patterns	Age (y), % Female, Race/Ethnicity, Outcome, Comparison	Dietary Patterns Associated with Lower Risk of Obesity	Dietary Patterns with No Significant Association with Obesity	Dietary Patterns Associated with Higher Risk of Obesity
Newby et al., 2006 Positive Prospective cohort Swedish Mammography Cohort in 1987 and 1997	33,840 Sweden 9 y 67-item FFQ (1987) and 97-item FFQ (1997) Confirmatory FA, 4 patterns	Mean 52.5 y 100% Not reported BMI BMI, Linear regression,for change in food pattern score and change in BMI stratified by baseline BMI	BMI (regression coefficient and 95% CI) •**"Healthy"** (vegetables, fruit, whole grains, fruit juice, cereals), Obese women with an increased factor score had larger decreases in BMI, β =-0.18 kg/m2 for a 1 unit increase in SD score, CI (-0.26, -0.10), P<0.0001 Normal-weight and overweight women who ↑ their "Healthy" pattern score showed smaller ↑ in BMI (-0.05 kg/m² and -0.11 kg/m², respectively; P<0.05 for both).	BMI (regression coefficient β and 95% CI) • **"Alcoho""** (wine, spirits, snacks, beer, chocolate), all groups • **"Western/Swedish"** (meat, processed meat, liver, potatoes, refined grains), Normal and obese • **"Sweets"** (sugary foods, sweet baked goods, soda, chocolate, fruit mix [soup], refined grains, dairy desserts), normal and overweight	BMI (regression coefficient β and 95% CI) • **"Sweets"** (sugary foods, sweet baked goods, soda, chocolate, fruit mix [soup], refined grains, dairy desserts) Obese subjects who ↑ their factor score had the smallest ↓in BMI (β = 0.17 kg/m² for a unit ↑ in SD score, CI: 0.07-0.26; P=0.0008), compared with a 0.04 kg/m² (P<0.005) ↑ in BMI for overweight women and NS difference for normal-weight women. • **"Western/Swedish"** (meat, processed meat, liver, potatoes, refined grains). Overwt: 0.05 (0.01, 0.09), P<0.05
Quatromoni et al., 2002 Positive Prospective cohort Framingham Offspring-Spouse study	737 U.S. 12 y 145-item FFQ Ward's cluster method, 5 patterns,	30–89 y 100% Not reported Overweight incidence, comparator: "Heart healthy"	Overweight Compared with "Empty-calorie" pattern: **"Heart healthy"** (other low-fat foods, fruits and low-fat milk, vegetables, refined grains, soft margarine, and oils).	Overweight • **"Light eating"** (diet beverages and firm vegetables fats, refine grains, soft margarine, and oils, other low-fat foods, vegetables). • **"Wine and moderate"** (diet beverages and firm vegetables fats, vegetables, refined grains, soft margarine, and oils, fruits and low-fat milk). • **"High fat"** (sweet and animal fats, diet beverages and firm vegetables fats, refined grains, soft margarine, and oils, vegetables).	Overweight • **"Empty-calorie"** (diet beverage and firm vegetables fats, refined grains, soft margarine, and oils, vegetables) vs "Heart healthy" (other low-fat foods, fruits and low-fat milk, vegetables, refined grains, soft margarine, and oils). RR = 1.4, 95% CI (0.9, 2.2)

Table 4-A-II-1 Summary of Findings—continued

Dietary patterns identified using factor analysis or cluster analysis (shaded rows) and association with body weight status and obesity

Author, Year, Quality Rating, Study Design, Cohort	Sample Size, Location, Duration, Dietary Assessment, Methodology/ No. Patterns	Age (y), % Female, Race/Ethnicity, Outcome, Comparison	Dietary Patterns Associated with Lower Risk of Obesity	Dietary Patterns with No Significant Association with Obesity	Dietary Patterns Associated with Higher Risk of Obesity
Schulze et al., 2006 Positive Prospective cohort Nurse's Health Study II	51,670 U.S. 8 y 133-item (semiquantitative) FFQ Principal component analysis, 2 patterns	26–46 y 100% Not reported Weight change Low vs high, high vs low pattern score	Average weight gain: • **"Prudent pattern"** (higher intakes of fruits, vegetables, whole grains, fish, poultry, and salad dressing) Women who ↑ "Prudent" pattern score had less wt gain (multivariate adjusted means, 1.93 kg for 1991 to 1995 and 0.66 kg for 1995 to 1999) than women who ↓ their "Prudent" pattern scores (4.83 and 3.35 kg for the two time periods), P<0.001		Average weight gain: • **"Western pattern"** (higher intake of red and processed meats, refined grains, sweets and desserts, and potatoes) Women who ↑ pattern score had > wt gain (multivariate adjusted means, 4.55 kg for 1991 to 1995 and 2.86 kg for 1995 to 1999) than women who ↓ their "Western" pattern scores (2.70 and 1.37 kg for the two time periods), P<0.001
Togo et al., 2003 Positive Prospective cohort MONICA study	2,436 Women: 1,693 Denmark 5 and 11 y 26-item FFQ FA, 2 patterns for women; 3 patterns for men	30–60 y 49% Not reported BMI change, obesity; Association between food factor scores, 5- and 11- y change in BMI and obesity		BMI change Women • **"Green"** (wheat bread with whole grains or bran, raw vegetables, rye bread with whole grains or bran, boiled vegetables) Obesity: Baseline and change in **"Traditional"**, **"Green"** , **"Sweet"**, **"Sweet-traditional"**, and **"Green"**, and **"Sweet-traditional"** (all) pattern scores at 5 and 11 y	BMI increase β (95% CI) Women: 5-y BMI change and baseline factor score: • **"Sweet-traditional"** (cake, biscuits or other baked goods, candy or chocolate, soft drinks or ice cream, jam/marmalade or honey) 5-y: β = -0.33 (-0.54, -0.13) P<0.01 (11-y NS)

Table 4-A-II-1 Summary of Findings—continued

Dietary patterns identified using factor analysis or cluster analysis (shaded rows) and association with body weight status and obesity

Author, Year, Quality Rating, Study Design, Cohort	Sample Size, Location, Duration, Dietary Assessment, Methodology/ No. Patterns	Age (y), % Female, Race/Ethnicity, Outcome, Comparison	Dietary Patterns Associated with Lower Risk of Obesity	Dietary Patterns with No Significant Association with Obesity	Dietary Patterns Associated with Higher Risk of Obesity
Ritchie et al., 2007 Positive Prospective cohort National Heart, Lung, and Blood Institute Growth and Health Study (NGHS)	2,371 U.S. 10 y 3-d dietary record CA, 4 patterns for White girls/ 4 patterns for Black girls; Comparator: "Healthy" (White girls); "Snack-type foods" (Black girls)	9–10 y 100% African American: 51% White: 49% BMI, % body fat, and WC	WC change ("Healthy" vs "Sweets and snack-type foods") White girls: • **"Healthy"** (sweetened drinks, juice, plain milk, fruit, other soups, mixed dishes, cereal, other vegetables). P=0.037)	BMI, WC and % Body Fat For Black girls: • **"Customary"** (sweetened drinks, juice, plain milk, cereal, fruit, mixed dishes, processed meats and sandwiches). • **"Snack-type foods"** (sweetened drinks, juice, plain milk, cereal, mixed dishes, other soup, ice cream). • **"Milk-type foods"** (sweetened drinks, juice, plain milk, cereal, processed meats and sandwiches, other vegetables, red meat). • **"Sweets and cheese pattern"** (sweetened drinks, juice, plain milk, cereal, mixed dishes, processed meats and sandwiches, ice cream). BMI, % body fat White girls: • **"Convenience"** (sweetened drinks, juice, plain milk, cereal, mixed dishes, fruit). • **"Sweets and snack-type foods"** (sweetened drinks, juice, plain milk, fruit, mixed dishes, cheese and spread sandwiches). • **"Fast-food pattern"** (sweetened drinks, juice, plain milk, flavored milk, cereal, mixed dishes, fruit, other soups). • **"Healthy"** (sweetened drinks, juice, plain milk, fruit, other soups, mixed dishes, cereal, other vegetables). WC "Fast-food pattern" and "Convenience" patterns	

Table 4-A-II-1 Summary of Findings—continued

Dietary patterns identified using factor analysis or cluster analysis (shaded rows) and association with body weight status and obesity

Author, Year, Quality Rating, Study Design, Cohort	Sample Size, Location, Duration, Dietary Assessment, Methodology/ No. Patterns	Age (y), % Female, Race/Ethnicity, Outcome, Comparison	Dietary Patterns Associated with Lower Risk of Obesity	Dietary Patterns with No Significant Association with Obesity	Dietary Patterns Associated with Higher Risk of Obesity
Dietary Pattern Analyses Conducted with Men					
McNaughton et al., 2007 Positive Prospective cohort Medical Research Council (MRC) National Survey of Health and Development (NSHD)--1946 British Birth Cohort	1,265 Men: 569 U.K. 17 y 5-day food diary FA, 3 patterns for women; 2 patterns for men	53 y 55% Not reported BMI and WC, longitudinal analysis (3 repeat measures of dietary pattern scores)	Men, pattern association with WC • **"Mixed"** (Soya milk, other vegetables, fruit juice, skim milk beverages, sweet biscuits), P=0.02	Men, pattern association with BMI and WC • **"Ethnic foods and alcohol"** (red wine, other legumes, avocados and olives, mineral water, white wine, Fried Indian and Chinese foods, spinach, rice dishes, pasta and noodles) Pattern association with BMI • **"Mixed"** (Soya milk, other vegetables, fruit juice, skim milk beverages, sweet biscuits), P=0.02	
Togo et al., 2003 Positive Prospective cohort MONICA study	2,436 Men: 1792 Denmark 5 and 11 y 26-item FFQ FA, 2 patterns for women; 3 patterns for men	30–60 y 49% Not reported BMI change, obesity; Association between food factor scores, 5- and 11-y change in BMI and obesity		BMI change (5 y and 11 y) Men: • **"Green"** (wheat bread with whole grains or bran, raw vegetables, rye bread with whole grains or bran, fruit, boiled vegetables) • **"Sweet"** (cake, biscuits or other baked goods, candy or chocolate, soft drinks or ice cream, jam/marmalade or honey)	BMI increase (11 y) β (95% CI) Men: • **"Traditional"** (meat, paté and meat for bread, potatoes, white [wheat] bread). 11-year: β = -0.40 (-0.78, 0.01), P<0.05 (5-y NS)

Qualitative Assessment of the Collected Evidence

Quality and Quantity

In terms of quantity, an exhaustive search in four electronic databases, supplemented with a hand search, identified 11 prospective cohort studies that met the inclusion criteria for evaluating dietary patterns with regard to body weight status. In total, over 135,000 adults and 2,300 adolescents were examined by studies in this review. Quality assessment of these studies involved an examination of their methodological rigor in order to minimize bias and random error in the systematic review findings. Components of the evaluation included the number and selection of data samples, use of statistical tools, and detection or reporting bias. Ten of eleven of the included studies were found to be of positive quality, indicating a low risk of bias and random error.

Consistency

The studies in this review did not use a consistent approach for examining the association between dietary patterns and body weight. Both factor and cluster analysis methodologies were used. Factor analysis summarizes a number of original variables into smaller composite factors, while cluster analysis groups individuals into clusters, so that individuals in the same cluster are homogeneous and there is heterogeneity across clusters. In addition, there are several methodological differences within the study designs, including different methods of grouping foods and selecting patterns. Nevertheless, some similarities among the findings can be seen. Most of the studies found at least two generic food patterns: a “healthy/prudent” food pattern and an “unhealthy/western” pattern. Generally, healthier patterns were associated with more favorable body weight outcomes, while the opposite was seen for unhealthy patterns. However, not all studies reported significant associations.Furthermore, because the patterns are data-driven, they represent what was consumed by the study population, and thus it is difficult to compare across the disparate patterns.

Impact

This body of evidence directly addressed the diet exposures and examined health outcomes of interest for this systematic review. Overall, the results observed were clinically meaningful from a public health perspective, particularly related to BMI. However the association between dietary patterns and body weight status may be mitigated by the presence of other important lifestyle factors that influence body weight but are difficult to measure.

Generalizability/ExternalValidity

The total number of studies in this review is not large, but several of them were conducted in large prospective cohort studies. Ethnicity, SES, sex, age, and BMI are among the variables considered when examining generalizability of the results to the general U.S. population. Ethnicity and socioeconomic status were often not reported or included in analyses, which makes generalizing the results difficult. There was a potential difference in associations found by gender: of the three studies that analyzed men and women separately, men tended to have null results. However, there were insufficient data to draw conclusions about population subgroups. In addition, nearly all the studies were in adults, only one was in adolescents, and none in young children. For these reasons, caution should be observed when extrapolating the findings to other populations.

Limitations

- Factor and cluster analyses are data-driven approaches that describe the dietary patterns in a particular population. The studies describe preexisting dietary patterns within the population and the dietary patterns are not based on a hypothesized association to health. The patterns derived through analyses may not represent the most beneficial or detrimental patterns relative to the health outcome of interest.
- Among the studies reviewed, the dietary pattern analyses varied with regard to the dietary assessment methods, the number and type of food groupings, and the statistical analysis techniques, which make comparisons challenging.
- In factor and cluster analysis, the consolidation of food items into food groups, the number of factors or clusters to extract, and even the labeling of components are subjective. Furthermore, patterns derived from either factor

or cluster analysis may not be reproducible across studies because elements of dietary patterns and analytic decisions differ.

- Dietary pattern analysis using factor or cluster methods may not be very informative in determining which elements of the diet or which biological relationships between these elements are responsible for the health outcome.
- Some studies completed over long periods of time did not account for changes to subjects' diets or seasonal variations in food supplies, which may have influenced the food components of patterns.
- One study analyzed the dietary patterns of pre-pubescent children transitioning into adolescence. In general, the results show that patterns vary widely at this age and caution should be observed when analyzing these data because the diet of children changes rapidly, as well as their weight.

Research Recommendations

- Insufficient evidence was available in population subgroups to examine the relationship between dietary patterns derived using factor and cluster analyses and body weight status. Future studies using this methodology should examine variables such as ethnicity, SES, sex, baseline weight status, and age. In additon, it is important to incorporate environmental and behavioral factors, such as physical activity, non-leisure physical activity, eating practices (eating out, cooking at home), indulgence over the weekend, among others, as potential confounders These variables may be moderators that in the long term will define the association between a particular pattern and weight status. There is a need for more research into specific ethnic groups and how cultural practices may influence dietary patterns and their repercussions for body weight.
- Research is needed to further examine if various dietary patterns influence body weight status differently among participants who are normal weight, overweight, or obese. There is some indication that obese versus normal weight individuals respond differently to changes of food patterns on body weight measures. Research in this area may help uncover better approaches to body weight management practices.
- There is a need to examine the most common unhealthy/western pattern components, variations, and amounts of food consumed by those who have such a diet. Rationale: If a pre-existing pattern is found to be detrimental to health, there is an impetus for dietary pattern modification.

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Section III: Reduced Rank Regression
By Thomas V. Fungwe and Julie E. Obbagy

What is the relationship between adherence to dietary guidelines/recommendations or specific dietary patterns, assessed using reduced rank regression analysis, and measures of body weight or obesity?

TECHNICAL ABSTRACT

Background

The goal of this systematic review project is to identify patterns of food and beverage intake that promote health and prevent disease. Historically, most dietary guidance has been based on research conducted on individual food components or nutrients. Dietary patterns are defined as the quantities, proportions, variety, or combination of different foods, drinks, and nutrients (when available) in diets, and the frequency with which they are habitually consumed. Reduced rank regression (RRR) is a statistical method that determines dietary patterns (combinations of food intake) that explain as much variation as possible among a set of response variables related to a health outcome of interest. It is an *a posteriori* method since it uses both existing evidence and exploratory statistics. The objective of this systematic review was to assess the relationship between patterns of food and beverage intake derived by using reduced rank regression, and body weight or risk for developing obesity.

Conclusion Statement

There are a number of methodological differences among the studies examining the relationship between dietary patterns derived using reduced rank regression and body weight status. The disparate nature of these studies made it difficult to compare results, and therefore, no conclusions were drawn. (Grade: Not Assignable)

Methods

Literature searches were conducted using PubMed, Embase, Navigator (BIOSIS, CAB Abstracts, and Food Science and Technology Abstracts), and Cochrane databases to identify studies that evaluated the association between dietary patterns derived using reduced rank regression analysis and risk of obesity. Studies that met the following criteria were included in the review: Human subjects; Ages: 2 years and older; Populations: Healthy and those with elevated chronic disease risk; individuals with chronic disease; published in English in a peer-reviewed journal; Sample size: Minimum of 30 subjects per study arm; Dropout rate less than 20 percent; Study assesses dietary intake using reduced rank regression analysis; study considered body weight and risks of obesity; subjects from countries with high or very high human development (based on the 2011 Human Development Index). The date range for the conduct of the studies was unlimited.

The results of each included study were summarized in evidence worksheets (including a study quality rating) and evidence table. A group of subject matter experts were involved in a qualitative synthesis of the body of evidence, development of a conclusion statement, and assessment of the strength of the evidence (grade) using pre-established criteria including evaluation of the quality, quantity and consistency, magnitude of effect, and generalizability of available evidence.

Findings

- There were six prospective cohort studies that examined dietary patterns derived using reduced rank regression analysis and their association with body weight and risks of obesity. The studies ranged in size from 141 to 24,958 subjects. Three studies were conducted in children, two in adults, and four of the studies included both females and males, while one study included only girls. One study each was conducted in the United States, Korea, United Kingdom, Iran, and Germany. The follow-up for these studies ranged in duration from 22 months to 8 years.
- The response variables and dietary assessment methods used varied widely by study and did not allow conclusions to be drawn across studies. Dietary patterns are based only on foods that are actually consumed, therefore results or outcomes from extracted patterns may be only confirmatory.
- Food groups were not examined in relation to weight status in these studies, and many of the studies used “roughly similar response variables” but generated patterns that were varied. Body weight was determined on the basis of observed food component intake, and as such, evaluating food patterns with respect to body weight change is highly dependent on the preceding analysis of carbohydrate, fat, and fiber density. Thus, results for these food patterns need replication using independent data sets.
- There was lack of consistency in the extracted patterns resulting in a mix of food groups within extracted patterns that are known to be harmful or those known to be protective. This may present limitations in attempting to address issues related to whether food groups within these patterns may act independent of each other (i.e., what role would whole grains and vegetables play in a generated pattern that also contains high fat?)
- The populations studied also varied widely by country of study, as well as region of the world. Diets consumed by these populations also varied by country making it difficult to translate and generalize the findings.

Discussion

The ability to draw a gradable conclusion was limited due to the following issues:

- Each study used different response variables in the reduced rank regression analyses. Two studies used biomarkers including change in BMI, percent body fat, bone mineral content, and bone mineral density as response variables. The second study included fat and bone mass as response variables. Four other studies used nutrients: dietary energy density, fiber density, and percent of energy as fat; total fat, carbohydrate, and fiber; and one used fat, PUFA: SFA ratio, calcium, cholesterol, and fiber as response variables. In reduced rank regression, the dietary patterns identified are those that explain the most variation in the response variables chosen. Therefore, because the studies included in this review used different response variables, the dietary patterns derived may not be comparable.
- Different weight-related outcomes were examined across the studies. The most common outcomes considered in at least four studies were body mass index and fat mass or percentage. Two studies examined incidence of overweight or obesity and excess adiposity and one study examined waist circumference. This variability made it difficult to identify themes within this body of evidence.
- Dietary assessment methods were different across the studies. Of the six studies, three used diet, one used 24-hour recalls, another used both a 24-hour recall and a diet record, while the sixth used a food frequency questionnaire. It is unclear what impacts different dietary assessment methods have on the derivation of dietary patterns using reduced rank regression.
- The studies were not consistent in their use of confounders in analyses. In particular, physical activity was not included as a confounder in the analyses in two studies.

PLAIN LANGUAGE SUMMARY

Are the amounts, types, variety, or combinations of foods and beverages people frequently eat and drink related to the likelihood of becoming overweight and obese?

Researchers have previously looked at the relationship between individual foods and nutrients and health. Today, there is interest in looking at how combinations of foods and beverages intake, or dietary patterns, influence health by applying different scientific methods. A statistical method called reduced rank regression analysis can be used to describe the patterns of foods and beverages people eat based on a set of “response variables” that are known to be related to the health outcome of interest. This summary of a NEL review presents what research evidence currently exist when reduced rank regression analysis is the method used to study the dietary patterns of groups of people and their likelihood of becoming overweight and risking obesity.

Conclusion

There were a number of methodological differences among the studies examining the relationship between dietary patterns derived using reduced rank regression and body weight status. The disparate nature of these studies made it difficult to compare results, and therefore, no conclusions were drawn.

What the Research Says

Six studies looked at dietary patterns found using reduced rank regression analysis and the risk of becoming over weight and obese. However, these studies had some key issues that make it hard to make any recommendations:

- There were few studies available.
- There were many differences in how the studies were done.
- The populations studied were different between studies.

EVIDENCE PORTFOLIO

Conclusion Statement

There were a number of methodological differences among the studies examining the relationship between dietary patterns derived using reduced rank regression and body weight status. The disparate nature of these studies made it difficult to compare results, and therefore, no conclusions were drawn.

Grade

Not Assignable (IV)

Key Findings:

- Six positive quality prospective cohort studies that used reduced rank regression to examine the relationship between dietary patterns and body weight status were included in this review. However, differences in methodologies used and populations studied prevented comparison across studies, and conclusions could not be drawn.
- Further research is needed to examine dietary patterns and body weight status using reduced rank regression, preferably with standardized methods and response variables.

Evidence Summary Overview

Description of the Evidence

Six prospective cohort studies that used reduced rank regression analysis (see appendix A) to examine the relationship between dietary patterns and body weight were included in this systematic review (Ambrosini, 2012; Johnson, 2008; Noh, 2011; Schulz, 2005; Sherafat-Kazemzadeh, 2010; Wosje, 2010). Ambrosini (2012) and Johnson (2008) represent the UK Avon Longitudinal Study of Parents and Children (ALSPAC) cohort, but due to variations in methodology used and subjects examined, they are described separately in this review. All of the studies were rated positive quality. Two studies were conducted in the United Kingdom, and one study each was conducted in the United States, Korea, Iran, and Germany. The sample sizes for these studies ranged from 141 to 24,958 participants (2 studies <200, 1 study <500, 1 study <1,000, 1 study >6500, and 1 study >24,000). Four studies were conducted in children and two in adults. Five of the studies included both females and males, while one study included only girls (Noh, 2011).

The studies in this review used a range of different dietary assessment methods. Three studies used 3-day diet records (Johnson, 2008; Ambrosini, 2012; Wosje, 2010), another used a 24-hour recall and a 2-day diet record (Noh, 2011), one used an FFQ (Schulz, 2005), and one used two, 24-hour dietary recalls (Sherafat-Kazemzadeh, 2010). The studies also varied in terms of weight-related outcomes examined: Ambrosini (2012) examined fat mass index, excess adiposity, BMI, and weight status; Johnson (2008) examined fat mass, fat mass index, BMI, weight status, body fat percentage, and excess adiposity; Noh (2011) examine BMI and body fat percentage; Schulz (2005) looked at annual change in body weight; Sherafat-Kazemzadeh (2010) examined BMI, waist circumference, and waist-to-hip ratio; and Wosje (2010) examined fat mass.

The independent variables in all six studies were dietary patterns determined with reduced rank regression analysis; however, the response variables used to identify the dietary patterns differed by study. Two studies used biomarkers as response variables (Noh, 2011; Wosje, 2010), and four studies used nutrients as response variables (Ambrosini, 2012; Johnson, 2008; Schulz, 2005; Sherafat-Kazemzadeh, 2010). The response variables used and dietary patterns extracted for each study are described in more detail below:

Evidence Summary Paragraphs

Johnson, 2008 (positive quality) selected dietary energy density (DED), fiber density (FD), and percentage of energy intake from fat as response variables. Three dietary patterns were extracted from a group of children ages 5 to 9 years (a random subsample of the larger ALSPAC cohort) in the United Kingdom. Pattern 1 explained the most variation in the response variables (47 percent) at ages 5 and 7 years. Patterns 2 and 3 explained <20 percent of the variation and were not used in subsequent analyses. Pattern 1 at 5 years of age was characterized by higher intakes of lower fiber bread, crisp and savory snacks, chocolate and confectionary, high-fat milk and cream, and cheese and cheese dishes, and lower intakes of fresh fruit, vegetables, boiled or baked potatoes, high-fiber bread, and high-fiber breakfast cereal. Pattern 1 at 7 years of age was characterized by higher intakes of crisps and savory snacks, chocolate and confectionery, low-fiber bread, biscuits and cakes, processed meat, and lower intakes of fresh fruit, vegetables, high-fiber breakfast cereals, boiled or baked potatoes, and high-fiber bread.
Ambrosini (2012) conducted another study in the ALSPAC cohort, this time using data from the full cohort, collected over a longer follow-up period. Ambrosini (2012) used the same response variables (dietary energy density [DED], fiber density [FD], and percentage of energy intake from fat). Three dietary patterns were extracted from a group of children ages 7 to 15 years in the United Kingdom. Pattern 1 explained the most variation in the response variables (45 percent) at all ages. Patterns 2 and 3 explained <15 percent of the variation and were not used in subsequent analyses. Similar to the previous report, Pattern 1 was characterized by higher intakes of chocolate and confectionary, lower fiber bread, cakes and biscuits, crisps, and full-fat milk, and lower intakes of fresh fruit, raw/boiled vegetables, high-fiber breakfast cereal, boiled potatoes, and high-fiber bread.

Noh, 2011 (positive quality) selected change in BMI, change in percent body fat, change in BMC, and change in BMD as response variables. Four dietary patterns were extracted. Patterns 1 and 2 explained more variation in the response variables (14 percent) than Patterns 3 and 4, so these two patterns were used in subsequent analyses. Pattern 1 was characterized by higher intakes of eggs and rice, and lower intakes of nuts and seeds, processed meats, potatoes, and eastern grains. Pattern 2 was characterized by higher intakes of fruits, nuts and seeds, milk and dairy products, other beverages, eggs, fruit juices, and eastern grains, and lower intakes of vegetables mushrooms, and kimchi.

Schulz, 2005 (positive quality) selected the nutrient densities (g per 1 MJ) of the dietary variables total fat, total carbohydrates, and fiber as response variables. Three dietary patterns were extracted. Pattern 1 explained the most response variation (53 percent of total variation). Patterns 2 and 3 explained only 21 percent and 10 percent of the variation and were not further used in subsequent analyses. Pattern 1 included foods such as whole-grain bread, fresh fruit, fruit juices, grains, cereals, and raw vegetables.

Sherafat-Kazemzadeh, 2010 (positive quality) selected fat, polyunsaturated to saturated fat ratio, calcium, cholesterol, and fiber intake as response variables. Five dietary patterns were extracted, and all five patterns were used in subsequent analyses. Pattern 1 explained 39 percent, Pattern 2 explained 19 percent, Pattern 3 explained 13 percent, Pattern 4 explained 9 percent, and Pattern 5 explained 5 percent of total variation. Pattern 1 ("traditional pattern") included sources of hydrogenated and saturated fat, egg, red and processed meat, refined carbohydrates, vegetables, and whole grain and starchy vegetables. Pattern 2 ("fiber and PUFA pattern") included plant oils, starchy vegetables, legumes, other vegetables, salty snacks, and fruit and nuts, with negative loadings for dairy products. Pattern 3 ("fiber and dairy pattern") included fruits and vegetables, dairy, and whole grain, as well as negative loadings for plant oil and egg. Pattern 4 ("dairy pattern") included dairy, egg, and plant oil, with negative loadings for saturated and Trans fat, refined carbohydrates, vegetables, and fruit. Pattern 5 ("egg pattern") included egg, fruit, and salty snacks, with negative loadings for dairy, plant and saturated oil, and red meat.

Wosje, 2010 (positive quality) selected fat mass and bone mass as response variables. Two patterns were extracted. Pattern 1 explained 13 to 19 percent of variation in the response variables, and Pattern 2 explained 11 to 18 percent of the variation. Pattern 1 included foods such as whole grains, cheese, processed meats, eggs, fried potatoes, discretionary fats, and artificially sweetened beverages. Pattern 2 included food such as dark-green vegetables, deep-yellow vegetables, and processed meats.

Overview Table

Table 4-C-III-1. Studies examining what combinations of food intake (*assessed using reduced rank regression*) explain the most variation in risk of obesity

Study (Quality Rating) Study Design (Location)	Response Variables	Dietary Patterns Identified
Ambrosini, 2012 (Positive Quality) Prospective Cohort (ALSPAC; United Kingdom)	• Dietary energy density • Fiber density • Percentage of energy intake from fat Pattern 1 explained 45% of the variation in the response variables at all ages (7, 10 & 13 y), and over 80% of the variation in DP scores was explained by the top 5 and bottom 5 factor loadings.	Pattern 1 at all ages ("energy dense, high fat, low fiber"): (+) confectionery chocolate, low-fiber bread, biscuit and cakes, crisps, full fat milk; (-) fresh fruit, raw/boiled vegetables, high-fiber breakfast cereal, boiled potatoes, and high-fiber bread.
Johnson, 2008 (Positive Quality) Prospective Cohort (ALSPAC; United Kingdom)	• Dietary energy density • Fiber density • Percentage of energy intake from fat Pattern 1 explained 47% of the variation in the response variables at ages 5 & 7 y.	Pattern 1 at 5 y: (+) lower fiber bread, crisp and savory snacks, chocolate and confectionary, high-fat milk and cream, cheese and cheese dishes; (-) fresh fruit, vegetables, boiled or baked potatoes, high-fiber bread, high-fiber breakfast cereals Pattern 1 at 7 y: (+) crisps and savory snacks, chocolate and confectionery, low-fiber bread, biscuits and cakes, processed meat; (-) fresh fruit, vegetables, high-fiber breakfast cereals, boiled or baked potatoes, high-fiber bread
Noh, 2011 (Positive Quality) Prospective Cohort (SUN; Korea)	• Change in BMI • Change in % body fat • Change in bone mineral content • Change in bone mineral density Patterns 1 and 2 explained 14% of the variation in the response variables.	Pattern 1 ("egg and rice pattern"): higher intakes of eggs and rice, and lower intakes of nuts and seeds, processed meats, potatoes, and eastern grains Pattern 2: ("fruit, nut, milk, beverage, egg, grain pattern"): higher intakes of fruits, nuts and seeds, milk/dairy products, other beverages, eggs, fruit juices, and eastern grains, and lower intakes of vegetables mushrooms, and kimchi
Schulz, 2005 (Positive Quality) Prospective Cohort (EPIC-Potsdam; Germany)	• Total fat • Total carbohydrate • Fiber Pattern 1 explained 53% of the variation in the response variables.	Pattern 1: (+) whole-grain bread, fresh fruit, fruit juices, grains (cereals), raw vegetables; (-) processed meat, butter, high-fat cheese, margarine, meat (other than poultry)
Sherafat-Kazemzadeh, 2010 (Positive Quality) Prospective Cohort (Tehran Lipid and Glucose Study; Iran)	• Fat • Polyunsaturated to saturated fat ratio • Calcium • Cholesterol • Fiber Pattern 1 explained 39%, Pattern 2 explained 19%, Pattern 3 explained 13%, Pattern 4 explained 9%, and Pattern 5 explained 5% of total variation.	Pattern 1 ("traditional pattern"): high intake of sources of hydrogenated and saturated fat, egg, red and processed meat, refine carbohydrates, vegetables, and whole grain and starchy vegetables Pattern 2 ("fiber and PUFA pattern"): high intake of plant oils, starchy vegetables, legumes, other vegetables, salty snacks, and fruit and nuts, and low intake of dairy Pattern 3 ("fiber and dairy pattern"): high intake of fruits and vegetables, dairy, and whole grain, and low intake of plant oil and egg Pattern 4 ("dairy pattern"): high intake of dairy, egg, and plant oil, and low intake of saturated and trans fat, refined carbohydrates, vegetables, and fruit Pattern 5 ("egg pattern"): high intake of egg, fruit, and salty snacks, and low intake of dairy, plant and saturated oil, and red meat
Wosje, 2010 (Positive Quality) Prospective Cohort (United States)	• Fat mass • Bone mass Pattern 1 explained 13-19% of variation in the response variables, and Pattern 2 explained 11-18% of the variation.	Pattern 1: whole grains, cheese, processed meats, eggs, fried potatoes, discretionary fats, and artificially sweetened beverages Pattern 2: dark-green vegetables, deep-yellow vegetables, and processed meats

Key: (+) Higher intake (-) Lower intake

Assessment of the Body of Evidence

This review included six positive-quality prospective cohort studies. However, while a sufficient quantity and quality of studies were potentially available, the studies varied substantially in methodology used and populations considered, which resulted in insufficient information from which to draw conclusions about the relationship between dietary patterns derived using reduced rank regression and body weight status.

Limitations of the Evidence

Methodological Differences

- Each study used different response variables in the reduced rank regression analyses. Two studies used biomarkers as response variables. Noh (2011) used change in BMI, percent body fat, bone mineral content, and bone mineral density as response variables, and Wosje (2010) included fat and bone mass as response variables. Four studies used nutrients as response variables: Ambrosini (2012) and Johnson (2008) used dietary energy density, fiber density, and percent of energy as fat; Schulze (2005) used total fat, carbohydrate, and fiber, and Sherafat-Kazemzadeh (2010) used fat, PUFA: SFA, calcium, cholesterol, and fiber. In reduced rank regression, the dietary patterns identified are those that explain the most variation in the response variables chosen. Therefore, because the studies included in this review used different response variables, the dietary patterns derived may not be comparable.
- Different weight-related outcomes were examined across the studies. The most common outcomes considered were body mass index (Ambrosini, 2012; Johnson, 2008; Noh, 2011; Sherafat-Kazemzadeh, 2010) and fat mass or percentage (Ambrosini, 2012; Johnson, 2008; Noh, 2011; Wosje, 2010). Two studies examined incidence of overweight or obesity and excess adiposity (Ambrosini, 2012; Johnson, 2008). Only one study examined waist circumference (Serafat-Kazemzadeh, 2010). This variability made it difficult to identify themes within this body of evidence.
- Dietary assessment methods were different across the studies. Of the six studies, three used diet records (Ambrosini, 2012; Johnson, 2008; Wosje, 2010), one used 24-hour recalls (Sherafat-Kazemzadeh, 2010), another used a 24-hour recall and a diet record (Noh, 2011), and one used an FFQ (Schulz, 2005). It is unclear what impacts different dietary assessment methods have on the derivation of dietary patterns using reduced rank regression.
- The studies were not consistent in their use of confounders in analyses. In particular, physical activity was not included as a confounder in the analyses by Johnson (2008) or Noh (2011).

Population Differences

- Each study was conducted in a different country (United States, Korea, United Kingdom, Iran, and Germany) and represented populations in different regions of the world, which prevented the ability to compare and interpret the results.
- The studies were conducted with different age groups, four with children (Ambrosini, 2012; Johnson, 2008; Noh, 2011; Wosje, 2010) and two with adults (Schulz, 2005; Sherafat-Kazemzadeh, 2010). Even among the studies with children, the age groups were significantly different.

Research Recommendations

More research using reduced rank regression should be conducted. Additionally, standardization in methodology, particularly in response variables used, is needed.

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Section IV: Other Methods

By Jean M. Altman and Eve Essery Stoody

What is the relationship between adherence to dietary guidelines/recommendations or specific dietary patterns (assessed using methods other than index/score, cluster or factor, or reduced rank regression analyses) and body weight status?

TECHNICAL ABSTRACT

Background

The goal of this systematic review project is to identify patterns of food and beverage intake that promote health and prevent disease. Historically, most dietary guidance has been based on research conducted on individual food components or nutrients. Dietary patterns are defined as the quantities, proportions, variety, or combination of different foods, drinks, and nutrients (when available) in diets, and the frequency with which they are habitually consumed. Different methods of analyses are used to assess dietary patterns including index or score, cluster or factor, reduced rank regression, in addition to other methods, to exam the relationship between adherence to dietary guidelines/recommendations or specific dietary patterns of a population and outcomes of public health concern. The objective of this systematic review was to assess the relationship between patterns of food and beverage intake identified using methods other than index or score, factor or cluster, or reduced rank analyses, and body weight.

Conclusion Statement

There is moderate evidence that adherence to a dietary pattern that emphasizes vegetables, fruits, and whole grains is associated with modest benefits in preventing weight gain or promoting weight loss in adults. (Grade: II-Moderate)

Methods

Literature searches were conducted using PubMed, Embase, Navigator (BIOSIS, CAB Abstracts, and Food Science and Technology Abstracts), and Cochrane databases to identify studies that evaluated the association between dietary patterns defined using methods other than index factor or cluster analysis and body weight status. Studies that met the following criteria were included in the review: conducted in subjects aged 2 to 18 years; randomized controlled trials, non-randomized controlled trials, or quasi-experimental studies; subjects from countries with high or very high human development (based on the 2011 Human Development Index); subjects who were healthy or at elevated chronic disease risk; published in English in a peer-reviewed journal. The date range was unlimited.

The results of each included study were summarized in evidence worksheets (including a study quality rating) and an evidence table. A group of subject matter experts were involved in a qualitative synthesis of the body of evidence, development of a conclusion statement, and assessment of the strength of the evidence (grade) using pre-established criteria including evaluation of the quality, quantity, consistency, magnitude of effect, and generalizability of available evidence.

Findings

- The Women's Health Initiative (WHI), Mediterranean, Vegetarian, and "Healthy" dietary patterns were associated with beneficial body weight outcomes. These dietary patterns consistently emphasized fruits, vegetables, and whole grains. Fewer studies considered, but consistently observed benefits, with reduced meat intake. Some studies also considered total fat intake; these studies did not support that targeting a low total fat intake is required for weight loss or stability.
- Studies included in this review were short to moderate in duration, and individuals with greater adherence to the plant-based dietary pattern experienced better body weight outcomes.

- Additional research is needed to quantify the amounts of food groups that are beneficial to consume, but, in general, movement to a dietary pattern with more plant foods and less meat is favorable related to body weight status.

Discussion

The ability to draw strong conclusions was limited due to the following issues:

- Five of the seven studies included in this review assessed dietary intake using food frequency questionnaires. Additionally, one study assessed dietary patterns by using a simple series of questions. These dietary assessment methodologies have measurement error and also prevent sufficient quantification of dietary intake.
- The studies did not consistently consider or report calorie intake and/or energy expenditure, which are important to consider when examining body weight status.

PLAIN LANGUAGE SUMMARY

Do the amounts, types, variety, or combinations of foods and beverages people frequently eat and drink affect body weight?

In the past, researchers looked at the relationship between individual foods and nutrients and health. Today, there is interest in looking at how combinations of foods and beverages, or dietary patterns, impact health. This summary of a NEL review presents what we know about different healthy eating patterns and the amounts, variety, or combination of different foods and drinks, and how often they are eaten affect body weight.

Conclusion

There is moderate evidence that adherence to a dietary pattern that emphasizes vegetables, fruits, and whole grains is associated with modest benefits in preventing weight gain or promoting weight loss in adults.

What the Research Says

- Of the seven studies in the review, the Women's Health Initiative (WHI), Mediterranean, Vegetarian, and "Healthy" dietary patterns were found to be favorable to body weight outcomes. These healthy dietary patterns consistently included fruits, vegetables, and whole grains. A few studies found that eating less meat helped with body weight. Some studies also looked at the effect of total fat in the diet but found that eating a low-fat diet is not required for weight loss or to prevent weight gain.
- Studies included in this review were short to moderate in length, and persons who closely followed a dietary pattern containing mostly plant-based food had better body weight outcomes.
- More research is needed to find out the exact amounts of food groups that are good to consume. In the mean time, eating a dietary pattern that contains more plant foods and less meat is better for body weight status.

EVIDENCE PORTFOLIO

Conclusion Statement

There is moderate evidence that adherence to a dietary pattern that emphasizes vegetables, fruits, and whole grains is associated with modest benefits in preventing weight gain or promoting weight loss in adults.

Grade

II – Moderate

Key Findings

- The Women's Health Initiative (WHI), Mediterranean, Vegetarian, and "Healthy" dietary patterns were associated with beneficial body weight outcomes. These dietary patterns consistently emphasized fruits, vegetables, and whole grains. Fewer studies considered, but consistently observed benefits, with reduced meat intake. Some studies also considered total fat intake; these studies did not support that targeting a low total fat intake is required for weight loss or stability.
- Studies included in this review were short to moderate in duration, and individuals with greater adherence to the plant-based dietary pattern experienced better body weight outcomes.
- Additional research is needed to quantify the amounts of food groups that are beneficial to consume, but, in general, movement to a dietary pattern with more plant foods and less meat is favorable related to body weight status.

Evidence Summary Overview

Description of the Evidence:

Four randomized controlled trials (Blumenthal, 2010; Carty, 2011; Esposito, 2004; Howard, 2006) and three prospective cohort studies (Pachucki, 2011; Romaguera, 2011; Rosell, 2006) were included in this review. All seven studies received a positive quality rating, and one was rated neutral. Four studies were conducted in the United States, one in the United Kingeom, one in Italy, and one in five European countries (Italy, United Kingdom, Netherlands, Germany, and Denmark). The sample sizes for the randomized controlled trials ranged from 140 to 46,808 participants, and the prospective cohort studies had sample sizes of 2,437 to 48,631 participants (in total, 2 studies <200, 2 studies <5,000, 1 study <25,000, and 2 studies >45,000). All seven studies were conducted in adults. Five studies included men and women, and two studies included only postmenopausal women. The duration of the randomized controlled trials ranged from 4 months to 7.5 years, and the duration of the prospective cohort studies ranged from 5.3 years to 10 years (in total, 1 study <1 year, 1 study = 2 years, 3 studies ≤6 years, 2 studies ≤10 years).

Dietary patterns examined:
The dietary patterns examined in the randomized controlled trials were the Dietary Approaches to Stop Hypertension (DASH) diet, a Mediterranean diet, and the low-fat dietary pattern from the Women's Health Initiative (WHI) Dietary Modification (DM) trial (2 studies). In these studies, the dietary intake of the participants was assessed, and the participants receiving the intervention modified their diets in the direction of the dietary pattern of interest. The diets examined in the prospective cohort studies were vegetarian, a generally healthy pattern, and a variety of empirically derived patterns ranging in healthfulness according to their scoring on the Dietary Guidelines Adherence Index (DGAI). Two of the prospective cohort studies also examined the change in dietary patterns among participants over time (Pachucki, 2011; Rosell, 2006). Table 4-A-IV-2 provides an overview of the study characteristics and provides a description of the dietary patterns examined in the studies.

Dietary assessment:

- Five studies in this review assessed dietary intake using FFQs. All of the FFQs were validated, and three studies used FFQs specific for the research study (Carty, 2011; Howard, 2006; Romaguera, 2011). One study supplemented their FFQ with 4-day food diaries (Blumenthal, 2010).
- One study assessed dietary intake using weekly diet diaries and assessed dietary adherence using 3-day food records (Esposito, 2004).
- One study categorized dietary intake based on responses to four 'Yes/No' questions asking participants if they consumed meat, fish, eggs, or dairy products (Rosell, 2006).

Outcomes considered:

- Five studies examined change in body weight, and four studies examined change in BMI. In four of these studies, height and body weight were measured by study personnel. One study used self-reported height and weight (Rosell, 2006); however, they conducted a validity study and found self-reported and measured height and weight to be highly correlated (r>0.09).
- Three studies considered waist circumference. In all of these studies, baseline WC was measured by study personnel. In one study, WC at follow-up was self-reported (Romaguera, 2011); however, they conducted a

validity study and found that self-reported WC could be used as a proxy for measured WC if adjustments were made in analyses.
- Two studies assessed change in percent body fat. Both of these studies assessed body fat using DXA.
- One study examined incidence of overweight and obesity, and height and weight were measured by study personnel in this cohort.

Themes

This body of evidence included a diverse group of studies that varied in the methodologies used and the dietary patterns considered. The randomized controlled trials examined the Women's Health Initiative (WHI)–Dietary Modification (DM) (Howard, 2006; Carty, 2011), the DASH pattern (Blumenthal, 2010), and a Mediterranean pattern (Esposito, 2004). The prospective cohort studies examined Vegetarian diets (Rosell, 2006), a "generally healthy" pattern (Romaguera, 2011), and seven empirically derived dietary patterns ranging in healthfulness based on the Dietary Guidelines Adherence Index (Pachucki, 2011). All of the patterns associated with beneficial body weight outcomes emphasized plant foods, particularly vegetables, fruit, and whole grains. The remaining features of the dietary patterns varied.

Total fat intake was considered in all four of the randomized controlled trials included in this review but was not assessed in the analyses of the three prospective cohort studies. Three articles studied patterns that were designed to be low in fat. One of the goals of the WHI-DM trial was to reduce fat intake to 20 percent (Howard, 2006; Carty, 2011). However, while energy from fat decreased ~8 percent from approximately 39 percent at baseline, this goal was not reached; yet beneficial outcomes related to body weight were observed. The DASH study was also low in total fat (≤25 percent of energy intake), but there was no significant effect of this diet alone on weight status; only the group that combined the DASH diet with calorie restriction experienced weight loss greater than the control group. Finally, Esposito and colleagues (2004) examined a Mediterranean dietary pattern that promoted moderate fat intake (<30 percent total fat and <10 percent saturated fat) as well as olive oil and walnut consumption and found reduced body weight, BMI, and WC compared to the controls. Overall, the body of evidence did not support that a dietary pattern must be low in fat to promote weight loss or stability.

Meat intake was considered in the three prospective cohort studies but not specifically in the four randomized controlled trials. Pachucki et al. (2011) and Rosell et al. (2006) associated increased meat intake with greater weight gain, and less meat intake with more favorable body weight outcomes. Rosell et al. (2006) also reported that mean annual weight gains were lowest among individuals who moved toward eating a vegan diet. Romaguera et al. (2011) indicated that a diet lower in processed meat intake was associated with less abdominal obesity. Overall, these observational studies indicated a benefit to reducing meat intake.

The studies in this review ranged in duration from 4 months to 10 years. The 4-month DASH intervention trial included two study arms: one isocaloric and one with a caloric restriction of 500 kcal/d (Blumenthal, 2010). Over the intervention period, the DASH diet alone did not result in significant weight loss compared to the control group. However, the group with calorie restriction did. The longer term RCTs that examined the WHI-DM (Howard, 2006; Carty, 2011) and Mediterranean (Esposito, 2004) patterns observed favorable body weight outcomes over time compared to controls. Further, Howard et al. (2006) reported that greater adherence to the WHI-DM resulted in better body weight outcomes. Esposito et al. (2004) observed decreased body weight, BMI, and WC in participants consuming a Mediterranean diet compared to those consuming a control diet over the 2-year trial. The prospective cohort trials were 5.3, 5.5, and 10 years in duration and all of these studies indicated beneficial body weight outcomes when adhering to a healthier dietary pattern or converting to a healthier dietary pattern over time.

Table 4-A-IV-1 Summary of Findings

Related to the conclusion that increased adherence to a plant-based dietary pattern is associated with more favorable body weight outcomes over time

Study/ Dietary Pattern	Body Weight	Body Mass Index	Waist Circumference	Percent Body Fat	Incidence of Overweight or Obesity
Howard 2006/ WHI-DM	(+)*	(+)*	(+)*		
Carty 2011/ WHI-DM				(+)	
Blumenthal 2010/ DASH	(∅) DASH-alone (+) DASH with calorie restriction			(∅) DASH-alone (+) DASH with calorie restriction	
Esposito 2004/ Mediterranean	(+)	(+)	(+)		
Pachucki 2011/ Seven empirically derived dietary patterns ranging in healthfulness					(+)**
Romaguera 2011/ "Generally healthy"			(+)		
Rosell 2006/ Vegetarian	(+)***	(∅)			

* WHI-DM resulted in less body weight/WC gain than experienced by the control group.
** Participants who moved on an "unhealthy" eating trajectory over the 10 years were more likely to be overweight and obese.
*** The most beneficial results were observed in vegans, fish-eaters, and those who moved toward a vegan eating pattern over the 5.3 year study.

Qualitative Assessment of the Body of Evidence

Quality and Quantity

Although the methodologies and dietary patterns considered in these studies differed, this review included several high-quality, large studies. Four randomized controlled trials (Blumenthal, 2010; Carty, 2011; Esposito, 2004; Howard, 2006) and three prospective cohort studies (Pachucki, 2011; Romaguera, 2011; Rosell, 2006) were included in this review. Six of the seven studies received a positive quality rating, and one was rated neutral. The sample sizes for the randomized controlled trials ranged from 140 to 46,808 participants, and the prospective cohort studies had sample sizes of 2,437 to 48,631 participants (in total, 2 studies <200, 2 studies <5,000, 1 study <25,000, and 2 studies >45,000). All seven studies were conducted in adults.

Consistency

Various dietary patterns were considered in this review. Additionally, various measures of body weight status were considered as outcomes. However, overall, there was a general trend for the dietary patterns to be categorized as plant-based patterns, emphasizing vegetables, fruits, and whole grains, with lesser emphasis on meat. There was also a general trend that adherence to a plant-based dietary pattern was associated with better weight outcomes, either greater weight loss or less weight gain, over time compared to controls.

Impact

Few studies provided quantitative intake data on the food groups consumed within these patterns. For example, for vegetables and fruits, the WHI, DASH, and Mediterranean diet studies recommended at least 5 servings, 9-12 servings, and a minimum of approximately 1.5 servings (converting from grams) per day, respectively. The WHI reported the intervention group maintained 5 servings at the end of the 2-year study and the Mediterranean diet trial achieved approximately 2-4 servings per day. While more research is needed, to quantify the amount of food groups that should be consumed, it appears that at least several servings per day should be emphasized. However, it should be noted that in the prospective cohort studies by Pachucki et al. (2011) and Rosell et al. (2006), movement to a healthier dietary pattern over time was associated with better body weight outcomes.

Generalizability/External Validity

All of the studies cited were conducted in middle-aged or older adults, with a predominance of women participants. Although one study had a substantial portion of African Americans, the remaining studies were predominantly Caucasian or conducted in Europe (presumed predominantly Caucasian). Subsequently, the conclusion for this review is limited to adults only, and additional research should be conducted to examine if and how gender and ethnicity might influence the relationship between dietary patterns and body weight status.

Limitations

- Five of the seven studies included in this review assessed dietary intake using FFQs. Additionally, one study assessed dietary patterns by using a simple series of questions. These dietary assessment methodologies have measurement error and also prevent sufficient quantification of dietary intake.
- The studies did not consistently consider or report calorie intake and/or energy expenditure, which are important to consider when examining body weight status.

Table 4-A-IV-2. Overview Table: Body Weight Status

Citation Quality Rating Study Design Location Duration Study/Cohort	Sample Size Age Gender	Dietary Pattern Overview	Results: Body Weight Body Mass Index Waist Circumference Percent Body Fat Incidence of Overweight/Obesity
Howard et al., 2006 Positive Randomized Controlled Trial U.S. 7.5 y Women's Health Initiative (WHI) Dietary Modification (DM) Trial	N = 46,808 62.3 y 100% Female (postmenopausal)	Low-fat dietary pattern Dietary goals: Reduce total dietary fat to 20% and increase intake of vegetables and fruit to 5 or more servings and grains (whole grains encouraged) to 6 or more servings daily; intervention did not encourage weight loss or caloric reduction.	Body Weight: Intervention group lost weight in the first year (mean of 2.2 kg, P<0.001) and maintained lower weight than control women during an average 7.5 y of follow-up (difference at 1 y = 1.9 kg, P<0.001 and at 7.5 y = 0.4 kg, P=0.01). No tendency toward weight gain was observed in intervention group women overall or when stratified by age, ethnicity, or body mass index. Weight loss was greatest among women in either group who decreased their percentage of energy from fat (P for trend < 0.001 in both groups in models adjusting for baseline energy intake). A similar but lesser trend was observed with increases in vegetable and fruit servings (P for trend = 0.005 and 0.02 for intervention and control, respectively, in models adjusting for baseline energy intake), and a nonsignificant trend toward weight loss occurred with increasing intake of fiber. BMI: Increases occurred in both groups, but were less in the intervention group. Change in BMI, kg/m^2: Intervention = 0.03 (3.2) Control = 0.3 (3.1); P<0.001 WC: Slight increases occurred in both groups, but were less in the intervention group. Change in WC, cm: Intervention = 1.6 (8.6) Control = 1.9 (8.8); P=0.04
Carty et al., 2011 Positive Randomized Controlled Trial U.S. 6 y Women's Health Initiative (WHI) Dietary Modification (DM) Trial	N = 3,053 62 y 100% Female (postmenopausal)	Low-fat dietary pattern Dietary goals: Reduce total dietary fat to 20% and increase intake of vegetables and fruit to 5 or more servings and grains (whole grains encouraged) to 6 or more servings daily; intervention did not encourage weight loss or caloric reduction.	Percent Body Fat: Overall, the intervention was associated with reductions in % body fat (-0.8%; 95% CI = -1.0 to -0.6%), fat mass (-1.1 kg; 95% CI = -1.3 to -0.8 kg), and lean mass (-0.17 kg; 95% CI = -0.28 to -0.06 kg) during follow-up (all P-values <0.003). Baseline to year 1: % body fat decreased in both groups, but the intervention group lost significantly more (P<0.001). Baseline to year 3: Women in the intervention group lost % body fat; women in the control group gained % body fat. The difference was modest (<1%) but significant (P<0.0001). Baseline to year 6: % body fat increased in both groups; women in intervention group gained slightly less, but their change from baseline was no longer significantly different from the change observed by the control group (P=0.057).

Table 4-A-IV-2. Overview Table: Body Weight Status—continued

Citation Quality Rating Study Design Location Duration Study/Cohort	Sample Size Age Gender	Dietary Pattern Overview	Results: Body Weight Body Mass Index Waist Circumference Percent Body Fat Incidence of Overweight/Obesity
			Fat mass changes from baseline followed patterns similar to those for percentage body fat; the largest differences were observed during the first year of follow-up, with women in the intervention group losing 1.72 (0.12) kg more than women in the control group. Lean mass decreased in both groups during follow-up, with women in the intervention group losing significantly more in year 1 (P=0.004) and 3 (P=0.038), but not in year 6 (P=0.076). Changes in total % body fat and fat mass associated with the intervention significantly varied by self-reported race-ethnicity (P<0.01 for both groups) and treated diabetes status (P<0.01 and P=0.04, respectively). Significant decreases in % body fat and fat mass were observed in (1) White women, but not in Black or Hispanic women, and (2) women without treated diabetes, but not in women with treated diabetes.
Blumenthal et al., 2010 Positive Randomized Controlled Trial U.S. 4 mo ENCORE Study	N = 140 52 y 67% Female	Dietary Approaches to Stop Hypertension (DASH) pattern Dietary goals were modeled after the original DASH feeding studies and included: Increase intake of fruits and vegetables (9-12 serv/d) and low-fat dairy products (2-3 serv/d); reduce intake of saturated fat (≤7% of energy) and total fat (≤25% energy); daily intake of no more than 100 mEq of dietary sodium; and daily intake of 1 oz or less of alcohol (2 drinks) for men and ½ oz (1 drink) for women. Study included two arms with the DASH pattern: (1) isocaloric (DASH-A) and (2) caloric restriction of 500 kcal/d (DASH-DM).	Body Weight: At follow-up, the mean weight for the DASH-WM group was significantly lower (84.5 kg) compared to DASH-A (92.9 kg; P<0.001) and to controls (94.1 kg; P<0.001). The weight change was −8.7 kg in DASH-WM, −0.3 kg in DASH-A, and +0.9 kg in controls. Percent Body Fat: DASH-WM group had significantly lower % body fat (33.1%) and trunk fat (13.6 kg) compared to DASH-A (36.2%; 16.6 kg) and controls (36.9%; 17.1 kg) (all P-values <0.001). DASH-WM had lower lean body mass (54.3 kg) compared to the DASH-A (56.8 kg) and controls (56.5 kg) (all P-values <0.001). DASH-A did not differ significantly from controls on any body composition measure.
Esposito et al., 2004 Positive Randomized Controlled Trial Italy 2 y	N = 164 43.9 y 45% Female	Mediterranean dietary pattern Dietary goals: 50-60% carbohydrate, 15-20% protein, <30% total fat, <10% sat fat, <300 mg cholesterol; at least 250 to 300 g of fruits (1 to 1.3 cups[1]), 125 to 150 g of vegetables (0.5 to 0.65 cups), 25 to 50 g of walnuts (1.75 to 3.5 Tbsp), and 400 g of whole grains (14 oz; including legumes) daily, and increase olive oil consumption.	Body Weight: Body weight decreased more in intervention group (−4.0 [1.1] kg) than in control group (−1.2 [0.6] kg) (P<0.001). BMI: BMI decreased more in intervention group (-1.2 [0.3] kg/m^2) than in control group (-0.4 [0.4] kg/m^2) (P=0.01). WC: WC decreased more in intervention group (-2 [0.5] cm) than in control group (0 [0.01] cm) (P=0.01).

[1] The volumes listed are approximations and will depend on the actual food consumed.

Table 4-A-IV-2. Overview Table: Body Weight Status—continued

Citation Quality Rating Study Design Location Duration Study/Cohort	Sample Size Age Gender	Dietary Pattern Overview	Results: Body Weight Body Mass Index Waist Circumference Percent Body Fat Incidence of Overweight/Obesity
Pachucki et al., 2011 Positive Prospective Cohort Study U.S. 10 y Offspring Cohort of the Framingham Heart study	N = 2,437 54 y 53% Female	Empirically derived dietary patterns 7 empirically derived dietary patterns were created in this study using factor and cluster analyses and cross-classified with the Dietary Guidelines Adherence Index (DGAI) score (score range was 1-20; listed below from most to least "healthy"). 'Healthier': 11.95 (1.94) 'Offsetting': 9.67 (2.28) 'Caffeine-avoidant': DGAI=9.41 (2.41) 'Light': DGAI=8.36 (1.89) 'Alcohol and snacks': DGAI=8.31 (2.24) 'Sweets': DGAI=8.03 (2.27) 'Meat and soda': DGAI=7.29 (2.11)	Body Weight: No group lost weight. 'Healthful' trajectory gained 0.56 (2.37) kg 'No change' trajectory gained 0.67 (2.4) kg 'Mixed' trajectory gained 0.75 (2.22) kg 'Unhealthy' trajectory gained 1.03 (2.39) kg BMI: 'Unhealthy' trajectory associated with 0.42 kg/m^2 increase in BMI (CI = 0.1 to 0.7). Incidence of Overweight/Obesity: Those with 'unhealthful' trajectory were 1.79 times more likely to be overweight (relative risk ratio; 95% CI = 1.1 to 2.8) and 2.4 times more likely to be obese (RR; 95% CI = 1.3 to 4.4).
Romaguera et al., 2011 Positive Prospective Cohort Study Italy, U.K., Netherlands, Germany, Denmark 5.5 y European Prospective Investigation into Cancer and Nutrition (EPIC) study; DiOGenes (Diet, Obesity and Genes) project	N = 48,631 ≤ 60 y 60% Female	Generally healthy pattern A summary dietary pattern score was constructed for this study which included food groups/items significantly associated with the outcome of interest (ΔWC_{BMI}). Six food groups/items were included in the score: fruit, dairy, white bread, processed meat, margarine, and soft drinks. Participants within the 1st, 2nd, and 3rd sex-specific tertile of fruit and dairy consumption were given 0, 1, and 2 points, respectively; participants within the 1st, 2nd, and 3rd sex-specific tertile of white bread, processed meat, margarine, and soft drinks were given 2, 1, and 0 points, respectively. The overall score range was 0-12 points. A higher score represented a diet rich in fruit and dairy and low in white bread, processed meat, margarine, and soft drinks.	WC: Those in the first quartile of the score—indicating a more favorable dietary pattern—showed a ΔWC_{BMI} of -0.05 (95% CI: -0.03 to -0.07), -0.07 (95% CI: -0.05 to -0.09), and -0.11 (95% CI: -0.09 to -0.14) cm/yr compared to those in second, third, and fourth quartiles, respectively.

Table 4-A-IV-2. Overview Table: Body Weight Status—continued

Citation Quality Rating Study Design Location Duration Study/Cohort	Sample Size Age Gender	Dietary Pattern Overview	Results: Body Weight Body Mass Index Waist Circumference Percent Body Fat Incidence of Overweight/Obesity
Rosell et al., 2006 Positive Prospective Cohort Study U.K. 5.3 y European Prospective Investigation into Cancer and Nutrition (EPIC) study; DiOGenes (Diet, Obesity and Genes) project	N = 21,966 20–69 y 76% Female	Vegetarian patterns Participants were asked four questions at baseline and follow-up and categorized into dietary pattern groups based on their responses: • 'Do you eat any meat (incl bacon, ham, poultry, game, meat pies, sausages)? (Yes/No)' • 'Do you eat any fish? (Yes/No)' • 'Do you eat any eggs? (Yes/No)' • 'Do you eat any dairy products (including milk, cheese, butter, yogurt)? (Yes/No)' Meat-eater (subjects ate meat at baseline and follow-up), fish-eater (subjects did not eat meat but ate fish), vegetarian (subjects did not eat meat or fish but ate eggs and/or dairy products), vegan (subjects did not eat any food of animal origin), reverted (subjects who during follow-up had changed their diet in one or more steps in the direction vegan>vegetarian>fish-eater>meat-eater), or converted (subjects who changed their diet in one or more steps in the opposite direction).	Body Weight: Annual weight gain = 0.39 (0.88) kg in men and 0.40 (0.89) kg in women. Compared with meat-eaters, mean annual weight gain was lower in vegans (0.28 kg in men and 0.30 kg in women, P<0.05 for both sexes) and fish-eaters (0.34 kg, women only, P<0.001). The lowest mean annual weight gains were seen in men and women classified as converted (0.24 kg in men and 0.30 kg in women, P<0.001 for both sexes), in whom the mean annual weight gain was 40 and 29% smaller, respectively, compared with the mean annual weight gain in meat-eaters. The highest weight gains were seen in men and women classified as reverted, but these values were not significantly different from the mean weight gains in meat-eaters. BMI: Mean age-adjusted annual increases in BMI in meat-eaters, fish-eaters, vegetarians, and vegans were 0.12, 0.12, 0.12, and 0.10 kg/m^2 in men (P for heterogeneity = 0.556), and 0.15, 0.12, 0.15, and 0.12 kg/m^2 in women (P for heterogeneity = 0.017), respectively.

Research Recommendations

- Additional research is needed to specify dietary patterns, particularly the quantity of different food and beverages that should be consumed.
- Studies, particularly randomized controlled trials, are needed that include several dietary patterns so that dietary patterns can be compared within, in addition to between, studies to determine the optimal dietary pattern, or the consistent components across dietary patterns, that are most beneficial related to body weight status.

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Chapter 4-B. **The Relationship Between Dietary Patterns and Risk of Cardiovascular Disease**

Section I: Index Analysis

By Mary M. McGrane and Joan Lyon

What is the relationship between adherence to dietary guidelines/recommendations or specific dietary patterns, *assessed using an index or score*, and risk of cardiovascular disease?

TECHNICAL ABSTRACT

Background

The goal of this systematic review project was to identify dietary patterns of food and beverage intake that promote health and prevent disease. Historically, most dietary guidance has been based on research conducted on individual food components or nutrients. Dietary patterns are defined as the quantities, proportions, variety, or combination of different foods, drinks, and nutrients in diets, and the frequency with which they are habitually consumed. The objective of this systematic review was to assess the relationship between adherence to an *a priori* score and risk of cardiovascular disease. An *a priori* score measures the degree of adherence to specific dietary guidelines or adherence to a healthy diet defined by scientific evidence on diet and disease. *A priori* scores are composite numeric scores of foods, food components, and/or nutrients that are assessed as dichotomous variables (with predefined cut-points), ordinal variables such as quintiles, or as continuous variables. The individual components are summed to derive a total score.

Conclusion Statement

There is strong and consistent evidence that in healthy adults increased adherence to dietary patterns scoring high in fruits, vegetables, whole grains, nuts, legumes, unsaturated oils, low-fat dairy, poultry and fish; low in red and processed meat, high-fat dairy, and added sugars; and moderate in alcohol is associated with decreased risk of fatal and non-fatal cardiovascular diseases, including coronary heart disease and stroke. (Grade I: Strong)

Methods

Literature searches were conducted using PubMed, Embase, (BIOSIS, CAB Abstracts, and Food Science and Technology Abstracts), and Cochrane databases to identify studies that evaluated the association between dietary patterns (using an *a priori* index or score) and risk of cardiovascular disease. Studies that met the following criteria were included in the review: randomized controlled trials, non-randomized controlled trials, or prospective cohort studies; subjects aged 2 to 18 years; subjects who were healthy or at elevated chronic disease risk; subjects from countries with high or very high human development (2011 Human Development Index); and published in English in peer-reviewed journals. The date range was unlimited. Diet exposure was assessed by adherence to a hypothesis-based dietary pattern, defined using a numerical scoring system.

A group of technical experts were involved in a qualitative synthesis of the body of evidence, development of a conclusion statement, and assessment of the strength of the evidence (grade) using pre-established criteria including evaluation of the quality, quantity, consistency, magnitude of effect, and generalizability of available evidence.

Findings

- A total of 55 studies met the inclusion criteria for this systematic review and the body of evidence consisted

primarily of large prospective cohort studies. These studies had large, relatively homogeneous populations of generally healthy adults, with long follow-up times.

- The majority of studies that assessed CVD incidence or mortality reported a favorable association between increased adherence to a dietary pattern and risk of CVD. The decrease in risk of CVD ranged from 22 to 59 percent for increased adherence to a Mediterranean dietary pattern and from 20 to 44 percent for increased adherence to a dietary guidelines-related pattern.
- In studies that examined CVD mortality secondary to total mortality, there were mixed results for favorable and null associations.
- The majority of studies that assessed CHD incidence or mortality reported a favorable association between adherence to a dietary pattern and CHD risk. The decreased risk of CHD ranged from 29 to 61 percent for increased adherence to a Mediterranean dietary pattern, from 24 to 31 percent for increased adherence to a dietary guidelines-related pattern, and from 14 to 27 percent for adherence to DASH.
- The majority of studies that assessed stroke incidence or mortality reported a favorable association between adherence to a dietary pattern and stroke risk. The decreased risk of stroke ranged from 13 to 53 percent for increased adherence to a Mediterranean dietary pattern and from 14 to 60 percent for increased adherence to a dietary guidelines-related pattern.
- A smaller number of studies examined intermediate, secondary outcomes, and other individual clinical endpoint outcomes with mixed results.

Discussion

The preponderance of evidence from studies carried out in large, well-characterized prospective cohorts from the United States, Europe, Japan, and Australia showed that an increase in a Mediterranean diet score or dietary guidelines-related score was associated with decreased risk of fatal and non-fatal CVD, defined as coronary heart disease (CHD) and stroke, as well as decreased risk of CHD and stroke as individual clinical outcomes. Scores that were most frequently associated with decreased risk of CVD, CHD, or stroke were the original Mediterranean Diet Score (MDS), the Alternate Mediterranean Diet Score (aMed), the Healthy Eating Index (HEI)-2005, the Alternate HEI (AHEI) and updated AHEI-2010, the Recommended Food Score (RFS), and a DASH score. Positive food components of scores that were associated with decreased CVD risk were fruits, vegetables, whole grains, nuts, legumes, unsaturated fats, and fish. Alcohol was included as a positive component when consumed in moderation, but not in all scores. Red and processed meats were negative components in the Mediterranean scores, AHEI scores, and DASH; whereas, poultry was included as a positive component in the original AHEI and RFS scores. Total high-fat dairy was a negative component in the MDS, but dairy was a positive component when meeting recommended intakes for the HEI-2005 or as low-fat dairy in the RFS and DASH scores. Certain scores also included sugars or sugar-sweetened beverages as negative components.

Limitations in this body of evidence were the use of different scores and differences between scores based on median population intakes versus recommended intakes. However, in this relatively large body of evidence, a limited number of scores were predictive of risk, oftentimes less complicated versions of these scores, and in some studies different scores were tested in the same cohorts, making comparisons across these scores feasible.

PLAIN LANGUAGE SUMMARY

Is adherence to dietary guidelines or specific dietary patterns, assessed by a predetermined score, related to the likelihood of developing cardiovascular disease?

In the past, researchers looked at the relationship between individual foods and nutrients and health. Today, there is interest in looking at how combinations of foods and beverages, or dietary patterns, impact health. Many researchers use a score to measure how well individuals follow specific dietary guidance or a healthy diet. These are numeric scores of foods, food components, and/or nutrients and the individual components are summed to derive a total score for a dietary pattern. This summary of a NEL review presents what we know about dietary patterns, assessed using a score, and the likelihood of developing cardiovascular disease.

Conclusion

There is strong and consistent evidence that in healthy adults increased adherence to dietary patterns scoring high in fruits, vegetables, whole grains, nuts, legumes, unsaturated oils, low-fat dairy, poultry and fish; low in red and processed meat, high-fat dairy, and added sugars; and moderate in alcohol is associated with decreased risk of fatal and non-fatal cardiovascular diseases, including coronary heart disease and stroke.

What the Research Says

- Results from this review tell us that consuming a Mediterranean-style dietary pattern or dietary guidelines-related pattern may prevent people from getting cardiovascular diseases.
- These studies show that consuming a diet that scores high in fruits, vegetables, whole grains, nuts, legumes, unsaturated oils, low-fat dairy, poultry and fish; low in red and processed meat, high-fat dairy, and added sugars; and moderate in alcohol may decrease risk of fatal and non-fatal cardiovascular diseases, including coronary heart disease and stroke.

EVIDENCE PORTFOLIO

Conclusion Statement

There is strong and consistent evidence that in healthy adults increased adherence to dietary patterns scoring high in fruits, vegetables, whole grains, nuts, legumes, unsaturated oils, low-fat dairy, poultry and fish; low in red and processed meat, high-fat dairy, and added sugars; and moderate in alcohol is associated with decreased risk of fatal and non-fatal cardiovascular diseases, including coronary heart disease and stroke.

Grade

I – Strong

Key Findings:

- Three major categories of dietary pattern scores were identified related to cardiovascular disease (CVD) risk: dietary exposure based on adherence to (1) a Mediterranean dietary pattern, (2) dietary guidelines recommendations, or (3) a DASH diet.
- The preponderance of the evidence from studies carried out in large, well-characterized prospective cohorts from the United States, Europe, Japan, and Australia showed that, in healthy adults, an increase in a Mediterranean diet score or dietary guidelines-related score was associated with decreased risk of fatal and non-fatal CVD, defined as coronary heart disease (CHD) and stroke, as well as decreased risk of CHD and stroke as individual clinical outcomes. Fewer studies assessed the association between adherence to a DASH diet and CVD, CHD, or stroke outcomes, using an index or score, and their findings were inconsistent.
- Scores that were most frequently associated with decreased risk of CVD, CHD, or stroke, in categorical comparisons of adherence, were the original Mediterranean Diet Score (MDS), the Alternate Mediterranean Diet Score (aMed), the Healthy Eating Index (HEI)-2005, the Alternate HEI (AHEI) and updated AHEI-2010, the Recommended Food Score (RFS), and one of the DASH scores.
- Positive food components of scores that were associated with decreased CVD risk were fruits, vegetables, whole grains, nuts, legumes, unsaturated fats, and fish. Alcohol was included as a positive component when consumed in moderation, but not in all scores. Red and processed meats were negative components in the Mediterranean scores, AHEI scores, and DASH; whereas, poultry was included as a positive component in the original AHEI and RFS scores. Total high-fat dairy was a negative component in the MDS, but dairy was a positive component when meeting recommended intakes for the HEI-2005 or as low-fat dairy in the RFS and DASH scores. Certain scores also included sugars or sugar-sweetened beverages as negative components.

- Studies that assessed the association between *individual* food components of scores and CVD risk were consistent with the identified food components from comparisons across predictive scores.
- A smaller number of studies examined intermediate, secondary outcomes and other individual clinical endpoints outcomes with mixed results.

Evidence Summary Overview

Description of the Evidence

A total of 55 studies met the inclusion criteria for this systematic review on dietary patterns and incident cardiovascular disease (CVD) outcomes. The body of evidence consisted primarily of prospective cohort studies; 52 studies were prospective cohort studies and the remaining studies were randomized controlled trials (RCTs). In terms of study quality, 46 of the studies were of positive quality and 9 were of neutral quality. The studies were carried out between the years 2000 and 2013. The sample sizes of the RCTs were from 187 to 7,447 subjects. The sample sizes of prospective cohort studies ranged from 373 to as many as 380,296 participants (3 studies <1,000, 16 studies >1,000, 29 studies >10,000, and 4 studies >100,000). RCT duration ranged from 3 months to 4.8 years and prospective cohort study follow-up times ranged from 2 to 40 years. Several of the prospective cohort studies were of long duration, with 7 studies with greater than 20 years follow-up. The majority of these studies measured hard clinical endpoint outcomes.

Population: The prospective cohort studies were primary prevention studies of general populations and most studies were conducted with healthy adults who were free of CVD, coronary heart disease (CHD), hypertension (HTN), or diabetes. However, a few studies included participants with chronic diseases such as CVD, HTN, or diabetes, within a larger cohort of otherwise healthy individuals (Akbaraly, 2011; Kant, 2000; Nilsson, 2012; Russell, 2012; Tognon, 2012). The three RCTs were conducted in adults with elevated chronic disease risk: two studies reported on the Prevencion con Dieta Mediterranea (PREDIMED) trial of older adults at increased CVD risks (Estruch, 2006 and 2013) and one study reported on men with metabolic syndrome (Jacobs, 2009). In prospective cohort studies with adult participants, age ranges spanned from 18 to 97 years. Two studies focused on young adults with an age range of 18 to 30 years from the Coronary Artery Risk Development in Young Adults Study (CARDIA) cohort (Steffen, 2005; Zamora, 2011). One study was conducted specifically in the elderly with an age range of 70 to 90 years (Knoops, 2004). Only one study examined children; a longitudinal growth and health study examined boys and girls with a mean age of 13 years at baseline (van der Laar, 2012). Several studies examined only women (Belin, 2011; Chiuve, 2011; Fitzgerald, 2012; Fung, 2008 and 2009; Levitan, 2009a; McCullough, 2000b; Michels and Wolk, 2002) and one study focused specifically on post-menopausal women (Belin, 2011). Other studies examined only men (Fidanza, 2004; Jacobs, 2009; Kaluza, 2009; Levitan, 2009b; McCullough, 2000a; Menotti, 2012; Sjögren, 2010). Some studies that examined men and women assessed health outcomes separately by gender (Buckland, 2011; Dauchet, 2011; Dilis, 2012; Drake, 2012; McCullough, 2002; Mitrou, 2007; Nilsson, 2012; Oba, 2009; Seymour, 2003; Tognon, 2012; von Ruesten, 2010). Only four studies specifically identified the race/ethnic subgroups of their cohort. Two studies with the CARDIA cohort examined equal numbers of Black and White young adults (Steffen, 2005; Zamora, 2010). One study examined Hispanic, Black, and White urban Americans (the Northern Manhattan Study) (Gardener, 2011) and one study examined Whites, Blacks, and South Asians in the United Kingdom (Whitehall II study) (Akbaraly, 2011).

Taken together, studies were conducted in the United States, Europe, Japan, and Australia and included many large, well-characterized cohorts. Several studies analyzed the same cohorts; however, all of the included studies presented unique data related to the association between dietary patterns and CVD.

- Nineteen studies were conducted in the United States with the following cohorts: the Nurses' Health Study (Chiuve, 2011 and 2012; Fung, 2008 and 2009; McCullough, 2000b and 20002), the Health Professionals Follow-Up Study (Chiuve, 2012; McCullough, 2000a and 2002), the Women's Health Initiative (Belin, 2011; Fitzgerald, 2012), the CARDIA Study (Steffen, 2005; Zamora, 2011), the Iowa Women's Health Study (Folsom, 2007), the Framingham Offspring and Spouse Study (Rumawas, 2009), the NIH AARP Diet and Health Study (Mitrou, 2007), the American Cancer Society Cancer Prevention Study II (Seymour, 2003), the Breast Cancer Detection and Demonstration Project (Kant, 2000), and the Northern Manhattan Study (Gardener, 2011).

- Nine studies were conducted in Spain with the following cohorts: the Seguimiento Universidad de Navarra Study (Martínez-González, 2011 and 2012; Núñez-Córdoba, 2009; Toledo, 2010; Tortosa, 2007), EPIC-Spain (Buckland, 2009 and 2011), and the Prevencion con Dieta Mediterranea Study (Estruch, 2006 and 2013).
- Eight studies were conducted in Sweden with the following cohorts: the Swedish Mammography Cohort (Levitan, 2009a; Michels and Wolk, 2002), the Cohort of Swedish Men (Kaluza, 2009; Levitan, 2009b), the Vasterbotten Intervention Program (Nilsson, 2012; Tognon, 2012), the Uppsala Longitudinal Study of Adult Men (Sjögren, 2010), and the Malmö Diet and Cancer Cohort (Drake, 2012).
- Four studies were conducted in Greece with the following cohorts: EPIC-Greece (Dilis, 2012; Misirli, 2012; Trichopoulou, 2003) and the ATTICA study (Pangiotakos, 2008).
- Two studies were conducted in Italy, EPIC-Italy (Agnoli, 2011) and the Italian Rural Areas of the Seven Countries Study (Menotti, 2012). Two studies were conducted in France, both with the SU.VI.MAX cohort (Dauchet, 2007; Kesse-Guyot, 2011). Two studies were conducted in Norway, the Oslo Diet and Exercise Study (Jacobs, 2009) and the Tromso Study (Hansen-Krone, 2012). Two studies were conducted in the Netherlands, EPIC-Netherlands (Hoevenaar-Blom, 2012) and the Amsterdam Growth and Health Longitudinal Study (van der Laar, 2012). And two studies were conducted in Japan, including the National Integrated Project for Prospective Observation of Non-Communicable Diseases and Trends in the Aged (Nakamura, 2009) and the Takayama Study (Oba, 2009).
- The remaining countries were represented in only one study: Germany (EPIC-Potsdam; von Ruesten, 2010), Denmark (WHO MONICA Study; Osler, 2012), Portugal (EPIPorto; Camoes, 2010), the United Kingdom (Whitehall II; Akbaraly, 2011), and Australia (Blue Mountain Eye Study; Russell, 2012).
- Lastly, two large multi-country studies were included in this body of evidence: the Seven Countries Study (United States, Finland, Italy, Greece, Japan, Yugoslavia, and Serbia) (Fidanza, 2004) and Healthy Ageing: a Longitudinal study in Europe (HALE), comprised of individuals from the Survey in Europe on Nutrition and the Elderly: a Concerned Action (SENECA) and the Finland, Italy, the Netherlands Elderly (FINE) studies. In combination, the latter analysis included 11 European countries (Knoops, 2004).

Dietary Exposure: Methodologically, diet exposure was assessed by adherence to a hypothesis-driven dietary pattern, defined using a numerical scoring system. Three major categories of *a priori* dietary patterns were identified: (1) dietary pattern exposure based on a Mediterranean diet, (2) dietary pattern exposure based on dietary guidelines recommendations, and (3) dietary pattern exposure based on a DASH diet. The most common method of assessment of dietary intake for determining dietary pattern scores was food frequency questionnaires (FFQs), commonly validated for foods in the respective locations of the population of study. Many prospective cohort studies assessed dietary intake only at baseline.

- Twenty-three studies examined health outcomes related to adherence to a Mediterranean-style dietary pattern. Of these studies, 12 studies used the Mediterranean Diet Score (MDS) [1] of Trichopoulou (Agnoli, 2011; Dilis, 2012; Gardener, 2011; Hoevenaar-Blom, 2012; Martínez-González, 2011 and 2012; Misirli, 2012; Mitrou, 2007; Núñez-Córdoba, 2009; Sjögren, 2010; Trichopoulou, 2003; Tortosa 2007). Four studies used the alternate Mediterranean Diet Score (aMed) (Fung, 2009; Mitrou, 2007; van der Laar, 2012; Chiuve, 2011). Two RCTs used the authors' Mediterranean diet score based on a version of the MDS that assessed a cardio-protective Mediterranean diet (Estruch, 2006 and 2013). Numerous other Mediterranean diet scores were represented in this body of evidence including the relative Mediterranean diet score (rMED) (Buckland, 2009 and 2011), the modified MDS (MMDS) (Tognon, 2012; Knoops, 2004), the Mediterranean Adequacy Index (MAI) (Fidanza, 2004; Menotti, 2012), the Mediterranean Style Diet Pattern Score (MSDPS) (Rumawas, 2009), the MedDietScore (Pangiotakos, 2008), and the Italian Mediterranean Index (Agnoli, 2011).
- Seventeen studies examined health outcomes related to adherence to dietary guidelines recommendations, including the United States, French, German, Swedish, and Japanese dietary guidelines recommendations. Of these studies, the largest number of studies assessed adherence to a version of the Healthy Eating Index (HEI). Four studies used the alternate HEI (AHEI) or updated AHEI-2010 (Belin, 2011; Chiuve, 2012; McCullough, 2002; Akbaraly, 2011). Two studies used the HEI-2005 (Agnoli, 2011; Chiuve, 2012) and two studies used HEI-f, a version of the original HEI adapted to the authors' FFQs (McCullough, 2000a and 2000b). Several studies used the Recommended Food Score (RFS) in different versions, also including a non-RFS in some studies (Kaluza, 2009 [and non-RFS]; Kant, 2000; McCullough, 2002; Michels and Wolk, 2002 [and non-

RFS]). Different versions of a Diet Quality Index (DQI) were used including the DQI-2005 (Zamora, 2011), the DQI of Patterson (Seymour, 2003), and DQI-Swedish Nutrition Recommendations (DQI-SNR) (Drake, 2012). Two studies used a Japanese score including the Japanese Food Guide Spinning Top (Oba, 2009) and the Reduced Salt Japanese Diet Score (Nakamura, 2009). Lastly, one study used the French Programme National Nutrition Santé Guideline Score (PNNS-GS) (Kesse-Guyot, 2011) and one study used the German Food Pyramid (von Reusten, 2010).

- Eight studies examined health outcomes related to adherence to a DASH diet. Of these studies, five studies used the DASH score of Fung (Agnoli, 2011; Fitzgerald, 2012; Fung, 2008; Levitan, 2009a and 2009b) and two used the DASH score of Folsom (Folsom, 2007; Levitan, 2009a). One study (Dauchet, 2007) used two scores adapted from the DASH eating plan of Appel (Appel, 1997) and one study (Camoes, 2010) used the DASH goals of Sacks (Sacks, 1995 and 2001). Finally, one study (Levitan, 2009a) used DASH scores based on NHLBI food and nutrient recommendations.
- Five studies examined health outcomes comparing the association with two or more dietary pattern scores, including comparisons across Mediterranean, dietary guidelines, DASH, and other customized scores (Agnoli, 2011 [DASH, MDS, Italian MDS, HEI]; Belin, 2011 [AHEI, DMI]; McCullough, 2002 [AHEI, RFS]; Sjögren, 2010 [HDI, MDS]; and Toledo, 2010 [DASH, UMMDS, etc.]). Toledo, in particular, assessed a large number of scores across Mediterranean diet and dietary guidelines-related scores. Three studies measured different versions of related scores (Chiuve, 2012 [HEI, AHEI]; Levitan, 2009a [DASH]; Mitrou, 2007 [MDS, aMed]).
- Seven studies examined health outcomes associated with the authors' own *a priori* diet scores: Hansen-Krone (2012), Jacobs (2009), Nilsson (2012), Osler (2002), Russell (2012), Sjögren (2010), and Steffen (2005).

Qualitative Synthesis of the Collected Evidence

Themes and Key Findings for Total Scores

Health Outcomes: The studies in this body of evidence were subdivided into two broad categories based on (I) endpoint clinical outcomes and (II) intermediate (CVD risk factor) outcomes. Within the first category, there were five designated subcategories: studies that examined (1) cardiovascular disease (CVD), (2) coronary heart disease (CHD), (3) stroke, (4) myocardial infarction (MI), and (5) heart failure (HF). Within the second category, there were two designated subcategories: studies that examined (1) hypertension (HTN) and blood pressure (BP) and (2) blood lipids.

Endpoint Clinical Outcomes: Cardiovascular diseases are disorders, both fatal and non-fatal, that affect the heart and circulatory system. The two major subclasses of CVD are CHD and stroke, and CHD includes MI as a major event. In addition, HF, another prevalent disorder, is also included within CVD. For this systematic review, endpoint clinical outcomes were subdivided into CVD, CHD, stroke, MI, and HF; ranging from more inclusive to less inclusive cardiovascular disorders. Overall, the outcomes were most commonly identified using the 9th or 10th edition of the International Classification of Diseases (ICD-9 or ICD-10).

CVD Incidence and Mortality:

The CVD category included studies that assessed a composite measure of CVD as the primary or secondary outcome of the study, and overall 29 studies were included (table 4-B-I-2). Typically, studies that measured CVD as a primary outcome did not include all diseases of the circulatory system (i.e., the entire spectrum of disorders listed in the ICD for this category). Total CVD most commonly included CHD and stroke, both fatal and nonfatal events. CHD and stroke events, in addition to CVD, were also assessed individually in many of these studies. This category also included studies with the primary objective of assessing total mortality but that also assessed CVD mortality as a secondary outcome. These studies commonly assessed CVD as "diseases of the circulatory system" and included the complete spectrum, or a large spectrum, of disorders listed in the ICD for this category.

Seventeen studies examined the association between adherence to a dietary pattern and CVD incidence and/or mortality as primary outcomes. The studies were all prospective cohort studies with one exception, an RCT (PREDIMED trial) that reported endpoint clinical outcomes (Estruch, 2013 [Med Diet]). The prospective cohort studies were typically large studies with well-characterized cohorts representative of national populations from the United States, Europe, and Japan. Two major categories of *a priori* dietary patterns were identified in these cohorts: (1) Mediterranean-style dietary patterns and (2) dietary guidelines-related dietary patterns. Additionally, two studies examined adherence to a DASH dietary pattern and three studies examined adherence to the authors' own *a priori* dietary pattern score.

Out of 17 studies that assessed CVD incidence and mortality, 14 studies reported a favorable association between increased adherence to a dietary pattern and risk of CVD (Belin, 2011 [AHEI, DMI]; Chiuve, 2012 [HEI, AHEI]; Estruch, 2013 [Med Diet]; Fitzgerald, 2012 [DASH]; Fung, 2009 [aMed]; Gardener, 2011 [MDS]; Hoevenaar-Blom, 2012 [MDS]; Kesse-Guyot, 2011 [PNNS-GS]; Knoops, 2004 [MDS]; Martínez-González, 2011 [MDS]; McCullough, 2000a [HEI-f]; McCullough, 2002 [AHEI, RFS]; Nakamura, 2009 [Japanese Diet Score]; Pangiotakos, 2008 [MedDietScore]). These studies had large sample sizes with generally healthy adults and long follow-up times. The long follow-up periods allowed for sufficient numbers of incident events and assessment of long-term associations between a given dietary pattern and CVD risk. The large cohorts in these studies were relatively homogeneous in terms of ethnicity and SES, which had the advantage of reducing confounding. In the prospective cohort studies, with few exceptions, common confounders were adjusted for, including age, sex, total energy, physical activity, BMI, smoking, and medications or supplements. Overall, in studies that reported favorable associations between a dietary pattern (based on categories of adherence) and CVD incidence or mortality, the decrease in risk of CVD ranged from 22 to 59 percent for increased adherence to a Mediterranean dietary pattern and from 20 to 44 percent for increased adherence to a dietary guidelines-related pattern. The one RCT reported that a Mediterranean diet (plus olive oil or nuts) decreased risk of CVD in high risk subjects, with an approximate 30 percent decrease in risk of major CVD events for both interventions, and the trial (PREDIMED) was stopped early for meeting benefit requirements (Estruch, 2013 [Med Diet]). One study found an association between adherence to a German dietary guidelines-related score in men, but not in women (von Ruesten 2010 [German Food Pyramid Index]), and one study of women reported that although there was a 14 percent decreased risk of CVD, it was not significant (McCullough, 2000b [HEI-f]). Lastly, although one study on DASH cited above found a 12-percent decrease in incident CVD risk in women (Fitzgerald, 2012 [DASH]), a second study reported no association between a DASH dietary pattern and CVD mortality in women (Folsom, 2007 [DASH]).

Twelve studies measured CVD mortality as a secondary outcome after total mortality. Of these studies, five studies reported a favorable association between adherence to a dietary pattern and CVD mortality (Akbaraly, 2011 [AHEI]; Buckland, 2011 [rMED]; Kaluza, 2009 [RFS]; Martínez-González, 2012 [MDS]; Mitrou, 2007 [MDS, aMed]). Four studies reported different CVD mortality risk outcomes based on gender. Three of these studies found a favorable association between adherence to either a dietary guidelines-related score (Oba, 2009 [Japanese Food Guide Score]; Seymour, 2003 [DQI]) or a Mediterranean diet score (Tognon, 2012 [MMDS]) and CVD mortality in women, but not men. However, one study found a favorable association in men, but not in women (Drake, 2012 [DQI-SNR]). Three studies reported no association between dietary pattern and CVD mortality (Nilsson, 2012 [Traditional Sami diet score]; Russell, 2012 [TDS]; Sjögren, 2010 [HDI, MDS]).

Sub-analysis–Gender: Several studies examined only women; three of these found a favorable association between dietary pattern and CVD incidence or mortality in women (Belin, 2011 [AHEI, DMI]; Fitzgerald, 2012 [DASH]; Fung, 2009 [aMed]) (one study focused on post-menopausal women [Belin, 2011]). However, one study, although reporting a 14 percent decreased risk of CVD in women, found it was not significant (McCullough, 2000b [HEI-f]). Another study found no association in women (Folsom, 2007 [DASH]). Three studies examined only men and found either a favorable association (McCullough, 2000a [HEI-f]; Kaluza, 2009 [RFS]) or no association (Sjögren, 2010 [HDI, MDS]). Other studies examined men and women separately relative to CVD risk and found either a favorable association for both between adherence to a dietary pattern and CVD (McCullough, 2002 [AHEI, RFS]; Mitrou, 2007 [MDS, aMed]) or a gender difference with a favorable association for men, but not women (Drake, 2012 [DQI-SNR]; von Ruesten, 2010 [German Food Pyramid Index]) or a favorable association for women, but not men (Oba, 2009 [Japanese Food Guide Score]; Seymour, 2003 [DQI]; Tognon, 2012 [MMDS]). One study that assessed men and women separately found no association for either men or women (Nilsson, 2012 [Traditional Sami diet score]). Two studies assessed men and women together, as well as men and women separately, and found a favorable association in all cases between adherence to a dietary pattern and CVD mortality (Buckland, 2011 [rMED]) or incidence (Chiuve, 2012 [HEI, AHEI]). Taken together, although there are reported gender differences across this series of studies, the evidence is mixed and does not demonstrate a consistently more favorable association for men or women as individual subgroups. Many of the studies that found gender differences used country-specific dietary guidelines scores within their target populations, including the German Food Pyramid Index, the Japanese Food Guide Score, and the DQI adapted to the Swedish Nutrition Recommendations (DQI-SNR).

CHD Incidence and Mortality:
CHD was commonly defined as fatal and nonfatal CHD and nonfatal MI. This category included 16 studies that measured CHD incidence or mortality. Nine of these studies assessed diet exposure as adherence to a Mediterranean dietary pattern; whereas, fewer studies assessed other diet pattern score categories such as dietary guidelines-related scores (4), DASH scores (3), and an authors' customized *a priori* diet score (1). Overall, the CHD studies included seven of the above studies that measured both CVD and CHD as independent outcomes, six studies that examined CHD incidence or mortality, three studies that measured CHD mortality as a secondary outcome after total mortality, and one study that examined sudden cardiac death (table 4-B-I-3). Overall, the CHD outcomes were most commonly identified by ICD-9 or ICD-10 codes.

Out of 13 studies that assessed CHD as a primary outcome, including non-fatal and fatal outcomes, 10 studies reported a favorable association between adherence to a dietary pattern and CHD risk (Buckland, 20009 [rMed]; Chiuve, 2011 [aMed] and 2012 [HEI, AHEI]; Dilis, 2012 [MDS]; Fidanza, 2004 [MAI]; Fung, 2008 [DASH] and 2009 [aMed]; Knoops, 2004 [MMDS]; Martínez-González, 2011 [MDS]; Menotti, 2012 [MAI]). Similar to the above studies that assessed CVD, these studies had large, relatively homogeneous populations of generally healthy adults, with long follow-up times. Overall, based on categories of adherence, the decreased risk of CHD ranged from 29 to 61 percent for increased adherence to a Mediterranean dietary pattern, from 24 to 31 percent for increased adherence to a dietary guidelines-related pattern, and from 14 to 27 percent for adherence to DASH. Common confounders that were adjusted for across these studies were age, sex, physical activity, BMI, and smoking. Of the above studies, one study that compared the HEI-2005 with the AHEI-2010 and adjusted each for respective models, found a favorable association between adherence to the AHEI, but not HEI, and risk of CHD with that further adjustment (Chiuve, 2012 [HEI, AHEI]). For CHD, the AHEI-2010 was more strongly associated with risk than the HEI-2005 (P-difference = 0.002). Three studies reported no association between adherence to a dietary pattern and risk of CHD (Fitzgerald, 2012 [DASH]; Folsom, 2007 [DASH]; Osler 2002 [Healthy Food Index]). In studies that examined CHD mortality secondary to total mortality, all three studies found a favorable association between dietary pattern adherence and CHD mortality, ranging from 33 to 53 percent decreased risk (Kant, 2000 [RFS]; Michels and Wolk, 2002 [RFS]; Trichopoulou, 2003 [MDS]).

Sub-analysis–Gender: Several studies examined only women. Five studies found a favorable association between dietary pattern and CHD incidence and mortality in women (Chiuve, 2011 [aMed]; Fung, 2008 [DASH]; Fung, 2009 [aMe]); Kant, 2000 [RFS]; Michels and Wolk, 2002 [RFS]); whereas, two studies found no association in women (Fitzgerald, 2012 [DASH]; Folsom, 2007 [DASH]). Two studies examined only men and found a favorable association between adherence to a Mediterranean diet and CHD risk in men (Fidanza, 2004 [MAI]; Menotti, 2012 [MAI]). Three studies assessed men and women together, as well as men and women separately, and found a favorable association in all cases between adherence to a dietary pattern and CHD mortality (Buckland, 2011 [rMED]; Dilis, 2012 [MDS]) or incidence (Chiuve, 2012 [HEI, AHEI]). Taken together, the studies that assessed CHD risk in men and women separately did not show gender differences, although two studies that only examined women found no association between a DASH dietary pattern and CHD.

Stroke:
This category included 10 studies that examined stroke in addition to CVD or CHD (above), or stroke alone. In addition, three studies measured stroke mortality as a secondary outcome after total mortality. The studies were all prospective cohort studies with one exception, an RCT (PREDIMED) that reported endpoint clinical outcomes (Estruch, 2013 [Med Diet]). Stroke outcomes often included ischemic and hemorrhagic stroke, in some cases results were reported as total stroke, ischemic stroke, and hemorrhagic stroke (table 4-B-I-4). Out of 13 studies that

assessed stroke, including non-fatal and fatal outcomes, 10 studies reported a favorable association between adherence to a dietary pattern and stroke risk (Agnoli, 2011 [DASH, MDS, Italian MDS, HEI]; Chiuve, 2012 [HEI, AHEI]; Estruch, 2013 [Med]; Fung, 2008 [DASH]; Fung, 2009 [aMed]; Hoevenaar-Blom, 2012 [MDS]; Kant, 2000 [RFS]; Michels and Wolk, 2002 [RFS]; Misirli, 2012 [MDS]; Nakamura, 2009 [Japanese Diet Score]). Similar to the above studies that assessed CVD, these studies had large sample sizes with generally healthy adults and long follow-up times with relatively homogeneous populations. Overall, the decreased risk of stroke ranged from 13 to 53 percent for increased adherence to a Mediterranean dietary pattern and from 14 to 60 percent for increased adherence to a dietary guidelines-related pattern. One study on the DASH diet showed a 17 percent decreased risk of stroke in women with increased adherence to the DASH score of Fung. Common confounders that were adjusted for across these studies were age, sex, total energy, physical activity, BMI, and smoking. The one RCT reported that a Mediterranean diet (plus olive oil or nuts) decreased risk of stroke in high risk subjects (Estruch, 2013 [Med Diet]). Two of the studies found differing results based on a comparison between two or more dietary pattern scores. One study found the AHEI-2010 was more predictive of stroke than HEI-2005 (Chiuve, 2012 [HEI, AHEI]). A second study compared four different scores and found that two Mediterranean diet scores (MDS and Italian MDS) and the DASH score of Fung were predictive of total stroke risk, but HEI-2005 was not (Agnoli, 2011 [DASH, MDS, Italian MDS, HEI]). Lastly, one study reported no association between dietary pattern adherence and risk of ischemic stroke (Gardener, 2011 [MDS]) and two studies reported no association with stroke death (Folsom, 2007 [DASH]; Tognon, 2012 [MMDS]).

Sub-analysis–Gender: Several studies examined only women; four of these found a favorable association between dietary pattern and stroke incidence or mortality in women (Fung, 2008 [DASH]; Fung, 2009 [aMed]; Kant, 2000 [RFS]; Michels and Wolk, 2002 [RFS]), but one study found no association (Folsom, 2007 [DASH]). None of the studies examined stroke risk only in men. One study assessed men and women separately and found no association between a Mediterranean diet and stroke mortality (Tognon, 2012 [MMDS]). One study assessed men and women together, as well as men and women separately, and found a favorable association in all cases between adherence to a dietary guidelines-related pattern and stroke incidence (Chiuve, 2012 [HEI, AHEI]). Taken together, these studies did not show gender differences relative to risk of stroke.

Myocardial Infarction:

This category included four of the above studies that also examined fatal and non-fatal MI as an independent outcome and one study that measured MI mortality as a secondary outcome after total mortality (table 4-B-I-4). Two studies reported a favorable association between adherence to a Mediterranean diet and risk of MI (Gardener, 2011 [MDS]; Hoevenaar-Blom, 2012 [MDS]). One study reported a favorable association between adherence to a Mediterranean diet and risk of MI mortality in women, but not in men (Tognon, 2012 [MMDS]). Two studies found no association between a dietary pattern score and risk of MI (Hansen-Krone, 2012 [Smart Diet Score]) or acute MI death (Nakamura, 2009 [Japanese Diet Score]).

Heart Failure:

This category included three studies that measured heart failure as the primary outcome (table 4-B-I-4). In two of these studies, heart failure included the ICD categories for heart failure and hypertensive heart failure and these studies found a favorable association between adherence to a DASH diet and risk of HF in men and women (Levitan, 2009a and 2009b [DASH]). The third study found a favorable association between the AHEI and the authors' own Dietary Modification Index (DMI) and risk of HF in the Women's Health Initiative study.

Intermediate Outcomes: Hypertension, Blood Pressure, and Blood Lipids

The intermediate outcomes and CVD risk factors included in this review were HTN, BP (systolic and diastolic), and blood lipids including LDL-C, HDL-Cl, the total-C: HDL-C and LDL-C: HDL-C ratios, and triglycerides. Relative to the large body of evidence for this question, only a few studies examined intermediate outcomes related to CVD risk.

Hypertension and Blood Pressure:
Of the three studies that examined the association between adherence to a dietary pattern and HTN, two studies found no association (Folsom, 2007 [DASH]; Núñez-Córdoba, 2009 [MDS]) and one study found different results comparing multiple dietary pattern scores. Toledo et al. reported a higher DASH score was associated with decreased risk of HTN, but a higher updated, modified MDS (UMMDS) was associated with *increased* risk of HTN (Toledo, 2010 [DASH and UMMDS]).

Three studies that examined BP as a primary outcome found an association between increased DASH scores and decreased systolic and diastolic BP (SBP and DBP) over time (Dauchet, 2007 [DASH]; Steffen, 2005 [Food Index]; van der Laar, 2012 [aMed]). One of these studies also assessed men and women separately and found a favorable association for SBP in men, but not women (Dauchet, 2007 [DASH]). One study also assessed risk of elevated BP (EBP) and found an association between increased DASH score and decreased risk of EBP (Steffen, 2005 [Food Index]). An early report from a subsample of the PREDIMED trial, with subjects at elevated CVD risk, found the Mediterranean diet treatment groups (Med diet + olive oil or + nuts) had improved SBP and DBP measures (Estruch, 2006 [Med Diet]). On the other hand, a second RCT that examined men with metabolic syndrome found no effect of a diet that matched adherence to the authors' *a priori* diet score and changes in SBP and DBP (Jacobs, 2009 [*a priori* diet score]).

Three studies examined BP as a component of metabolic syndrome. One study found an association between adherence to a dietary pattern and decreased SBP and DBP (Zamora, 2011 [DQI]). But two studies reported no association between adherence to a Mediterranean diet and BP (Rumawas, 2009 [MSDPS]; Tortosa, 2007 [MDS]).

Blood Lipids:
Of the three studies that examined blood lipids as primary outcomes, two of these studies were RCTs with populations at elevated risk. An early report from a subsample of the PREDIMED trial, with subjects at elevated CVD risk, found the Mediterranean diet treatment groups had favorable changes in blood HDL-C, the total-Cl: HLD-C ratio, and triglycerides (Estruch, 2006 ([Med Diet]). On the other hand, the second RCT, that examined men with metabolic syndrome, found no effect of a diet treatment that matched adherence to the authors' *a priori* diet score and changes in LDL-C, HDL-C, or triglycerides, although there was a significant decrease in total cholesterol in the diet treatment group (Jacobs, 2009 [*a priori* diet score]). The third study in this group was a prospective cohort study that showed a favorable association between adherence to a Mediterranean diet and total and HDL-C (van der Laar, 2012 [aMed]).

Three studies examined blood lipids as components of metabolic syndrome. One study found an association between adherence to a dietary pattern and higher HDL-C levels (Zamora, 2011 [DQI]), one study reported adherence to a Mediterranean diet was associated with favorable changes in HDL-C and triglycerides (Rumawas, 2009 [MSDPS]), and one study found no association between adherence to a Mediterranean diet and blood lipids (Tortosa, 2007 [MDS]).

Themes and Key Findings for Food Components of Scores

Food Components of Diet Pattern Scores
Twenty studies assessed the association between individual food components of a dietary pattern score and CVD endpoint outcomes (Akbaraly, 2011 [AHEI]; Belin, 2011 [AHEI, DMI]; Buckland, 2009 [rMed]; Camoes, 2010 [DASH]; Chiuve, 2012; Dauchet, 2007 [DASH]; Estruch, 2006 and 2013 [Med]; Fitzgerald, 2012 [DASH]; Folsom, 2007 [DASH[; Gardener, 2011 [MDS]; Hansen-Krone, 2012 [Smart Diet Score]; Hoevenaar-Blom, 2012 [MDS]; Martínez-González, 2011 [MDS]; McCullough, 2000a and 2000b [HEI-f]; Misirli, 2012 [MDS]; Núñez-Córdoba 2009 [MDS]; Seymour, 2003 [DQI]; Steffen, 2005 [Food Index]). Eight studies used components from Mediterranean diet scores (5 MDS, 1 rMed, 2 Med); four studies used components from DASH diets; six studies used components from dietary guidelines-related scores (2 AHEI, 1 AHEI-2010 and HEI-2005, 2 HEI-f, 1 DQI), and three studies used components from the authors' customized diet pattern scores (1 Smart Diet Score, 1 Food Index, 1 Diet Modification Index).

Fruits, vegetables, and nuts (either individually or in combination as fruits & vegetables or fruits & nuts) were cited by nine studies as having a protective association with clinical outcomes, including CVD (Belin, 2011 [AHEI, DMI]; Estruch, 2013 [Med]; Fitzgerald, 2012 [DASH]; Martinez-Gonzalez, 2011 [MDS]; McCullough, 2000a [HEIf]; and Seymour, 2003 [DQI] only in women); CHD (Buckland, 2009 [rMed]); stroke (Estruch, 2013 [Med]; Misirli, 2012 [MDS]); and MI (Hansen-Krone, 2012 [Smart Diet]). One study specified dark-green and orange vegetables as having a protective association against CHD (Chiuve, 2012 [HEI, AHEI]). One study reported on nuts and soy as having a favorable association with risk of CVD (Akbaraly, 2011 [AHEI]). Four studies reported a favorable association between fruits, vegetables, and/or nuts and intermediate outcomes or CVD risk factors, including HTN (Camoes, 2010 [DASH]), BP (Dauchet, 2007 [DASH]), Estruch, 2006 [Med], Steffen, 2005 [Food Index]) or blood lipids (Estruch, 2006 [Med]). Legumes were reported in two studies as having a favorable association with either decreased risk of stroke (Misirli, 2012 [MDS]) or HTN (Núñez-Córdoba, 2009 [MDS]). Whole grains were reported in three studies as having a favorable association with CVD (McCullough, 2000a [(HEIf]), CHD (Chiuve, 2012 [HEI, AHEI], or BP (Steffen, 2005 [Food Index]).

Several studies reported a favorable association between olive oil (MUFA) or PUFA consumption and risk of CVD (Estruch, 2013 [Med]), CHD (Buckland, 2009 [rMed]), stroke (Estruch, 2013 [Med]; Misirli, 2012 [MDS]) or MI (Hansen-Krone, 2012 [Smart Diet]). One study reported a favorable association between healthy oils (plant and fish oils) and CHD risk in women only (Chiuve, 2012 [HEI, AHEI]). As well, these components were favorably associated with improved BP and blood lipids (Estruch, 2006 [Med]). Fish consumption was favorably associated with risk of CVD (Gardener, 2011 [MDS], CHD (Buckland, 2009 [rMed]), or MI (Hansen-Krone, 2012 [Smart Diet]). The studies that assessed plant oils and fish were predominantly using a Mediterranean diet score, although the HEI-2005 included plant and fish oils in their healthy oils component.

Alcohol consumption was reported by seven studies as having a favorable association with risk of CVD (Akbaraly, 2011 [AHEI]; Belin, 2011 [AHEI]; Gardener, 2011 [MDS]; Hoevenaar-Blom, 2012 [MDS]); CHD (Buckland, 2009 [rMed]; Chiuve, 2012 [HEI, AHEI]); or HTN (Núñez-Córdoba, 2009 [MDS]). Studies that assessed alcohol used components of either a Mediterranean diet score (3 MDS, 1 rMed) or the AHEI. One study that used the HEI-2005 reported a favorable association between a composite solid fats/alcoholic beverages/added sugars (SoFAAS) component, the benefits of which were driven by alcohol intake (Chiuve, 2012 [HEI, AHEI]).

Certain food components were also considered for their unfavorable association with risk of CVD. Meat, including red and processed meat, was associated with increased risk of CVD (Belin, 2011 [AHEI]), CHD (Buckland, 2009 [rMed], CHD only in women (Chiuve, 2012 [HEI, AHEI]), and elevated BP (Steffen, 2005 [Food Index]). Dairy consumption, on the other hand, was reported both negatively and positively in different studies. One study reported an unfavorable association between total dairy and CHD risk (Buckland, 2009 [rMed]); however, two studies reported a favorable association between total dairy and HTN (Folsom, 2007 [DASH] or elevated BP (Steffen, 2005 [Food Index]).

Components across All Scores and Indices

Although the dietary pattern scores that were used in this large body of evidence were numerous, those scores adherence to which was associated with decreased risk of CVD clinical endpoints were many fewer, and can be compared to assess commonalities across them. Scores that were associated with decreased risk of CVD, CHD, stroke, MI, and HF were selected to examine commonalities in components across scores related to clinically significant outcomes, rather than intermediate markers (table 4-B-I-1 Comparison of Dietary Components across Diet Pattern Scores). The scores include the MDS (18 associated outcomes), aMed (5 associated outcomes), AHEI (7 associated outcomes, 3 AHEI 2010), RFS (6 associated outcomes), HEI-2005 (3 associated outcomes), and DASH (6 associated outcomes). Regarding a DASH score, the score developed by Fung (2008) was associated with CVD endpoints in all six studies; by comparison, the DASH score of Folsom was not significantly associated with CVD, CHD, stroke death, or HTN (Folsom, 2007) or heart failure (Levitan, 2009a). Overall, the above scores were the most commonly applied scores associated with a protective outcome for CVD risk in healthy adults. This relatively small number of dietary pattern scores, that are also uncomplicated versions, had similarities in that food groups were aligned and described in similar ways, although they were scored differently. Many of these scores have been tested in the same cohort with similar results.

Two of the scores assessed adherence to a Mediterranean style diet (MDS, aMed). Although these were *a priori*, hypothesis-driven scores, they were also population-based in that dichotomous points (0, 1) were assigned to individuals who were above or below the population median. The aMed score was based on the original MDS of Trichopolou and modified by excluding potatoes from the vegetable group, separating fruit and nuts into two groups, eliminating the dairy group, including whole-grain products only, including only red and processed meats for the meat group, and assigning alcohol intake of 5-15 g/d for 1 point (Fung et al., 2005). The Healthy Eating Index (HEI) was developed to measure compliance with U.S. dietary guidance, initially using the 1995 Dietary Guidelines for Americans (DGAs) and updated for 2005 (and currently 2010, but not utilized in studies reported in this review). In this body of evidence, the updated HEI-2005 was used to assess CVD outcomes, as well as to compare predictive utility with an alternative version, the Alternative HEI (AHEI) (Chiuve, 2012). Additionally, a variation on the original HEI was used by McCullough to assess CVD risk in men and women separately (McCullough, 2000a and 2000b). In the studies included here, the HEI and AHEI scores (including updated HEI-2005 and AHEI-2010) were based on dietary guidance with individuals ranked across a gradient of high to low scores, based on recommended intakes, independent of the population. The AHEI-2010 introduced detailed changes from the original, including the recommendation of ~5 or 6 servings per day of 100% whole-grain products for women and men, respectively, and including long chain n-3 fats (EPA and DHA) as well as PUFA intake as percent energy as positive components. The DASH score developed by Fung reflected adherence to a DASH-style diet and was operationalized based on quintiles of intake of food group and nutrient components, rather than absolute intake. The Recommended Food Score (RFS) of Kant (2000) was based on consumption of dietary guidelines-recommended foods assessed by summing individual food items derived from the FFQ tool used in the respective study, with a summary score that added the food items consumed at least once per week. The total RFS scores varied from study to study, as the number of FFQ items varied, although the most commonly used RFS version was the 23-item version of Kant (2000). Overall, although the Mediterranean, HEI and AHEI, DASH, and RFS score methods differed, they were all employed to address, and successfully predicted, the association between an *a priori* defined dietary pattern and CVD risk, at the level of endpoint outcomes. It is interesting to note that the AHEI and updated AHE-2010, the aMed score, and the DASH-Fung score have all been tested in women in the Nurses' Health study and were favorably associated with CVD, CHD, and/or stroke risk. Related to this, when the HEI-2005 and AHEI-2010 were compared in both the Nurses' Health Study and the Health Professionals Follow-Up Study, and risk was adjusted for the other respective model, the HEI-2005 lost significance in association with CVD, CHD, and stroke risk, whereas the AHEI-2010 did not (Chiuve, 2012).

Taken together, the positive components of the scores that were associated with decreased CVD risk were fruits and nuts, vegetables, whole grains, legumes, unsaturated fats, and fish. Alcohol was commonly included as a positive component when consumed in moderation in all of the scores except for HEI, RFS, and DASH. Meat (red and processed meat) was a negative component in the Mediterranean scores, AHEI scores, and DASH, although the original AHEI emphasized a white/red meat ratio where the white meat included poultry and fish. The RFS of Kant included chicken or turkey as positive components in their food item-based score. There was variation in the method by which dairy was assessed. Total dairy (high fat) was a negative component in the MDS, was omitted from the aMed, but was a positive component when meeting recommended intakes for the HEI-2005 or as low-fat dairy in the RFS and DASH-Fung scores. Certain scores also included sugars (HEI-2005 included sugar in a combined category of solid fats, alcoholic beverages and added sugars [SoFAAS]) or sugar-sweetened beverages (AHEI-2010 included sugar sweetened beverages and fruit juice), as well as *trans* fats, and sodium as negative components.

Table 4-B-I-1 Comparison of Dietary Components across Diet Pattern Scores

Components	Med Diet Score (MDS) Trichopolou et al. 2003 EPIC-Greece	Alternate Med Diet Score (aMed) Fung et al. 2009 Nurses' Health Study	Alternate HEI (AHEI) McCullough et al. 2002 Health Professionals Follow-up Study & Nurses' Health Study	Alternative HEI (AHEI)-2010 Chiuve et al. 2012 Health Professionals Follow-up Study & Nurses' Health Study	Healthy Eating Index (HEI)-2005 Guenther et al. 2008 2005 DGAs	Recommended Food Score (RFS) Kant et al. 2000 Breast Cancer Detection & Demonstration Project	DASH Score Fung et al. 2008 Nurses' Health Study
	Total Score 0 - 9	Total Score 0 - 9	Total Score 2.5 - 87.5	Total Score 0 - 110	Total Score 0 - 100	Total Score 0 - 23*	Total Score 8 - 40
Vegetables	**Vegetables**** ≥Median = 1 <Median = 0	Vegetables (not potatoes) ≥Median = 1 <Median = 0	Vegetables (not potatoes and french fries) 0 -10 5 serv/d = 10	Vegetables (not potatoes and french fries) 0 - 10 ≥5 serv/d = 10	Total vegetables 0 - 5 **Dark green/orange**/ legumes[†] 0 - 5	Tomatoes; broccoli; spinach; mustard, turnip, collard greens; carrots or mixed vegetables w/ carrots; green salad; sweet potatoes, yams; other potatoes	Vegetables (not potatoes and legumes) 1 - 5 Lowest to Highest quintile
Legumes	**Legumes** ≥Median = 1 <Median = 0	Legumes ≥Median = 1 <Median = 0		Nuts & Legumes 0 - 10 ≥1 serv/d = 10	Dark green/orange/legumes[†] 0 - 5	Dried beans	Nuts & Legumes 1 - 5 Lowest to Highest quintile
Fruits and/or Nuts	**Fruits & Nuts** ≥Median = 1 <Median = 0	Fruits ≥Median = 1 <Median = 0 Nuts ≥Median = 1 <Median = 0	**Fruits** 0 - 10 4 serv/d = 10 **Nuts & Soy Protein** 0 - 10 1 serv/d = 10	Fruits 0 - 10 ≥4 serv/d = 10 Nuts & Legumes 0 - 10 ≥1 serv/d = 10	Total fruit[‡] 0 - 5 Whole fruits[‡‡] 0 - 5	Apples or pears; oranges; cantaloupe; orange or grapefruit juice; grapefruit; other fruit juices	**Fruits** and fruit juices 1 - 5 Lowest to Highest quintile Nuts & Legumes 1 - 5 Lowest to Highest quintile
Cereals and/or Whole Grains	Cereals ≥Median = 1 <Median = 0	Whole grains ≥Median = 1 <Median = 0	Cereal Fiber 0 - 10 15g/d = 10	**Whole Grains** 0 - 10 75g/d ♀ = 10 90g/d ♂ = 10	Total grains 0 - 5 **Whole grains** 0 - 5	Dark breads (wh wheat, rye, pumpernickel); cornbread, tortillas & grits; high-fiber cereals; cooked cereals	Whole Grains 1 - 5 Lowest to Highest quintile
Fish or Fresh Fish	**Fish** ≥Median = 1 <Median = 0	Fish ≥Median = 1 <Median = 0				Baked or broiled fish	
Fat	**MUFA/SFA** ≥Median = 1 <Median = 0	MUFA/SFA ≥Median = 1 <Median = 0	PUFA/SFA 0 - 10 ≤0.1 to ≥1.0	Long-chain fats (EPA + DHA) 0 - 10 0 - 250 mg/d PUFA % energy ≤2 to ≥10	SFA 0 - 10 ≥15% - ≤7% E **Healthy oils**[††] 0 - 10 0 - 12 g/d		
Alcohol	**5 - 25 ♀ 10 – 50 ♂ g/d = 1**	5 -15 g/d = 1	**0.5 - 1.5 ♀ 1.5 - 2.5 ♂ Drinks/d = 10**	**0.5 - 1.5 ♀ 0.5 - 2.0 ♂ Drinks/d = 10**	Solid fats, **alcoholic beverages** & added sugars 0 - 20 ≥50% - ≤20% E		
Total Meat	Meat & Meat Products ≥Median = 0 <Median = 1	Red & Processed Meat ≥Median = 0 <Median = 1	**White/Red Meat Ratio** 0 - 10, 4 = 10 White meat = poultry & fish Red meat = beef, pork, lamb & processed meats	**Red & Processed Meat** 0 – 10 ≥1.5 – 0 serv/d	Meat & Beans 0 - 10	Baked or stewed chicken or turkey	Red &Processed Meat 1 - 5 Highest to Lowest quintile
Dairy Products	Dairy Products ≥Median = 0 <Median = 1				Milk, yogurt, cheese, & soy beverages 0 - 10	2% milk and beverages w/ 2% milk; 1% or skim milk	Low-fat dairy 1 - 5 Lowest to Highest quintile

Table 4-B-I-1 Comparison of Dietary Components across Diet Pattern Scores—continued

Components	Med Diet Score (MDS) Trichopolou et a.l 2003 EPIC-Greece	Alternate Med Diet Score (aMed) Fung et al. 2009 Nurses' Health Study	Alternate HEI (AHEI) McCullough et al. 2002 Health Professionals Follow-up Study & Nurses' Health Study	Alternative HEI (AHEI)-2010 Chiuve et al. 2012 Health Professionals Follow-up Study & Nurses' Health Study	Healthy Eating Index (HEI)-2005 Guenther et al. 2008 2005 DGAs	Recommended Food Score (RFS) Kant et al. 2000 Breast Cancer Detection & Demonstration Project	DASH Score Fung et al. 2008 Nurses' Health Study
	Total Score 0 – 9	Total Score 0 – 9	Total Score 2.5 – 87.5	Total Score 0 – 110	Total Score 0 – 100	Total Score 0 – 23*	Total Score 8 – 40
Sweets or Sugar Products				Sugar Sweetened Beverages & Fruit Juice 0 - 10 ≥1 - 0 serv/d	Solid fats, alcoholic beverages & added sugars 0 - 20 ≥50% - ≤20% E		Sweetened beverages 1 - 5 Highest to Lowest quintile
Sodium				0 - 10 Highest to Lowest decile, mg/d	0 - 10 Highest – Lowest decile, mg		1 - 5 Highest to Lowest quintile
***Trans* fat**			**<u>% energy 0 - 10 ≥4 to ≤0.5</u>**	% energy 0 - 10 ≥4 to ≤0.5			
Multivitamin use			**<u>2.5 (non-use) 7.5 (use)</u>**				
# Associations with CVD endpoints	18 associated outcomes	5 associated outcomes	4 associated outcomes	3 associated outcomes	3 associated outcomes	3 associated outcomes	6 associated outcomes

*****Total score = sum of 23 items (1 pt/item) consumed ≥1X/wk.

‡Includes 100% juice.

‡‡Includes all forms except juice.

†Includes legumes only after meat & beans standard is met.

††Includes non-hydrogenated vegetables oils and oils in fish, nuts and seeds.

(+) Positive components

(−) Negative components

(+m) Positive in moderation

Listed 2X for respective food groups

** <u>*Food components*</u> that were associated with either favorable or unfavorable CVD outcomes in studies with favorable associations between <u>*total score*</u> and CVD endpoint outcomes.

Several of the studies that utilized scores that successfully predicted CVD outcomes also assessed food group components. Given the scores that are highlighted in table 1, component analysis was done for the MDS, HEI-2005, AHEI, AHEI-2010, and DASH-Fung.

MDS: For MDS, in the SUN cohort, Martinez-Gonzalez found that only the fruits & nuts group was favorably associated with incidence of CVD (Martinez-Gonzalez, 2011 [MDS]). However, when the MDS was tested in the EPIC-Netherlands cohort, the association of the MDS with CVD and MI was attenuated most when alcohol was excluded from the score, and alcohol was operationalized differently from the original MDS in that alcohol intake was dichotomized into users and non-users (1 point for ≥1 drink/month and 0 for <1 drink/month) (Hoevenaar-Blom, 2012 [MDS]). In one study that examined cerebrovascular disease, the food groups that had an inverse association were vegetables, legumes, and monounsaturated fats in the EPIC-Greece cohort (Misirli, 2012 [MDS]).

HEI-2005: For the HEI-2005, dark-green and orange vegetables, whole grains, and energy from solid fat, alcohol, and added sugar were significantly associated with lower risk of CHD (Chiuve, 2012 [HEI, AHEI]). The inverse association for the solid fat, alcohol, and added sugar component was driven by alcohol intake. Vegetable oils were associated with risk of CHD among women only.

AHEI: For AHEI, in individual AHEI component analyses, fruits, the white/red meat ratio, *trans* fat, multivitamin use, and alcohol consumption were each associated with decreased CVD risk (Belin, 2011 [AHEI, DMI]).

AHEI-2010: For the AHEI- 2010, whole grains and alcoholic beverages were inversely associated, and red and processed meats were positively associated with risk of CHD (Chiuve, 2012 [HEI, AHEI]).

DASH: For the DASH-Fung score, comparing highest to lowest quintiles of score, the fruit component was associated with decreased risk of CVD (Fitzgerald, 2011 [DASH]).

Qualitative Assessment of the Collected Evidence

Quality and Quantity

Quality assessment for the studies included in this systematic review involved determining the validity of each study. Validity was assessed by examining the scientific soundness of study design and execution to avoid potential bias in the findings related to outcomes; this included selection, performance, attrition, detection, and reporting bias. For this body of evidence, the preponderance of the evidence consisted of positive quality studies (45 out of 55 studies), indicating a low risk of bias overall. This was a relatively large body of evidence with studies that directly addressed the question. The majority of these studies were prospective cohort studies with large numbers of participants in nationally recognized cohorts.

Consistency

- **CVD Incidence and Mortality:** The evidence of a protective association between a dietary pattern score and risk of CVD was consistent in the majority of studies that used either a Mediterranean diet score or dietary guidelines index in healthy adult populations. The body of evidence for CVD endpoint clinical outcomes was relatively large (29 studies), with many fewer studies on intermediate outcomes. Typically, studies that measured CVD as a primary outcome did not include all diseases of the circulatory system (i.e., studies did not include the entire spectrum of ICD disorders for this category). Total CVD most commonly included CHD and stroke, both fatal and nonfatal events. These studies were consistent in finding a decreased risk of CVD associated with adherence to either a Mediterranean diet or dietary guidelines-related pattern. Out of 17 studies, 15 studies reported a favorable association. This included studies in the United States (9 studies), Spain (2 studies), France, the Netherlands, Greece, Japan, and the 11 European countries of the HALE study. All of these studies measured a composite fatal and non-fatal CVD, with the exception of two studies that assessed CVD mortality alone. The one RCT reported that a Mediterranean diet decreased risk of CVD in high risk subjects, and the trial (PREDIMED) was stopped early for meeting benefit requirements. This category also included studies with the primary objective of assessing total mortality, but that also assessed cause-specific mortality including CVD. These studies commonly assessed CVD as a larger composite category than the above studies, most often described as "diseases of the circulatory system" and including the complete spectrum, or a large spectrum, of ICD disorders for the category. These studies were less consistent, and this may relate to the larger number of cardiovascular diseases included in the CVD outcome. Out of twelve studies, five reported a favorable association, four reported different risk outcomes based on gender, and three found no association.
- **CHD Incidence and Mortality:** The evidence of a protective association between a dietary pattern score and risk of CHD was consistent in the majority of studies in healthy adult populations. Most of the studies assessed adherence to a Mediterranean diet, with fewer studies that assessed dietary guidelines-related or DASH scores. The body of evidence for CHD endpoint clinical outcomes was also relatively large. Out of 16 studies that assessed CHD, including nonfatal and fatal outcomes, nine studies reported a favorable association between adherence to a dietary pattern and CHD risk, one study found a favorable association between adherence to the AHEI, but not HEI, and three studies reported no association. In studies that examined CHD mortality secondary to total mortality, all three studies found a favorable association between dietary pattern adherence and CHD mortality. Similar to the studies on CVD, the prospective cohort studies were conducted in the United States and several European countries with large, well-characterized cohorts.
- **Stroke:** The evidence of a protective association between a dietary pattern score and risk of stroke was consistent in the majority of studies in healthy adult populations. Out of 13 studies that assessed stroke, including nonfatal and fatal outcomes, 10 studies reported a favorable association. This included one RCT, the above-mentioned PREDIMED trial. Two studies that compared different dietary pattern scores found a favorable association between one or more scores and stroke risk and one study reported no association.
- **Myocardial Infarction:** The evidence of a protective association between a dietary pattern score and risk of MI was inconsistent and included fewer studies than the above health outcomes. Out of six studies, two studies reported a favorable association between dietary pattern and MI risk, one study reported different risk outcomes based on gender, two studies found no association, and one study found a favorable association with one score, but an unfavorable association with a second score.

- **Heart Failure:** The three studies that examined heart failure were consistent in showing a favorable association between adherence to a dietary pattern and risk of heart failure; two of these studies included the ICD categories for heart failure and hypertensive heart failure.

Impact

This body of evidence directly addressed the exposures and health outcomes of interest for this systematic review, with a large number of studies measuring endpoint clinical outcomes. Overall, several large prospective cohort studies found a decreased risk of CVD, CHD, stroke, or heart failure associated with adherence to a Mediterranean diet or dietary guidelines score. Although not clinical trials, these cohort studies reported results that are applicable in free-living populations. For example, a recent study from the Nurses' Health and Health Professionals Follow-up cohorts reported that a change from lowest to highest AHEI adherence reduced risk of CVD, CHD, and stroke by 20, 31, and 14 percent, respectively, over 24 years (Chuive, 2012 (HEI, AHEI)). It is notable that in this study dietary intake was assessed at regular intervals over the long follow-up period. Additionally, although there were only a few clinical trials in this body of evidence, the PREDIMED study reported that a Mediterranean diet (plus olive oil or nuts) decreased risk of clinical endpoint outcomes, CVD and stroke, in high risk subjects and, as already indicated, this trial was stopped early for meeting benefit requirements.

Generalizability/External Validity

Studies were conducted in the United States, Europe, Japan, and Australia and included many large, well-characterized cohorts. Nineteen studies were conducted in the United States and the remaining studies were conducted mainly in Europe, with Spain, Sweden, and Greece heavily represented. In addition, two studies were conducted in Japan and one in Australia. Taken together, the prospective cohort studies were primary prevention studies of general populations and most studies were conducted with healthy adults. Subgroup analysis was conducted in many studies on men and women; however, there were no consistent differences between men and women in the association between dietary pattern and CVD outcomes. There were only a few studies that specifically identified and analyzed race/ethnic subgroups of their cohorts and none reported differences based on race or ethnicity. Overall, therefore, there is a relatively large body of evidence on adherence to dietary patterns in the United States and European populations of healthy adults. This is primarily among Caucasian populations, however, with little additional analysis of racial or ethnic subpopulations. Given the robust evidence involving U.S. cohorts and endpoint clinical outcomes, the generalizability to the U.S. population, and relevance of this body of evidence to U.S. policy on dietary patterns and risk of CVD, is compelling.

Limitations of the Evidence

Common limitations of studies on dietary patterns using *a priori* scores involve the use of different scores, differences between scores that are based on median population intakes versus indices that are based on recommended intakes, scores that use similar weights for each component assuming equivalent effects on health, the use of different confounding factors (or lack of sufficient adjustment), and problems associated with use of different FFQs and validation related to other methods of diet assessment. It should be said, however, that in this relatively large body of evidence, a limited number of scores were used, oftentimes less complicated versions of these scores, and in a number of cases the different scores were tested in the same cohorts. Overall, this makes the comparison of food components across these scores feasible. Additionally, a very common limitation in many prospective cohort studies is that dietary intake is based on a single dietary assessment at baseline, with no follow-up assessment of dietary intake over the period of the study. However, this body of evidence had notable exceptions including Chiuve (2010 [aMed/NHS] and 2011 [HEI, AHEI/NHS, HPFS]), and Fung (2008 [DASH/NHS] and 2009 [aMed/NHS]) that measured dietary intakes at regular intervals across the period of follow-up of the respective studies. Therefore, these studies did take into account the fact that diets change over time due to trends in the food supply, as well as the fact that population-level and individual-level food choices change over time.

Research Recommendations

The studies covered in this systematic review provide results that improve some of the problems involved in dietary patterns research. For example, the need for consensus on a single score or index that is applicable across populations is less problematic in this body of evidence than for some other outcomes, as a relatively small number of uncomplicated scores have been used to successfully predict CVD risk in large U.S. and European populations. Further quantitative analysis/comparisons of these scores and their respective components by meta-analysis would be particularly useful. Although a large number of the studies assessed food group components and their association with CVD outcomes, many did not, and more precise determination of the benefits and risks of individual components (e.g., alcohol) would be helpful for policy recommendations. In addition, component analysis could be improved by determining interaction terms across components that would be needed to maintain a dietary patterns approach. Methodologically, research in this area could be improved by measuring dietary intake at regular intervals over the course of a prospective study, rather than just at baseline (although a few of the large cohort studies in this body of evidence did this). Determining the best approach to weighing and scoring individual food components would also improve the rigor in application of scores to assess dietary pattern adherence. Additionally, studies in this body of evidence that assessed gender differences in the relationship between adherence to a dietary pattern and CVD risk found inconsistent results. Further research is needed to clarify this. There were also very few studies that identified racial/ethnic subgroups within their cohorts and analyzed these groups separately related to CVD risk and this warrants additional research. Assessment of dietary patterns at earlier and later stages of the life cycle is also recommended. Lastly, behavioral issues related to timing, frequency, and size of meals need further consideration.

Abbreviations

Scores & Indices: Dietary Approaches to Stop Hypertension (DASH); Diet Quality Index (DQI); DQI-Swedish Nutrition Recommendations (DQI-SNR); Healthy Eating Index (HEI); Alternate Healthy Eating Index (AHEI); Mediterranean Diet Score (MDS); Alternate Mediterranean Diet Score (aMed); Mediterranean Adequacy Index (MAI); Mediterranean Style Diet Pattern Score (MSDPS); Relative Mediterranean Diet Score (rMED); modified MDS (MMDS); Programme National Nutrition Santé Guideline Score (PNNS-GS); Recommended Food Score (RFS)
Cohorts: Coronary Artery Risk Development in Young Adults (CARDIA); European Prospective Investigation into Cancer and Nutrition (EPIC); Framingham Offspring and Spouse (FOS); Health Professionals Follow-Up Study (HPFS); Healthy Ageing: a Longitudinal study in Europe (HALE); Multi-Ethnic Study of Atherosclerosis (MESA); Nurses' Health Study (NHS); Prevencion con Dieta Mediterranea (PREDIMED); Seguimiento Universidad de Navarra (SUN); SUpplementation en VItamines et Minereaux AntioXydants (SU.VI.MAX); Women's Health Initiative (WHI)

Table 4-B-I-2. Overview Table: Cardiovascular Disease

	Author, Year Study Design	Sample Size Location Duration Dietary Assessment	Population Age/Gender Cohort	Exposure Index/Score	Outcomes Measured	Health Outcome
Cardiovascular Disease						
1.	Akbaraly et al., 2011 Prospective Cohort	N = 7,319 U.K. 18 y FFQ (127 item)	39–63 y Mean = 49.5 y 30% Women Whitehall II Study Whites, South Asians, and Blacks	AHEI Total Score 2.5 - 87.5	All-cause and CVD mortality	CVD mortality, comparing highest to lowest tertile of AHEI scores: HR = 0.58 (95% CI = 0.37 - 0.91)
2.	Belin et al., 2011 Prospective Cohort	N = 79,752 (CVD) N = 83,183 (HF) U.S. 10 y FFQ (WHI)	50–79 y Women, Postmenopausal Women's Health Initiative (WHI)	AHEI Total Score 2.5 - 87.5 Dietary Modification Index (DMI) Total Score 6 - 30	Composite CVD (nonfatal MI, CHD death, coronary artery bypass graft/ coronary angioplasty, stroke, and HF) and HF alone	Comparing highest to lowest quintiles: CVD: DMI: HR = 0.88 (95% CI = 0.80 - 0.95, P for trend <0.001) AHEI: HR = 0.77 (95% CI = 0.70 - 0.84, P for trend <0.001)
3.	Buckland et al., 2011 Prospective Cohort	N = 40,622 Spain 13.4 y Dietary history questionnaire, validated	29–69 y 62% Women EPIC-Spain	rMED Total Score 0 - 18	All-cause and CVD mortality	Comparing highest to lowest rMED scores (high, med, low): CVD mortality: HR = 0.66 (95% CI = 0.49 - 0.89, P for trend = 0.006) CVD mortality for men: HR = 0.76 (95% CI = 0.63 - 0.90, P for trend = 0.002) CVD mortality for women: HR = 0.85 (95% CI = 0.68 - 1.06, P for trend = 0.152, NS) P for interaction (Men, Women) = 0.512
4.	Chiuve et al., 2012 Prospective Cohort	N = 112,488 U.S. 24 y FFQ (131-item) validated	♀ 30–55 y ♂ 40–75 y 64% Women Nurses' Health Study (NHS) and Health Professionals Follow-Up Study (HPFS)	HEI - 2005 Total Score 0 - 100 AHEI - 2010 Total Score 0 - 110	CVD (CHD, stroke, or angina)	Comparing highest to lowest quintile of HEI-2005 and AHEI-2010 scores for each outcome (each adjusted for the other score): CVD: HEI-2005: RR = 0.91 (95% CI = 0.80 - 1.04; P for trend = 0.17, NS) AHEI-2010: RR = 0.80 (95% CI = 0.74 - 0.86; P for trend <0.001) P for similar effects of diet scores = 0.06, NS.
5.	Drake et al., 2012 Prospective Cohort	N = 17,126 Sweden 14.2 y FFQ (168-item)	44–73 y 61% Women Malmö Diet and Cancer (MDC)	DQI - Swedish Nutrition Recommendations (DQI- SNR) Model 2: 0 - 6 (population median)	All-cause and CVD mortality	Comparing highest to lowest DQI-SNR (high, med, low): CVD mortality in men: Model 1: HR = 0.59 (95% CI = 0.44 - 0.81, P for trend <0.0001) Model 2: HR = 0.85 (95% CI = 0.62 - 1.17, P for trend = 0.077, NS) CVD mortality in women: Model 1: HR = 1.07 (95% CI = 0.75 - 1.53, P for trend = 0.522, NS) Model 2: HR = 1.06 (95% CI = 0.70 - 1.60, P for trend = 0.635, NS)

Table 4-B-I-2. Overview Table: Cardiovascular Disease—continued

	Author, Year Study Design	Sample Size Location Duration Dietary Assessment	Population Age/Gender Cohort	Exposure Index/Score	Outcomes Measured	Health Outcome
6.	Estruch et al., 2013 RCT	Initial N = 7,447 Final N = 6,924 Intent to treat analysis Spain 4.8 y FFQ (137-item) validated	55–80 y High CVD risk 57% Women Prevencion con Dieta Mediterranea (PREDIMED) Trial	Med diet + olive oil (OO) (N = 2,543) or Med diet + nuts (N = 2,454) vs control, low-fat diet (N = 2,450)	Major cardiovascular events (MI, stroke, or death from cardio-vascular causes)	CVD Med + OO vs control: HR = 0.70 (95% CI = 0.54 - 0.92, P = 0.01) Med + nuts vs control: HR = 0.72 (95% CI = 0.54 - 0.96, P = 0.03) Med diets combined vs control: HR = 0.71 (95% CI = 0.56 - 0.90, P for trend <0.005) For both Med diet groups, adherence to Med Diet scores were higher than the control group (P <0.0001 for all yearly comparisons of follow-up)
7.	Fitzgerald et al., 2012 Prospective Cohort	N = 34,827 U.S. 14.6 y FFQ (133-item, Willett)	Mean Age=55 y Women Women's Health Study	DASH score Total Score 8 - 40	CVD (fatal and non-fatal MI and stroke and cardio-vascular death). CHD (non-fatal MI and CHD death).	CVD, comparing highest to lowest quintile of DASH scores: HR = 0.88 (95% CI = 0.72 - 1.07; P for trend = 0.04)
8.	Folsom et al., 2007 Prospective Cohort	N = 20,993 U.S. 16 y FFQ (127-item) validated	55–69 y Women Iowa Women's Health Study (IWHS)	DASH Score Total Score 0 - 11	CVD, CHD, and stroke mortality	**CVD mortality**, comparing highest to lowest quintile of DASH scores: HR =0.93 (95% CI = 0.76 - 1.12; P for trend = 0.85, NS)
9.	Fung et al., 2009 Prospective Cohort	N = 74,886 U.S. 20 y FFQ (116-item) validated (assessed 6X)	38–63 y Women NHS	aMed Total Score 0 - 9	CVD, CHD, and stroke	Comparing highest to lowest quintile of aMed scores: CVD (CHD + stroke): RR = 0.78 (P for trend < 0.0001) **CVD mortality**: RR = 0.61 (95% CI = 0.49 - 0.76; P for trend < 0.0001)
10.	Gardener et al., 2011 Prospective Cohort	N = 2568 U.S. 9 y FFQ (Block NCI), validated	Mean Age: 69±10 y 64% Women Northern Manhattan Study (NOMAS)	MDS (as MeDi) Total Score 0 - 9	Combined Ischemic stroke, MI, and vascular death and vascular death alone	Comparing highest to lowest quintile of MDS scores: **Combined ischemic stroke, MI and vascular death**: HR = 0.75 (95% CI = 0.56 - 0.99; P for trend = 0.04) **Vascular death**: HR = 0.67 (95% CI = 0.46 - 0.98; P for trend = 0.02)
11.	Hoevenaar-Blom et al., 2012 Prospective Cohort	N = 34,708 The Netherlands 11.8 y FFQ (178-item)	20–65 y MORGEN 50–70 y PROSPECT 75% Women EPIC-NL	MDS Total Score 0 - 9	Fatal CVD, total CVD, composite CVD, stroke, and MI	Per 2 unit increment in MDS: **Fatal CVD**: HR = 0.78 (95%CI = 0.69 - 0.88) **Total CVD**: HR = 0.95 (95%CI = 0.91 - 0.98) **Composite CVD**: HR = 0.85 (95%CI = 0.80 - 0.91)
12.	Kaluza et al., 2009 Prospective Cohort	N = 40,837 Sweden 7.7 y FFQ (96-item)	45–79 y Men Cohort of Swedish Men (COSM)	RFS [expanded from original RFS] Total Score 0 - 36 Non-RFS Total Score 0 - 16	All-cause and CVD mortality	**CVD mortality**, comparing highest to lowest RFS (high, med, low): HR = 0.71 (95% CI = 0.54 - 0.93, P for trend = 0.003) CVD mortality, comparing highest to lowest non-RFS (high, med, low): HR = 1.27 (95% CI = 1.05 - 1.54, P for trend = 0.07)

Table 4-B-I-2. Overview Table: Cardiovascular Disease—continued

	Author, Year Study Design	Sample Size Location Duration Dietary Assessment	Population Age/Gender Cohort	Exposure Index/Score	Outcomes Measured	Health Outcome
13.	Kesse-Guyot et al., 2011 Prospective Cohort	N = 5,823 France 11.6 y 24-h record every 2 mos	Mean Age: ♀ 47.0±6.5 y ♂ 51.9±4.7 y 58% Women SU.VI.MAX study	PNNS-GS Total Score 0 - 15	CVD	CVD, comparing highest to lowest quartile of PNNS-GS: HR = 0.65 (95% CI = 0.42 - 1.00, P for trend = 0.04)
14.	Knoops et al., 2004 Prospective Cohort	N = 2,339 11 European countries 10 y Diet histories, validated	70–90 y 35% Women Healthy Ageing: a Longitudinal study in Europe (HALE)	MMDS Total Score 0 - 8 (w/out alcohol)	CVD and CHD mortality	Comparing the low risk group (MMDS = 4 or above) to the high risk group: CVD: HR = 0.71 (95% CI = 0.58 - 0.88)
15.	Martínez-González et al., 2011 Prospective Cohort	N = 13,609 Spain 5 y FFQ (96-item) validated	Mean Age: 38 y 56–61% Women Seguimiento Universidad de Navarra (SUN)	MDS Total Score 0 - 9	CVD and CHD	Comparing highest to lowest MDS scores: CVD: HR = 0.41 (95% CI = 0.18 - 0.95, P for trend = 0.07) Per 2-point increase in MDS score: CVD: HR = 0.80 (95% CI = 0.62 - 1.02)
16.	Martínez-González et al., 2012 Prospective Cohort	N = 15,535 Spain 2–10 y, FFQ(136-item) validated	Mean Age: 38.1±11.8 y 60% Women SUN	MDS Total Score 0 - 9	All-cause and CVD mortality	Per 2-point increase in MDS score: CVD mortality: HR = 0.59 (95% CI = 0.36 - 0.96, P for trend = 0.03)
17.	McCullough et al., 2000a Prospective Cohort	N = 38,622 U.S. 8 y FFQ (131-item) validated	40–75 y Men HPFS	HEI-f (HEI based on FFQs) Total Score 0 - 100	CVD (fatal or non-fatal stroke or MI)	CVD, comparing highest to lowest quintile of HEI-f scores: RR = 0.72 (95% CI = 0.60 - 0.88, P for trend < 0.001)
18.	McCullough et al., 2000b Prospective Cohort	N = 67,272 U.S. 12 y FFQ (116-item) validated	Mean Age by HEI-f quintiles: 48.7±6.83 to 52.7±7.0 y Women NHS	HEI-f (HEI based on FFQs) Total Score 0 - 100	CVD (fatal or non-fatal stroke or MI)	CVD, comparing highest to lowest quintile of HEI-f scores: RR = 0.86 (95% CI = 0.72 - 1.03, P for trend = 0.085, NS)
19.	McCullough et al., 2002 Prospective Cohort	N = 67,271 ♀ N = 38,615 ♂ U.S. 8–12 y FFQ (131-item) validated	Mean Age by AHEI Quintiles: ♀: 49.4–51.8 y ♂: 51.8–54.0 y 64% Women NHS and HPSF	AHEI, Total Score 2.5 - 87.5 RFS Total Score 0 - 23	CVD (fatal or non-fatal stroke or MI)	Comparing highest to lowest quintile of AHEI scores: CVD in men: RR = 0.61 (95% CI = 0.49 - 0.75; P for trend < 0.001) CVD in women: RR = 0.72 (95% CI = 0.60 - 0.86; P for trend < 0.001) Comparing highest to lowest quintile of RFS scores : CVD in men: RR = 0.77 (95% CI = 0.64 - 0.93; P for trend < 0.001) NS in Women

Table 4-B-I-2. Overview Table: Cardiovascular Disease—continued

	Author, Year Study Design	Sample Size Location Duration Dietary Assessment	Population Age/Gender Cohort	Exposure Index/Score	Outcomes Measured	Health Outcome
20.	Mitrou et al., 2007 Prospective Cohort	N = 380,296 U.S. 10 y FFQ(124-item) validated with 24h recalls	Median Age: 62 y 44% Women NIH-AARP Diet and Health Study	MDS Total Score 0 - 9 aMed Total Score 0 - 9	All-cause and CVD mortality	Comparing highest to lowest aMed scores (high, med, low): CVD mortality for men: HR = 0.78 (95% CI = 0.69 - 0.87, P for trend < 0.001) CVD mortality for women: HR = 0.81 (95% CI = 0.68 - 0.97, P for trend < 0.01) Similar results were seen for MDS, data not shown for fully adjusted model for men and women.
21.	Nakamura et al., 2009 Prospective Cohort	N = 9,086 Japan 19 y FFQ (31-item) NIPPON DATA80	Mean Age 49.1±13.5 – 51.7±13.0 y 56% Women National Integrated Project for Prospective Observation of Non-Communicable Diseases and its Trends in the Aged	Reduced Salt Japanese Diet Score Total Score 0 - 7	CVD, stroke, and MI mortality	Comparing highest to lowest tertile of Reduced Salt Japanese Diet scores: CVD mortality: HR = 0.80 (95% CI = 0.66 - 0.97; P for trend = 0.022)
22.	Nilsson et al., 2012 Prospective Cohort	N = 77,319 Sweden 10 y 3 FFQs: 2 84-item and 1 64-item	Median Ages: 50 y for low & med groups; 40 y for high group 51% Women Vasterbotten Intervention Program (VIP)	Traditional Sami diet score Total Score 0 - 8	All-cause and CVD mortality	Per 1 pt increase in Traditional Sami Diet score: CVD mortality for men: HR = 1.02 (95% CI = 0.97 - 1.08; P = 0.370, NS) CVD mortality for women: HR = 1.05 (95% CI = 0.96 - 1.15; P = 0.287, NS)
23.	Oba et al., 2009 Prospective Cohort	N = 29,079 Japan 7 y FFQ (169-item) validated	Mean Ages: ~55 y Women ~54 y Men 54% Women Takayama Study	Japanese Food Guide Spinning Top Total Score 0 - 70	All-cause and CVD mortality	Comparing highest to lowest quartile of Japanese Food Guide Scores: CVD mortality for men: HR = 1.06 (95% CI = 0.78 - 1.45, P for trend = 0.70, NS) CVD mortality for women: HR = 0.76 (95% CI = 0.56 - 1.04, P for trend = 0.05)
24.	Panagiotakos et al., 2008 Prospective Cohort	N = 2,101 Greece 5 y FFQ (EPIC Greece)	Mean Age: 45±14 y 50% Women ATTICA Study	MedDietScore Total Score 0 - 55	CVD (CHD, acute coronary syndromes, stroke, or other CVD)	CVD, per 1 unit increase in MedDietScore: RR = 0.94 (95% CI = 0.90 - 0.97) Only for men and women aged 35 - 65 y
25.	Russell et al., 2012 Prospective Cohort	N = 2,897 Australia 15 y FFQ(145-item), adapted from Willett	49–97 y 43.7 – 70% women across quintiles Blue Mountain Eye Study (BMES)	Total Diet Score (TDS) Total Score 0 - 20	All-cause and CVD mortality	CVD mortality, comparing highest to lowest quintile of TDS: HR = 0.77(95% CI = 0.57 - 1.05, P for trend = 0.1, NS) Per standard deviation increase in TDS (1 SD = 2·19 units): HR = 0.91 (95% CI = 0.82 - 1.00, P for trend = 0.06)
26.	Seymour et al., 2003 Prospective Cohort	N = 63,109 ♀ N = 52,724 ♂ U.S. 3 y FFQ (68-item) NCI Block	50–79 y 55% Women American Cancer Society Cancer Prevention Study II Nutrition cohort	DQI of Patterson Total Score 0 - 16 Higher DQI = poorer diet quality	All-cause and CVD mortality	Comparing highest to lowest DQI scores: All circulatory disease mortality for men: RR = 1.18 (95% CI = 0.80 - 1.74, P for trend = 0.83, NS) All circulatory disease mortality for women: RR = 1.81 (95% CI = 0.88 - 3.72, P for trend = 0.003)

Table 4-B-I-2. Overview Table: Cardiovascular Disease—continued

	Author, Year Study Design	Sample Size Location Duration Dietary Assessment	Population Age/Gender Cohort	Exposure Index/Score	Outcomes Measured	Health Outcome
27.	Sjögren et al., 2010 Prospective Cohort	N = 924 Sweden 10 y 7-day Dietary Record	Mean Age: 71 ±1 y Men Uppsala Longitudinal Study of Adult Men (ULSAM)	Healthy Diet Indicator (HDI) Total Score 1 - 8 MDS Total Score 0 - 9	All-cause and CVD mortality	CVD mortality, comparing the highest to lowest scores: HDI: HR = 1.25 (95% CI = 0.55 - 2.80, P for trend = 0.67, NS) MDS: HR = 0.60 (95% CI = 0.26 - 1.38, P for trend = 0.22, NS) In sub-analysis (N = 511), non-adequate dietary reporters were excluded: CVD mortality, comparing the highest to lowest scores: MDS: HR = 0.19 (95% CI = 0.04 - 0.86, P for trend = 0.009) Per standard deviation increase in MDS: HR = 0.63 (95% CI = 0.42 - 0.96) HDI: HR = 1.36 (95% CI = 0.44 - 4.13, P for trend = 0.85, NS) Per standard deviation increase in HDI: HR = 0.97 (95% CI = 0.60 - 1.57, NS)
28.	Tognon et al., 2012 Prospective Cohort	N = 77,151 Sweden 9 y 3 FFQs: 2 84-item and 1 64-item	30–60 y (including a few people aged 70 y) 51% Women VIP	MMDS Total Score 0 - 8	All-cause and CVD mortality	Comparing highest to lowest MMDS: CVD mortality for men: HR = 0.99 (95% CI = 0.93 - 1.04, NS) CVD mortality for women: HR = 0.90 (95% CI = 0.82 - 0.99, P for trend < 0.05)
29.	von Ruesten et al., 2010 Prospective Cohort	N = 23,531 Germany 7.8 y FFQ (148-item)	Mean Ages ♀: 46.5 ±8.8 - 49.7 ±9.6 y ♂: 50.1 ±7.6 - 53.2 ±8.3 y; 61% Women EPIC-Potsdam	German Food Pyramid Index (GFPI) Total Score 0 - 110	CVD incidence	Comparing highest to lowest quintile of GFPI scores: CVD in men: HR = 0.56 (95% CI = 0.34 - 0.94, P for trend = 0.0259) CVD in women: HR = 1.76 (95% CI = 0.34 - 2.25, P for trend = 0.2437)

Table 4-B-I-3. Overview Table: Coronary Heart Disease

	Author, Year Study Design	Sample Size Location Duration Dietary Assessment	Population Age/Gender Cohort	Exposure Index/Score	Outcomes Measured	Health Outcome
Coronary Heart Disease						
1.	Buckland et al., 2009 Prospective Cohort	N = 41,078 Spain 10.4 y Dietary history questionnaire, validated in Spain across all centers	29–69 y 62% Women EPIC-Spain	rMED Total Score 0 - 18	CHD incidence	Comparing highest to lowest rMED scores: CHD: HR = 0.60 (95% CI = 0.47 - 0.77, P for trend <0.001) CHD for men: HR = 0.58 (95% CI = 0.44 - 0.76, P for trend <0.001) CHD for women: HR = 0.67 (95% CI = 0.39 - 1.16, P for trend =0.16, NS) Per 1-unit increase in the 18-unit rMED: CHD: HR = 0.94 (95% CI = 0.91 - 0.97, P for trend <0.001) CHD for men: HR = 0.94 (95% CI = 0.91 - 0.97, P for trend <0.001) CHD for women: HR = 0.93 (95% CI = 0.87 - 0.99, P for trend = 0.04)
2.	Chiuve et al, 2011 Prospective Cohort	N = 81,722 U.S. 26 y FFQ, validated (assessed every 2-4 y)	Mean age: 72 y at follow-up Women NHS	aMed Total Score 0 - 9	Sudden cardiac death	Sudden cardiac death, comparing highest to lowest aMed scores: RR = 0.60 (95% CI = 0.43 - 0.84, P for trend < 0.001)
3.	Chiuve et al., 2012 Prospective Cohort	N = 112,488 U.S. 24 y FFQ (131-item) validated	♀ 30–55 y ♂ 40–75 y 64% Women NHS and HPFS	HEI - 2005 Total Score 0 - 100 AHEI - 2010 Total Score 0 - 110	CVD (CHD, stroke, or angina)	Comparing highest to lowest quintile of HEI-2005 and AHEI-2010 scores for each outcome (each adjusted for the other score): CHD: HEI-2005: RR = 0.97 (95% CI = 0.86 - 1.10; P for trend = 0.99, NS) AHEI-2010: RR = 0.69 (95% CI = 0.61 - 0.78; P for trend <0.001) P for similar effects of diet scores = 0.002
4.	Dilis et al., 2012 Prospective Cohort	N = 23,929 Greece 10 y FFQ (190-item) validated	20–86 y 60% Women EPIC-Greece	MDS Total Score 0 - 9	CHD incidence and mortality	Comparing highest to lowest MDS: CHD mortality: HR = 0.54 (95% CI = 0.37 - 0.81; P = 0.003) CHD mortality for men: HR = 0.62 (95% CI = 0.39 - 0.98; P = 0.040) CHD mortality for women: HR = 0.39 (95% CI = 0.17 - 0.88; P = 0.024) Per 2 point increase in MDS: CHD mortality: HR = 0.78 (95% CI = 0.66 - 0.92; P = 0.003) CHD mortality for men: HR = 0.81 (95% CI = 0.66 - 0.99; P = 0.043) CHD mortality for women: HR = 0.75 (95% CI = 0.57 - 0.98; P = 0.038) Comparing highest to lowest MDS: CHD incidence for women: HR = 0.62 (95% CI = 0.39 - 0.99; P = 0.043) NS men or men and women
5.	Fidanza et al., 2004 Prospective Cohort	N = 12,763 U.S., Finland, Italy, Greece, Japan, Yugoslavia, Serbia 25 y Food Records	40–59 y Men Seven Countries Study	MAI MAI was determined for sub-samples of the 16 cohorts	CHD mortality	MAI computed for 16 cohorts was inversely correlated with 25 y death rates from CHD. Coefficient of linear correlation between MAI and CHD mortality in 16 cohorts: R = -0.72 (P < 0.001)

Table 4-B-I-3. Overview Table: Coronary Heart Disease—continued

	Author, Year Study Design	Sample Size Location Duration Dietary Assessment	Population Age/Gender Cohort	Exposure Index/Score	Outcomes Measured	Health Outcome
6.	Fitzgerald et al., 2012 Prospective Cohort	N = 34,827 U.S. 14.6 y FFQ (133-item, Willett)	Mean Age = 55 y Women Women's Health Study	DASH score Total Score 8 - 40	CVD (fatal and non-fatal MI and stroke and cardio-vascular death). CHD (non-fatal MI and CHD death).	CHD, comparing highest to lowest quintile of DASH scores: HR = 0.90 (95% CI = 0.65 - 1.24; P for trend = 0.09, NS)
7.	Folsom et al., 2007 Prospective Cohort	N = 20,993 U.S. 16 y FFQ (127-item) validated	55 – 69 y Women Iowa Women's Health Study (IWHS)	DASH Score Total Score 0 - 11	CVD, CHD, and stroke mortality	CHD mortality, comparing the highest to lowest quintile of DASH scores: HR = 0.86 (95% CI = 0.67 - 1.12; P for trend = 0.69, NS)
8.	Fung et al., 2008 Prospective Cohort	N = 88, 517 U.S. 24 y FFQ (116-item) validated (assessed 7X)	34–59 y Women NHS	DASH Score Total Score 8 - 40	CHD (nonfatal MI or fatal CHD) and stroke	CHD, comparing highest to lowest quintile of DASH scores: RR = 0.73 (95% CI = 0.64 - 0.84; P for trend < 0.001) Risk reduction was significant for both fatal and nonfatal CHD
9.	Fung et al., 2009 Prospective Cohort	N = 74,886 U.S. 20 y FFQ (116-item) validated (assessed 6X)	38–63 y Women NHS	aMed Total Score 0 - 9	CVD, CHD, and stroke	CHD, comparing highest to lowest quintile of aMed scores: RR = 0.71 (95% CI = 0.62 - 0.82; P for trend < 0.0001) CHD mortality: RR = 0.58 (95% CI = 0.45 - 0.75; P for trend < 0.0001)
10.	Kant et al., 2000 Prospective Cohort	N = 42,254 U.S. 5.6 y FFQ (62-item), validated	40–93 y Mean Age: 61.1 y Women Breast Cancer Detection and Demonstration Project (BCDDP)	RFS Developed by authors Total Score 0 - 23	All-cause and CHD and Stroke mortality	CHD mortality, comparing highest to lowest quartile of RFS: RR = 0.67 (95% CI = 0.47 - 0.95, P for trend = 0.03)
11.	Knoops et al., 2004 Prospective Cohort	N = 2,339 11 European countries 10 y Diet histories, validated	70–90 y 35% Women HALE	MMDS Total Score 0 - 8 (w/out alcohol)	CVD and CHD mortality	Comparing the low risk group (mod MDS = 4 or above) with high risk group: CHD: HR = 0.61 (95% CI = 0.43 - 0.88)
12.	Martínez-González et al., 2011 Prospective Cohort	N = 13,609 Spain 5 y FFQ (96-item) validated	Mean Age: 38 y 56 – 61% Women SUN	MDS Total Score 0 - 9	CVD and CHD	Comparing highest to lowest MDS scores: CHD: HR = 0.42 (95% CI = 0.16 - 1.11, P for trend = 0.04) Per 2-point increase in MDS score: CHD: HR = 0.74 (95% CI = 0.55 - 0.99)
13.	Menotti et al., 2012 Prospective Cohort	N = 1,139 Italy 40 y Weighted-record for subsample and diet history for all	45–64 y Mean Age: 54.5±5 y Men Italian Rural Areas of the Seven Countries Study	MAI natural logarithm (lnMAI) Range 0 to >100	CHD mortality	CHD mortality, per 1 unit increase of lnMAI (~ 2.7 units of MAI): HR = 0.74 (95% CI = 0.55 - 0.99) at 20 y HR = 0.79 (95% CI = 0.64 - 0.97) at 40 y

Table 4-B-I-3. Overview Table: Coronary Heart Disease—continued

	Author, Year Study Design	Sample Size Location Duration Dietary Assessment	Population Age/Gender Cohort	Exposure Index/Score	Outcomes Measured	Health Outcome
14.	Michels and Wolk, 2002 Prospective Cohort	N = 59,038 Sweden 10 y FFQ (60-item)	40–76 y Women SMC	RFS Total Score 0 - 17 Non-RFS Total Score 0 - 21	All-cause and CHD and Stroke mortality	CHD mortality, comparing highest to lowest RFS: HR = 0.47 (95% CI = 0.33 - 0.68, P for trend < 0.0001) comparing highest to lowest Non- RFS: RR = 0.79 (95% CI = 0.47 - 1.32, P for trend = 0.09, NS)
15.	Osler et al., 2002 Prospective Cohort	N = 5,834 Denmark 12–14 y FFQ (26-item) validated	30–70 y 49% Women WHO MONICA study	Healthy Food Index Total Score 0 - 4	CHD incidence	CHD, comparing highest to lowest Healthy Food Index scores: HR = 1.21 (95% CI = 0.80 - 1.82; P for trend = 0.229, NS)
16.	Trichopoulou et al., 2003 Prospective Cohort	N = 22,043 Greece 3.7 y FFQ(150-item) validated	20–86 y 60% Women EPIC-Greece	MDS Total Score 0 - 9	All-cause and CHD mortality	CHD mortality, per 2 pt increment in MDS: HR = 0.67 (95% CI = 0.47 - 0.94)

Table 4-B-I-4. Overview Table: Stroke, Myocardial Infarction and Heart Failure

	Author, Year Study Design	Sample Size Location Duration Dietary Assessment	Population Age/Gender Cohort	Exposure Index/Score	Outcomes Measured	Health Outcome
Stroke						
1.	Agnoli et al., 2011 Prospective Cohort	N = 40,681 Italy 8 y FFQ (188 item)	♀ 35–74 y ♂ 35–64 y 60% Women EPIC-Italy	HEI-2005 Total Score 0 - 100 DASH score Total Score 8 - 40 MDS Total Score 0 - 9 Italian Med Index, Total Score 0 - 11	Stroke (all types of stroke, ischemic stroke, and hemorrhagic stroke)	Stroke: All patterns except HEI-2005 inversely associated, strongest association for Italian Index (highest to lowest tertile): HR = 0.47 (95%CI = 0.30 - 0.75, P for trend <0.001) Ischemic Stroke: All patterns except MDS inversely associated, strongest association for Italian Index (highest to lowest tertile): HR = 0.37 (95%CI = 0.19 - 0.70, P for trend < 0.001)
2.	Chiuve et al., 2012 Prospective Cohort	N = 112,488 U.S. 24 y FFQ (131-item) validated	♀ 30–55 y ♂ 40–75 y 64% Women NHS and HPFS	HEI - 2005 Total Score 0 - 100 AHEI - 2010 Total Score 0 - 110	CVD (CHD, stroke, or angina)	Comparing highest to lowest quintile of HEI-2005 and AHEI-2010 scores for each outcome (each adjusted for the other score): Stroke: HEI-2005: RR = 0.90 (95% CI = 0.77 - 1.05; P for trend = 0.12, NS) AHEI-2010: RR = 0.86 (95% CI = 0.74 - 1.00; P for trend = 0.03) P for similar effects of diet scores = 0.87, NS
3.	Estruch et al., 2013 RCT	Initial N = 7,447 Final N = 6,924 Intent to treat analysis Spain 4.8 y FFQ (137-item) validated	55–80 y High CVD risk 57% Women PREDIMED Trial	Med diet + olive oil (OO) (N = 2,543) or Med diet + nuts (N = 2,454) vs control, low-fat diet (N = 2,450)	Major cardiovascular events (MI, stroke, or death from cardio-vascular causes)	Stroke: Med + OO vs control: HR = 0.67 (95% CI = 0.46 - 0.98, P = 0.04) Med + nuts vs control diet: HR = 0.54 (95% CI = 0.35 - 0.84, P = 0.006) Med diets combined vs control diet: HR = 0.61 (95% CI = 0.44 - 0.86, P for trend <0.005) For both Med diet groups, adherence to Med Diet scores were higher than the control group (P<0.0001 for all yearly comparisons of follow-up).
4.	Folsom et al., 2007 Prospective Cohort	N = 20,993 U.S. 16 y FFQ (127-item) validated	55–69 y Women IWHS	DASH Score Total Score 0 - 11	CVD, CHD, and stroke mortality	Stroke mortality, comparing highest to lowest quintile of DASH scores: HR = 0.82 (95% CI = 0.55 - 1.23; P for trend = 0.44)
5.	Fung et al., 2008 Prospective Cohort	N = 88, 517 U.S. 24 y FFQ (116-item) validated (assessed 7X)	34–59 y Women NHS	DASH Score Total Score 8 - 40	CHD (nonfatal MI or fatal CHD) and stroke	Stroke, comparing highest to lowest quintile of the DASH scores: RR = 0.83 (95% CI = 0.71 - 0.96; P for trend = 0.007)
6.	Fung et al., 2009 Prospective Cohort	N = 74,886 U.S. 20 y FFQ (116-item) validated (assessed 6X)	38–63 y Women NHS	aMed Total Score 0 - 9	CVD, CHD, and stroke	Stroke, comparing the highest to lowest quintile of aMed scores: RR = 0.87 (95% CI = 0.73 - 1.02; P for trend = 0.03)

Table 4-B-I-4. Overview Table: Stroke, Myocardial Infarction and Heart Failure—continued

	Author, Year Study Design	Sample Size Location Duration Dietary Assessment	Population Age/Gender Cohort	Exposure Index/Score	Outcomes Measured	Health Outcome
7.	Gardener et al., 2011 Prospective Cohort	N = 2568 U.S. 9 y FFQ (Block NCI), validated	Mean Age: 69±10 y 64% Women Northern Manhattan Study (NOMAS)	MDS (as MeDi) Total Score 0 - 9	Ischemic stroke, vascular death, and MI	Ischemic Stroke, comparing the highest to lowest quintile of MDS scores: HR = 0.98 (95% CI = 0.58 - 1.65; P = 0.62)
8.	Hoevenaar-Blom et al., 2012 Prospective Cohort	N = 34,708 The Netherlands 11.8 y FFQ (178-item)	20–65 y MORGEN 50–70 y PROSPECT 75% Women EPIC-NL	MDS Total Score 0 - 9	Fatal CVD, total CVD, composite CVD, stroke, and MI	Per 2 unit increment in MDS: Stroke: HR = 0.88 (95% CI = 0.78 - 1.00) Ischemic stroke: HR = 0.86 (95% CI = 0.72 - 1.01) Hemorrhagic stroke: HR = 0.87 (95% CI = 0.60 - 1.09)
9.	Kant et al., 2000 Prospective Cohort	N = 42,254 U.S. 5.6 y FFQ (62-item), validated	40–93 y Mean Age: 61.1 y Women Breast Cancer Detection and Demonstration Project (BCDDP)	RFS Total Score 0 - 23	All-cause and CHD and Stroke mortality	Stroke mortality, comparing highest to lowest quartile of RFS: HR = 0.58 (95% CI = 0.35 - 0.96, P for trend = 0.02)
10.	Michels and Wolk, 2002 Prospective Cohort	N = 59,038 Sweden 10 y FFQ (60-item)	40–76 y Women Swedish Mammography Cohort (SMC)	RFS Total Score 0 - 17 Non-RFS Total Score 0 - 21	All-cause and CHD and Stroke mortality	Stroke mortality: Comparing highest to lowest RFS: HR = 0.40 (95% CI = 0.22 - 0.73, P for trend = 0.007) Comparing highest to lowest Non-RFS: RR = 0.96 (95% CI = 0.47 - 1.97, P for trend = 0.98) NS
11.	Misirli et al., 2012 Prospective Cohort	N = 23,601 Greece 10.6 y FFQ (190-item) validated	58% <55 y 23% 55–64 y 19% ≥65 y 60% Women EPIC-Greece	MDS Total Score 0 - 9	Cerebrovascular disease (CBVD)	Comparing highest to lowest MDS: CBVD: HR = 0.72 (95% CI = 0.54 - 0.97) CBVD mortality: HR = 0.76 (95% CI = 0.50 - 1.16, NS) Per 2 point increase in MDS: CBVD: HR = 0.85 (95% CI = 0.74 - 0.96) CBVD mortality: HR = 0.88 (95% CI = 0.73 - 1.06, NS)
12.	Nakamura et al., 2009 Prospective Cohort	N = 9,086 Japan 19 y FFQ (31-item) NIPPON DATA80	Mean Age 49.1±13.5 – 51.7±13.0 y 56% Women National Integrated Project for Prospective Observation of Non-Communicable Diseases and its Trends in the Aged	Reduced Salt Japanese Diet Score Total Score 0 - 7	CVD, stroke, and MI mortality	Stroke death , comparing highest to lowest tertile of Reduced Salt Japanese Diet scores: HR = 0.75 (95% CI = 0.56 - 0.99; P for trend = 0.038)
13.	Tognon et al., 2012 Prospective Cohort	N = 77,151 Sweden 9 y 3 FFQs: 2 84-and 1 64-item	30–60 y (included some aged 70 y) 51% Women VIP	MMDS Total Score 0 - 8	All-cause and CVD mortality	Comparing highest to lowest MMDS: Stroke mortality for men: HR = 0.98 (95% CI = 0.85 - 1.13, NS) Stroke mortality for women: HR = 1.00 (95% CI = 0.87 - 1.17, NS)

Table 4-B-I-4 Overview Table: Stroke, Myocardial Infarction and Heart Failure—continued

	Author, Year Study Design	Sample Size Location Duration Dietary Assessment	Population Age/Gender Cohort	Exposure Index/Score	Outcomes Measured	Health Outcome
Myocardial Infarction						
1.	Gardener et al., 2011 Prospective Cohort	N = 2568 U.S. 9 y FFQ (Block NCI), validated	Mean Age: 69±10 y 64% Women Northern Manhattan Study (NOMAS)	MDS (as MeDi) Total Score 0 - 9	Ischemic stroke, vascular death, and MI	MI, comparing the 2nd with the lowest quintile of MDS scores: HR = 0.55 (95% CI = 0.31 - 1.00; P <0.05)
2.	Hansen-Krone et al., 2012 Prospective Cohort	N = 18,062 Norway 10.8 y FFQ (37-item)	25–69 y Mean Age: 42 ±11 y 52% Women Tromso study	Smart Diet score Total Score 15 - 45 (this study 13 - 39)	MI (fatal and non-fatal)	MI, comparing highest to lowest tertile of Smart Diet scores: HR = 0.83 (95% CI = 0.66 - 1.06, P for trend = 0.1, NS)
3.	Hoevenaar-Blom et al., 2012 Prospective Cohort	N = 34,708 The Netherlands 11.8 y FFQ (178-item)	20–65 y MORGEN 50–70 y PROSPECT 75% Women EPIC-NL	MDS Total Score 0 - 9	Fatal CVD, total CVD, composite CVD, stroke, and MI	MI, per 2 unit increment in MDS: HR = 0.86 (95% CI = 0.79 - 0.93)
4.	Nakamura et al., 2009 Prospective Cohort	N = 9,086 Japan 19 y FFQ (31-item) NIPPON DATA80	Mean Age: 49.1±13.5 – 51.7±13.0 y 56% Women National Integrated Project for Prospective Observation of Non-Communicable Diseases and its Trends in the Aged	Reduced Salt Japanese Diet Score Total Score 0 - 7	CVD, stroke, and MI mortality	Acute MI death, comparing highest to lowest tertile of Reduced Salt Japanese Diet scores: HR = 0.84 (95% CI = 0.55 - 1.27; P for trend = 0.42, NS)
5.	Tognon et al., 2012 Prospective Cohort	N = 77,151 Sweden 9 y 3 FFQs: 2 84-and 1 64-item	30–60 y (included some aged 70 y) 51% Women VIP	MMDS Total Score 0 - 8	All-cause and CVD mortality	Comparing highest to lowest MMDS: MI mortality for men: HR = 0.96 (95% CI = 0.89 - 1.04, NS) MI mortality for women: HR = 0.84 (95% CI = 0.71 - 0.99, P for trend < 0.05)
Heart Failure						
1.	Belin et al., 2011 Prospective Cohort	N = 79,752 (CVD) N = 83,183 (HF) U.S. 10 y FFQ (WHI)	50–79 y Women, Postmenopausal WHI	AHEI Total Score 2.5 - 87.5 Dietary Modification Index (DMI) Total Score 6 - 30	Composite CVD (nonfatal MI, CHD death, coronary artery bypass graft/ coronary angioplasty, stroke, and HF) and HF alone	HF, comparing highest to lowest quintiles: DMI: HR = 0.91 (95% CI = 0.78 - 1.06, P for trend = 0.045) AHEI: HR = 0.70 (95% CI = 0.59 - 0.82, P for trend <0.001)
2.	Levitan et al., 2009a Prospective Cohort	N = 36,019 Sweden 7 y FFQ (96-item)	48–83 y Women SMC	1) DASH score of Fung 2) DASH score of Folsom 3) DASH Food score of NHLBI 4) DASH Nutrient score of NHLBI	Heart Failure (HF)	HF, comparing highest to lowest quartile of DASH scores (Fung): HR = 0.63 (95% CI = 0.48 - 0.81, P for trend <0.0001) DASH scores (NHLBI Food Rec): HR = 0.69 (95% CI = 0.52 - 0.90, P for trend = 0.007) DASH scores (NHLBI Nutrient Rec): HR = 0.69 (95% CI = 0.51 - 0.93, P for trend = 0.02) DASH score (Folsom) NS
3.	Levitan et al., 2009b Prospective Cohort	N = 38,987 Sweden 9 y FFQ (96-item)	45–79 y Men CSM	DASH score Total Score 8 - 40	Heart Failure (HF)	HF, comparing highest to lowest quartile of DASH scores: RR = 0.78 (95% CI = 0.65 - 0.95; P for trend = 0.006).

Table 4-B-I-5 Overview Table: Hypertension & Blood Pressure and Blood Lipids

	Author, Year Study Design	Sample Size Location Duration Dietary Assessment	Population Age/Gender Cohort	Exposure Index/Score	Outcomes Measured	Health Outcome
			Hypertension & Blood Pressure			
1.	Camoes et al., 2010 Prospective Cohort	N = 549 Portugal 3.8 y FFQ (82-item) validated	44% 40–49 y 37% 50–60 y 19% >60 y 62% Women EPIPorto	DASH Total Score: 0 - 9	HTN	HTN, comparing highest to lowest tertile of DASH scores: Incident Rate Ratio (IRR) = 0.84 (95% CI = 0.55 - 1.26, NS)
2.	Dauchet et al., 2007 Prospective Cohort	N = 2,341 France 5.4 y Repeated 24-h dietary records	Mean Age: ♀ 47.9±6.5y ♂ 52.7±4.7y 64% Women SU.VI.MAX	DASH score DASH + Keys score	SBP and DBP	Comparing highest to lowest quartile of DASH scores: SBP = -2.1 mmHg (P for trend <0.002) DBP = -0.6 mmHg (P for trend <0.02) The relation was similar for Dash + Keys score. SBP men = -2.7 mmHg (P for trend <0.03) DBP men = -0.8 mm Hg (P for trend <0.12, NS) SBP women = -1.5 mmHg (P for trend <0.06, NS) DBP women = -0.3 mm Hg (P for trend <0.17, NS)
3.	Estruch et al., 2006 RCT	Initial N = 772 Final N = 769 Spain 3 mos FFQ (137-item) validated	50–80 y High CVD risk 60, 50, 58% Women for: Med diet +OO, Med diet +nuts, and low-fat diet PREDIMED Trial	Subjects assigned to control low-fat diet (N = 257) or Med diet + OO (N = 257) or Med diet + nuts (N = 258) Med diet received nutrition education	SBP and DBP	SBP, compared with the low-fat diet: Mean change with Med diet +OO: -5.9mm Hg (95% CI = -8.7 to -3.1, P<0.001) Mean change with Med diet +nuts: -7.1 mm Hg (95% CI = -10.0 to -4.1, P<0.001) DBP, compared with the low-fat diet: Mean change with Med diet +OO: -1.60mm Hg (95% CI = -3.00 to -0.01, P=0.048) Mean change with Med diet + nuts: -2.6 mm Hg (95% CI = -4.2 to 1.0, P < 0.001)
4.	Folsom et al., 2007 Prospective Cohort	N = 20,993 U.S. 16 y FFQ (127-item) validated	55–69 y Women IWHS	DASH Score Total Score 0 - 11	HTN	HTN, comparing highest to lowest quintile of DASH scores: HR = 0.97 (95% CI = 0.87 - 1.07; P for trend = 0.96, NS)
5.	Jacobs et al., 2009 RCT	Initial N = 219 Final N = 187 Norway 1 y FFQ (180-item) validated	Mean Age: 45±2 y Men Oslo Diet and Exercise Study (ODES)	Author derived *a priori* score Total Score 0 - 62	SBP and DBP	Per 10-point increase in diet score: SBP: -3 mm Hg (P<0.01) NS after adjustment for intervention + change in % body fat DBP NS
6.	Núñez-Córdoba et al., 2009 Prospective Cohort	N = 9,408 Spain 4.2 y FFQ (136-item) validated	Mean Age ♀: 34.0±9.7 y ♂: 39.4±11.2 y 62% Women SUN	MDS Total Score 0 - 9	HTN and BP	Comparing highest to lowest MDS: HTN: HR = 1.12 (95% CI = 0.79 - 1.60; P for trend = 0.41, NS) SBP = -3.1 mmHG (95% CI = -5.4 to -0.8; P for trend < 0.01) DBP = -1.9 mmHG (95% CI = -3.6 to -0.1; P for trend < 0.05)

Table 4-B-I-5 Overview Table: Hypertension & Blood Pressure and Blood Lipids—continued

	Author, Year Study Design	Sample Size Location Duration Dietary Assessment	Population Age/Gender Cohort	Exposure Index/Score	Outcomes Measured	Health Outcome
7.	Rumawas et al., 2009 Prospective Cohort	N = 2,730 U.S. 7 y FFQ, Harvard	43–70 y 43–70% women across quintiles Framingham Offspring and Spouse (FOS)	MSDPS Total Score 0 - 130	SBP and DBP	NS MSDPS and SBP or DBP
8.	Steffen et al., 2005 Prospective Cohort	N = 4,304 U.S. 15 y CARDIA FFQ (baseline /7 y)	18–30 y 57% Women CARDIA	Authors' Food Index Total Score 0 - 24	Elevated BP (EBP)	EBP, comparing highest to lowest quintile of Food Index scores: HR = 0.59 (95% CI = 0.45 - 0.76; P for trend > 0.001) Food Index score was inversely associated with SBP and DBP (P < 0.05)
9.	Toledo et al., 2010 Prospective Cohort	N = 10,800 Spain 4.6 y FFQ (136-item),validated	Mean Age by DASH score: 36±11 – 39±12 y 57–84% Women SUN	MDS, MMDS, Updated MMDS (UMMDS), MAI, Mediterranean Diet Quality Index (MDQI), Mediterranean Food Pattern (MFP), MedDietScore, DQI-I, RFS, Quantitative Index Dietary Diversity, HEI & AHEI	HTN	HTN, comparing highest to lowest DASH scores: HR = 0.48 (95% CI = 0.21 - 1.09; P for trend = 0.02) HTN, comparing highest to lowest UMMDS scores: HR = 1.34 (95% CI = 1.04 - 1.73; P for trend = 0.02)
10.	Tortosa et al., 2007 Prospective Cohort	N = 2,563 Spain 6 y FFQ (136-item) validated	Age Not Reported Gender Not Reported SUN	MDS referred to as Med Food Pattern (MFP) Total Score 0 - 9	SBP and DBP	NS MFP and SBP or DBP
11.	van der Laar et al., 2012 Prospective Cohort	N = 373 The Netherlands 24 y Cross-check dietary history interviews	Mean Age: 13.1±0.8 y 53% Girls The Amsterdam Growth and Health Longitudinal Study	aMed Total Score 0 - 9	SBP, DBP, mean BP (MBP)	Per 2 point increase in aMed score: SBP: β = -0.140 (95% CI = -0.267 to -0.012) DBP: β = -0.142 (95% CI = -0.259 to -0.025) MBP: β = -0.158 (95% CI = -0.283 to -0.033)
12.	Zamora et al., 2011 Prospective Cohort	N = 3,700 U.S. 13 y FFQ CARDIA Diet History	Young Adults Ave age: 24–25 y Blacks: 58% Women Whites: 53% Women ~ 50% Blacks and 50% Whites CARDIA	DQI-2005	SBP and DBP	Comparing highest to lowest quartile of DQI-2005 scores: Decreased SBP (P=0.03) Decreased DBP (P=0.01)

Table 4-B-I-5 Overview Table: Hypertension & Blood Pressure and Blood Lipids—continued

	Author, Year Study Design	Sample Size Location Duration Dietary Assessment	Population Age/Gender Cohort	Exposure Index/Score	Outcomes Measured	Health Outcome
Blood Lipids						
1.	Estruch et al., 2006 RCT	Initial N = 772 Final N = 769 Spain 3 mos FFQ (137-item) Validated	50–80 y High CVD risk 60, 50, 58% Women for: Med diet +OO, Med diet +nuts, and low-fat diet PREDIMED Trial	Subjects assigned to control low-fat diet (N = 257) or Med diet + OO (N = 257) or Med diet + nuts (N = 258) Med diet received nutrition education	Blood Lipids	HDL cholesterol Med + OO vs control, mean change: 0.08 mmol/L (95% CI = 0.04 - 0.10, P < 0.001) Med + nuts vs control, mean change: 0.04 mmol/L (95% CI = 0.01 - 0.07, P = 0.006) Total cholesterol/HDL cholesterol ratio Med + OO vs control: -0.38 (95% CI = -0.55 to -0.22, P < 0.001) Med + nuts vs control: -0.26 (95% CI = -0.42 to -0.10, P = 0.002) Triglycerides Med + nuts vs control: -0.15 mmol/L (95% CI = -0.26 to -0.02, P = 0.022)
2.	Jacobs et al., 2009 RCT	Initial N = 219 Final N = 187 Norway 1 y FFQ (180-item) validated	Mean Age: 45±2 y Men Oslo Diet and Exercise Study (ODES)	Author derived *a priori* score Total Score 0 - 62	Blood Lipids	Total cholesterol, per 10-point increase in a priori score: -0.22 ±0.09 mmol/L (P = 0.02) LDL-C, HDL-C, and TG all NS
3.	Rumawas et al., 2009 Prospective Cohort	N = 2,730 U.S. 7 y FFQ, Harvard	43–70 y 43–70% women across quintiles Framingham Offspring and Spouse (FOS)	MSDPS Total Score 0 - 130	Blood Lipids	Highest compared to lowest quintile of MSDPS: Decreased triglyceride levels (P < 0.001) Increased HDL-cholesterol (P = 0.02)
4.	Tortosa et al., 2007 Prospective Cohort	N = 2,563 Spain 6 y FFQ (136-item) validated	Age Not Reported (University Grads) Gender Not Reported SUN	MDS referred to as Med Food Pattern (MFP) Total Score 0 - 9	Blood Lipids	NS between MFP and triglycerides or HDL-C .
5.	van der Laar et al., 2012 Prospective Cohort	N = 373 The Netherlands 24 y Cross-check dietary history (face-to-face) interviews	Mean Age: 13.1±0.8 y 53% Girls The Amsterdam Growth and Health Longitudinal Study	aMed Total Score 0 - 9	Blood Lipids	Per 2 point increase in aMed score: Total cholesterol: β = -0.155 (95% CI = -0.273 to -0.038) HDL-cholesterol: β = -0.059 (95% CI = -0.167 to 0.048)
6.	Zamora et al., 2011 Prospective Cohort	N = 3,627 U.S. 13 y FFQ CARDIA Diet History	Young Adults Ave age: 24–25 y Blacks: 58% Women Whites: 53% Women ~ 50% Blacks and 50% Whites CARDIA	DQI-2005	Blood Lipids	Comparing highest to lowest quartile of DQI-2005 scores: Increased HDL cholesterol (P = 0.02) NS triglycerides

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Section II: Factor and Cluster Analysis

By Patricia C. MacNeil, Joanne M. Spahn, and Joan Lyon

Are prevailing patterns of diet behavior in a population, assessed using factor or cluster analysis, related to risk of cardiovascular disease?

TECHNICAL ABSTRACT

Background

The goal of this systematic review project is to identify patterns of food and beverage intake that promote health and prevent disease. Historically, most dietary guidance has been based on research conducted on individual food components or nutrients. Dietary patterns are defined as the quantities, proportions, varieties, or combinations of different foods, drinks, and nutrients (when available) in diets, and the frequency with which they are habitually consumed. Factor and cluster analysis allow examination of the relationship between prevailing dietary patterns of a population and outcomes of public health concern. The objective of this systematic review was to assess the relationship between patterns of food and beverage intake, identified using factor and cluster analysis, and risk of cardiovascular disease (CVD).

Conclusion Statement

Limited evidence from epidemiological studies indicates that dietary patterns, assessed using cluster or factor analysis, characterized by vegetables, fruits, whole grains, fish, and low-fat dairy products are associated with decreased risk of cardiovascular disease in adults. Evidence of a relationship between dietary patterns characterized by red and processed meat, sugar-sweetened foods and drinks, and fried foods and an increased risk of cardiovascular disease is limited and less consistent. (Grade: III-Limited).

Methods

Literature searches were conducted using PubMed, Embase, Navigator (BIOSIS, CAB Abstracts, and Food Science and Technology Abstracts), and Cochrane databases to identify studies that evaluated the association between dietary patterns defined using factor or cluster analysis and CVD risk. Studies that met the following criteria were included in the review: Human subjects; Ages: 2 years and older; Populations: Healthy and those with elevated chronic disease risk; subjects from countries with high or very high human development (based on the 2011 Human Development Index); randomized controlled trials, non-randomized controlled trials, or quasi-experimental studies; Sample size: Minimum of 30 subjects per study arm; Dropout rate less than 20 percent; Study assesses dietary intake using factor and cluster analysis; study considered cardiovascular disease and risks of cardiovascular disease; published in English in a peer-reviewed journal. The date range for the conduct of studies was unlimited.

The results of each included study were summarized on evidence worksheets (including a study quality rating) and evidence table. A group of subject matter experts were involved in a qualitative synthesis of the body of evidence, development of a conclusion statement, and assessment of the strength of the evidence (grade), using pre-established criteria including evaluation of the quality, quantity, consistency, magnitude of effect, and generalizability of available evidence.

Findings

- Twenty-two prospective cohort studies conducted between 1989 and 2012 (from 18 cohorts) were included in this review. To derive dietary patterns, 15 studies used factor analysis and 5 studies used cluster analysis. Two studies generated dietary patterns using both factor and cluster analysis. Study duration ranged from 2 to 21 years. Seven studies were conducted in the United States; two studies each were conducted in Sweden, Italy, Japan, and Denmark; and the remaining studies were conducted in the United Kingdom, Spain, Australia, Finland, Greece, Germany, and the Netherlands.

- Variability in the studies included in this review, including populations considered, dietary assessment methods used, the number and type of food groupings included in the analyses, and the statistical techniques employed, made comparisons among studies challenging.
- In general, the favorable patterns were variously labeled "Mediterranean," "vegetable," "prudent," "whole grains and fruit," "cereals," "fish and olive oil," and "Japanese." The unfavorable patterns, were labeled as "Western," "fats and processed meat," "meat," "animal food," or "sweets" patterns.
- Nine studies examined dietary patterns and their association with CVD outcomes. Eight studies used factor analysis, and two used cluster analysis; only one study analyzed dietary intake beyond the baseline measure. Generally, dietary patterns characterized by vegetables, fruits, whole grains, fish, and low-fat dairy products were more consistently associated with a decreased risk of CVD, while patterns characterized by red and processed meat, sugar-sweetened foods and drinks, and fried foods were somewhat less consistently associated with increased risk.
- The evidence that evaluates the association between other related outcomes, as coronary heart disease, myocardial infarction, stroke, lipid levels, and blood pressure were insufficient and not consistent.

Discussion

The ability to draw strong conclusions was limited by the following issues:

- In factor and cluster analysis, the consolidation of food items into food groups, the number of factors or clusters to extract, and even the labeling of components are subjective. Furthermore, patterns derived from either factor or cluster analysis may not be reproducible across studies because elements of dietary patterns and analytic decisions differ.
- Dietary pattern analysis using factor or cluster methods may not be very informative in determining which elements of the diet or which biological relationships between these elements are responsible for the health outcome.
- Some studies completed over long periods of time did not account for changes to subjects' diets or seasonal variations in food supplies, which may have influenced the food components of patterns.
- The patterns derived through analyses may not represent the most beneficial or detrimental patterns relative to the health outcome of interest.

PLAIN LANGUAGE SUMMARY

How combinations of foods and beverages, or dietary patterns, impact cardiovascular disease

In the past, researchers looked at the relationship between individual foods and nutrients and health. Today, there is interest in looking at how combinations of foods and beverages, or dietary patterns, impact health. Statistical methods called factor and cluster analyses can be used to describe the patterns of foods and beverages people eat. This summary of a NEL review presents what we know about dietary patterns of certain groups of people described using factor and cluster analysis and the likelihood of increased risk of cardiovascular disease.

Conclusion

Limited evidence from epidemiological studies indicates that dietary patterns characterized by vegetables, fruits, whole grains, fish, and low-fat dairy products, assessed using cluster or factor analysis, are associated with decreased risk of cardiovascular disease in adults. Evidence of a relationship between dietary patterns characterized by red and processed meat, sugar-sweetened foods and drinks, and fried foods, on the one hand, and an increased risk of cardiovascular disease, on the other, is limited and less consistent.

What the Research Says

- Consuming a diet pattern characterized by vegetables, fruits, whole grains, fish, and low-fat dairy products may prevent adults from increasing the risk of cardiovascular disease.
- This review raised some key issues that make it harder to make stronger recommendations:
    - There were many differences in how the studies were done.
    - The dietary patterns differed a lot between studies.

EVIDENCE PORTFOLIO

Conclusion Statement

Limited evidence from epidemiological studies indicates that dietary patterns, assessed using cluster or factor analysis, characterized by vegetables, fruits, whole grains, fish, and low-fat dairy products are associated with decreased risk of cardiovascular disease in adults. Evidence of a relationship between dietary patterns characterized by red and processed meat, sugar-sweetened foods and drinks, and fried foods and an increased risk of cardiovascular disease is limited and less consistent.

Grade

III – Limited

Key Findings

- Cluster and factor analyses are data-driven approaches that describe the dietary patterns consumed by the study population. High variability in the studies included in this review, including populations, case number, sample size, dietary assessment techniques, methods used to define and retain factors and clusters, confounders considered and the statistical analysis employed, made comparisons among studies challenging.
- Patterns derived from either factor or cluster analyses are not reproducible across studies. The consolidation of food items into food groups, the number of factors or clusters to extract, and the labeling of components are based on subjective decisions. Patterns using the same naming convention frequently contain different foods or groups of foods, making it difficult to draw conclusions.
- In general, favorable associations with CVD risk were seen in dietary patterns characterized by high consumption of vegetables, fruits, whole grains, fish, and low-fat dairy products. The unfavorable patterns, characterized by high intake of red and processed meat, sugar-sweetened foods and drinks, and fried foods, were more mixed in results, with no association with risk frequently found.
- Association of patterns with favorable and unfavorable characteristics with CHD risk was mixed. Favorable patterns described as “prudent;” “healthy;” “evolved Mediterranean;” “bread, cereals, vegetables, fish, potatoes and oils;” and “whole grains and fruit” had an inverse association with CHD, while other patterns described as “prudent” or “healthy” had no association with CHD. The same inconsistency was found among unfavorable patterns described as “western” or “animal.”
- Variation in the number, design, size of studies, and patterns identified made it difficult to identify trends related to myocardial infarction, stroke, measures of blood lipids, and blood pressure.

Evidence Summary Overview

Description of the Evidence

Factor and cluster analyses are data-driven approaches that empirically derive food intake patterns. A description of these techniques is found in appendix A. A total of 22 prospective cohort studies conducted between 1989 and 2012 (from 18 cohorts) were included in this review. Sixteen received a positive quality rating (Akesson, 2007; Harriss, 2007; Heidemann, 2008; Kimokoti, 2012; Maruyama, 2012; Schulze, 2003; Shimazu, 2007; Panagiotakos, 2008; Fung, 2001; Fung, 2004; Guallar-Castillón, 2012; Hu, 2000; Mikkilä, 2007; Nettleton, 2009; Osler and Andreasen, 2002; Stricker, 2011) and six received a neutral quality rating (Brunner, 2008; Duffey, 2012; Farchi, 1989;

Hlebowicz, 2011; Menotti, 2011; Osler, 2001). Sample sizes ranged from 1,146 to 72,113 participants (four studies <2,000; eight studies 3,000 to 9,000; six with 20,000 to 50,000, and four >50,000 subjects). The three largest cohorts were from the Nurses' Health Study (Fung, 2001; Fung, 2004; Hiedemann, 2008), two small cohorts were from two rural Italian villages within the Seven Countries Study on Cardiovascular Disease (Farchi, 1989; Menotti, 2001), and two small cohorts were from the Danish WHO-MONICA survey (Osler and Andreasen, 2002; Osler and Heitmann, 2001). Study duration ranged from 2 to 21 years (seven <10 years, eight between 10 to 15 years, and seven >15 years). Eight studies (Heidemann, 2008; Nettleton, 2009; Fung, 2001; Hu, 2000; Fung, 2004; Duffey, 2012; Kimokoti, 2012; Schulze, 2003) were conducted in the United States, two studies each (Maruyama, 2012; Menotti, 2011; Osler, 2002; Osler, 2001; Shimazu, 2007; Hlebowicz, 2011; Farchi, 1989; Akesson 2007) were conducted in Sweden, Italy, Japan, and Denmark, and the remaining studies were conducted in the United Kingdom, Spain, Australia, Finland, Greece, Germany, and the Netherlands.

Population: All studies analyzed prospective data which, in general, included subjects free of cardiovascular disease (CVD), coronary heart disease (CHD), hypertension (HTN), and diabetes. Six studies did not exclude participants with chronic disease (Brunner, 2008; Farchi, 1989; Guallar-Castillón, 2012; Menotti, 2011; Mikkilä, 2007; Osler, 2001). One of these studies was conducted in children and adolescents (Mikkilä, 2007) and four adjusted for the presence of chronic disease or disease risk (Brunner, 2008; Farchi, 1989; Guallar-Castillón, 2012; Menotti, 2011). Ten studies were conducted in both men and women (Brunner, 2008; Duffey, 2012; Guallar-Castillon, 2012; Hlebowicz, 2011; Harriss, 2007; Maruyama, 2012; Nettleton, 2009; Osler, 2002; Osler, 2001; Panagiotakos, 2008), six studies included women only (Akesson, 2007; Fung, 2001; Fung, 2004; Heidemann, 2008; Kimokoti, 2000; Schulze, 2003), one recruited only postmenopausal women (Akesson, 2007), three studies included only men (Farchi, 1989; Hu, 2000; Menotti, 2011), and two studies analyzed health outcomes separately by gender (Hlebowicz 2011, Maruyama 2012). Age range at baseline spanned from 18 to 89 years; 15 studies recruited middle-aged and older populations (above 35 years), and two studies recruited young subjects at baseline, including children 3 to 18 years (Mikkila, 2007) and young adults 18 to 30 years (Duffey, 2012). Only one study identified the race/ethnic subgroups of their cohort (Nettleton, 2009).

Dietary Assessment Methodology: Dietary intake was assessed using a baseline food frequency questionnaire (FFQ) in 16 studies (Akesson, 2007; Brunner, 2008; Fung, 2004; Fung, 2001; Harriss, 2007; Heidemann, 2008; Hu, 2000; Kimokoti, 2012; Maruyama, 2012; Nettleton, 2009; Osler, 2002; Osler, 2001; Panagiotakos, 2008; Schulze, 2003; Shimazu, 2007; Stricker, 2012), and three studies from the Nurses' Health Study aggregated data from multiple FFQs completed at three (Fung, 2001; Fung, 2004) and five (Heidemann, 2008) time points during the study. Five studies (Duffey, 2012; Farchi, 1989; Guallar-Castillon, 2012; Hlebowicz, 2011; Menotti, 2011), used a diet history approach, two from the Seven Country Study relied on data collected in 1965 (Farchi, 1989; Menotti, 2001), one study used a validated interviewer-administered diet history conducted in the mid-eighties (Duffey, 2012), another from the EPIC Spanish cohort used a validated computerized diet history conducted in the early nineties (Guallar-Castillón, 2012), and another study used a diet history questionnaire combined with a 7-day food record completed in the early nineties (Hlebowicz, 2011). The longitudinal study involving children (Menotti, 2011) used a 48-hour recall to assess dietary intake.

Dietary Pattern Methodology: In general, individual food and beverage items were consolidated into food groups based on established criteria, and dietary patterns were then generated by either factor analysis or cluster analysis. A factor analysis technique was used in 15 studies (Akesson, 2007; Fung, 2004; Fung, 2001; Guallar-Castillón, 2012; Harriss, 2007; Heidemann, 2007; Hu, 2000; Maruyama, 2012; Menotti, 2011; Mikkilä, 2007; Nettleton, 2009; Osler and Heitmann, 2001; Osler and Andreasen, 2002; Schulze, 2003; Shimazu, 2007) and cluster analysis in 5 studies (Brunner, 2008; Duffey, 2012; Farchi, 1989; Hlebowicz, 2011; Kimokoti, 2012). Two studies (Panagiotakos, 2008; Stricker, 2011) generated dietary patterns using both factor and cluster analysis. Once dietary patterns were defined, analysis was conducted to assess the association between dietary patterns and health.

Health Outcomes: The studies in this body of evidence focus on both endpoint clinical outcomes and CVD risk factors (intermediate outcomes). Evidence was organized into the following categories for analysis: cardiovascular disease (CVD), coronary heart disease (CHD), myocardial infarction (MI), stroke and cardiovascular risk factors including blood pressure and blood lipid levels including LDL-C, HDL-C, and triglycerides.

Themes

- Nine studies, ranging in size from 1,221 to 64,037 subjects (4 studies with greater than 20,000 subjects) and conducted in Europe, Asia, Australia, and North America (two studies conducted in the United States) examined dietary patterns and their association with CVD outcomes (table 4-B-II-1). Seven studies (Harriss, 2007; Heidemann, 2008; Maruyam,a 2012; Menotti, 2011; Nettleton, 2009; Osler, 2001; Shimazu, 2007) used factor analysis, one used cluster analysis (Hlebowicz, 2011), one used both cluster and factor analysis (Panagiotakos, 2008), and only one study (Heidemann, 2008) analyzed dietary intake beyond the baseline measure. Generally, dietary patterns characterized by vegetables, fruits, whole grains, fish, and low-fat dairy products were more consistently associated with a decreased risk of CVD, while patterns characterized by red and processed meat, sugar-sweetened foods and drinks, and fried foods were somewhat less consistently associated with increased risk. The favorable patterns were variously labeled “Mediterranean,” “vegetable,” “prudent,” “whole grains and fruit,” “cereals,” “fish and olive oil,” and “Japanese.” The unfavorable patterns were labeled as “Western,” “meat,” or “sweets” patterns and were more mixed in results, with no association with risk frequently found.

- Ten studies, including a wide range of sample sizes (1,221 to 69,017 subjects, five with less than 7,000 subjects), conducted in Europe, North America, and Asia, examined dietary patterns and their association with CHD outcomes (table 4-B-II-2). Two studies (Brunner, 2008; Farchi, 1989) used cluster analysis, seven used factor analysis (Fung, 2001; Guallar-Castillon, 2012; Hu, 2000; Menotti; 2011; Nettleton; 2009; Osler; 2002; Shimazu, 2007), and one used both cluster and factor analyses. Association of patterns with favorable and unfavorable characteristics with CHD risk was mixed. Favorable patterns were described as “prudent;” “healthy;” “evolved Mediterranean;” “bread, cereals, vegetables, fish, potatoes, and oils;” and “whole grains and fruit” had an inverse association with CHD, while other patterns described as “prudent” or “healthy” had no association with CHD. The same inconsistency was found among unfavorable patterns. Patterns described as “Western” were either related to increased CHD risk or had no significant association.

- Two small studies (<6,500 subjects), one conducted in the United States and the other in the United Kingdom, and one large study (24,444 subjects) conducted in Sweden, examined the association of dietary patterns with fatal and nonfatal myocardial infarction (MI) (table 4-B-II-3). One study used cluster analysis and two studies used factor analysis, and all studies assessed dietary intake at baseline only. In general, patterns with favorable characteristics were more consistently associated with decreased risk, while the unfavorable patterns consistently had no association with fatal and nonfatal myocardial infarction. Favorable patterns were described as “healthy,” “Mediterranean-like,” and “whole grains and fruits.” The unfavorable patterns were described as “Western/Swedish,” “sweets,” and “fats and processed meat.”

- Four large studies (>35,000) and one small study (1,536 subjects), conducted in Europe, Asia, and North America (one large U.S. study, two large Japanese studies), examined the association between dietary patterns and incidence of stroke (table 4-B-II-4). Three studies (Fung, 2004; Maruyama, 2012; Shimazu, 2007) used factor analysis, one study used cluster analysis (Farchi, 1989), and one (Stricker, 2012) used both. Association of patterns with favorable and unfavorable characteristics with incidence of stroke was mixed. Favorable patterns described as “dairy product” and “prudent” were found to decrease risk, while patterns described as “prudent” and “vegetable” were found not to be associated with risk. Also, a “Japanese” pattern was found to decrease stroke risk. One “unhealthy” pattern was associated with increased risk, while two “animal food” patterns and a “Western component” pattern had no association with risk.

- Five small studies (ranging from 1,146 to 8,552 subjects), three conducted in the United States (Duffey, 2012; Kimokoti, 2012; Schulze, 2003) and two in Europe (Mikkila, 2007; Panagiotakos 2008), assessed the association between dietary patterns and lipid levels, blood pressure and/or incidence of hypertension (table 4-

B-II-5). Three of four studies evaluated an association with HDL, triglyceride, and/or LDL levels and found a favorable pattern generally had an inverse association with one or more of these measures. Five studies evaluated blood pressure or hypertension. Three of the five found no association between dietary patterns and BP, while the remaining two showed a protective effect in consuming a “health-conscious” pattern or a pattern characterized by cereals, small fish, hardtack, and olive oil. Although there were some vague signs that favor a healthier pattern, the number and size of the studies make it difficult to identify any clear trends.

Table 4-B-II-1 Summary of Findings

Dietary patterns identified using factor analysis of cluster analysis (shaded rows) and association with risk of cardiovascular disease (CVD)

Author, Year, Quality Rating, Study Design, Cohort	Sample Size, Location, Duration, Dietary Assessment, Methodology/No. Patterns	Age, % Female, Race/Ethnicity, Outcome/ Comparison No. Events	Dietary Patterns Associated with Lower CVD Risk	Dietary Patterns with No Significant Association with CVD	Dietary Patterns Associated with Higher CVD Risk
Harriss et al., 2007 Positive Prospective Cohort Melbourne Collaborative	N = 40,653 Australia 10.4 y 112- item FFQ FA: 4 patterns	40–69 y 59% 24% (Southern European immigrants) **CVD mortality**, highest vs lowest quartile Mortality: 697 events	• **"Factor 1-Mediterranean"** (garlic, cucumber, olive oil, salad greens, capsicum, cooked dried legumes, soups, feta and ricotta cheeses, olives, steamed fish, and broiled chicken), HR = 0.51 (95% CI = 0.30, 0.88), P for trend 0.03	• **"Factor 2-Vegetables"** (cauliflower, broccoli, carrots, cabbage or Brussels sprouts, pumpkin, green beans or peas, leafy greens, celery or fennel, potato cooked without fat, beetroot, zucchini or squash or eggplant, coleslaw, salad greens, cucumber, and capsicum), NS • **"Factor 3-Meat"** (beef rissoles, roast beef or veal, fried potatoes, beef or veal schnitzel, savory pastries, mixed dishes with lamb, fried eggs, beef steaks, fried fish, and bacon), NS • **"Factor 4-Fresh fruit"** (apricots, peaches or nectarines, plums, cantaloupe or honeydew, grapes, watermelon, pears, strawberries, oranges or mandarins, figs, apples, and pineapple), NS	
Heidemann et al., 2008 Positive Prospective Cohort Nurses' Health Study	N = 72,113 U.S. 18 y 116- item FFQ FA: 2 patterns	48–53 y 100% 97% White **CVD mortality**, highest vs lowest quintile Mortality: 1154 events	• **"Prudent"** (vegetables, fruit, legumes, fish, poultry, and whole grains), RR = 0.72 (95% CI = 0.60, 0.87), P<0.001		• **"Western"** (red and processed meats, refined grains, French fries, and sweets and desserts), RR = 1.22 (95% CI = 1.01, 1.48), P = 0.009

Table 4-B-II-1 Summary of Findings—continued

Dietary patterns identified using factor analysis of cluster analysis (shaded rows) and association with risk of cardiovascular disease (CVD)

Author, Year, Quality Rating, Study Design, Cohort	Sample Size, Location, Duration, Dietary Assessment, Methodology/No. Patterns	Age, % Female, Race/Ethnicity, Outcome/ Comparison No. Events	Dietary Patterns Associated with Lower CVD Risk	Dietary Patterns with No Significant Association with CVD	Dietary Patterns Associated with Higher CVD Risk
Maruyama et al., 2012 Positive Prospective cohort Japan Collaborative cohort (JACC) Study	N = 64,037 Japan Median = 12.6 y 40-item FFQ FA: 3 patterns	40–79 y 59% NR CVD mortality and risk, highest vs lowest quintile Mortality: 2311 events	CVD mortality: • **"Vegetable"** (fresh fish, vegetables, fungi, potatoes, algae, tofu [soybean curd] and fruits) Women: HR = 0.67 (95% CI = 0.43, 1.06), P for trend 0.05 Men: NS CVD risk: • **"Dairy product"** pattern (milk and dairy products, butter, margarine, fruits, coffee and tea) Women: HR = 0.76 (95% CI = 0.61 - 0.94), P for trend 0.01 Men: NS	CVD risk: • **"Animal food"** (meats, fish, and deep-fried foods or tempura), NS for either sex	
Menotti et al., 2011 Neutral Prospective cohort 2 rural villages from Seven Countries Study	N = 1153 for CHD incidence at 20 y N= 1,221 for mortality at 40 y Italy Diet History FA: 3 patterns	40–59 y 0% Women NR CVD incidence and Mortality CVD incidence: 513 events	• **"Factor 2"** (bread, cereals, pasta, potatoes, vegetables, fish, oils), P values not reported - CVD mortality (40 y): HR = 0.87 (95% CI = 0.78, 0.96)	• **"Factor 1"** (sugar, milk, meat, fruit, pastries, cheese), NS • **"Factor 3"** (eggs, alcoholic beverages), NS	

Table 4-B-II-1 Summary of Findings—continued

Dietary patterns identified using factor analysis of cluster analysis (shaded rows) and association with risk of cardiovascular disease (CVD)

Author, Year, Quality Rating, Study Design, Cohort	Sample Size, Location, Duration, Dietary Assessment, Methodology/No. Patterns	Age, % Female, Race/Ethnicity, Outcome/ Comparison No. Events	Dietary Patterns Associated with Lower CVD Risk	Dietary Patterns with No Significant Association with CVD	Dietary Patterns Associated with Higher CVD Risk
Nettleton et al., 2009 Positive Prospective cohort MESA	N = 5.316 U.S. 4.6 y (median of follow-up) 120-item FFQ FA: 4 patterns	45–84 y 53% White: 43% Black: 24% Hispanic: 21% Chinese:12% All CVD (fatal and nonfatal) and Hard CVD (incidence); highest vs lowest quintile All CVD: 207 events Hard CVD: 139 events	• "Whole grains and fruit" (whole grains, fruit, nuts and seeds, green leafy vegetables, and low-fat dairy foods) Any CVD (fatal and nonfatal) HR = 0.54 (95% CI = 0.33, 0.91), P for trend 0.007 Hard CVD HR = 0.37 (95% CI = 0.19, 0.72), P for trend 0.002	• "Fats and processed meat" (added fats, processed meat, fried potatoes, and desserts), NS • "Vegetables and fish" (several vegetable groups, fish, soup, Chinese foods, red meat, poultry, and soy), NS • "Beans, tomatoes and refined grains" (beans, tomatoes, refined grains, high-fat dairy foods, avocado, and red meat), NS	
Osler and Heitmann et al., 2001 Neutral Prospective cohort Danish WHO-MONICA survey	N = 5,871 Denmark Median = 15 y 28-item FFQ FA: 2 patterns	30–70 y 49% NR CVD mortality, highest vs lowest quartile Mortality: 108 events	• "Prudent diet" (whole meal cereals, fruit and vegetables) P values not reported - Women: HRRE = 0.87 (95% CI = 0.71, 1.06) Men: HRRE = 0.63 (95% CI = 0.44, 0.90)	• "Western food" (meat products, butter and white bread) pattern (which reflected the primary characteristics of traditional Danish main meals), NS	

Table 4-B-II-1 Summary of Findings—continued

Dietary patterns identified using factor analysis of cluster analysis (shaded rows) and association with risk of cardiovascular disease (CVD)

Author, Year, Quality Rating, Study Design, Cohort	Sample Size, Location, Duration, Dietary Assessment, Methodology/No. Patterns	Age, % Female, Race/Ethnicity, Outcome/ Comparison No. Events	Dietary Patterns Associated with Lower CVD Risk	Dietary Patterns with No Significant Association with CVD	Dietary Patterns Associated with Higher CVD Risk
Shimazu et al., 2007 Positive Prospective cohort Ohsaki NHI Cohort	N = 40,547 Japan 7 y 40-item FFQ FA: 3 patterns	40–79 y NR NR **CVD mortality**, highest vs lowest quartile Mortality: 801 events	• **"Japanese" pattern** (soybean products, fish, seaweeds, vegetables, fruits and green tea), HR =0.74 (95% CI: 0.59 - 0.91), P for trend 0.004	• **"DFA" pattern** [High-dairy (milk and yogurt), margarine, fruits and vegetables (carrot, pumpkin and tomato)], NS	• **"Animal" pattern** [Animal-derived products (beef, pork, ham, sausage, chicken, liver, and butter), coffee and alcohol], HR = 1.24 (95% CI: 1.00–1.54), P for trend 0.02
Panagiotakos et al., 2008 Positive Prospective cohort ATTICA	N = 3042 Greece 5 y 156-item FFQ FA: 15 components	18–89 y 50% NR **CVD risk (fatal and nonfatal)**, highest vs lowest quintile Mortality: 170 events	Food components and risk of developing CVD (p<0.05) • **Component 2** (Cereals, small fish, hardtack, and olive oil): HR = 0.72 (95% CI = 0.52, 1.00) • **Component 5** (Fruits, vegetables, and olive oil): HR = 0.80 (95% CI = 0.66, 0.97)	Food components and risk of developing CVD, NS • Component 1 (Cereals, potatoes, and bread) • Component 3 (Poultry) • Component 4 (Legumes) • Component 6 (Low fat dairy products) • Component 9 (Fish) • Component 10 (Red meat, pork, and margarine) • Components 11 -14 (mainly characterized by coffee, tea, nuts [without salt], wild tea, and chocolate)	Food components and risk of developing CVD (p<0.05) • **Component 7** (Sweets, red meat, margarine, and nuts with salt): HR = 1.32 (95% CI = 1.05, 1.66) • **Component 8** (Cheese and nuts with salt): HR = 1.26 (95% CI = 1.01, 1.56) • **Component 15** (Alcoholic beverages): HR = 1.26 (95% CI = 0.99, 1.60)
	CA: 3 groups	Group 3 vs Group 1		Comparator • **Group 1** (Healthy dietary choices.--increased fish, nuts w/o salt, legumes, low-fat dairy, F/V, potatoes, cereals, moderate red meat and poultry, and less coffee drinking)	• **Group 3** (Unhealthier choices--reduced fish, nuts, legumes, dairy, F/V, potatoes, cereals, and poultry intake, but increased red meat, sweets, and alcohol), HR = 2.0 (95% CI: 1.12, 3.54)
		Group 2 vs Group 3		Comparator: • **Group 3** (Unhealthier choices--reduced fish, nuts, legumes, dairy, F/V, potatoes, cereals, and poultry intake, but increased red meat, sweets, and alcohol)	• **Group 2** (Between healthy and unhealthy options--in the middle of the other groups in terms of consumption), HR = 1.6 (95% CI: 1.02, 2.50)

Table 4-B-II-1 Summary of Findings—continued

Dietary patterns identified using factor analysis of cluster analysis (shaded rows) and association with risk of cardiovascular disease (CVD)

Author, Year, Quality Rating, Study Design, Cohort	Sample Size, Location, Duration, Dietary Assessment, Methodology/No. Patterns	Age, % Female, Race/Ethnicity, Outcome/ Comparison No. Events	Dietary Patterns Associated with Lower CVD Risk	Dietary Patterns with No Significant Association with CVD	Dietary Patterns Associated with Higher CVD Risk
Hlebowicz et al., 2011 Neutral Prospective Cohort Malmö Diet and Cancer CVD Programme	N = 4,999 Sweden 13 y Dietary history CA: 6 groups	45–68 y 59% NR CVD risk (fatal and nonfatal,) each group versus "Many foods and drinks" (MFD) Incident: 449 events		**Comparator:** "Many foods and drinks" (MFD) HR and p-value not reported: • **"White bread"** (white bread, low-fat margarine, high-fat and low-fat meats and sweets) • **"Low fat and high fiber"** (fruits, low-fat milk, both high-fat and low-fat meats and sweets) • **"Fiber bread"** (fiber-rich bread, meats, sweets, fruits, low-fat margarines, and boiled potatoes)	No P values reported • **"Milk fat"** (Bregott [a spread consisting of butter and rapeseed oil] cheese, whole milk, white bread, and sweets): Women: HR = 2.2 (95% CI = 1.09, 4.44) Men: HR = 1.18 (95% CI = 0.72, 1.92) • **"Sweets and cakes"** (sugar, sweets, jam, cakes, biscuits, and soft drinks): Women: HR = 2.14 (95% CI = 1.17, 3.93) Men: HR = 1.10 (95% CI = 0.72, 1.71)

Table 4 B-II-2 Summary of Findings

Dietary patterns identified using factor analysis or cluster analysis (shaded rows) and association with risk of coronary heart disease (CHD)

Author, Year, Quality Rating, Study Design, Cohort	Sample Size, Location, Duration, Dietary Assessment, Methodology/No. Patterns	Age, % Female, Race/Ethnicity, Outcome/ Comparison No. Events	Dietary Patterns Associated with Lower CHD Risk	Dietary Patterns with No Significant Association with CHD	Dietary Patterns Associated with Higher CHD Risk
Brunner et al., 2008 Neutral Prospective cohort Whitehall II study	N = 6,610 U.K. 15 y 127-item FFQ CA: 4 patterns	Mean=50 y 30% NR CHD		Fatal CHD + nonfatal MI • “Unhealthy” pattern (white bread, processed meat, fries, and full-cream milk) Vs: • "Healthy" (fruit, vegetables, whole-meal bread, low-fat dairy, and little alcohol) HR = 0.74 (0.53, 1.02), P=0.07, NS • "Sweet" (white bread, biscuits, cakes, processed meat, and high-fat dairy products) HR = 0.81 (0.52, 1.27), P=0.35, NS • "Mediterranean-like" (fruit, vegetables, rice, pasta, and wine) HR = 0.72 (0.46, 1.12), P=0.15, NS	
Farchi et al., 1989 Neutral Prospective Cohort 2 rural villages from the Seven Countries Study	N = 1366 Italy 20 y Dietary History CA: 4 patterns	45–64 y 0% NR CHD mortality. age-adjusted death rate CHD: 168 deaths		• Cluster 1 (high alcohol intake [one-third of the total energy intake], consumption of minimum amount of meat, fruit, and cookies), NS • Cluster 2 (largest amount of polyunsaturated fatty acids [~3 times more than other groups]), NS • Cluster 3 (highest consumption of monounsaturated and saturated fatty acids, proteins; other nutrients are below the mean), NS • Cluster 4 (largest consumption of carbohydrates [~of total energy], proteins, vegetables, and starchy foods), NS	

Table 4 B-II-2 Summary of Findings—continued

Dietary patterns identified using factor analysis or cluster analysis (shaded rows) and association with risk of coronary heart disease (CHD)

Author, Year, Quality Rating, Study Design, Cohort	Sample Size, Location, Duration, Dietary Assessment, Methodology/No. Patterns	Age, % Female, Race/Ethnicity, Outcome/ Comparison No. Events	Dietary Patterns Associated with Lower CHD Risk	Dietary Patterns with No Significant Association with CHD	Dietary Patterns Associated with Higher CHD Risk
Fung et al., 2001 Positive Prospective Cohort Nurses' Health Study	N = 69,017 U.S. 12 y 116-item FFQ FA: 2 patterns	38–63 y 100% NR CHD risk, highest vs lowest quintile Incident CHD (Fatal CHD + nonfatal MI): 821 cases	• **"Prudent"** (higher intakes of fruit, vegetables, whole grains, legumes, fish, and poultry), RR = 0.76 (95% CI = 0.60, 0.98), P for trend 0.03		• **"Western"** (higher intakes of refined grains, red and processed meats, desserts, high-fat dairy products, and French fries), RR = 1.46 (95% CI = 1.07, 1.99), P for trend 0.02
		CHD risk, highest "prudent" score vs lowest "Western" score		Test for interaction between the Prudent and Western patterns was NS	
Guallar-Castillón et al., 2012 Positive Prospective Cohort EPIC study	N = 40,757 Spain 11 y Diet History FA: 2 patterns	29–69 y 62% NR CHD mortality and morbidity, lowest vs highest quintile CHD: 606 events	• **"Evolved Mediterranean"** (frequent intake of plant-based foods and olive oil), HR = 0.73 (95% CI = 0.57, 0.94); P for trend 0.0013	• **"Westernized"** (frequent consumption of refined cereals and red meats), NS	

Table 4 B-II-2 Summary of Findings—continued

Dietary patterns identified using factor analysis or cluster analysis (shaded rows) and association with risk of coronary heart disease (CHD)

Author, Year, Quality Rating, Study Design, Cohort	Sample Size, Location, Duration, Dietary Assessment, Methodology/No. Patterns	Age, % Female, Race/Ethnicity, Outcome/ Comparison No. Events	Dietary Patterns Associated with Lower CHD Risk	Dietary Patterns with No Significant Association with CHD	Dietary Patterns Associated with Higher CHD Risk
Hu FB et al., 2000 Positive Prospective Cohort Health Professionals Follow-up Study (HPFS)	N = 44,875 U.S. 8 y 131-item FFQ FA: 2 patterns	40–75 y 0% NR Fatal CHD and nonfatal MI, lowest vs highest quintile Fatal CHD: 359 events Non-fatal MI: 730 events		• **"Prudent"** (high intake of vegetables, fruits, legumes, whole grains, fish, and poultry), NS	• **"Western"** (high intake of processed meat, red meat, high-fat dairy products, refined grains, French fries, sweets and desserts), RR = 1.64 (95% CI = 1.24, 2.17), P for trend < 0.0001 Further adjusted for dietary cholesterol, saturated fat, and trans fat, RR = 1.43 (95% CI = 1.01, 2.01), P for trend < 0.004
Menotti et al., 2011 Neutral Prospective cohort 2 rural villages from Seven Countries Study	N = 1,221 Italy CHD 20 y CHD/CVD 40 y Diet History FA: 3 patterns	40–59 y 0% NR Fatal CHD, fatal and nonfatal MI CHD incidence: 185 events CHD mortality: 187 events	Fatal CHD + fatal and nonfatal MI at 20 y: • **"Factor 2"** (bread, cereals, vegetables, fish, potatoes, oils: HR = 0.88 (95% CI = 0.73, 0.96) CHD mortality at 40 y • **"Factor 2"** (bread, cereals, vegetables, fish, potatoes, oils), HR = 0.79 (95% CI = 0.66, 0.95)	Fatal CHD + fatal and nonfatal MI at 20 y: • **"Factor 1"** (sugar, milk, meat, fruit, pastries, cheese): HR = 1.12 (95% CI = 0.95, 1.31), NS • "Factor 3" (eggs, alcoholic beverages): HR = 1.02 (95% CI = 0.87, 1.19), NS CHD mortality at 40 y: • **"Factor 1"** (sugar, milk, meat, fruit, pastries, cheese): HR =0.87 (95% CI = 0.76, 1.01), NS • **"Factor 3"** (eggs, alcoholic beverages), HR = 1.17 (95% CI = 0.97, 1.40), NS	

Table 4 B-II-2 Summary of Findings—continued

Dietary patterns identified using factor analysis or cluster analysis (shaded rows) and association with risk of coronary heart disease (CHD)

Author, Year, Quality Rating, Study Design, Cohort	Sample Size, Location, Duration, Dietary Assessment, Methodology/No. Patterns	Age, % Female, Race/Ethnicity, Outcome/ Comparison No. Events	Dietary Patterns Associated with Lower CHD Risk	Dietary Patterns with No Significant Association with CHD	Dietary Patterns Associated with Higher CHD Risk
Nettleton et al., 2009 Positive Prospective cohort MESA	N = 5,316 U.S. Median = 4.6 y 120-item FFQ FA: 4 patterns	45–84 y 53% White: 43% Black: 24% Hispanic: 21% Chinese: 12% Lowest vs highest quintile Hard CHD (MI + Resuscitated cardiac arrest + CHD death, 87 events All CHD (Hard CHD + definite angina + probable angina): 150 events	• "Whole grains and fruit" (whole grains, fruit, nuts and seeds, green leafy vegetables, and low-fat dairy foods): Hard CHD: HR = 0.35 (95% CI = 0.14, 0.85), P for trend 0.01 All CHD: HR = 0.63 (95% CI = 0.34, 1.16), P for trend 0.05	Stated in narrative, analysis not shown: • "Fats and processed meat" (added fats, processed meat, fried potatoes, and desserts), NS • "Vegetables and fish" (several vegetable groups, fish, soup, Chinese foods, red meat, poultry, and soy), NS • "Beans, tomatoes and refined grains" (beans, tomatoes, refined grains, high-fat dairy foods, avocado, and red meat), NS	
Osler and Andreasen et al., 2002 Positive Prospective cohort study Danish WHO-MONICA survey	N = 5,834 Denmark Median = 15 y 26-item FFQ FA: 2 patterns	30–70 y 49% NR CHD mortality and morbidity, 280 events CHD		• "Prudent food" (whole meal breads), HR = 1.06 (95% CI = 0.93, 1.21), NS • "Western food" (meat, sausages, potatoes, butter and white bread), HR = 0.97 (95% CI = 0.85, 1.10), NS	

Table 4 B-II-2 Summary of Findings—continued

Dietary patterns identified using factor analysis or cluster analysis (shaded rows) and association with risk of coronary heart disease (CHD)

Author, Year, Quality Rating, Study Design, Cohort	Sample Size, Location, Duration, Dietary Assessment, Methodology/No. Patterns	Age, % Female, Race/Ethnicity, Outcome/ Comparison No. Events	Dietary Patterns Associated with Lower CHD Risk	Dietary Patterns with No Significant Association with CHD	Dietary Patterns Associated with Higher CHD Risk
Shimazu et al., 2007 Positive Prospective cohort Ohsaki NHI Cohort	N = 40,547 Japan 7 y 40-item FFQ FA: 3 patterns	40–79 y NR NR CHD mortality, highest vs lowest quartile CHD: 181		CHD mortality: • **"Japanese"** (soybean products, fish, seaweeds, vegetables, fruits and green tea), HR =0.82 (95% CI: 0.52–1.29), P for trend 0.29, NS	CHD mortality: • **"Animal"** [Animal-derived products (beef, pork, ham, sausage, chicken, liver, and butter), coffee and alcohol], HR = 1.50 (95% CI: 0.95–2.37), P for trend 0.05
Stricker et al., 2011 Positive Prospective cohort EPIC-NL cohort	N = 35,910 The Netherlands 13 y 79-item FFQ FA: 2 patterns	20–69 y NR NR CHD mortality and morbidity, lowest vs highest quartile CHD: 1,843 cases		• **"Prudent"** (high intakes of fish and shellfish, raw vegetables, wine, and high-fiber cereals and low consumption of potatoes): HR = 0.87 (95% CI = 0.75, 1.00), P trend = 0.058 • **"Western"** [high consumption of French fries, fast food (spring rolls, Russian salad, pizza, and Dutch fried meat snack), low-fiber products, and different drinks and low on fruit and vegetables and low-fat dairy products]: HR = 0.91 (95% CI = 0.76, 1.08), P trend = 0.342, NS	
	CA: 2 patterns	K-means cluster analysis, "Prudent" vs "Western" cluster		• **"Prudent"** (high intakes of fish and shellfish, raw vegetables, wine, and high-fiber cereals and low consumption of potatoes), HR = 0.93 (95% CI = 0.85,1.02)	

Table 4-B-II-3 Summary of Findings

Dietary patterns identified using factor analysis or cluster analysis (shaded rows) and association with risk of myocardial infarction (MI)

Author, Year, Quality Rating, Study Design, Cohort	Sample Size, Location, Duration, Dietary Assessment, Methodology/No. Patterns	Age, % Female, Race/Ethnicity, Outcome/ Comparison No. Events	Dietary Patterns Associated with Lower MI Risk	Dietary Patterns with No Significant Association with MI	Dietary Patterns Associated with Higher MI Risk
Akesson et al., 2007 Positive Prospective cohort Swedish Mammography Cohort	N = 24,444 Sweden 6.2 years 96-item FFQ FA: 4 patterns	48–83 y 100% NR MI (fatal and non fatal), lowest vs highest quintile MI: 308 cases	• "Healthy" (vegetables, fruits, and legumes), RR = 1.71 (95% CI = 1.14, 2.55), P for trend 0.004 • "Alcohol" (wine, liquor, beer, and some snacks), RR = 1.64 (95% CI = 1.09, 2.47), P for trend 0.002	• "Western/Swedish" (red meat, processed meat, poultry, rice, pasta, eggs, fried potatoes, and fish), NS • "Sweets" (sweets baked goods, candy, chocolate, jam, and ice cream), NS	
Brunner et al., 2008 Neutral Prospective cohort Whitehall II study	N = 7,731 N for MI = 7033 U.K. 15 y 127-item FFQ CA: 4 patterns	Mean=50 30.25% NR Fatal CHD and non-fatal MI event rates MI: 229 events		Comparator: • "Unhealthy" (white bread, processed meat, fries, and full-cream milk) vs. • "Mediterranean-like" (fruit, vegetables, rice, pasta, and wine), NS • "Healthy" (fruit, vegetables, whole-meal bread, low-fat dairy, and little alcohol) NS • "Sweet" (white bread, biscuits, cakes, processed meat, and high-fat dairy products), NS	
Nettleton et al., 2009 Positive Prospective cohort MESA	N = 5,316 U.S. Median = 4.6 y 120-item FFQ FA: 4 patterns	45–84 y 53% White: 43% Black: 24% Hispanic: 21% Chinese: 12% MI (fatal and nonfatal), highest vs lowest quintile MI: 72 events	• "Whole grains and fruit" (whole grains, fruit, nuts and seeds, green leafy vegetables, and low-fat dairy foods), HR = 0.34 (95% CI = 0.12, 0.94), P for trend 0.03	Stated in narrative, analysis not shown: • "Fats and processed meat" (added fats, processed meat, fried potatoes, and desserts), NS • "Vegetables and fish" (several vegetable groups, fish, soup, Chinese foods, red meat, poultry, and soy), NS • "Beans, tomatoes and refined grains" (beans, tomatoes, refined grains, high-fat dairy foods, avocado, and red meat), NS	

Table 4-B-II-4 Summary of Findings

Dietary patterns identified using factor analysis or cluster analysis (shaded rows) and association with risk of stroke

Author, Year, Quality Rating, Study Design, Cohort	Sample Size, Location, Duration, Dietary Assessment, Methodology/No. Patterns	Age, % Female, Race/Ethnicity, Outcome/ Comparison No. Events	Dietary Patterns Associated with Lower Stroke Risk	Dietary Patterns with No Significant Association with Stroke	Dietary Patterns Associated with Higher Stroke Risk
Farchi et al., 1989 Neutral Prospective Cohort 2 rural villages from Seven Countries Study	N = 1,536 Italy 20 y Dietary History CA: patterns	45–64 y 0% NR Stroke, age-adjusted death rate Stroke: 89 events	• Cluster 2 (largest amount of polyunsaturated fatty acids [about 3 times more than in other groups]), Age-adjusted death rate: 5.4±2.0 • Cluster 4 (largest consumption of carbohydrates [~of total energy], proteins, vegetables, and starchy foods), Age-adjusted death rate: 5.5±1.0	• Cluster 1 (high alcohol intake [one-third of the total energy intake], consumption of minimum amount of meat, fruit, and cookies), Age-adjusted death rate: 8.7±1.7 • Cluster 3 (highest consumption of monounsaturated and saturated fatty acids, proteins; other nutrients are below the mean), Age-adjusted death rate: 7.4±1.5 Stroke rates ± SEM (%), P<0.005 for Breslow test for equality of survival curves	
Fung et al., 2004 Positive Prospective Cohort Nurses' Health Study	N = 71,768 U.S. 14 y 116-item FFQ FA: 2 patterns	38–63 y 100% NR Stroke, highest vs lowest quintile Stroke: 791 incidents		• "Prudent" (higher intakes of fruit, vegetables, whole grains, fish, and poultry), NS	• "Western" (higher intakes of red and processed meats, refined grains, full-fat dairy products, and desserts and sweets), women: RR = 1.58 (95% CI = 1.15, 2.15), P for trend 0.0002
Maruyama et al., 2012 Positive Prospective cohort Japan Collaborative cohort	N = 64,037 Japan Median = 12.6 y 40-item FFQ FA: 3 patterns	40–79 y 58% NR Stroke, highest vs lowest quintiles Stroke: men=578 cases; women=499 cases	• "Dairy product" (milk and dairy products, butter, margarine, fruits, coffee and tea); men: HR = 0.65 (95% CI = 0.49 - 0.86); P for trend = 0.01; women: HR = 0.70 (95% CI = 0.51, 0.97), P for trend = 0.02	• "Vegetable" (fresh fish, vegetables, fungi, potatoes, algae, tofu [soybean curd] and fruits), NS • "Animal food" (meats, fish, and deep-fried foods or tempura), NS	

Table 4-B-II-4 Summary of Findings—continued

Dietary patterns identified using factor analysis or cluster analysis (shaded rows) and association with risk of stroke

Author, Year, Quality Rating, Study Design, Cohort	Sample Size, Location, Duration, Dietary Assessment, Methodology/No. Patterns	Age, % Female, Race/Ethnicity, Outcome/ Comparison No. Events	Dietary Patterns Associated with Lower Stroke Risk	Dietary Patterns with No Significant Association with Stroke	Dietary Patterns Associated with Higher Stroke Risk
Shimazu et al., 2007 Positive Prospective cohort Ohsaki NHI Cohort	N = 40,547 Japan 7 y 40-item FFQ FA: 3 patterns	40–79 y NR NR Stroke, highest vs lowest quartile Stroke: 432	• "Japanese" (soybean products, fish, seaweeds, vegetables, fruits and green tea), HR = 0.64 (95% CI: 0.48–0.86), P for trend 0.004	• "Animal" [Animal-derived products (beef, pork, ham, sausage, chicken, liver, and butter), coffee and alcohol], NS	
Stricker et al., 2011 Positive Prospective cohort EPIC-NL cohort	N = 35,910 The Netherlands 13 y 79-item FFQ FA: 2 patterns	20–69 y NR NR Stroke, lowest vs highest quartile Stroke: 588 cases	• "Prudent" (high intakes of fish and shellfish, raw vegetables, wine and high-fiber cereals and low consumption of potatoes), HR = 0.69 (95% CI = 0.53,0.88), P trend = 0.002	• "Western" [high consumption of French fries, fast food (spring rolls, Russian salad, pizza and Dutch fried meat snack), low-fiber products, and different drinks and low on fruit and vegetables and low-fat dairy products], NS	
	CA: 2 patterns	k-means cluster analysis, risk of stroke, Prudent" vs. "Western" cluster	• "Prudent" (high intakes of fish and shellfish, raw vegetables, wine and high-fiber cereals and low consumption of potatoes, HR = 0.82 (95% CI = 0.69,0.97)	Comparator: • "Western" [high consumption of French fries, fast food (spring rolls, Russian salad, pizza and Dutch fried meat snack), low-fiber products, and different drinks and low on fruit and vegetables and low-fat dairy products]	

Table 4-B-II-5 Summary of Findings

Dietary patterns identified using factor analysis or cluster analysis (shaded rows) and association with blood pressure and blood lipid measurements

Author, Year, Quality Rating, Study Design, Cohort	Sample Size, Location, Duration, Dietary Assessment, Methodology/No. Patterns	Age, % Female, Race/Ethnicity, Outcome/ Comparison No. Events	Dietary Patterns Associated with Favorable Blood Lipids or Blood Pressure	Dietary Patterns with No Significant Association Blood Lipids or Blood Pressure	Dietary Patterns Associated with Unfavorable Blood Lipids or Blood Pressure
Duffey et al., 2012 Neutral Prospective cohort CARDIA study	N = 4,161 U.S. 20 y Dietary History CA: 2 patterns	18–30 y 59% NR Lipids and BP	**"Prudent diet"** (fruit, milk, yogurt, cheese, nuts, seeds, fish, and whole grains) vs **Comparator** - "Western diet" (meats, poultry, refined grains, soda, fast food, fruit drinks, egg and egg dishes, legumes, and snacks) **Low HDL-C**: HR = 0.87 (95% CI: 0.75, 0.99), P<0.05	**"Prudent diet"** (fruit, milk, yogurt, cheese, nuts, seeds, fish, and whole grains) vs. **Comparator** - "Western diet" (meats, poultry, refined grains, soda, fast food, fruit drinks, egg and egg dishes, legumes, and snacks). **High TGs**: HR = 0.80(95% CI: 0.61, 1.05), NS **High BP**: HR = 1.14 (95% CI: 0.87, 1.51), NS	
Kimokoti et al., 2012 Positive Prospective cohort Framingham Offspring/Spouse cohort	N = 1,146 U.S. 7 y FFQ (145-items) FA: 5 patterns	25–77 y 100% NR Lipids and BP		No pattern was associated with **elevated BP, hypertriglyceride or HDL-C** • **"Heart healthier"** (vegetables, fruits, legumes, fish, whole grain, low-fat dairy milk). • "Lighter eating" (fattier poultry and beer). •**"Wine and moderate eating"** (wine, organ meats, eggs, high-fat dairy, and snack foods). • **"Higher fat"** (sweets and animal fats, refined grains, soft margarine, oils, diet beverages, and desserts). • **"Empty calorie"** (sweetened beverages, meat, mixed dishes and desserts).	
Mikkilä et al., 2007 Positive Prospective cohort Cardiovascular Risk in Young Finns Study	N = 1,768 Finland 21 y 48-hour recall FA: 2 patterns	3–18 y NR NR Lipids and BP (b indicates the changed in predicted z-score for outcome variable per unit increase in the pattern score)	**"Health-conscious"** pattern (high consumption of vegetables, fruit, root vegetables, fish, legumes and nuts, tea, rye, cheese and other dairy products, and alcoholic beverages). LDL cholesterol: Women: b = -0.07 (0.03); P=0.01 Men: b = 0.03 (0.02); NS		**"Traditional"** pattern (high consumption of potatoes, sausages, milk, coffee, rye, and butter). LDL-C: Women: b = 0.08 (0.03), P < 0.01 Men: b = 0.07 (0.02), P<0.01 SBP: Women: b= 0.08 (0.03), P=0.02 Men: b= 0.02 (0.03), NS

Table 4-B-II-5 Summary of Findings—continued

Dietary patterns identified using factor analysis or cluster analysis (shaded rows) and association with blood pressure and blood lipid measurements

Author, Year, Quality Rating, Study Design, Cohort	Sample Size, Location, Duration, Dietary Assessment, Methodology/No. Patterns	Age, % Female, Race/Ethnicity, Outcome/ Comparison No. Events	Dietary Patterns Associated with Favorable Blood Lipids or Blood Pressure	Dietary Patterns with No Significant Association Blood Lipids or Blood Pressure	Dietary Patterns Associated with Unfavorable Blood Lipids or Blood Pressure
Panagiotakos et al., 2008 Positive Prospective cohort ATTICA	N = 3,042 Greece 5 y FFQ (156-item) FA: 15 components	18–89 50% NR Lipids and BP	• Component 2 (Cereals, small fish, hardtack, and olive oil) : SBP: r = - 0.09, p=0.007 LDL-C: r = - 0.05, p=0.01 HDL-C: r = 0.06, p=0.002 • Component 15: (alcoholic beverages intake) SBP: r = 0.15, p=0.01 DBP: r = 0.09, p=0.06		• Component 7 (Sweets, red meat, margarine, and nuts with salt): SBP: r = 0.15, p=0.01 DBP: r=0.13, p=0.02 • Component 8 (Cheese and nuts with salt): SBP: r = 0.13, p=0.03 DBP: r = 0.13, p=0.03
	CA: 3 patterns	Group 1 vs Group 3 Lipids	• Group 1 (Healthy dietary choices—increased fish, nuts w/o salt, legumes, low-fat dairy, F/V, potatoes, cereals, moderate red meat and poultry, and less coffee drinking) Low LDL 39% (±8%), p < 0.001		• Group 3 (Unhealthier choices—reduced fish, nuts, legumes, dairy, F/V, potatoes, cereals, and poultry intake, but increased red meat, sweets, and alcohol)
		Group 2 vs Group 3	• Group 2 (Between healthy and unhealthy options--in the middle of the other groups in terms of consumption) Low LDL 22% (±5%), p < 0.01		• Group 3 (Unhealthier choices—reduced fish, nuts, legumes, dairy, F/V, potatoes, cereals, and poultry intake, but increased red meat, sweets, and alcohol)
Schulze et al., 2003 Positive Prospective cohort EPIC- Potsdam	N = 8,552 U.S. 2–4 y FFQ (148-item) FA: 2 patterns	35–64 y 100% NR Risk of hypertension HTN Incidence: 123 cases		• "Traditional cooking" (meat, cooked vegetables, sauce, potatoes, and poultry), NS • "Fruits and vegetables" (fruits, raw vegetables, and vegetable oil), NS	

Qualitative Assessment of the Collected Evidence

Quality and Quantity

This review includes 22 prospective cohort studies, which examine the relationship between dietary patterns and CVD incidence or mortality (9 studies); CHD morbidity and mortality (10 studies); fatal and nonfatal MI (3 studies); stroke incidence and mortality (5 studies); and blood pressure, hypertension, and lipid levels (5 studies). Sixteen of 22 studies were found to be of positive quality, indicating a low risk of bias and random error. The other six studies received a neutral quality rating.

Consistency

In general, favorable associations with CVD risk were seen in dietary patterns characterized by high consumption of vegetables, fruits, legumes, whole grains, fish, and low-fat dairy, and other foods. Dietary patterns showing some times unfavorable associations with CVD risk were described as unhealthy or Western and were in general characterized by high intake of red meat, processed meat, deep-fried foods, sugar-sweetened foods and drinks, and refined grains. No clear pattern of association was identified between dietary patterns and risk for coronary heart disease. In addition, the number, design, size of studies, and variation in patterns identified make it difficult to identify trends related to myocardial infarction, stroke, and measures of blood lipids and blood pressure.

Impact

The studies evaluated varied with regard to dietary assessment methods. Patterns using the same naming convention may contain very different foods or groups of foods and patterns, making it difficult to draw conclusions. Variations in the number of study subjects and subjective decisions involved in deriving and retaining factors and clusters for analysis likely influence power and the ability to detect associations.

Generalizability/External Validity

All studies but one (Mikkilä, 2007) recruited adult population, and both men and women were well represented. Studies were conducted in Europe, North America, Asia, and Australia, and populations were primarily Whites. Ethnicity and socioeconomic status were often not reported or included in analyses. Subsequently, the conclusion for this review is limited to White adults.

Limitations of the Evidence

- Most longitudinal studies included only baseline measure of dietary intake and did not account for changes to subjects' diets, availability and variations in the food supply, which may have influenced the food components of patterns.
- Variations in the number and type of food groupings and definitions and naming conventions found in the review are not easily comparable and factors with the same naming convention (e.g., "vegetable" or "healthy") may include somewhat different foods or groups of foods with varying factor loadings.
- Differences in the statistical analysis approaches used to derive and retain factors and clusters influences power and the ability to detect an association.
- Patterns derived from factor analysis and cluster analyses were analyzed differently. In factor analysis, "high" scores were generally compared with "low" scores of the same pattern, though it was not clear what characteristic differences there were in a "high" versus "low" score factor. In cluster analysis, one cluster was compared with another one, making it difficult to interpret results together.

Research Recommendations

- Evaluate and standardize methods used to assess, organize, aggregate, and adjust food variables to facilitate interpretation of findings across studies.
- Additional research is needed to examine if and how gender, age, SES, and ethnicity might influence the relationship between dietary patterns and cardiovascular disease risk.
- Explore the characteristics of dietary patterns beyond food choice, such as timing and frequency of meals, meal sizes, and eating occasions.

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Section III: Reduced Rank Regression Analysis

By Thomas V. Fungwe and Julie E. Obbagy

What is the relationship between adherence to dietary guidelines/recommendations or specific dietary patterns, assessed using reduced rank regression analysis, and cardiovascular disease?

TECHNICAL ABSTRACT

Background

The goal of this systematic review project is to identify patterns of food and beverage intake that promote health and prevent disease. Historically, most dietary guidance has been based on research conducted on individual food components or nutrients. Dietary patterns are defined as the quantities, proportions, variety, or combination of different foods, drinks, and nutrients (when available) in diets, and the frequency with which they are habitually consumed. Reduced rank regression (RRR) is a statistical method that determines dietary patterns (combinations of food intake) that explain as much variation as possible among a set of response variables related to a health outcome of interest. It is an *a posteriori* method since it uses both existing evidence and exploratory statistics. The objective of this systematic review was to assess the relationship between patterns of food and beverage intake identified using reduced rank regression, and risk for cardiovascular disease.

Conclusion Statement

Insufficient evidence, due to a small number of studies, was available to examine the relationship between dietary patterns derived using reduced rank regression and risk of cardiovascular disease. The disparate nature of the methods used made it difficult to compare results, and therefore, no conclusions were drawn. (Grade: Not Assignable)

Methods

Literature searches were conducted using PubMed, Embase, Navigator (BIOSIS, CAB Abstracts, and Food Science and Technology Abstracts), and Cochrane databases to identify studies that evaluated the association between dietary patterns derived using reduced rank regression analysis and risk of cardiovascular disease (CVD). Studies that met the following criteria were included in the review: Human subjects; Ages: 2 years and older; Populations: Healthy and those with elevated chronic disease risk; individuals with chronic disease; published in English in a peer-reviewed journal; Sample size: Minimum of 30 subjects per study arm; Dropout rate less than 20 percent; Study assesses dietary intake using reduced rank regression analysis; study considered cardiovascular disease and risks of cardiovascular disease; subjects from countries with high or very high human development (based on the 2011 Human Development Index). The date range for the conduct of the studies was unlimited.

The results of each included study were summarized in evidence worksheets (including a study quality rating) and evidence table. A group of subject matter experts were involved in a qualitative synthesis of the body of evidence, development of a conclusion statement, and assessment of the strength of the evidence (grade) using pre-established criteria including evaluation of the quality, quantity and consistency, magnitude of effect, and generalizability of available evidence.

Findings

- Four prospective cohort studies examined dietary patterns derived using reduced rank regression analysis and their association with CVD risks and incidence. The studies ranged in size from 981 to 26,238 subjects, and one study each was conducted in the United States, United Kingdom, and Germany, and one included subjects from Europe. The follow-up for these studies ranged in duration from 6 to 25 years.

- Comparison across studies was limited by the small number of studies, differences in methodologies used, and in the populations studied. Therefore no conclusions were drawn.
- More U.S. population-based research is needed to examine dietary patterns and risk of cardiovascular disease using reduced rank regression, preferably with more consistent methods and response variables.

Discussion

The ability to draw a gradable conclusion was limited due to the following issues:

- Three out of the four studies used biomarkers and the fourth study used nutrients as response variables in the reduced rank regression analyses. Among the three studies that used biomarkers as response variables, there were differences in the type of biomarkers chosen, leading to the identification of dietary patterns that differed from study to study. One study used change in BMI, mean arterial pressure, total cholesterol, HDL-cholesterol, triglycerides (mg/dl), fasting glucose, and uric acid. The second study used C-reactive protein, Interleukin (IL)-6, and Interleukin (IL)-18, while the third study used total cholesterol, HDL cholesterol, and triglycerides. The fourth study used nutrients, including total fat, total carbohydrate, and fiber, as response variables. Because the dietary patterns described in each study are directly linked to response variables chosen, the variation in the response variables used means that the resulting dietary patterns may not be comparable.
- Dietary assessment methods were different across the studies. One study used 3-day diet records; another used a self-administered FFQ; a third used a 127-item validated FFQ, and the fourth study used a 7-day dietary record. It is unclear what impacts different dietary assessment methods have on the derivation of dietary patterns using reduced rank regression.
- The studies were not consistent in their use of confounders in analyses. In particular, physical activity was not included as a confounder in the analyses by one study, and another did not include smoking as a confounder.
- The studies were conducted in different countries, representing populations in different regions of the world, which limited the ability to compare and interpret the results due to potential differences in dietary patterns between these regions. From that perspective, the results may not be generalizable to some U.S. populations.

PLAIN LANGUAGE SUMMARY

Combinations of food intake (assessed using reduced rank regression) that explain the most variation in risk of cardiovascular disease

Researchers have previously looked at the relationship between individual foods and nutrients and health. Today, there is interest in looking at how combinations of foods and beverages intake, or dietary patterns, influence health by applying different scientific methods. A statistical method called reduced rank regression analysis can be used to describe the patterns of foods and beverages people eat based on a set of “response variables” that are known to be related to the health outcome of interest. This summary of a NEL review presents what research evidence currently exist when reduced rank regression analysis is the method used to study the dietary patterns of groups of people and their likelihood of developing the risk for cardiovascular diseases such as high blood lipids, high blood pressure, and heart disease.

Conclusion

Insufficient evidence, due to a small number of studies, was available to examine the relationship between dietary patterns derived using reduced rank regression and risk of cardiovascular disease. The disparate nature of the methods used made it difficult to compare results, and therefore, no conclusions were drawn.

What the Research Says

- Four studies looked at dietary patterns found using reduced rank regression analysis and the risk of developing cardiovascular disease. However, these studies had some key issues that make it hard to make any recommendations:
- There were few studies available.
- There were many differences in how the studies were done.
- The populations studied were different between studies.

EVIDENCE PORTFOLIO

Conclusion Statement

Insufficient evidence, due to a small number of studies, was available to examine the relationship between dietary patterns derived using reduced rank regression and risk of cardiovascular disease. The disparate nature of the methods used made it difficult to compare results, and therefore, no conclusions were drawn.

Grade

IV – Not Assignable

Key Findings:

- Four positive quality prospective cohort studies that used reduced rank regression to examine the relationship between dietary patterns and cardiovascular disease (CVD) status were included in this review. Comparison across studies is limited by the small number of studies, differences in methodologies used, and in the populations studied. Therefore no conclusions were drawn.
- More U.S. population-based research is needed to examine dietary patterns and risk of cardiovascular disease using reduced rank regression, preferably with more consistent methods and response variables.

Evidence Summary Overview

Description of the Evidence

Four prospective cohort studies included in this systematic review (Drogan, 2007; Heroux, 2009; McNaughton, 2009; Meyer, 2011) used reduced rank regression analysis (see appendix A) to examine the relationship between dietary patterns and CVD. All of the studies were rated positive quality. One study each was conducted in the United States, United Kingdom, and Germany, and one included subjects from Europe. The sample sizes for these studies ranged from 981 to 26,238 participants (1 study <1000, 1 study <8,000, 1 study <14,000, and 1 study >26,000). All four studies were conducted in adults. Three of the studies included both females and males, while one study included only males (Meyer, 2011).

The studies in this review used different dietary assessment methods, including 3-day diet records (Heroux 2009), a self-administered FFQ (Drogan 2007), a 127-item validated FFQ (McNaughton, 2009), and a 7-day dietary record (Meyer, 2011). The studies also examined a variety of CVD-related outcomes: Drogan (2007), examined CVD morbidity and mortality; Heroux (2009), measured CVD disease and all-cause mortality; McNaughton (2009), death due to CVD and nonfatal incident of CHD; and Meyer (2011), examined incidence of fetal or nonfatal MI and sudden cardiac death or mortality from CHD.

The independent variables in all four studies were dietary pattern scores derived using reduced rank regression analysis. Three studies used biomarkers as response variables (Heroux, 2009; McNaughton, 2009; Meyer 2011), while the fourth study used nutrients as response variables (Drogan, 2007). The response variables used and the respective dietary patterns extracted for each study are described in more detail below:

Evidence Summary Paragraphs

Drogan 2007 selected total fat, total carbohydrates, and fiber as response variables. Three dietary patterns were extracted. Pattern 1 explained the greatest variation in all three response variables (53 percent). Patterns 2 and 3 explained only 21 percent and 10 percent of the variation. Only pattern 1 was used in subsequent analyses to calculate a pattern score for each subject and included foods such as whole-grain bread, fresh fruit, fruit juices, grains, cereals, and raw vegetables.

Heroux 2007 selected BMI, blood pressure, total cholesterol, HDL-cholesterol, triglycerides (mg/dl), fasting glucose, uric acid, and white blood cell count as response variables. Five dietary patterns were extracted, which together explained 5.66 percent of the variation within the total biomarker index. Pattern 1 explained 4.33 percent of the overall variation, with the other four patterns only explaining an additional 1.33 percent between them. Thus, pattern 1 accounted for 76.50 percent of the total variation and the pattern was labeled "Unhealthy eating Index." Pattern 1 was characterized by elevated consumption of processed and red meat, white potato products, non-whole grains, added fat, and reduced consumption of non-citrus fruits.

McNaughton 2009 selected total cholesterol, HDL cholesterol, and triglycerides as response variables. Three dietary patterns were extracted, and patterns 1 and 2 explained the most variation in the response variables (Dietary pattern 1 explained 7.14 percent of variation in HDL cholesterol and 5.3 percent of variation in triglycerides, while dietary pattern 2 explained 3.5 percent of variation in total cholesterol) and were used in subsequent analyses. Pattern 1 was characterized by high intakes of white bread, fried potatoes, sugar in tea and coffee, burgers, and soft drinks and lower consumption of salad dressings and vegetables. Pattern 2 was characterized by higher consumption of red meat, cabbage, Brussels sprouts, and cauliflower and lower consumption of whole meal bread, jam, marmalade, tofu, buns, cakes, pastries, fruit pies, and margarine.

Meyer 2011 selected C-reactive protein, Interleukin (IL)-6, and Interleukin (IL)-18 as response variables. Pattern 1 showed a high score of the RRR-derived pattern characterized by high intakes of meat, soft drinks and beer and low intakes of vegetables, fresh fruit, chocolates, cake, pastries, whole meal bread, cereals, muesli, curd, condensed milk, cream, butter, nuts, sweet bread spread, and tea.

Table 4-C-III-1 Summary of Findings

Studies examining the combinations of food intake (assessed using reduced rank regression) explain the most variation in risk of CVD

Study (Quality Rating) Study Design; Location	Study Description	Response Variables	Dietary Patterns	Results
Drogan, 2007 Positive Quality Prospective cohort EPIC Nutrition-Potsdam Cohort Germany	To examine the association between a food pattern predictive for prospective weight change and risk of CVD.	Total fat Total Carbohydrate Fiber	Pattern 1: (+) whole-grain bread, fresh fruit, fruit juices, grains (cereals), raw vegetables; (-) processed meat, butter, high-fat cheese, margarine, meat (other than poultry)	During follow-up there were 379 incident cases of non-fatal CVD (MI, n = 201; stroke, n = 178), including 68 fatal CVD events (MI, n = 41; stroke, n = 27). Nonfatal CVD risk: NS; no relationship between dietary pattern and nonfatal CVD risk Fatal CVD risk: Compared to quartile 1, risk of fatal CVD was decreased by 70% in quartile 3 and 50% in quartile 4 (P for trend = 0.016) Quartile 1 vs. quartile 3: HR = 0.31, 95% CI = 0.13 - 0.74 Quartile 1 vs. quartile 4: HR = 0.47, 95% CI = 0.20 - 0.91
Heroux, 2009 Positive Quality Prospective cohort ACLS Cohort United States	To examine the relationship between dietary patterns with mortality risk from all-cause and CVD, as well as examine the combined effects of dietary patterns and fitness on mortality risk	BMI Mean arterial pressure Total cholesterol HDL-cholesterol Triglycerides (mg/dl) Fasting glucose Uric acid White blood cell count	Pattern 1: (+) processed and red meat, white potato products, non-whole grains, added fat and reduced consumption of non-citrus fruits.	During follow-up there were 136 CVD deaths. CVD Mortality: NS; no relationship between dietary pattern score and CVD mortality
McNaughton, 2009 Positive Quality Prospective cohort Whitehall II Cohort United Kingdom	To examine the relationship between dietary patterns associated with blood lipid levels and risk of incident coronary events.	Total Cholesterol HDL Cholesterol Triglycerides	Pattern 1: (+) white bread, fried potatoes, sugar in tea and coffee, burgers, and soft drinks; (+) salad dressings and vegetables. Pattern 2: (+) red meat, cabbage, Brussels sprouts, and cauliflower: (-) whole meal bread, jam, marmalade, tofu, buns, cakes, pastries, fruit pies, and margarine.	After 83536 person-years of follow-up, there were 243 incident CHD events. Pattern 1: Compared to quartile 1, risk of CHD was increased by 57% in quartile 4 (P = 0.003) Quartile 1 vs. quartile 4: HR = 1.57, 95% CI = 1.08 - 2.27 Pattern 2: NS; no relationship between Pattern 2 and CHD risk in the fully adjusted model (after adjusting for BMI, BP)
Meyer, 2011 Positive Quality Prospective cohort MONICA cohort Germany	To examine dietary patterns associated with inflammatory markers and to examine their impact on the incidence of coronary heart disease (CHD) and all-cause mortality.	C-reactive protein Interleukin (IL) - 6 Interleukin (IL) -18	Pattern 1: (+) intake of diets rich in meat and beer and low in fresh and cooked vegetables, fresh fruit, whole meal bread, cereals and muesli, curd, nuts, sweet bread spread and tea identified with higher risk for CHD.	During follow-up, there were 101 cases of incident CHD and 88 cases of CHD mortality. CHD and CHD mortality: NS; no relationship between dietary pattern score and CVD mortality in the fully adjusted model (after adjusting for smoking status)

Key: **(+)** Higher intake **(-)** Lower intake

Qualitative Assessment of the Body of Evidence

This review included four positive-quality prospective cohort studies. However, because there were so few studies available, variability in the methodology used in the studies that were reviewed, and populations considered, there was insufficient information from which to assess consistency or draw conclusions about the relationship between dietary patterns derived using reduced rank regression and risk of CVD.

Limitations of the Evidence

Methodological Differences:

- Three out of the four studies used biomarkers and the fourth study used nutrients as response variables in the reduced rank regression analyses. Among the three studies that used biomarkers as response variables, there were differences in the type of biomarkers chosen, leading to the identification of dietary patterns that differed from study to study. Heroux (2009) used change in BMI, mean arterial pressure, total cholesterol, HDL-cholesterol, triglycerides (mg/dl), fasting glucose, and uric acid; Meyer (2011) used C-reactive protein, Interleukin (IL)-6, and Interleukin (IL)-18; and McNaughton (2009) used total cholesterol, HDL cholesterol, and triglycerides. The fourth study, Drogan (2007), used nutrients, including total fat, total carbohydrate, and fiber, as response variables. Because the dietary patterns described in each study are directly linked to response variables chosen, the variation in the response variables used means that the resulting dietary patterns may not be comparable.
- Dietary assessment methods were different across the studies. One study used 3-day diet records (Heroux 2009); another used a self-administered FFQ (Drogan 2007); a third used a 127-item validated FFQ (McNaughton 2009); and the fourth study used a 7-day dietary record (Meyer 2011). It is unclear what impacts different dietary assessment methods have on the derivation of dietary patterns using reduced rank regression.
- The studies were not consistent in their use of confounders in analyses. In particular, physical activity was not included as a confounder in the analyses by Meyer (2011), and Drogan (2007) did not include smoking as a confounder.

Population Differences:

- The studies were conducted in different countries (United States and several countries in Europe) and represented populations in different regions of the world, which limited the ability to compare and interpret the results due to potential differences in dietary patterns between these regions. From that perspective, the results may not be generalizable to some U.S. populations.

Research Recommendations

More research using reduced rank regression should be conducted. Additionally, standardization in methodology, such as food groupings and response variables used, are also needed.

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Section IV: Other Methods
By Jean M. Altman and Mary M. McGrane

What is the relationship between adherence to dietary guidelines/recommendations or specific dietary patterns (assessed using methods other than index/score, cluster or factor, or reduced rank regression analyses) and risk of cardiovascular disease?

TECHNICAL ABSTRACT

Background

The goal of this systematic review project is to identify patterns of food and beverage intake that promote health and prevent disease. Historically, most dietary guidance has been based on research conducted on individual food components or nutrients. Dietary patterns are defined as the quantities, proportions, variety, or combination of different foods, drinks, and nutrients (when available) in diets, and the frequency with which they are habitually consumed. Different methods of analyses are used to assess dietary patterns including index or score, cluster or factor, reduced rank regression, in addition to other methods, to exam the relationship between adherence to dietary guidelines/recommendations or specific dietary patterns of a population and outcomes of public health concern. The objective of this systematic review was to assess the relationship between patterns of food and beverage intake identified using methods other than index or score, factor or cluster, or reduced rank analyses, and risk of cardiovascular disease.

Conclusion Statement

There is strong and consistent evidence that consumption of a DASH diet results in reduced blood pressure in adults with above optimal blood pressure, up to and including stage 1 hypertension. A dietary pattern consistent with the DASH diet is rich in fruits, vegetables, low-fat dairy, fish, whole grains, fiber, potassium, and other minerals at recommended levels and low in red and processed meat, sugar-sweetened foods and drinks, saturated fat, cholesterol, and sodium. There is limited evidence that adherence to vegetarian diets is associated with decreased death from ischemic heart disease, with the association being stronger in men than in women. (Grade: I-Strong - DASH and Blood Pressure; Grade: III-Limited – Vegetarian and Ischemic Heart Disease)

Methods

Literature searches were conducted using PubMed, Embase, Navigator (BIOSIS, CAB Abstracts, and Food Science and Technology Abstracts), and Cochrane databases to identify studies that evaluated the association between dietary patterns defined using methods other than index factor or cluster analysis and body weight status. Studies that met the following criteria were included in the review: conducted in subjects aged 2 to18 years; randomized controlled trials, non-randomized controlled trials, or quasi-experimental studies; subjects from countries with high or very high human development (based on the 2011 Human Development Index); subjects who were healthy or at elevated chronic disease risk; published in English in a peer-reviewed journal. The date range was unlimited.

The results of each included study were summarized in evidence worksheets (including a study quality rating) and an evidence table. A group of subject matter experts were involved in a qualitative synthesis of the body of evidence, development of a conclusion statement, and assessment of the strength of the evidence (grade) using pre-established criteria including evaluation of the quality, quantity, consistency, magnitude of effect, and generalizability of available evidence.

Findings

- Two types of dietary patterns were identified using other methods of assessing dietary exposure related to cardiovascular disease (CVD) risk: (1) a DASH dietary pattern and (2) a vegetarian-style dietary pattern.
- Evidence from RCTs showed a DASH diet resulted in reduced blood pressure (BP) including systolic BP (SBP) and/or diastolic BP (BP) in adults with above optimal blood pressure, up to and including stage 1 hypertension, with further reductions with the low sodium DASH modification and the DASH high protein or DASH high unsaturated fat modifications (OmniHeart). Addition of a behavioral intervention or weight management intervention together with the DASH diet was more effective in reducing BP than DASH diet alone (PREMIER, ENCORE). Approximately two-thirds of the U.S. population has pre-hypertension or hypertension.
- Evidence from prospective cohort studies showed a vegetarian diet was associated with reduced ischemic heart disease (IHD) or cardiovascular disease (CVD) mortality *in four out of six studies*. In studies that showed a favorable association for the vegetarian diet, the risk reduction for men was greater than that for women. The association between vegetarian diets and BP was less clear.

- Studies that examined cerebrovascular disease or stroke mortality did not find differences between vegetarians and non-vegetarians.
- The results of either a DASH diet or vegetarian diet on blood lipids were mixed regarding effects on total-, LDL-, and HDL-cholesterol and triglycerides.
- The DASH diet is high in fruits, vegetables, low-fat diary, whole grains, fish, fiber, potassium, and other minerals at recommended levels and low in red and processed meat, sugar-sweetened foods and drinks, saturated fat, cholesterol, and sodium. Vegetarian diets include vegan (no meat, fish, eggs, or dairy); lacto-ovo vegetarian (includes eggs and dairy, but no fish or meat), and pesco vegetarian (includes fish, but no meat) diets.

Discussion

There were limitations of the evidence in this review. In the DASH trials, including the original DASH and DASH-sodium, the feeding phases were relatively brief (4-8 wks) and the trial outcomes were CVD risk factors, not clinical events. In DASH trials with free-living populations, including PREMIER and ENCORE, there was the potential for selection bias, as participants may have been more motivated toward behavior modifications.

The studies on vegetarian diets were all prospective cohort studies and there was the potential for vegetarian cohorts to be relatively health conscious in other lifestyle components, in addition to diet. Additionally, in these studies, analyses relied on single baseline measurements of diet, without further dietary intake assessment over the time course of prospective studies. Related to the specific systematic review question on dietary patterns, vegetarian diets including vegan, lacto-ovo vegetarian, and pesco vegetarian, were most often described by what was excluded from the diet rather than a full dietary pattern including all foods and beverages consumed. Overall, the definition of vegetarian diets has not been standardized.

PLAIN LANGUAGE SUMMARY

Are the amounts, types, variety, or combinations of foods and beverages people frequently eat and drink related to the likelihood of developing cardiovascular disease?

In the past, researchers looked at the relationship between individual foods and nutrients and health. Today, there is interest in looking at how combinations of foods and beverages, or dietary patterns, impact health. This summary of a NEL review presents what we know about different healthy eating patterns and the amounts, variety or combination of different foods and drinks, and how often they are eaten effect the risk of cardiovascular (heart) disease.

Conclusion

There is strong and consistent evidence that consumption of a DASH diet results in reduced blood pressure in adults with above optimal blood pressure, up to and including stage 1 hypertension. A dietary pattern consistent with the DASH diet is rich in fruits, vegetables, low-fat dairy, fish, whole grains, fiber, potassium, and other minerals at recommended levels and low in red and processed meat, sugar-sweetened foods and drinks, saturated fat, cholesterol, and sodium. There is limited evidence that adherence to vegetarian diets is associated with decreased death from ischemic heart disease, with the association being stronger in men than in women. (Grade: Strong - DASH and Blood Pressure; Grade: Limited – Vegetarian and Ischemic Heart Disease)

What the Research Says

- Two types of dietary patterns were identified using other methods of assessing dietary exposure related to cardiovascular disease (CVD) risk: (1) a DASH dietary pattern and (2) a vegetarian-style dietary pattern.
- Evidence from RCTs showed a DASH diet reduced blood pressure (BP) including systolic BP (SBP) and/or diastolic BP (BP) in adults with above optimal blood pressure, up to and including stage 1 hypertension, with further reductions with the low sodium DASH modification and the DASH high protein or DASH high unsaturated fat modifications (OmniHeart). Adding a behavioral intervention or weight management intervention together with the DASH diet was more effective in reducing BP than DASH diet alone (PREMIER, ENCORE). Approximately two-thirds of the U.S. population has pre-hypertension or hypertension.
- Evidence from prospective cohort studies showed a vegetarian diet reduced ischemic heart disease (IHD) or cardiovascular disease (CVD) death *in four out of six studies*. In studies that showed a reduced risk of CVD with a vegetarian diet, the reduction in risk was greater in men than women. The association between vegetarian diets and BP was less clear.

- Studies that examined cerebrovascular disease or stroke death did not find differences between vegetarians and non-vegetarians.
- The results of either a DASH diet or vegetarian diet on blood lipids were mixed regarding effects on total-, LDL-, and HDL-cholesterol and triglycerides.
- The DASH diet is high in fruits, vegetables, low-fat diary, whole grains, fish, fiber, potassium, and other minerals at recommended levels and low in red and processed meat, sugar-sweetened foods and drinks, saturated fat, cholesterol, and sodium. Vegetarian diets include vegan (no meat, fish, eggs, or dairy), lacto-ovo vegetarian (includes eggs and dairy, but no fish or meat), and pesco vegetarian (includes fish, but no meat) diets.

EVIDENCE PORTFOLIO

Conclusion Statement

There is strong and consistent evidence that consumption of a DASH diet results in reduced blood pressure in adults with above optimal blood pressure, up to and including stage 1 hypertension. A dietary pattern consistent with the DASH diet is rich in fruits, vegetables, low-fat dairy, fish, whole grains, fiber, potassium, and other minerals at recommended levels and low in red and processed meat, sugar-sweetened foods and drinks, saturated fat, cholesterol, and sodium. There is limited evidence that adherence to vegetarian diets is associated with decreased death from ischemic heart disease, with the association being stronger in men than in women.

Grade

I-Strong **-** DASH and Blood Pressure; III-Limited – Vegetarian and Ischemic Heart Disease

Key Findings:

- Two types of dietary patterns were identified using other methods of assessing dietary exposure related to cardiovascular disease (CVD) risk: (1) a DASH dietary pattern and (2) a vegetarian-style dietary pattern.
- Evidence from RCTs showed a DASH diet resulted in reduced blood pressure (BP) including systolic BP (SBP) and/or diastolic BP (BP) in adults with above optimal blood pressure, up to and including stage 1 hypertension, with further reductions with the low sodium DASH modification and the DASH high protein or DASH high unsaturated fat modifications (OmniHeart). Addition of a behavioral intervention or weight management intervention together with the DASH diet was more effective in reducing BP than DASH diet alone (PREMIER, ENCORE). Approximately two-thirds of the U.S. population has pre-hypertension or hypertension.
- Evidence from prospective cohort studies showed a vegetarian diet was associated with reduced ischemic heart disease (IHD) or cardiovascular disease (CVD) mortality *in four out of six studies*. In studies that showed a favorable association for the vegetarian diet, the risk reduction for men was greater than that for women. The association between vegetarian diets and BP was less clear.
- Studies that examined cerebrovascular disease or stroke mortality did not find differences between vegetarians and non-vegetarians.
- The results of either a DASH diet or vegetarian diet on blood lipids were mixed regarding effects on total-, LDL-, and HDL-cholesterol and triglycerides.
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Evidence Summary Overview

Description of the Evidence

A total of 20 articles met the inclusion criteria for this systematic review on dietary patterns and incident CVD outcomes assessed using methods other than index/score, cluster or factor, or reduced rank regression analyses. The body of evidence consisted of 14 articles from 8 randomized controlled trials (RCTs) (Adamsson, 2011; Appel, 1997 and 2005; Blumenthal, 2010, Blumenthal Babyak Sherwood, 2010; Conlin, 2000; Howard, 2006; Lien, 2007; Margetts, 1985; Moore, 1999; Obarzanek, 2001; Sacks, 2001; Saneei, 2013; Svetkey, 2004) and six prospective cohort studies (PCS) (Burr and Butland, 1988; Chang-Claude, 2005; Crowe, 2013; Key, 1996 and 1999; Orlich, 2013). In terms of study quality, 15 of the 20 articles received a positive quality rating and five were rated neutral (Burr and Butland, 1988; Chang-Claude, 2005; Key, 1996 and 1999; Margetts, 1985). The studies were carried out between 1985 and 2013. Twelve articles were from 6 RCTs and one PCS conducted in the United States; three PCSs were conducted in the United Kingdom, Australia, and Germany; and two RCTs were conducted in Sweden and Iran, and there was one pooled analysis of cohort studies conducted in the United States, United Kingdom, and Germany. The sample sizes of the RCTs ranged from 49 to 44,351 participants (12 studies <500; 1 study >500; 1 study >40,000) and the PCSs had sample sizes of 1,724 to 76,172 participants (1 study >1,000; 2 studies >10,000; 2 study >70,000). All of the studies were conducted with adults, with the exception of the RCT conducted in Iran on adolescent girls (Saneei, 2013). Eighteen out of 20 articles included men and women. One RCT included only post-menopausal women (Howard, 2006) and one RCT included only adolescent girls (Saneei, 2013). RCT duration ranged from 30 days to 8.1 years (9 <2 months; 4 <6 months; 1 >8 years) and PCSs ranged from a mean of 5.8 years to 21 years (1 <10 years; 2 >10 years; 1 >15 years; 1 >20 years).

Dietary patterns examined:

Ten of the 20 articles reported results from the original Dietary Approaches to Stop Hypertension (DASH) trial (Appel, 1997; Conlin, 2000; Moore, 1999; Obarzanek, 2001) or subsequent trials that examined either variations on the original DASH diet (Appe,l 2005 [Omni Heart]; Sacks, 2001 [DASH-sodium]; Svetkey, 2004 [DASH-sodium]) or added behavioral interventions to the original DASH diet in free-living populations (Blumenthal, 2010 [PREMIER]; Blumenthal Babyak and Sherwood, 2010 [PREMIER]; Lien, 2007 [ENCORE]). A small trial in Iran also tested a DASH diet modified for adolescents (Saneei, 2013). Three additional RCTs looked at a Nordic diet (Adamsson, 2011), a low-fat dietary pattern (Howard, 2006 [WHI-DM]), and an ovo-lacto-vegetarian diet

(Margetts, 1985). The diets examined in the six PCSs were vegetarian, in some cases including pesco-vegetarian, lacto-ovo-vegetarian, and vegan diets (Burr and Butland, 1988; Chang-Claude, 2005; Crowe, 2013; Key, 1996 and 1999; Orlich, 2013).

Population:
The original DASH trial and subsequent DASH modification trials commonly included adult subjects that were generally healthy but with pre-hypertension or with untreated stage I hypertension. Additionally, Black and minority subgroups were well-represented in these trials, Blacks accounted for 39 to 65 percent of the trial populations, in addition to other minorities from 1 to 6 percent (Appel, 1997 and 2005; Blumenthal, 2010; Blumenthal Babyak and Sherwood, 2010; Conlin, 2000; Lien, 2007; Moore, 1999; Obarzanek, 2001; Sacks, 2001; Svetkey, 2004).

Dietary assessment:
Dietary intake in this review was assessed by adherence to a specific dietary pattern using a variety of methods (i.e., food frequency questionnaire [FFQ], food record/diary/checklists, 24-hour recall, responses to a "Yes/No" question asking if subjects were vegetarian), and urinary mineral and urea nitrogen analyses.

The DASH and DASH-sodium trials were controlled feeding trials where subjects received prepared meals consumed on-site, with some meals consumed off-site. For each day of controlled feeding, subjects recorded their intake of discretionary items. They indicated whether they ate any non-study foods and whether they did not eat all the study foods. Adherence to the diet was further assessed by measuring 24-hour urinary sodium, potassium, phosphorous, and urea nitrogen. In the free-living ENCORE trial (DASH + Weight Management), as well as the Women's Health Initiative Dietary Modification (WHI-DM) trial (low-fat diet), food intake was assessed with both FFQs and 4-day food records. In the PREMIER trial, dietary intake was assessed from two unannounced 24-hour dietary recalls conducted by telephone. Self-reported dietary intake was corroborated using the 24-hour urinary measures indicated above for DASH. The small DASH trial in Iran, small NorDiet trial in Sweden, and the small lacto-ovo vegetarian trial in Australia all used daily diet records to assess adherence.

Prospective cohort studies on vegetarian diets assessed dietary intake using FFQs (Crowe, 2013 [EPIC-Oxford]; Key, 1996; Chang-Claude, 2005 [German Vegetarian Study]; Orlich, 2013 [Adventist Health Study 2]). Of these studies, only one assessed dietary intake after baseline: Change-Claude (2005) conducted a follow-up on dietary changes at 5 and 11 years. However, a few studies only asked participants if they were a vegetarian (i.e., defined as those who did not eat meat or fish) (Key, 1999; Burr and Butland, 1988).

Qualitative Synthesis of the Collected Evidence

Themes and Key Findings

Health Outcomes:
The 20 articles in this review considered CVD risk factors, or intermediate outcomes, including hypertension, blood pressure, and blood lipids and endpoint health outcomes including CVD incidence or mortality.

Intermediate Outcomes:
Hypertension, Blood Pressure, and Blood Lipids:
Nine articles reported results from the DASH and modified DASH trials on the effect of dietary intake on changes in systolic and diastolic blood pressure (SBP and DBP) or ambulatory blood pressure (ABP) in prehypertensive and/or hypertensive adults (Appel, 1997 and 2005; Conlin, 2000; Howard, 2006; Lien, 2007; Margetts, 1985; Moore, 1999; Sacks, 2001; Svetkey 2004). Two of these articles also reported on hypertension/blood pressure control (Conlin, 2000; Svetkey, 2004). One article reported results from the WHI-DM trial with subjects who had blood pressure that was either treated, stage 1 hypertension, or strayed into the high end of the range (>140/90 mm) (Howard, 2006). One small trial reported on the effect of a Nordic diet on SBP and DBP (Adamsson, 2011). Lastly, in all of these studies subjects were not on anti-hypertensive medications, with one exception where medication was not indicated (Adamsson, 2011).

Six of the above articles also reported on blood lipids, including total cholesterol, low-density lipoprotein [LDL] cholesterol, high-density lipoprotein [HDL] cholesterol, and triglycerides [TG]) (Appel, 2005; Blumenthal Babyak and Sherwood, 2010; Howard, 2006; Lien, 2007; Obarzanek, 2001; Saneei, 2013). Adamsson (2011) only looked at LDL cholesterol.

DASH Trials:

Eleven of the 20 articles reported on the original DASH or a variation on the DASH trial (Appel, 1997 and 2005; Blumenthal, 2010; Blumenthal Babyak and Sherwood, 2010; Conlin, 2000; Lien, 2007; Moore, 1999; Obarzanek, 2001; Sacks, 2001; Saneei, 2012; Svetkey 2004).

DASH Trial: The original DASH trial compared a control diet that was typical of a substantial number of Americans with either (1) a fruits and vegetables diet or (2) a combination diet that was rich in fruits and vegetables and low-fat dairy foods. The trial showed that consumption of the combination diet (DASH) reduced SBP and DBP in prehypertensive and hypertensive adults (Appel, 1997). When hypertensive subjects in the DASH trial were assessed separately, the combination DASH diet resulted in a greater reduction in SBP and DBP in hypertensives than in non-hypertensives (Appel, 1997) and a 60 percent decreased risk of hypertension in this subgroup (Conlin, 2000). Ambulatory BP (ABP) was also assessed and the combination DASH diet resulted in lowered 24-hour ABP, and the hypertensives had a greater response than non-hypertensives to the combination DASH diet (Moore, 1999). Furthermore, the combination DASH diet resulted in lower total and LDL-cholesterol, but also lower HDL-cholesterol, and had no effect on triglycerides (Obarzanek, 2001). The net reduction in total- and LDL-cholesterol was greater in men than in women, but there were no differences based on race.

DASH-Sodium Trial: The DASH-sodium trial introduced three levels of sodium intake in the DASH diet and a typical U.S. control diet. The reduction in sodium resulted in significantly lowered SBP and DBP in both DASH and control groups; however, the DASH diet resulted in lower SBP than the control diet at every sodium level (Sacks, 2001). Additionally, reducing sodium intake from the high to the low level with either the DASH or control diets reduced SBP in subjects with and without hypertension, and in Blacks and other racial groups, as well as in men and women. But the combination of the two dietary interventions, DASH and low sodium, lowered SBP more in participants with HTN than in those without HTN, and more in women than in men (Sacks, 2011). Another report from the DASH-sodium trial examined BP control and found that the maximum BP control rate was achieved with the DASH/lower sodium treatment (Svetsky, 2004).

OmniHeart Trial: Trials that further assessed a DASH dietary approach with modifications included the OmniHeart Trial that assessed diets rich in carbohydrates, protein, or unsaturated fats (predominantly monounsaturated fats) in subjects with prehypertension and stage I hypertension. Although all treatment arms were rich in fruits and vegetables, low-fat dairy, fiber, and potassium and reduced in saturated fat, cholesterol, and sodium, the carbohydrate diet used in OmniHeart was similar to the original DASH diet and the other two treatment arms substituted either unsaturated fats or protein for carbohydrates as 10 percent of energy. All three diets decreased BP, LDL-cholesterol, and 10-year CHD risk (from the Framingham risk equation). However, BP, total- and LDL-cholesterol, triglycerides, and estimated 10-year CHD risk were all significantly improved in the high protein, compared to the high carbohydrate diet. And BP, HDL-cholesterol and triglycerides were significantly improved on the high unsaturated fat diet, compared to the high carbohydrate diet (Appel, 2005).

PREMIER Trial: The PREMIER Trial was a multicomponent lifestyle intervention in a free-living population that included (1) an advice only control group; (2) a group that received established behavioral intervention for lowering BP (EST); and (3) a group that received EST plus a DASH diet. In participants without metabolic syndrome (MetSyn), EST and EST + DASH equally reduced SBP. However, in subjects with MetSyn, only the combined EST + DASH intervention resulted in SBP reduction. The effects of the EST and EST + DASH interventions on blood lipids were mixed, with decreased total cholesterol and a trend to improve LDL-cholesterol in both MetSyn groups, but no effect of EST + DASH on triglycerides (Lien, 2007).

ENCORE Trial: The Exercise and Nutrition interventions for CardiOvasculaR hEalth (ENCORE) trial was conducted in overweight or obese subjects with high BP and the results indicated that the DASH diet plus weight management was more effective in decreasing BP than the DASH diet alone (Blumenthal, 2010). A second report from the ENCORE trial showed that the DASH diet alone, although it caused a decrease in BP, did not decrease total-, LDL-cholesterol, or triglycerides (Blumenthal Babyak and Sherwood, 2010).

Vegetarian Diets:
Three of the articles on vegetarian patterns measured BP or blood lipids (Burr and Butland, 1988; Crowe, 2013; Margetts, 1985). Burr and Butland reported that a vegetarian diet was associated with decreased levels of total cholesterol, compared to non-vegetarians; however, BP measurements were not different between the two groups (Burr and Butland, 1988). Margetts examined the effect of a lacto-ovo vegetarian diet on BP in mild hypertensives and found a decrease in SBP, but not DBP (Margetts, 1985). In a study of the EPIC-Oxford cohort, comparing a vegetarian to a non-vegetarian diet showed a reduction in SBP, but not DBP, in a small sub-sample of the cohort (Crowe, 2013). In addition, non-HDL-cholesterol was reduced in the vegetarian participants.

Other Diets:
Women's Health Initiative - Dietary Modification Trial: Women in the low-fat diet treatment group of the WHI-DM trial had decreased DBP and LDL-cholesterol; however, other CVD risk factors were not different between groups (Howard, 2006).

Nordic Diet: In the NORDIET Trial, the effect of a Nordic diet, compared to a control typical Western diet, on CVD risk factors was assessed. The Nordic diet treatment caused a decrease in SBP, but not DBP. Additionally, total-, LDL-, and HDL-cholesterol, and the LDL/HDL ratio were decreased with the Nordic diet (Adamsson, 2011).

Endpoint Clinical Outcomes:
CVD Incidence and Mortality:
One trial, the WHI-DM Trial, examined the effect of a low-fat diet on incident (fatal and nonfatal) CVD, CHD, and stroke (Howard, 2006). Six prospective cohort studies examined only mortality and these examined the association between a vegetarian diet and ischemic heart disease (IHD) mortality (Burr and Butland, 1988; Chang-Claude, 2005; Crowe, 2013; Key, 1999; Orlich, 2013), cerebrovascular disease mortality (Burr and Butland, 1988; Key, 1996 and 1999), CVD mortality (Orlich, 2013), or mortality due to circulatory diseases (Chang-Claude, 2005). One trial examined risk of CHD using the Framingham risk equation (Appel, 2005).

Vegetarian diets: Four studies that examined IHD found that IHD mortality was decreased in vegetarians compared to non-vegetarians (Burr and Butland, 1988; Crowe, 2013; Key, 1999; Orlich, 2013). However, one of these studies, conducted with the Adventist Health Study 2 cohort, found the association only in men for both IHD and CVD mortality, not in men and women combined nor in women alone (Orlich, 2013). Key and colleagues conducted a pooled analysis of five prospective cohort studies and found that mortality from IHD was 24 percent lower in vegetarians compared to non-vegetarians. Additional analysis showed that in comparison with regular meat eaters, mortality from IHD was 34 percent lower in lacto-ovo vegetarians and 26 percent lower in vegans (Key, 1999). However, two studies that compared vegetarians with health-conscious non-vegetarians, found IHD mortality was not different between the two groups in the United Kingdom (Key, 1996) and German participants (Chang-Claude, 2005), nor was all circulatory disease mortality (Chang-Claude, 2005). In these two studies, one study was relatively small for a prospective cohort study (N = 1,724 subjects) (Chang-Claude, 2005) and one study did not define vegetarians beyond a direct question asked of the participants (i.e., if participants were vegetarian) (Key, 1996).

Studies that examined cerebrovascular disease or stroke mortality did not find differences between vegetarians and non-vegetarians (Burr and Butland, 1988; Key, 1996 and1999; Orlich, 2013).

Low-fat diet:
The WHI-DM trial examined the effects of a low-fat diet on incident CVD, CHD, and stroke and found no effect on risk in postmenopausal women (Howard, 2006). The WHI-DM intervention resulted in decreased total and saturated fat intake in the treatment group, but also increased intakes of fiber, vegetables and fruits, total and whole grains, and soy.

DASH diet (OmniHeart):
In a report from the OmiHeart trial, CHD risk was estimated using the Framingham risk equation (Appel, 2005). The calculated 10-year risk of CHD was decreased for all versions of the DASH diet (modified to be high in carbohydrate, protein, or unsaturated fat as an increase in 10 percent of energy). Furthermore, compared with the carbohydrate diet, both the protein and unsaturated fat diets resulted in greater reductions in CHD risk. (This result is also considered under intermediate outcomes.)

Sub-analysis–Gender:
One of the prospective cohort studies that examined total and cause-specific mortality found an association only in men for both IHD and CVD mortality, not in men and women combined, nor in women alone (Orlich, 2013). Further analysis of different types of vegetarian patterns showed that for pesco-vegetarians, compared to non-vegetarians, women and men and women combined (but not men alone) had reduced IHD mortality, but only men had reduced CVD mortality. Comparing lacto-ovo vegetarians to non-vegetarians, CVD mortality was decreased only in men. And in vegans, both IHD and CVD mortality were reduced only in men (Orlich, 2013). Earlier studies also found that although there was reduced IHD mortality in men and women in vegetarians compared to non-vegetarians, there was a greater reduction in men (Burr and Butland, 1988; Key, 1999).

Table 4-B-IV-1 Summary of Findings

Blood pressure, blood lipids and risk of CVD/CHD

Trial or Cohort	Study/ Design/Pattern	Blood Pressure	Blood Lipids	CVD Incidence or Mortality
DASH TRIAL	AppeL 1997l/ RCT/DASH	↓ ↓ (w/ HTN)		
	Conlin 2000/ RCT/DASH	↓ (w/ HTN)		
	Moore 1999/ RCT/DASH	↓ ABP ↓ ABP (w/ HTN)		
	Obarzanek 2001/ RCT/DASH		↓ Total, LDL-C (>Men) ↓ HDL-C ∅ TG	
	Saneei 2013/RCT/DASH (mod for Iranian adolescents)	↓ DBP	∅ Total, LDL-C, HDL-C, TG	
DASH SODIUM TRIAL	Sacks 2001/ RCT/DASH-Sodium	↓ SBP ↓ SBP (w/HTN)		
	Svetsky 2004/ RCT/DASH-Sodium	↓ ↓ (w/ HTN), (w/ ISH)		
OMNI HEART TRIAL	Appel 2005/ RCT/OmniHeart	↓ >Protein (w/ HTN) ↓ >Unsat Fat (w/ HTN)	↓ >Protein LDL-C, TG ↓ HDL-C ↓ >Unsat Fat TG, HDL-C	↓ >Protein ↓ >Unsat Fat CHD risk (calculated)
PREMIER TRIAL	Lien 2007/ RCT/PREMIER	↓ SBP ↓ SBP (w/ MetSyn)	↓ Total-C ∅ LDL-C, HDL-C, TG	
ENCORE TRIAL	Blumenthal 2010/ RCT/ENCORE	↓		
	Blumenthal, Babyak 2010/ RCT/ ENCORE		↓ Total-C, LDL-C, TG ∅ HDL-C	
	Margetts 19885/ PCS/Lacto-Ovo	↓ SBP		
	Burr 1988/ PCS/ Vegetarian	∅		↓ IHD mortality
EPIC OXFORD	Crowe 2013/ PCS/Vegetarian	↓ SBP	↓ Non-HDL-C	↓ IHD mortality
GERMAN VEGETARIAN STUDY	Chang-Claude 2005/ PCS/ Vegetarian			∅ IHD mortality ∅ Circulatory Disease mortality
	Key 1996/ PCS/Vegetarian			∅ IHD mortality
POOLED COHORTS	Key 1999/ PCS/Vegetarian			↓ IHD mortality
ADVENTISTS HEALTH 2	Orlich 2013/ PCS/Vegetarian			↓ Men – IHD and CVD mortality ∅ Women – IHD and CVD
WHI-DM TRIAL	Howard/ RCT/Low-Fat	↓ DBP	↓ Total-C	∅ CVD, CHD, stroke incidence
NORDIET TRIAL	Adamsson 2011/ RCT/NorDiet	↓ SBP	↓ Total, LDL-C, LDL/HDL ↓ HDL-C	

Qualitative Assessment of the Collected Evidence

Quality and Quantity

Quality of the studies was assessed by examining the scientific soundness of study design and execution to determine if there was bias in the findings related to outcomes. The majority of the evidence for this question consisted of positive quality studies (15 out of 20 studies), indicating potential low risk of bias overall. In addition, these studies directly addressed the question, especially related to blood pressure and, additionally, CHD mortality.

Consistency

Blood Pressure:

The evidence of a protective association between a DASH dietary pattern and blood pressure was consistent in all of the RCTs in adults in the general population and adults with hypertension.

***CHD Mortality*:**

Evidence from prospective cohort studies showed a vegetarian diet was associated with reduced ischemic heart disease (IHD) or cardiovascular disease (CVD) mortality in four out of six studies. In the two studies that did not find an association, one study was relatively small for a prospective cohort study (N = 1,724 subjects) (Chang-Claude, 2005), and one study did not define vegetarians beyond a direct question asked of the participants (i.e., if participants were vegetarian) (Key, 1996).

Impact

The body of evidence directly addressed the exposures and health outcomes of interest for this systematic review, with clinical trials that consistently showed that a DASH diet resulted in reduced blood pressure in prehypertensive and hypertensive adults, thus decreasing CVD risk. In the DASH-sodium trial, the effect of DASH diet and low sodium achieved the greatest effect on blood pressure and the effect was equal to or greater than that of a single therapeutic drug for hypertensive individuals (Sacks, 2001). In addition, this body of evidence included large prospective cohort studies that found a favorable association between vegetarian diets and risk of mortality from ischemic heart disease (IHD), especially in men.

Generalizability/External Validity

Twelve articles from six RCTs and one PCS were conducted in the United States, with the remaining articles from studies conducted in the United Kingdom, Germany, Sweden, Australia, and Iran. Results from the DASH trials should be broadly applicable to the U.S. population as the trial populations were large and demographically heterogeneous. Additionally, DASH trials focused on individuals with prehypertension and hypertension, a group that makes up approximately two-thirds of the U.S. population. DASH trials were also conducted in free-living populations and found effective (PREMIER and ENCORE). Regarding the association between vegetarian diets and IHD mortality, two recent prospective cohort studies with large cohorts (EPIC-Oxford and Adventist Health 2) showed an association with reduced IHD death, as did one pooled analysis of five prospective cohort studies covering the United States, United Kingdom, and Germany. Given the robust evidence involving U.S. clinical trials and large cohort studies with endpoint mortality outcomes, the generalizability to the U.S. population, and the relevance of this body of evidence to U.S. policy, is compelling.

Table 4-B-IV-2 Overview Table: Cardiovascular Disease

Organized by dietary trial/dietary pattern

	Citation Quality Rating Location	Study Design Duration Study/Cohort	Sample Size Age Gender Race/Ethnicity	Dietary Pattern Overview	Health Outcomes
			DASH Trial		
1.	Appel et al., 1997 Positive U.S.	Randomized Controlled Trial 8 wks Dietary Approaches to Stop Hypertension (DASH) Trial	Initial N = 459 Final N = 456 Mean: DASH: 44±10 y FV diet: 45±11 y Control: 44±11 y 49% Women 34% Non-minority 60% Black 6% Other minority	Dietary Approaches to Stop Hypertension (DASH) Trial Control diet: Macronutrient profile and fiber content similar to typical American diet--potassium, magnesium, and calcium levels were close to the 25th percentile of U.S. consumption. Macronutrient distribution: 50% CHO, 37% fat, 13% protein. Fruits-and-vegetables (FV) diet: Provided more fruits and vegetables (8-10 svgs/d), and fewer snacks and sweets than the control diet; potassium and magnesium at levels close to the 75th percentile of U.S. consumption. Macronutrient distribution: 52% CHO, 37% fat, 11% protein. Combination diet (DASH): Rich in fruits and vegetables (8-10 svgs/d), and low-fat dairy foods; reduced amounts of saturated fat, total fat, and cholesterol; potassium, magnesium, and calcium content close to the 75th percentile of U.S. consumption, high amounts of fiber and protein. Macronutrient distribution: 58% CHO, 27% fat, 15% protein. Four calorie levels available: 1600, 2100, 2600, 3100 kcals. A 7-day menu cycle with 21 meals used. No more than three caffeinated or diet beverages and no more than two alcoholic beverages per day.	Combination vs control diet: SBP: - 5.5 mm Hg (95% CI = -7.4 to -3.7, P <0.001); DBP: - 3.0 mm Hg (95% CI = -4.3 to -1.6, P<0.001) FV vs control diet: SBP: - 2.8 mm Hg (95% CI = -4.7 to -0.9, P<0.001); DBP: - 1.1 mm Hg (95% CI = -2.4 to 0.3, P=0.07, NS) Combination vs FV diet: SBP: - 2.7 mm Hg (95% CI = -4.6 to -0.9, P = 0.001); DBP: - 1.9 mm Hg (95% CI = -3.3 to -0.6, P=0.002) BP results were achieved after 2 weeks on the combination and the fruits-and-vegetable diets, and sustained for 6 more weeks.
2.	Conlin et al., 2000 Positive U.S.	Randomized Controlled Trial 8 wks Dietary Approaches to Stop Hypertension (DASH) Trial	N = 133 HTN participants Attrition: 6% control 4% FV 0% DASH Mean: 49.2±10.3 y 60% Women 65% Black	DASH Trial As above	DASH vs control diet: SBP: -11.6 mm Hg (95% CI = -15.5 to -7.6, P<.001) DBP: -5.9 mm Hg (95% CI = -8.3 to -3.4, P<.001) HTN: RR = 0.39 (95% CI = 0.23 - 0.65, P<.001) FV vs control diet: SBP: -7.0 mm Hg (95% CI = -10.7 to -3.4, P<.001) DBP: -3.0 mm Hg (95% CI = -5.3 to -0.7, P<.001) HTN: RR = 0.72 (95% CI = 0.52 - 0.97, P<.001) DASH diet produced significantly greater BP effects (P<.05) than FV diet 70% subjects on DASH achieved normal BP after 8 wks, compared to 45% on FV and 23% on control diet

Table 4-B-IV-2 Overview Table: Cardiovascular Disease—continued
Organized by dietary trial/dietary pattern

	Citation Quality Rating Location	Study Design Duration Study/Cohort	Sample Size Age Gender Race/Ethnicity	Dietary Pattern Overview	Health Outcomes
3.	Moore et al., 1999 Positive U.S.	Randomized Controlled Trial 8 wks Dietary Approaches to Stop Hypertension (DASH) Trial	Initial N = 362 Final N = 345 5% attrition Mean: 45.1±10.4 y 47% Women 62% Minority	DASH Trial AS above	DASH diet vs control: SBP = -5.6 (95% CI = -7.5 to -3.7, P<0.05) DBP = -2.4 (95% CI = -3.7 to -1.1, P<0.05) 24h ASBP = -4.5 (95% CI = -6.2 to -2.8, P<0.05) ADBP = -2.7 (95% CI = -4.0 to -1.4, P<0.05) DASH diet: SBP & DBP fell significantly during 24 h, daytime, and night in all participants combined FV diet vs control: SBP = -3.2 (95% CI = -5.1 to -1.4, P<0.05) DBP = -0.8 (95% CI = -2.1 to 0.5, NS) 24 h ASBP = -3.1 (95% CI = -4.8 to -1.4, P<0.05) ADBP = -2.0 (95% CI = -3.3 to -0.8, P<0.05) Subgroup analysis: NS men versus women, minorities vs nonminorities, or younger vs older HTN subjects had greater SBP and DBP decrease than normotensives during day, night and 24-hr recordings (P<0.05)
4.	Obarzanek et al., 2001 Positive U.S.	Randomized Controlled Trial 8 wks Dietary Approaches to Stop Hypertension (DASH) Trial	Initial N = 459 Final N = 436 5% attrition Mean: 44.6±10.7 y 49% Women 60% Black 34% White 6% Other	DASH Trial As above	DASH diet vs control: Total C = -13.7 mg/dL (95% CI = -18.8 to -8.6, P<0.0001) LDL-C = -10.7 mg/dL (95% CI = -15.4 to -6.0, P<0.0001) HDL-C = -3.7 mg/dL (95% CI = -5.1 to -2.2, P<0.0001) TG = 3.2 mg/dL (95% CI = -5.1 to11.6, NS) TC:HDL = -0.03 (95% CI = -0.19 to 0.13, NS) LDL:HDL = -0.8 (95% CI = -0.22 to 0.06, NS) Subgroup analysis: total and LDL-C: decreases in men > women by 10.3 mg/dL (P = 0.052) and 11.2 mg/dL (P<0.02), respectively, and greater net reductions in TC:HDL and LDL:HDL in men than women NS by race for total, LDL-C, HDL-C, cholesterol ratios, and TG HDL-C greater by 4.1 mg/dL in those with higher baseline HDL (>45 mg/dL)

Table 4-B-IV-2 Overview Table: Cardiovascular Disease—continued
Organized by dietary trial/dietary pattern

	Citation Quality Rating Location	Study Design Duration Study/Cohort	Sample Size Age Gender Race/Ethnicity	Dietary Pattern Overview	Health Outcomes
					FV diet vs control: Total C = -3.75 mg/dL (95% CI = -8.9 to 1.4, NS) LDL-C = -1.9 mg/dL (95% CI = -6.6 to 2.7, NS) HDL-C = -0.2 mg/dL (95% CI = -1.6 to 1.2, NS) TG = -8.2 mg/dL (95% CI = -16.5 to 0.2, NS) TC:HDL = -0.14 (95% CI = -0.29 to 0.02, NS) LDL:HDL = -0.10 (95% CI = -0.23 to 0.04, NS) Subgroup analysis: LDL:HDL: decreased in men (P<0.05) TC:HD: decreased in both men and non-African Americans (P<0.05) TG: decreases in subjects with higher baseline TG (P<0.05)
5.	Saneei et al., 2013 Positive Iran	Randomized Controlled Trial 6 wks Dietary Approaches to Stop Hypertension (DASH) Trial (modified)	Initial N = 60 Final N = 49 18% attrition 11–18 y Mean: 14.2±1.7 y Post-pubescent adolescent girls 100% Girls 100% Iranian	Modified DASH Trial Control Diet (UDA/typical Iranian diet): CHO=50-60% Protein=15-20% Fat=<30% Dietary fiber=14 g/d SFA=24 g/d Ca, dairy product, nut, and legume contents of this diet were lower than DASH diet. Dietician gave general oral advice and written information about healthy food choices based on healthy MyPlate. DASH diet (modified for adolescents): CHO=53-58% Protein=15-18% Fat=26-30% High amounts of whole grains, fruits, vegetables, and low-fat dairy products as well as low amounts of saturated fats, cholesterol, refined grains, sweets, and red meat. Ca, K, and Mg contents of the DASH diet were higher than UDA. Contained <2,400 mg Na/d. Diet modified to conform to nutritional needs of adolescents.All diets designed to maintain participants' weight.	DASH diet compared to UDA (control) diet: Change in SBP: P=0.13, NS Change in DBP: P=0.01 DASH diet compared to UDA (control) diet: TG: P=0.90, NS Total cholesterol: P=0.31, NS HDL-C: P=0.31, NS LDL-C: P=0.32, NS

Table 4-B-IV-2 Overview Table: Cardiovascular Disease—continued
Organized by dietary trial/dietary pattern

	Citation Quality Rating Location	Study Design Duration Study/Cohort	Sample Size Age Gender Race/Ethnicity	Dietary Pattern Overview	Health Outcomes
			DASH-Sodium Trial		
6.	Sacks et al., 2001 Positive U.S.	Randomized Controlled Trial 30 d Dietary Approaches to Stop Hypertension (DASH)-Sodium Trial	Initial N = 412 Final N = 390 DASH diet: 5% attrition Control diet: 6% attrition Intent to treat analysis Mean: DASH: 47±10 y Control: 49±10 y ~55% Women 56% Black, 40% Non-Hispanic White 4% Asian	DASH-Sodium Trial Control diet: Typical American diet was a diet with potassium, magnesium, and calcium ~ 25th percentile of U.S. consumption, and macronutrient and fiber at average U.S. consumption. DASH diet: Combination diet, high in fruits and vegetables and low-fat dairy foods with reduced total fat, SFA, and cholesterol; potassium, magnesium, and calcium ~ 75th percentile of U.S. consumption; and high amounts of fiber and protein.	DASH vs control diet: SBP, high sodium = -5.9 mm Hg (95 % CI: -8.0 to -3.7, P<0.001) SBP, intermed sodium = -5.0 mm Hg (95 % CI: -7.6 to -2.5, P<0.001) SBP, low sodium = -2.2 mm Hg (95 % CI: -4.4 to -0.1, P<0.05) DBP, high sodium = -2.9 mm Hg (95 % CI: -4.3 to -1.5, P<0.001) DBP, intermed sodium = -2.5 mm Hg (95 % CI: -4.1 to -0.8, P<0.01) DBP, low sodium = -1.0 mm Hg (95 % CI: -2.5 to 0.4, NS) Control diet, comparing high to low sodium: SBP = -6.7 mm Hg (95 % CI: -5.4 to -8.0, P<0.001) DBP = -3.5 mm Hg (95 % CI: -2.6 to -4.3, P<0.001) DASH diet, comparing high to low sodium: SBP = -3.0 mm Hg (95 % CI: -1.7 to -4.3, P<0.001) DBP = -1.6 mm Hg (95 % CI: -0.8 to -2.5, P<0.001) Control diet/high sodium compared to DASH diet/low sodium: SBP = -8.9 mm Hg (95 % CI: -6.7 to -11.1, P<0.001) DBP = -4.5 mm Hg (95 % CI: -3.1 to -5.9, P<0.001) Sodium effect greater in HTN participants (P=0.01 control diet; P=0.003 DASH diet), in Blacks on control diet than other races (P=0.007), and in women on DASH than in men (P=0.04). The combination of the two dietary interventions lowered SBP more in participants with HTN than in those without HTN (P=0.004), and more in women than in men (P=0.02).

Table 4-B-IV-2 Overview Table: Cardiovascular Disease—continued
Organized by dietary trial/dietary pattern

	Citation Quality Rating Location	Study Design Duration Study/Cohort	Sample Size Age Gender Race/Ethnicity	Dietary Pattern Overview	Health Outcomes
7.	Svetkey et al., 2004 Positive U.S.	Randomized Controlled Trial 30 d Dietary Approaches to Stop Hypertension (DASH)-Sodium Trial	Initial N = 412 Final N = 390 5% attrition Mean: ~50 y ~60% Women 60% Black ~37% Non-Hispanic White ~ 3% Other	DASH-Sodium Trial As above	HTN subjects BP Control (30 d): Control = 32% (NS), 51% (P <0.01), and 74% (P<0.01) at high, intermed, and low sodium DASH = 63% (P<0.01), 65% (P<0.01), and 84% (P<0.01) DASH vs Control diet: high sodium in DASH diet, increased BP control 2X (95% CI = 1.4 - 2.9); at intermediate sodium, increased BP control 2 X (95% CI = 1.4 - 3.0); at low sodium, increased BP control 2.6 X (95% CI = 1.9 - 3.7) Maximum BP control rate (84%) was achieved with the DASH/lower sodium diet. DASH vs Control diet: SBP: high sodium = -6.8 mm Hg (P<0.0001), intermed sodium = -6.2 mm Hg (P<0.0001), and low sodium = -3.0 mm Hg (P<0.05) ISH subjects, comparing DASH to control diet: SBP: high sodium = -4.4mm Hg (P<0.0001), intermed sodium = -6.3 mm Hg (P<0.0001), and low sodium = -4.3 mm Hg (P<0.05) High-normal BP subjects, DASH vs control diet: SBP: high sodium = -4.5 mm Hg (P<0.0001), intermed sodium = -3.5 mm Hg (P<0.0001), and low sodium = -0.7 mm Hg (NS)

Table 4-B-IV-2 Overview Table: Cardiovascular Disease—continued

Organized by dietary trial/dietary pattern

	Citation Quality Rating Location	Study Design Duration Study/Cohort	Sample Size Age Gender Race/Ethnicity	Dietary Pattern Overview	Health Outcomes
			OmniHeart Trial		
8.	Appel et al., 2005 Positive U.S.	RCT 6 wks OMNI-Heart (Optimal Macronutrient Intake Trial to Prevent Heart Disease)	Initial N = 191 Final N = 164 14% attrition Mean: 53.6±10.9 y 73% Women 55% Black 40% White 5% Other	OmniHeart Trial with DASH 3 healthful diets that model the principles of the Dietary Approaches to Stop Hypertension (DASH) dietary pattern. Each study diet differed in the amount of carbohydrates, protein, and unsaturated fat while keeping the calorie levels the same. Each diet was reduced in saturated fat, cholesterol, and sodium, and rich in fruits, vegetables, fiber, potassium, and other minerals at recommended levels. CHO diet: (similar to DASH) CHO = 58% Fat = 27% (6% SFA) Pro = 15% Protein diet: CHO = 48% Fat = 27% (6% SFA) Pro = 25% Unsaturated Fat diet:: CHO = 48% Fat = 37% (21% MUFA, 10% PUFA) Pro = 15%	CHD risk: estimated using Framingham equation Compared with baseline, 10 y CHD risk was lower for each diet: 16.1% (Carb) 21.0% (Protein) 19.6% (Unsat Fat) Protein vs Carb diet: ↓10 y CHD risk by 5.8% Unsat Fat vs Carb: ↓ 10 y CHD risk by 4.2% Resting BP: (post-treatment vs pretreatment) Carb: SBP = -8.2 mm Hg (95% CI = -9.6 to -6.8) DBP = -4.1 mm Hg (95% CI = -5.0 to -3.3) Protein: SBP = -9.5 mm Hg (95% CI = -10.9 to - 8.2) DBP = -5.2 mm Hg (95% CI = -6.1 to - 4.4) Unsat Fat: SBP = -9.3 mm Hg (95% CI = -10.6 to -8.0) DBP = -4.8 mm Hg (95% CI = -5.6 to - 4.0) Protein vs Carb diet: lowered SBP (P=0.002) and DBP (P<0.001) in all participants Unsat Fat vs Carb diet: lowered SBP (P=0.005) and DBP (P=0.02) in all participants Protein vs Carb diet: lowered SBP (P=0.006) and DBP (P=0.008) in hypertensives Unsat Fat vs Carb diet: lowered SBP (P=0.02) and DBP (P=0.02) in hypertensives For the 32 hypertensives, 38% remained hypertensive on the Carb, 22% on the Protein, and 19% on the Unsat Fat diets Protein vs Carb diet: Decreased Total-C (P<0.001), LDL-C (P=0.01), HDL-C (P=0.02), and TG (P< 0.01) in all participants Unsat Fat vs Carb diet: Increased HDL-C (P=0.03) in all participants Decreased total-C (P=0.04) and TG (P=0.02) in all participants Protein vs Unsat Fat diet: Decreased Total-C (P < 0.001), HDL-C (P<0.001), and TG (P=0.03) in all participants

Table 4-B-IV-2 Overview Table: Cardiovascular Disease—continued

Organized by dietary trial/dietary pattern

	Citation Quality Rating Location	Study Design Duration Study/Cohort	Sample Size Age Gender Race/Ethnicity	Dietary Pattern Overview	Health Outcomes
PREMIER Trial					
9.	Lien et al., 2007 Positive U.S.	Randomized Controlled Trial 6 mos PREMIER: Lifestyle Interventions for Blood Pressure Control Trial	Initial N = 810 Final N = 796 1.7% attrition No Metabolic syndrome Mean: 49.9±9.0 y 65% Women 39% Black Metabolic syndrome Mean:49.7±8.6 y 58% Women 30% Black	PREMIER Trial with DASH Control group: Advice only Both the EST and EST+DASH interventions included weight loss of ≥15 lb (6.8 kg) for those with a body mass index ≥25, ≥180 min/wk of moderate-intensity physical activity, ≤100 mmol/d of dietary sodium, and ≤1 oz/d of alcohol (men) or 0.5 oz/d (women). EST+DASH followed DASH dietary pattern, consuming 9-12 serv of fruits and vegetables and 2-3 serv of low-fat dairy products daily and limiting total and SAF to ≤25% and <7% of total calories, respectively.	MetSyn Est vs control: SBP: -1.58 mm Hg (95% CI = -3.78 to 0.63, P<0.05 MetS vs no MetS) DBP: -0.9 mm Hg (95% CI = -2.54 to 0.55, NS) EST + DASH vs control: SBP: -3.01 mm Hg (95% CI = -5.26 to -0.76, P<0.025) DBP: -1.55 mm Hg (95% CI = -3.12 to 0.02, P<0.05) No MetSyn Est vs control: SBP: -5.80 mm Hg (95% CI = -8.04 to -3.56, P<0.025 treatment) groups, P<0.05 MetS vs no MetS) DBP: -2.37 mm Hg (95% CI = -3.98 to -0.80, P<0.025) EST + DASH vs control: SBP: -4.97 mm Hg (95% CI = -7.15 to -2.80, P<0.025) DBP: -3.18 mm Hg (95% CI = -4.70 to -1.67, P<0.025) MetSyn Est vs control: Total-C: -7.98 mg/dL (95% CI = -13.61 to -2.35, P<0.025) LDL-C: -4.63 mg/dL (95% CI = -9.69 to 0.43, NS) HDL-C: 0.67 mg/dL (95% CI = -0.82 to 2.16, NS) TG (LN): -0.16 mg/dL (95% CI = -0.25 to -0.07, P<0.025) EST + DASH vs control: Total-C: -5.91 mg/dL (95% CI = -11.67 to -0.15, P<0.05) LDL-C: -3.41 mg/dL (95% CI = -8.63 to 1.82, NS) HDL-C: 0.09 mg/dL (95% CI = -1.44 to 1.61, NS) TG (LN): -0.08 mg/dL (95% CI = -0.17 to 0.02, NS) No MetSyn Est vs control: Total-C: -7.41 mg/dL (95% CI = -13.06 to -1.76, P<0.025) LDL-C: -6.89 mg/dL (95% CI = -11.84 to -1.95, P<0.025) HDL-C: 1.42 mg/dL (95% CI = -0.07 to 2.92, NS) TG (LN): -0.10 mg/dL (95% CI = -0.19 to -0.01, P<0.025) EST + DASH vs control: Total-C: -7.06 mg/dL (95% CI = -12.51 to -1.62, P<0.025) LDL-C: -5.13 mg/dL (95% CI = -9.91 to -0.34, P<0.05) HDL-C: -0.63 mg/dL (95% CI = -2.07 to 0.81, NS) TG (LN): -0.05 mg/dL (95% CI = -0.14 to 0.04, NS)

Table 4-B-IV-2 Overview Table: Cardiovascular Disease—continued
Organized by dietary trial/dietary pattern

	Citation Quality Rating Location	Study Design Duration Study/Cohort	Sample Size Age Gender Race/Ethnicity	Dietary Pattern Overview	Health Outcomes
			ENCORE Trial		
10.	Blumenthal et al., 2010 Positive U.S.	Randomized Controlled Trial 4 mos ENCORE (Exercise & Nutrition interventions for Cardiovascular Health)	Initial N = 144 Final N = 140 3% attrition Mean: 52±10 y 67.4% Women 60% White 39% Black 1% Asian	ENCORE Trial with DASH Control diet (UC): Participants maintained their usual diet and exercise habits; 34% E from fat, 15% from protein; K, Mg, Ca and fiber levels ~ 25th percentile of U.S. consumption. DASH diet: Rich in fruits and vegetables (8-10 svgs/d), and low-fat dairy foods; reduced amounts of saturated fat, total fat, and cholesterol; K, Mg, Ca content at ~ 75th percentile of U.S. consumption, high amounts of fiber and protein; 27% E from fat, and 18% E from protein. Sodium content: 2400 mg/2000 kcal. DASH diet alone (DASH-A): Subjects received instruction to meet DASH guidelines, told not to exercise or attempt to lose weight; met weekly in a small group for coaching on diet. DASH plus Weight Management (DASH-WM): Subjects received instruction on the DASH diet with a 500 kcal deficit, attended a weekly cognitive-behavioral weight loss intervention and participated in supervised exercise 3X/wk.	Clinic-measured BP: (reduction, post-treatment vs pretreatment) DASH-WM: SBP = 16.1 mm Hg (95% CI = 13.0 - 19.2) DBP = 9.9 mm Hg (95% CI = 8.1 - 11.6) DASH-A: SBP = 11.2 mm Hg (95% CI = 8.1 - 14.3) DBP = 7.5 mm Hg (95% CI = 5.8 - 9.3) UC diet: SBP = 3.4 mm Hg (95% CI = 0.4 - 6.4) DBP = 3.8 mm Hg (95% CI = 2.2 - 5.5) DASH-WM + DASH-A vs UC: lowered SBP and DBP (P<0.001) DASH-WM vs DASH-A: lowered SBP P<0.02) and DBP (P=0.048) ABP: (reduction, post-treatment vs pretreatment) DASH-WM: SBP = 10.2 mm Hg (95% CI = 6.8 - 13.6) DBP = 5.4 mm Hg (95% CI = 3.4 - 7.4) DASH-A: SBP = 5.3mm Hg (95% CI = 2.0 - 8.6) DBP = 2.9 mm Hg (95% CI = 1.0 - 4.9) UC diet: SBP = 0.2 mm Hg (95% CI = -3.4 - 7.4) DBP = 0.003 mm Hg (95% CI = -1.8 - 1.9) DASH-WM + DASH-A vs UC: lowered ASBP and ADBP (P<0.001) DASH-WM vs DASH-A: lowered ASBP (P<0.01) and ADBP (P=0.03) Hypertension post-treatment: 38.8% UC group participants were hypertensive compared with 12.2% in DASH-WM and 7 15.2% in DASH-A
11.	Blumenthal, Babyak, Sherwood et al., 2010 Positive U.S.	Randomized Controlled Trial 4 mos ENCORE (Exercise & Nutrition interventions for Cardiovascular Health)	Initial N = 144 Final N = 138 4% attrition Mean: 52±10 y 67% Women 60% White 39% Black 1% Asian	ENCORE Trial with DASH As above	DASH-WM vs DASH-A: Total-C (P=0.008) LDL-C (P=0.054, NS) HDL-C (P=0.115, NS) TG (P<0.001) DASH-WM vs UC: Total-C (P<0.001) LDL-C (P=0.005) HDL-C (P=0.911, NS) TG (P<0.001) DASH-A vs UC: Total-C (P=0.364, NS) LDL-C (P=0.715, NS) HDL-C (P=0.047) TG (P=0.900, NS)

Table 4-B-IV-2 Overview Table: Cardiovascular Disease—continued
Organized by dietary trial/dietary pattern

	Citation Quality Rating Location	Study Design Duration Study/Cohort	Sample Size Age Gender Race/Ethnicity	Dietary Pattern Overview	Health Outcomes
			Vegetarian Diets		
12.	Burr and Butland, 1988 Neutral U.K.	Prospective Cohort Study 10–12 y Cohort not identified	N = 10,896 >10 y at date of entry 60% Women Not Reported	Vegetarian pattern Participants were asked if they were vegetarian. ~43% of vegetarians identified themselves as lacto-ovovegetarians. Vegetarian pattern not defined further other than participants did not consume "meat" (also undefined).	Comparing vegetarians to non-vegetarians: Ischemic heart disease: Standardized Mortality (SMR) = 42.8 for vegetarians Standardized Mortality (SMR) = 60.1 for nonvegetarians (p<0.01) Effect seen in both men and women, but greater in men (significance not indicated). NS difference between vegetarians and nonvegetarians in cerebrovascular deaths
13.	Chang-Claude et al., 2005 Neutral Germany	Prospective Cohort Study 21 y German Vegetarian Study	N = 1,724 31% ≤34 y 30% ≤54 y 29% ≥55 y 10% ≥75 y 55% Women Not Reported	Vegetarian pattern Vegan (no meat, fish, eggs, and dairy) and lacto-ovo vegetarian (no meat and fish, but ate eggs and/or dairy). Non-vegetarian (occasionally or regularly ate meat and/or fish).	Comparing vegetarians to health conscious non-vegetarians: Mortality from circulatory diseases: RR = 0.83 (95% C I = 0.62 - 1.12, NS) Mortality from ischemic heart disease: RR = 0.70 (95% CI = 0.41 - 1.18, NS)
14.	Crowe et al., 2013 Positive U.K.	Prospective Cohort Study 11.6 y European Prospective Investigation into Cancer and Nutrition (EPIC)-Oxford Study	Initial N = 57,446 Final N = 44,561 (IHD analysis) Final N = 1,546 (non-cases for blood lipids) Final N = 1,519 (non-cases for BP) Nonvegetarian Men = 49±13.3 y Women = 46.3±13.2 y Vegetarian Men = 41.8±13.3 y Women = 38.4±12.7 y 76.2% Women Not Reported	Vegetarian pattern FFQ used estimated the intake of 130 different food items over the past 12 mo. Participants were asked if they ate any meat, fish, eggs, or dairy products and were categorized for this analysis as vegetarians if they did not eat meat and fish.	IHD: 1,235 cases of IHD Angina pectoris (N=332; 27%), acute MI (N=261; 21%), chronic IHD (N=619; 50%) IHD, comparing vegetarians to nonvegetarians: HR=0.68 (95% CI = 0.58 - 0.81) P<0.001 SBP: comparing vegetarians to nonvegetarians: SBP decrease = -3.3 mm Hg (95% CI = 0.7 - 5.9) DBP: NS Non-HDL Cholesterol: comparing vegetarians to nonvegetarians: Non-HDL-C decrease = 0.45 mmol/L (95% CI = 0.30 - 0.60)
15.	Key et al., 1996 Neutral U.K.	Prospective Cohort Study 16.8 y Cohort not identified; includes Seventh Day Adventists	N = 10,771 Mean: Men: 45.7±17.7 y Women: 45.9±18.3 y ~60% Women Not Reported	Vegetarian pattern Subjects asked if vegetarian, but not described further. Dietary variables were dichotomized as vegetarian or non-vegetarian. or daily vs <daily intake of whole meal bread, bran cereals, nuts or dried fruit, fresh fruit, and raw vegetable salads as individual components.	Comparing vegetarians to non-vegetarians: Ischemic heart disease: Mortality ratio = 0.85 (95% CI = 0.68 - 1.06, NS) Cerebrovascular disease: Mortality ratio = 0.96 (95% CI = 0.69 - 1.34, NS)

Table 4-B-IV-2 Overview Table: Cardiovascular Disease—continued
Organized by dietary trial/dietary pattern

	Citation Quality Rating Location	Study Design Duration Study/Cohort	Sample Size Age Gender Race/Ethnicity	Dietary Pattern Overview	Health Outcomes
16.	Key et al., 1999 Neutral U.S., U.K., Germany	Prospective Cohort Study 5.6–18.4 y (mean=10.6 y) 5 studies: Adventist Mortality, Health Food Shoppers, Adventist Health, Heidelberg, and Oxford Vegetarian	N = 76,172 16–89 y 60% Women Not Reported	Vegetarian pattern In the Health Food Shoppers Study, vegetarians were people who replied "yes" to the question "Are you a vegetarian?", whereas in the 4 other studies, vegetarians were defined as people who reported that they did not eat any meat or fish; all others were defined as nonvegetarians.	Comparing vegetarians to nonvegetarians: Ischemic heart disease (IHD), death rate ratio = 0.76 (95% CI: 0.62 - 0.94, p<0.01) Cerebrovascular disease, death rate ratio = 0.93 (95% CI: 0.74 - 1.17, NS) IHD for men, death rate ratio = 0.69 (95% CI: 0.56 - 0.84) IHD for women, death rate ratio = 0.80 (95% CI: 0.67 - 0.95) Cerebrovascular disease for men, death rate ratio = 0.77 (95% CI: 0.57 - 1.02, NS) Cerebrovascular disease for women, death rate ratio = 0.98 (95% CI: 0.80 - 1.20, NS)
17.	Orlich et al., 2013 Positive U.S.	Prospective Cohort Study Positive Adventist Health Study 2	Initial N = 96,469 Final N = 73,308 Mean: Vegan: 57.9±13.6 y Lacto-Ovo: 57.5±13.9 y Pesco: 58.8±13.7 y Semi: 57.8±14.1 y Nonvegetarian: 55.9± 13.1 y ~66% Women All: Vegan: 63.8% Lacto-Ovo: 64.9% Pesco: 68.0% Semi: 69.7% Nonvegetarian: 65.3% Black: Vegan: 21.0% Lacto-Ovo: 13.6% Pesco: 39.1% Semi: 17.8% Nonvegetarian: 34.0%	Vegetarian pattern Vegan: eggs/dairy, fish, and all other meats less than 1 time/month Lacto-ovo: eggs/dairy 1 time/month or more, but fish and all other meats less than 1 time/month Pesco: fish 1 time/month or more, but all other meats less than 1 time/month Semi: nonfish meats 1 time/month or more and all meats combined (fish included) 1 time/month or more, but no more than 1 time/week Nonvegetarians: nonfish meats 1 time/month or more and all meats combined (fish included) more than 1 time/week	Cause-Specific Mortality: 2,932 deaths among 73,308 participants: Ischemic heart disease = 372; Cardiovascular disease = 987 Comparing all vegetarians combined to nonvegetarians: IHD: All: HR=0.81 (95% CI = 0.64 - 1.02), NS; Men: HR=0.71 (95% CI = 0.51 - 1.00); Women: HR = 0.88 (95% CI = 0.65 - 1.20), NS CVD: All: HR=0.87 (95% CI = 0.75 - 1.01), NS; Men: HR=0.71 (95% CI, 0.57- 0.90); Women: HR=0.88 (95% CI = 0.65 - 1.20), NS Comparing pesco-vegetarians to nonvegetarians: IHD: All: HR=0.65 (95% CI = 0.43 - 0.97); Women: HR=0.51 (95% CI = 0.26 - 0.99); Men, NS CVD: All, NS; Men: HR=0.66 (95% CI, 0.44 - 0.98); Women, NS Comparing lacto-ovo vegetarians to nonvegetarians: CVD: All, NS; Men: HR=0.77 (95% CI = 0.59 - 0.99); Women, NS Comparing vegans to nonvegetarians: IHD: All, NS; Men: HR=0.45 (95% CI = 0.21 - 0.94); Women, NS CVD: All, NS; Men: HR=0.58 (95% CI = 0.38 - 0.59); Women, NS Comparing vegetarians to nonvegetarians: Stroke: All: HR=1.10 (95% CI = 0.82 - 1.47), NS; Men: HR=0.83 (95% CI = 0.52 - 1.31), NS; Women: HR=1.27 (95% CI = 0.89 - 1.80), NS

Table 4-B-IV-2 Overview Table: Cardiovascular Disease—continued
Organized by dietary trial/dietary pattern

	Citation Quality Rating Location	Study Design Duration Study/Cohort	Sample Size Age Gender Race/Ethnicity	Dietary Pattern Overview	Health Outcomes
18.	Margetts et al, 1985 Neutral Australia	Randomized Controlled Trial 14 wks Cohort not identified	Initial N = 60 Final N = 58 3% attrition Mean: 49.1±9.6 y 28% Women Not Reported	Ovo-lacto vegetarian pattern Dietary goals: Avoid all meat, fish, and poultry; eat only whole grain cereal when possible; double fruit intake; increase vegetable consumption; replace all butter, cooking fats, and oils with only PUFA vegetable margarine/oils; maintain intake of cheese, eggs, salt, and total calories at pre-study levels.	OLV vs usual control diet: SPB: ~ -5 mmHg (P<0.05) DBP: NS Subjects with pre-study SBP >160 mm HG: SBP = -12.3 mmHg (OLV diet) SBP = -8.5 mmHg (control diet) Subjects with pre-study SBP >140 mm Hg: 30% SBP ↓ <140 mmHg (OLV diet) 8% SBP ↓ <140 mmHg (control diet)
			WHI-DM Trial		
19.	Howard et al., 2006 Positive U.S.	Randomized Controlled Trial 8.1 y (3 y for blood pressure and blood lipids) Women's Health Initiative (WHI) Dietary Modification (DM) Trial	Initial N = 48,835 Final N = 44,351 Intent to treat analysis 50-69 y Mean: 62 y 100% Women (Postmenopausal) White= ~81% Black= ~11% Hispanic= ~4% Other= ~4%	Low-fat dietary pattern Dietary goals: Reduce total dietary fat to 20% and increase intake of vegetables and fruit to 5 or more servings and grains (whole grains encouraged) to 6 or more servings daily; intervention did not encourage weight loss or caloric reduction.	Intervention compared to control group: CVD: HR = 0.98 (95% CI = 0.92 - 1.05, NS) CHD: HR = 0.97 (95% CI = 0.90 - 1.06, NS) Intervention group that reached the lowest SFA* (< 6.1%E) compared to control: CHD: HR = 0.81 (95% CI: 0.69 - 0.96, P for trend <0.001) Intervention group that reached the lowest trans fat* (< 1.1%E) compared to control: CHD: HR = 0.81 (95% CI: 0.69 - 0.95, P for trend <0.001) Intervention group that reached highest intakes of vegetables/fruits* (≥6.5 serv/d) compared to control: CHD: HR = 0.88 (95% CI: 0.76 - 1.03, P for trend <0.001) *Individuals stratified by quartiles of achieved levels of key nutrients at year 1 Intervention compared to control group: Stroke: HR = 1.02 (95% CI = 0.90 - 1.15, NS) Intervention vs control group: SBP: Mean difference = -0.17 mm Hg (95% CI = -0.49 to 0.15, NS) DBP: Mean difference = -0.31 mm Hg (95% CI = -0.50 to -0.13, P< 0.001)

Table 4-B-IV-2 Overview Table: Cardiovascular Disease—continued

Organized by dietary trial/dietary pattern

	Citation Quality Rating Location	Study Design Duration Study/Cohort	Sample Size Age Gender Race/Ethnicity	Dietary Pattern Overview	Health Outcomes
					Intervention vs control group: Total Cholesterol: Mean difference = -3.26 mg/dL (95% CI = -6.53 to -0.00, P< 0.05) LDL C: Mean difference = -3.55 mg/dL (95% CI = -6.58 to -0.52, P<0.05) HDL C: Mean difference = 0.43 mg/dL (95% CI = -1.42 to 0.57, NS) Total/HDL C: Mean difference = -0.04 (95% CI = -0.13 to -0.5, NS) TG: Mean difference = 0.00 mg/dL (95% CI = -0.03 to 0.04, NS)
NORDIET Trial					
20.	Adamsson et al., 2011 Positive Sweden	Randomized Controlled Trial 6 wks NORDIET (Nordic Diet)	Initial N = 88 Final N = 86 2% attrition Mean: ~53 years ~63% Women Not Reported	Nordic pattern Dietary goals: Consume Nordic Diet (ND) based on Nordic nutrition recommendations. ND rich in high-fiber plant foods from fruits, berries, vegetables, whole grains (oats and barley), rapeseed oil, nuts, fatty fish and low-fat dairy products, but low in salt, added sugars and saturated fats. Contains some poultry, red meat, fish and low-fat milk. Macronutrient distribution: 27%, 52%, 19% and 2% of energy from fat, carbohydrate, protein and alcohol, respectively.	ND vs control diet: SBP: −6.55±13.18 mmHg (P=0.008) NS when adjusted for weight change over 6 wks DBP: NS ND vs control: Total-C: −0.98±0.75 mmol/L (P < 0.0001) LDL-C: −0.98±0.67 mmol/L (P < 0.001) HDL-C: −0.08±0.23 mmol/L (P < 0.001) LDL/HDL: −0.42±-0.57 (P = 0.003) Difference between groups in LDL-C (P < 0.001) and total-C, HDL-C, and LDL/HDL (all P<0.05) remained after adjusting for weight change

Limitations of the Evidence

In the DASH trials, including the original DASH and DASH-sodium, the feeding phases were relatively brief (4-8 weeks) and the trial outcomes were CVD risk factors, not clinical events. In DASH trials with free-living populations, including PREMIER and ENCORE, there was the potential for selection bias, as participants may have been more motivated toward behavior modifications.

The studies on vegetarian diets were all prospective cohort studies, and there was the potential for vegetarian cohorts to be relatively health conscious in other lifestyle components, in addition to diet. Additionally, in these studies, analyses relied on single baseline measurements of diet, without further dietary intake assessment over the time course of prospective studies. Related to the specific systematic review question on dietary patterns, vegetarian diets including vegan, lacto-ovo vegetarian, and pesco vegetarian, were most-often described by what was excluded from the diet rather than a full dietary pattern including all foods and beverages consumed. Overall, the definition of vegetarian diets has not been standardized.

Research Recommendations

Vegetarian diets are often defined by what is excluded from the diet rather than what is included; therefore, researchers should make efforts to characterize the diets of self-identified vegetarians more fully in terms of their patterns of food choice. In addition, standardization of the various definitions of vegetarian diets across different populations and locations would further advance knowledge in this area. The benefits of vegetarian diets are associated, in part, with decreased consumption of animal products; given this, it would help to inform policy if investigators could determine how much of a decrease in animal product consumption is most beneficial related to CVD risk. Methodologically, research in this area could be further improved by measuring dietary intake at regular intervals over the course of prospective studies, rather than just at baseline.

Further research needs to be done to clarify the effect of a DASH diet on blood pressure outcomes by racial/ethnic subgroups, as well as gender differences in blood lipid measures. The potential gender difference in the association between vegetarian diets and CHD mortality (i.e., more pronounced in men) needs to be further clarified, and this could be informed by detailed analyses of different forms of vegetarian diets including vegan, lacto-ovo vegetarian, and pesco-vegetarian diets, together with a fuller accounting of what these diets include as well as exclude. Women's diets tend to have higher diet quality with regard to a number of dietary dimensions other than protein sources which could explain why this particular exclusion does not have as pronounces an effect among them.

Abbreviations

Diet Trials and Cohorts: Dietary Approaches to Stop Hypertension (DASH); European Prospective Investigation into Cancer and Nutrition (**EPIC);** Exercise and Nutrition interventions for CardiOvasculaR hEalth (ENCORE); Nordic Diet (NorDiet); Optimal Macronutrient Intake Trial to Prevent Heart Disease (OmniHeart); Women's Health Initiative (WHI) Dietary Modification (DM) Trial; The Multi-Ethnic Study of Atherosclerosis (MESA); The Netherlands (NL), British Civil Service cohort (Whitehall study)

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Chapter 4-C. **The Relationship Between Dietary Patterns and Risk of Type 2 Diabetes**

Section I: Index Analysis

By Mary M. McGrane and Joan Lyon

What is the relationship between adherence to dietary guidelines/recommendations or specific dietary patterns, *assessed using an index or score*, and risk of type 2 diabetes?

TECHNICAL ABSTRACT

Background

The goal of this systematic review project was to identify dietary patterns of food and beverage intake that promote health and prevent disease. Historically, most dietary guidance has been based on research conducted on individual food components or nutrients. Dietary patterns are defined as the quantities, proportions, variety, or combination of different foods, drinks, and nutrients in diets, and the frequency with which they are habitually consumed. The objective of this systematic review was to assess the relationship between adherence to an *a priori* score and risk of cardiovascular disease. An *a priori* score measures the degree of adherence to specific dietary guidelines or adherence to a healthy diet defined by scientific evidence on diet and disease. *A priori* scores are composite numeric scores of foods, food components, and/or nutrients that are assessed as dichotomous variables (with predefined cut-points), ordinal variables such as quintiles, or as continuous variables. The individual components are summed to derive a total score.

Conclusion Statement

There is limited evidence that adherence to a dietary pattern rich in fruits, vegetables, legumes, cereals/whole grains, nuts, fish, and unsaturated oils and low in meat and high-fat dairy assessed using an index or score, is associated with decreased risk of type 2 diabetes. (Grade: III-Limited)

Methods

Literature searches were conducted using PubMed, Embase, Navigator (BIOSIS, CAB Abstracts, and Food Science and Technology Abstracts), and Cochrane databases to identify studies that evaluated the association between dietary patterns (using an *a priori* index or score) and risk of obesity. Studies that met the following criteria were included in the review: randomized controlled trials, non-randomized controlled trials, or prospective cohort studies; subjects aged 2 to 18 years; subjects who were healthy or at elevated chronic disease risk; subjects from countries with high or very high human development (2011 Human Development Index); and published in English in peer-reviewed journals. The date range was unlimited. Diet exposure was assessed by adherence to a hypothesis-based dietary pattern, defined using a numerical scoring system.

A group of technical experts were involved in a qualitative synthesis of the body of evidence, development of a conclusion statement, and assessment of the strength of the evidence (grade) using pre-established criteria including evaluation of the quality, quantity, consistency, magnitude of effect, and generalizability of available evidence.

Findings

- A total of 11 studies met the inclusion criteria for this systematic review and the body of evidence consisted primarily of large prospective cohort studies.
- The studies identified two major categories of dietary pattern scores and their association with incident T2D was mixed.

- Mediterranean style dietary pattern:
  - European studies (Spain and Greece) found a favorable association between a Mediterranean diet and risk of T2D
  - A study in the United States found no association between a Mediterranean diet and T2D incidence in the total population, in men or women, or in racial/ethnic subgroups
- Dietary guidelines-related pattern (each study used a different score or index):
  - Adherence to the alternate HEI (AHEI) was associated with decreased risk of T2D in women in the United States
  - Adherence to a DASH score was associated with reduced risk of T2D in Whites, but not in the Blacks and Hispanics in the United States
  - Adherence to the DQI-2005 was not associated with risk of T2D in young adults in the total population or in Black or White young adults in the United States
  - European studies (Australia and Germany) found no association between their dietary guidelines scores and incident T2D
- Studies that assessed intermediate outcomes including glucose tolerance and insulin resistance showed there was some agreement that a Mediterranean style diet was protective.

Discussion

It was challenging to synthesize the results because of the number of indices examined, including MDS, variations on MDS, and a large number of unique dietary guidelines-related scores. Overall, there were not a compelling number of studies with any one index. Of the eight studies that examined diabetes incidence, seven different scores were used and only the MDS was used in two studies. Of the five studies that assessed glucose tolerance and insulin resistance, all used different scores.

PLAIN LANGUAGE SUMMARY

Is adherence to dietary guidelines or specific dietary patterns, assessed by a predetermined score, related to the likelihood of developing type 2 diabetes?

In the past, researchers looked at the relationship between individual foods and nutrients and health. Today, there is interest in looking at how combinations of foods and beverages, or dietary patterns, impact health. Many researchers use a score to measure how well individuals follow specific dietary guidance or a healthy diet. These are numeric scores of foods, food components, and/or nutrients and the individual components are summed to derive a total score for a dietary pattern. This summary of a NEL review presents what we know about dietary patterns, assessed using a score, and the likelihood of developing type 2 diabetes.

Conclusion

There is limited evidence that adherence to a dietary pattern rich in fruits, vegetables, legumes, cereals/whole grains, nuts, fish, and unsaturated oils, and low in meat and high-fat dairy, assessed using an index or score, is associated with decreased risk of type 2 diabetes.

What the Research Says

- Among included studies there was variation in the types of indices or scores used, without a preponderance of studies with any one index related to risk of type 2 diabetes, making it difficult to draw overarching conclusions related to a specific dietary pattern
- In European populations, consumption of a Mediteranean-style diet was associated with reduced incidence of type 2 diabetes

EVIDENCE PORTFOLIO

Conclusion Statement

There is limited evidence that adherence to a dietary pattern rich in fruits, vegetables, legumes, cereals/whole grains, nuts, fish, and unsaturated oils, and low in meat and red meat and high-fat dairy, assessed using an index or score, is associated with decreased risk of type 2 diabetes.

Grade

III – Limited

Key Findings:

- Among included studies there was variation in the types of indices or scores used, without a preponderance of studies with any one index related to either risk of type 2 diabetes or fasting blood glucose and insulin resistance, making it difficult to draw overarching conclusions related to a specific dietary pattern.
- The different scores showed varied predictability of incident type 2 diabetes:
    - In European populations, adherence to the MDS was associated with reduced incidence of type 2 diabetes. Additionally, among women in a U.S. cohort, the AHEI had similar relationships.
    - For other scores considered, such as the Total Diet Score, German Food Pyramid Index, DQI-2005, as well as the MDS in a U.S. population, there was no relationship between diet quality and incidence of type 2 diabetes.
    - One study assessing the DASH score in a U.S. population showed an association in Whites but not in Blacks. A second study showed no association between DQI-2005 and T2D incidence in Black or White young adults.
- The different scores showed varied association with glucose tolerance and/or insulin resistance:
    - For impaired fasting glucose or insulin resistance, there was some agreement with the MDS and MSDPS being protective for the measures examined.
    - There were mixed findings for Total Diet Score, DQI-2005, and an authors' *a priori* score. For the mixed results, the findings differed by sex, type of intermediate outcome examined, and race/ethnicity.

Evidence Summary Overview

Description of the Evidence

A total of 11 studies met the inclusion criteria for this systematic review on dietary patterns and incident type 2 diabetes (T2D). The body of evidence consisted primarily of epidemiological studies, with nine prospective cohort studies and two randomized controlled trials (RCTs). In terms of study quality, nine of the studies were of positive quality and two were of neutral quality. The studies were carried out between the years 2006 and 2013. Sample sizes ranged from 187 to 769 subjects for the RCTs and from 822 to as many as 80,029 participants (1 study <1,000, 4 studies >1,000, 3 studies >10,000 for the prospective cohort studies.). Study duration ranged from 3 months to 1 year for the RCTs, while the prospective cohort study follow-up times ranged from 4.4 to 20 years.

Population: The prospective cohort studies were primary prevention studies of general populations; most were conducted with healthy adults who were free of T2D or cardiovascular disease (CVD). The two RCTs were conducted in adults with elevated chronic disease risk: one reported on the Prevencion con Dieta Mediterranea (PREDIMED) trial of older adults at increased CVD risk (Estruch, 2006); the other study reported on men with metabolic syndrome (Jacobs, 2009). In prospective cohort studies with adult participants, age ranges spanned from 18 to 84 years. One study focused on young adults with an age range of 18 to 30 years from the Coronary Artery Risk Development in Young Adults Study (CARDIA) cohort (Zamora, 2011). One of the studies examined only women (Fung, 2007) and one study examined only men (Jacobs, 2009). Some studies that examined men and women assessed health outcomes in men and women separately (Abiemo, 2012; von Ruesten, 2010). Three studies specifically identified the race/ethnic subgroups of their cohort. The CARDIA study examined equal numbers of Black and White young adults (Zamora, 2010); the Multi-Ethnic Study of Atherosclerosis (MESA) examined Black, White, Hispanic, and Chinese adults (Abiemo, 2012); and the Insulin Resistance Atherosclerosis Study (IRAS) examined Blacks and Hispanics separately from Whites (Liese, 2009).

Taken together, studies were conducted in the United States, Spain, Norway, Germany, and Australia and included many large, well-characterized cohorts.

- Five reports were from prospective cohort studies conducted in the United States: the CARDIA study (Zamora, 2010), the Framingham Offspring and Spouse (FOS) study (Rumawas, 2009), the Insulin Resistance Atherosclerosis Study (IRAS) study (Liese, 2009), the MESA study (Abiemo, 2012), and the Nurses' Health Study (NHS) (Fung, 2007).
- Two reports were from studies conducted in Spain: the Seguimiento Universidad de Navarra (SUN) Study (Martínez-González, 2008) and the PREDIMED Study (Estruch, 2006).
- The remaining reports were from countries represented in only one study: Australia (Blue Mountain Eye Study, Russell, 2012), Germany (EPIC-Potsdam, von Ruesten, 2010), and Norway (Oslo Diet and Exercise Study [ODES], Jacobs, 2009).

Dietary Exposure: Methodologically, diet exposure was assessed by adherence to a hypothesis-based dietary pattern, defined using a numerical scoring system. Two major categories of *a priori* dietary patterns were identified: (1) a dietary pattern based on a Mediterranean-style diet and (2) a dietary pattern based on dietary guidelines recommendations. Only one study examined adherence to a DASH diet and one study used the authors' own *a priori* diet score.

The most common dietary intake assessment method was the use of food frequency questionnaires (FFQs), which were validated for foods in the respective locations of the study population. Many prospective cohort studies assessed dietary intake only at baseline.

- Four studies examined health outcomes related to adherence to a Mediterranean-style dietary pattern. Of these studies, three used the Mediterranean Diet Score (MDS) of Trichopoulou or a close variant of the MDS (Abiemo, 2012; Estruch, 2006; Martínez-González, 2008) and one study used the Mediterranean-style dietary pattern score (MSDPS) (Rumawas, 2009).
- Four studies examined health outcomes related to adherence to dietary guidelines recommendations based on the United States, German, or Australian dietary guidelines, including the alternate Healthy Eating Index (AHEI) (Fung, 2007), the Diet Quality Index (DQI)-2005 (Zamora, 2011), the Total Diet Score (Gopinath, 2013), and the German Food Pyramid Index (von Reusten, 2010).

- One study examined health outcomes related to adherence to a DASH diet (Liese, 2009).
- One study examined health outcomes associated with the authors' own *a priori* diet scores (Jacobs, 2009).

Qualitative Synthesis of the Collected Evidence

Themes and Key Findings

Health Outcomes: The studies in this body of evidence examined (1) T2D incidence or (2) impaired glucose tolerance or insulin resistance.
Type 2 Diabetes Incidence: This category included studies that assessed T2D incidence as the primary outcome of the study (tables 4-C-I-1 and 4-C-I-2). Subjects who met the American Diabetes Association or World Health Organization criteria for fasting blood glucose or oral glucose tolerance, or were taking hypoglycemic medication, were considered having incident T2D. Eight studies examined the association between adherence to a dietary pattern and T2D incidence (Abiemo, 2012; Fung, 2007; Gopinath, 2013; Liese, 2009; Martínez-González, 2008; Rossi, 2013; von Ruesten, 2010; Zamora, 2011).

The results of prospective cohort studies that examined incident T2D outcomes were mixed. Several studies assessed Mediterranean-style diets. One study conducted in Spain with the Seguimiento Universidad de Navarra (SUN) cohort found a favorable association between the Mediterranean Diet Score (MDS), the original Mediterranean diet score of Trichopoulou, and risk of T2D. Overall, a 2-point increase in MDS was associated with a 35 percent reduction in risk of T2D (Martínez-González, 2008). Another study, conducted in Greece with the EPIC-Greece cohort, also assessed the relationship between the MDS and T2D. In this second Mediterranean population, adherence to the MDS was also favorably associated with risk of T2D (Rossi, 2013). Conversely, a study conducted in the United States, using the authors' MedDiet Score with the Multi-Ethnic Study of Atherosclerosis (MESA) cohort found no association between their MedDiet Score and T2D incidence in the total population, in men or women, or in racial/ethnic subgroups (Abiemo, 2012). Taken together, studies in Mediterranean populations that assessed adherence to the traditional MDS found an inverse association with T2D incidence; however, the one study that examined a multi-ethnic U.S. population, found no association.

Studies that assessed a dietary guidelines-related pattern were also mixed. In the United States, a study that assessed adherence to the alternate HEI (AHEI) found a favorable association between AHEI score and risk of incident T2D in women in the Nurses' Health Study (Fung, 2007). In a second U.S. cohort, Liese and colleagues found adherence to their DASH score was associated with markedly reduced odds of T2D in Whites in the Insulin Resistance Atherosclerosis Study (IRAS), but not in the total population or in the Black and Hispanic subgroup, ~60 percent of IRAS cohort (Liese, 2009). In a third U.S. cohort in the Coronary Artery Risk Development in Young Adults (CARDIA) study, there was no association between DQI-2005 score and T2D incidence in the total population or in Blacks or Whites (Zamora, 2011). Lastly, studies in Australia using a Total Diet score in the Blue Mountains Eye Study (BMES) and Germany using a German Food Pyramid Index with the EPIC-Potsdam cohort found no association between these scores and incident T2D (Gopinah, 2013; von Ruesten, 2010). The AHEI was predictive of T2D risk in a population of U.S. women, and a DASH score was predictive in Whites, but not Blacks or Hispanics in a U.S. population. With regard to incident T2D, the DQI-2005 was not predictive in that there was no association in the total population, Blacks, or Whites in young adults in the United States. Other studies in Australia and Germany, using dietary guidelines-related scores found no association between respective scores and incident T2D.

Impaired Glucose Tolerance and/or Insulin Resistance: This category included studies that assessed fasting blood glucose, fasting blood insulin, oral glucose tolerance, or insulin resistance using the Homeostasis Model Assessment–Insulin Resistance (HOMA-IR) equation (tables 4-C-I-1 and 4-C-I-2). These outcomes were measured by standard clinical and laboratory methods. Five studies examined adherence to a dietary pattern and intermediate outcomes related to glucose tolerance and/or insulin resistance: two RCTs (Estruch, 2006; Jacobs, 2009) and three prospective cohort studies (Gopinath, 2013; Rumawas, 2009; Zamora, 2011).

The two RCTs were conducted in at-risk populations in Europe. An early report from the PREDIMED trial showed that a Mediterranean diet decreased fasting blood glucose, fasting insulin, and HOMA-IR scores in a Spanish population at-risk for CVD (Estruch, 2006). In the Oslo Diet and Exercise Study (ODES), increased adherence to the authors' *a priori* diet score resulted in decreased fasting insulin and insulin after a glucose challenge, but not fasting glucose, in Norwegian men with metabolic syndrome (Jacobs, 2009). Results from prospective cohort studies were consistent in showing a favorable association between diet score and fasting glucose, fasting insulin or HOMA-IR (Rumawas, 2009; Zamora, 2011) with the exception of one study that found the association with fasting glucose only in men (Gopinath, 2013). It is difficult to assess food components across these studies, as numerous different scores were used, without a compelling number of studies using any one score or index.

Qualitative Assessment of the Collected Evidence

Quality and Quantity

Quality assessment of the studies included in this systematic review involved determining the validity of each study by examining the scientific soundness of study design and execution, as well as the risk of bias in the findings related to outcomes. The preponderance of the evidence consisted of positive quality studies (9 out of 11 studies). In terms of quantity of studies, there were a moderate number of studies with varied results in T2D outcomes.

Consistency

When comparing across the large well-characterized cohorts for incident T2D, the findings were mixed. There were no significant findings from the CARDIA or MESA studies; mixed findings from the IRAS cohort, although a notable T2D risk reduction in Whites; and some protective findings from Nurses' Health Study (NHS). Overall, it was challenging to synthesize the results because of the number of indices examined, including MDS, variations on MDS, and a large number of unique dietary guidelines-related scores. Overall, there were not a compelling number of studies with any one index. Of the eight studies that examined diabetes incidence, seven different scores were used and only the MDS was used in two studies. Of the five studies that assessed glucose tolerance and insulin resistance, all used different scores.

Impact

This body of evidence directly addressed the exposures and health outcomes of interest for the systematic review; eight studies measured the endpoint outcome, incident T2D. When associations were found between a dietary pattern and incident T2D, they were clinically meaningful. However, a number of the included studies did not find association.

Generalizability/External Validity

Overall, the prospective cohort studies on incident T2D were from large, well-characterized cohorts from the United States and Europe, so potentially generalizable if the findings had been consistent. The two RCTs were conducted with at-risk subjects, therefore, not generalizable to the healthy U.S. population, but relevant to the large at-risk population in the United States.

Limitations of the Evidence

For several of the studied indices, there was only one analysis, including for the Total Diet Score, German Food Pyramid Index, DQI-2005, AHEI, and DASH. Mediterranean-style scores were the only dietary pattern measures/indices used in more than one study. It was a challenge to compare results across the studies because some of the scores were not validated and used different diet assessment tools. Furthermore, the number of study participants and number of type 2 diabetes cases varied widely. Additionally, sample size was cited by authors who examined racial/ethnic subgroups as a potential limitation in their ability to detect significant associations related to incident T2D in the MESA, CARDIA, and IRAS cohorts.

Research Recommendations

Overall, there is a need for more coordinated studies involving multiple U.S. cohorts, all of which examine the same scores or indices assessed in a standardized way. In addition, more analysis of key subpopulation groups, with sufficient sample sizes, would further inform policy in this area.

Abbreviations:

Dietary pattern scores: Mediterranean Diet: Mediterranean Diet Score (MDS), Mediterranean Style Dietary Pattern Score (MSDPS), Dietary Guidelines-related: Healthy Eating Index (HEI), Alternate HEI (AHEI), Diet Quality Index (DQI), Dietary Approaches to Stop Hypertension (DASH)

Cohorts or Trials:Blue Mountains Eye Study (BMES), Coronary Artery Risk Development in Young Adults (CARDIA), European Prospective Investigation into Cancer and Nutrition (EPIC), Framingham Offspring and Spouse (FOS), Insulin Resistance Atherosclerosis Study (IRAS), Multi-Ethnic Study of Atherosclerosis (MESA), Nurses' Health Study (NHS), Seguimiento Universidad de Navarra (SUN)

Table 4-C-I-1 Summary of Findings

Hypothesis that adherence to a dietary pattern has a favorable association with impaired glucose tolerance, insulin resistance or incident type 2 diabetes

Study/ DP/ Cohort or Trial	Glucose Tolerance	Insulin Resistance	Incident T2D
Abiemo 2012/MedDiet/MESA			∅ T2D (Total, Men, Women, racial/ethnic groups)
Fung 2007/AHEI/NHS			↓ T2D
Gopinath 2013/Total Diet/BMES			∅ T2D
Liese 2009/DASH Score/IRAS			∅ T2D Total population ∅ Blacks/Hispanics ↓ T2D Whites
Martínez-González 2008/MDS/SUN			↓ T2D
Rossi 2013/MDS/EPIC-Greece			↓ T2D
von Ruesten 2010/GFPI/EPIC-Potsdam			∅ T2D (Men, Women)
Zamora 2011/DQI-2005/CARDIA			∅ T2D (Total, Blacks, Whites)
Estruch 2006/MDS/PREDIMED	↓ Fasting glucose (Med+OO) (Med+nuts)	↓ HOMA-IR (Med+OO) (Med+nuts)	
Gopinath 2013/Total Diet/BMES	↓ Fasting glucose Men ∅ Fasting glucose Women		
Jacobs 2009/Author *a priori*/ODES	∅ Fasting glucose	↓ Fasting insulin ↓ Insulin,Glu challenge	
Rumawas 2009/MSDPS/FOS	↓ Fasting glucose	↓ HOMA-IR	
Zamora 2011/DQI-2005/CARDIA		↓ HOMA-IR – Whites ↑ HOMA-IR – Blacks	

Table 4-C-I-2 Overview Table: Type 2 Diabetes

	Author, Year Study Design	Sample Size Location Duration Dietary Assessment	Population Age/Gender Cohort	Exposure Index/Score	Outcomes Measured Cases	Health Outcome
Incidence of Type 2 Diabetes						
1.	Abiemo et al., 2012 Neutral Prospective Cohort	N = 5,390 U.S. 6.6 y FFQ (127 item)	Range: 45–84 y 54% Women Multi-Ethnic Study of Atherosclerosis (MESA) Whites, Blacks, Hispanic, Chinese	MedDiet Score Total Score 0 - 10	T2D incidence 412 incident cases of T2D (7.6%)	T2D, comparing highest to lowest quintiles of MedDiet score: Total population: HR = 1.09 (95% CI = 0.80 - 1.49; P for trend = 0.51, NS) Men: HR = 1.11 (95% CI = 0.70 - 1.76; P for trend = 0.69, NS) Women: HR = 1.12 (95% CI = 0.74 - 1.71; P for trend = 0.55, NS)
2.	Fung et al., 2007 Positive Prospective Cohort	N = 80,029 U.S. 18 y FFQ (116 item)	Range: 30–55 y Women Nurses' Health Study (NHS)	AHEI Total Score 2.5 - 87.5	T2D incidence 5,183 incident cases of T2D (6.5%)	T2D, comparing the highest with the lowest quintile of AHEI score: RR = 0.64 (95% CI = 0.58 - 0.71; P for trend < 0.0001) Model 1 RR = 0.76 (95% CI = 0.66 - 0.88; P for trend < 0.0001) Model 2 (+WHR) Among symptomatic individuals: RR = 0.56 (95% CI = 0.49 - 0.64; P for trend < 0.0001) Model 1 For change in AHEI over follow-up: Change from low to high AHEI in last 4 y: RR = 0.78 (95% CI = 0.66 - 0.92, P = 0.003) Model 1
3.	Gopinath et al., 2013 Positive Prospective Cohort	N = 1,821 Australia 10 y FFQ (145 item)	Mean: ~63 y 42% Women (T2D) 58% Women (IFG) Blue Mountain Eye Study (BMES)	Total Diet Score Total Score 0 - 20	T2D incidence 144 incident cases of T2D (7.9%)	T2D, comparing highest to lowest tertile of TDS: OR = 1.00 (95% CI = 0.63 - 1.58; P for trend = 0.99, NS)
4.	Liese et al., 2009 Positive Prospective Cohort	N = 822 U.S. 5 y FFQ (114 item)	Range: 40-69 y 50% Women Insulin Resistance Atherosclerosis Study (IRAS)	DASH score Total Score 0 - 80	T2D incidence 129 incident cases of T2D (15.7%) Whites: 15.0% Blacks/ Hispanics: 16.2%	T2D, comparing highest to lowest tertiles of DASH score: Total population: OR = 0.64 (95% CI = 0.37 - 1.13; P for trend = 0.29, NS) Whites: OR = 0.25 (95% CI = 0.09 - 0.67; P for trend = 0.02) Blacks/Hispanics: OR = 0.96 (95% CI = 0.46 - 1.97; P for trend = 0.95, NS)
5.	Martínez-González et al., 2008 Positive Prospective Cohort	N = 13,380 Spain 4.4 y FFQ (136-item)	Mean Age: ~ 38 y 60% Women Seguimiento Universidad de Navarra (SUN)	Mediterranean Diet Score (MDS) Total Score 0 - 9	T2D incidence 33 incident cases of T2D (0.25%)	T2D, comparing highest to lowest MDS (high, med, low): Rate Ratio = 0.17 (95% CI = 0.04 - 0.72; P for trend = 0.04) T2D, per 2 pt increase in MDS: Rate Ratio = 0.65 (95% CI = 0.44 - 0.95; P for trend = 0.04)

Table 4-C-I-2 Overview Table: Type 2 Diabetes—continued

	Author, Year Study Design	Sample Size Location Duration Dietary Assessment	Population Age/Gender Cohort	Exposure Index/Score	Outcomes Measured Cases	Health Outcome
			Incidence of Type 2 Diabetes			
6.	Rossi et al., 2013 Neutral Prospective Cohort	N = 22,295 Greece 11.3 y FFQ (150-item)	Median Age: 50 y 59% Women EPIC-Greece	Mediterranean Diet Score (MDS) Total Score 0 - 9	T2D incidence 2,330 incident cases of T2D (10%)	T2D, comparing highest to lowest MDS: HR = 0.88 (95% CI = 0.78 - 0.99; P = 0.021)
7.	von Ruesten et al., 2010 Positive Prospective Cohort	N = 23,531 Germany 7.8 y FFQ (148-item)	Mean Age by GFPI: ♀: 46.5±8.8 - 49.7±9.6 y ♂: 50.1±7.6 - 53.2±8.3 y 61% Women EPIC-Potsdam	German Food Pyramid Index (GFPI) Total Score 0 - 110	T2D incidence 837 incident cases of T2D (3.6%)	T2D, comparing highest to lowest quintile of GFPI: Men: HR = 0.74 (95% CI = 0.54 - 1.01; P for trend = 0.03) Model 1 HR = 0.94 (95% CI = 0.69 - 1.30; P for trend = 0.63, NS) Model 2 (+BMI) Women: HR = 0.72 (95% CI = 0.51 - 1.00; P for trend = 0.06, NS) Model 1 HR = 1.09 (95% CI = 0.77 - 1.54; P for trend = 0.57, NS) Model 2 (+BMI)
8.	Zamora et al., 2011 Positive Prospective Cohort	N = 4,381 U.S. 20 y FFQ (CARDIA)	Range: 18–30 y Blacks: 58% Women Whites: 53% Women Coronary Artery Risk Development in Young Adults (CARDIA)	DQI-2005 Total Score 0 - 100	T2D incidence 328 incident cases of T2D (7.5%)	T2D, comparing highest to lowest quartiles of DQI: Total population: HR = 1.05 (95% CI = 0.71 - 1.56, NS) Model 1 HR = 1.16 (95% CI = 0.79 - 1.71, NS) Model 2 (+BMI) Blacks: HR = 1.10 (95% CI = 0.65 - 1.86, NS) Model 1 HR = 0.96 (95% CI = 0.57 - 1.62, NS) Model 2 (+BMI) Whites: HR = 0.78 (95% CI = 0.44 - 1.37, NS) Model 1 HR = 1.14 (95% CI = 0.65 - 2.00, NS) Model 2 (+BMI)
			Impaired Fasting Glucose and/or Insulin Resistance			
1.	Estruch et al., 2006 Positive RCT	Initial N = 772 Final N = 769 Spain 3 mos FFQ (137-item)	Range: 55–80 y High CVD risk 60, 50, 58% ♀: Med+OO,Med+nuts, and control Prevencion con Dieta Mediterranea (PREDIMED) Trial	Med diet + olive oil (OO) or Med diet + nuts vs control, low-fat diet	Fasting glucose and insulin, and HOMA-IR	Fasting glucose: Med + OO vs control, mean change: -0.39 mmol/L (95% CI = -0.72 to -0.07, P=0.017) Med + nuts vs control, mean change: -0.30 mmol/L (95% CI = -0.58 to - 0.01, P=0.039) Fasting Insulin: Med + OO vs control, mean change: -16.7 pmol/L (95% CI = -27.1 to -0.4, P=0.001) Med + nuts vs control, mean change: -20.4 pmol/L (95% CI = -31.9 to -9.7, P<0.001) HOMA-IR: Med + OO vs control, mean change: -0.91 (95% CI = -1.40 to -0.46, P<0.001) Med + nuts vs control, mean change: -1.1 (95% CI = -1.6 to -0.55, P<0.001)

Table 4-C-I-2 Overview Table: Type 2 Diabetes—continued

	Author, Year Study Design	Sample Size Location Duration Dietary Assessment	Population Age/Gender Cohort	Exposure Index/Score	Outcomes Measured Cases	Health Outcome
2.	Gopinath et al., 2013 Positive Prospective Cohort	N = 1,630 Australia 10 y FFQ (145 item)	Mean: ~63 y 42% Women (T2D) 58% Women (IFG) Blue Mountain Eye Study (BMES)	Total Diet Score Total Score 0 - 20	Fasting glucose 91 incident cases of IFG (5.6%)	Fasting glucose, comparing the highest with the lowest tertile of TDS: <u>Men</u>: OR = 0.25 (95% CI = 0.08 - 0.73; P for trend = 0.004) <u>Women</u>: OR = 1.74 (95% CI = 0.75 - 4.00; P for trend = 0.24, NS)
3.	Jacobs et al., 2009 Positive RCT	Initial N = 219 Final N = 187 Norway 1 y FFQ (180-item)	Mean Age: 45±2 y Met criteria for Metabolic Syndrome Men Oslo Diet and Exercise Study (ODES)	Author derived *a priori* score Total Score 0 - 62	Fasting glucose and insulin	Fasting glucose, per 10 point increase in *a priori* diet score: Mean change: -0.17±0.06 mmol/L; P = 0.01 Model 1 Mean change: -0.12±0.06 mmol/L; P = 0.06, NS Model 2 (+ % body fat) Fasting insulin, per 10 point increase in a priori diet score: Mean change: -20.1±6.69 pmol/L; P=0.003 Model 1 Mean change: -22.5±6.87 pmol/L; P=0.002 Model 2 (+ % body fat) Insulin after glucose challenge: Mean change: -125.1 ±54.94 pmol/L; P=0.02 Model 1 Mean change: -120.3 ±56.77 pmol/L; P=0.04 Model 2 (+ % body fat)
4.	Rumawas et al., 2009 Positive Prospective Cohort	N = 2,730 U.S. 7 y FFQ (Harvard)	Range: 43–70 y 43–70% Women across quintiles Framingham Offspring and Spouse (FOS)	Mediterranean-style dietary pattern score (MSDPS) Total score 0 - 100	Fasting blood glucose and HOMA-IR	Fasting glucose for quintile 5 of MSDPS: Mean = 97.1 mg/dL (95% CI = 96.3 - 98.0; P for trend = 0.03, compared to quintile 1) HOMA-IR for quintile 5 of MSDPS: Mean = 3.16 (95% CI = 3.03 - 3.30; P for trend = 0.02, compared to quintile 1)
5.	Zamora et al., 2011 Positive Prospective Cohort	N = 4,381 U.S. 20 y FFQ (CARDIA)	Range: 18–30 y Blacks: 58% Women Whites: 53% Women Coronary Artery Risk Development in Young Adults (CARDIA)	DQI-2005 Total Score 0 – 100	HOMA-IR	HOMA-IR, comparing highest to lowest quartiles of DQI: <u>Blacks</u>: quartile 4, Mean = 1.20 (95% CI = 0.77 - 1.66; P for trend = 0.01, compared to quartile 1) <u>Whites</u>: quartile 4, Mean = 0.48 (95% CI = 0.29 - 0.69; P for trend = 0.08, compared to quartile 1)

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Section II: Factor and Cluster Analysis

By Patricia C. MacNeil and Joanne M. Spahn

Are prevailing patterns of diet behavior in a population, assessed using factor or cluster analysis, related to risk of type 2 diabetes?

TECHNICAL ABSTRACT

Background

The goal of this systematic review project is to identify patterns of food and beverage intake that promote health and prevent disease. Historically, most dietary guidance has been based on research conducted on individual food components or nutrients. Dietary patterns are defined as the quantities, proportions, variety, or combination of different foods, drinks, and nutrients (when available) in diets, and the frequency with which they are habitually consumed. Factor and cluster analysis allow examination of the relationship between prevailing dietary patterns of a population and outcomes of public health concern. The objective of this systematic review was to assess the relationship between patterns of food and beverage intake identified using factor and cluster analysis, and risk for type 2 diabetes.

Conclusion Statement

Limited and inconsistent evidence from epidemiological studies indicates that in adults, dietary patterns derived using factor or cluster analysis, characterized by vegetables, fruits, and low-fat dairy products tend to have an association with decreased risk of type 2 diabetes, and those patterns characterized by red meat, sugar-sweetened foods and drinks, French fries, refined grains, and high-fat dairy products tended to show an increased association for risk of type 2 diabetes. Among studies, there was substantial variation in food group components and not all studies with similar patterns showed significant association (Grade: III-Limited).

Methods

Literature searches were conducted using PubMed, Embase, Navigator (BIOSIS, CAB Abstracts, and Food Science and Technology Abstracts), and Cochrane databases to identify studies that evaluated the association between dietary patterns defined using factor or cluster analysis and risk of type 2 diabetes. Studies that met the following criteria were included in the review: Human subjects; Ages: 2 years and older; Populations: Healthy and those with elevated chronic disease risk; subjects from countries with high or very high human development (based on the 2011 Human Development Index); randomized controlled trials, non-randomized controlled trials, or quasi-experimental studies; Sample size: Minimum of 30 subjects per study arm; Dropout rate less than 20 percent; Study assesses dietary intake using factor and cluster analysis; study considered type 2 diabetes and risks of type 2 diabetes; published in English in a peer-reviewed journal. The date range for the conduct of studies was unlimited.

The results of each included study were summarized in evidence worksheets (including a study quality rating) and evidence table. A group of subject matter experts were involved in a qualitative synthesis of the body of evidence, development of a conclusion statement, and assessment of the strength of the evidence (grade) using pre-established criteria including evaluation of the quality, quantity, consistency, magnitude of effect, and generalizability of available evidence.

Findings

- Twelve prospective cohort studies examined dietary patterns and their association with T2D incidence. Eleven studies used factor analysis and one used cluster analyses to identify a total of 33 diverse dietary patterns. Studies ranged in size from 690 to 75,512 subjects, were conducted in the United States (five), Japan (two), the Netherlands, Australia, Finland, China, and the United Kingdom, and ranged in duration from 4 to 23 years.
  - Dietary patterns associated with lower risk of T2D were characterized by vegetables, fruits, low-fat dairy, and whole grains and those associated with increased risk of T2D were characterized by red meat, sugar-sweetened foods and drinks, French fries, refined grains, and high-fat dairy products.
- Three prospective cohort studies assessed the association between dietary patterns derived using cluster analysis and factor analysis and plasma glucose levels. Studies ranged in size from 1,146 to 5,824 subjects and were conducted in the United States (two studies) and Denmark.
  - Studies focused on intermediate outcomes were too few and too diverse in methodology to develop a conclusion.

Discussion

The ability to draw strong conclusions was limited due to the following issues:

- Variations in methodology, the number and type of food groupings (e.g., vegetables grouped together or in different groups, regional food groupings), definitions, and naming conventions found in the review make analysis challenging.
- Diet assessment methodology may not accurately capture important elements of the diet. Most longitudinal studies include only baseline measure of dietary intake and do not account for changes in subjects' diets, availability and variations in the food supply.
- Patterns derived from factor or cluster analysis represent the prevailing dietary patterns of a specific population and are therefore not generalizable and do not represent the optimal diet to protect against disease. However, studies in this review identify characteristics of dietary patterns actually consumed, which are associated with increased and decreased incidence of type 2 diabetes.

PLAIN LANGUAGE SUMMARY

Are the amounts, types, variety, or combinations of foods and beverages people frequently eat and drink related to the likelihood of developing type 2 diabetes?

In the past, researchers looked at the relationship between individual foods and nutrients and health. Today, there is interest in looking at how combinations of foods and beverages, or dietary patterns, impact health. Statistical methods called factor and cluster analyses can be used to describe the patterns of foods and beverages people eat. This summary of a NEL review presents what we know about dietary patterns of certain groups of people described using factor and cluster analysis and the likelihood of developing type 2 diabetes.

Conclusion

Limited and inconsistent evidence from epidemiological studies examining dietary patterns derived using factor or cluster analysis in adults found that consumption of a dietary pattern characterized by vegetables, fruits, whole grains, and reduced-fat dairy products tends to be associated with more favorable body weight status over time than consumption of a dietary pattern characterized by red meat, processed meats, sugar-sweetened foods and drinks, and refined grains.

What the Research Says

- Results the from the twelve studies included in this review tell us that dietary patterns high in vegetables, fruits, low-fat dairy products, and whole grains may prevent people from getting type 2 diabetes.
- These studies also show that dietary patterns high in red meat, sugar-sweetened foods and drinks, French fries, refined grains, and high-fat dairy products tend to increase people's risk of getting type 2 diabetes.
- This review raised some key issues that make it harder to make stronger recommendations:
  - There were many differences in how the studies were done.
  - The dietary patterns differed a lot between studies.

EVIDENCE PORTFOLIO

Conclusion Statement

Limited and inconsistent evidence from epidemiological studies indicates that in adults, dietary patterns derived using factor or cluster analysis, characterized by vegetables, fruits, and low-fat dairy products tend to have an association with decreased risk of type 2 diabetes and those patterns characterized by red meat, sugar-sweetened foods and drinks, French fries, refined grains, and high-fat dairy products tended to show an increased association for risk of type 2 diabetes. Among studies, there was substantial variation in food group components and not all studies with similar patterns showed significant association.

Grade

III– Limited

Key Findings

- Cluster and factor analyses are data-driven approaches that describe the dietary patterns consumed by the study population. High variability in the studies included in this review, including populations, case number, sample size, dietary assessment techniques, methods used to define and retain factors and clusters, confounders considered and the statistical analysis employed, made comparisons among studies challenging.
- Studies focused on intermediate outcomes were too few and too diverse in methodology to draw a conclusion.

Evidence Summary Overview

Description of the Evidence

Factor and cluster analyses are data-driven approaches that empirically derive food intake patterns (appendix A). Fifteen prospective cohort studies conducted between 2004 and 2012 were included. Seven studies received a positive quality and eight a neutral quality rating. Sample sizes ranged from 690 to 75,512 participants (2 studies <2,000; 6 studies 3,000 to 6,500; 4 with 20,000 to 45,000; and 3 studies with >65,000 subjects). Study duration ranged from 4 to 23 years (6 <10 years; 7 between 10 to 15 years; and 2 >15 years). Eight studies were conducted in the United States and two in Japan, while the remaining were conducted in Australia, Finland, Hong Kong, the Netherlands, and the United Kingdom.

Population: Eleven studies were conducted in both men and women (Bauer, 2012; Brunner, 2008; Duffey, 2012; Erber, 2009; Hodge, 2007; Lau, 2009; Montonen, 2005; Morimoto, 2012; Nanri, 2013; Nettleton, 2008; Yu, 2011), and two of these studies analyzed health outcomes separately by gender (Erber, 2009; Nanri, 2013).Three studies included U.S. women only (Fung, 2004; Kimokoti, 2012; Malik, 2012), and one study included U.S. men only (Van Dam, 2002). Age range at baseline spanned from 18 to 84 years. Fourteen studies analyzed middle-aged and older populations (above 35 years), and one study analyzed young adults 18 to 30 years at baseline (Duffey, 2012). Three studies identified race/ethnic subgroups within their cohort (Erber, 2009; Hodge, 2007; Nettleton, 2008).

Dietary Pattern Methodology: Thirteen of fifteen studies assessed dietary intake using a baseline food frequency questionnaire (FFQ), and two studies from the Nurses' Health Study aggregated data from FFQs completed at four separate time points (Fung, 2004; Malik, 2012). Two studies used a diet history approach (Duffey, 2012; Montonen, 2005). In general, individual food and beverage items were consolidated into food groups based on established criteria, and dietary patterns were then generated using factor analysis in 12 studies (Bauer, 2012; Erber, 2009; Fung, 2004; Hodge, 2007; Lau, 2009; Malik, 2012; Montonen, 2005; Morimoto, 2012; Nanri, 2013; Nettleton, 2008; Van Dam, 2002; Yu, 2011), and cluster analysis in 3 studies (Brunner, 2008; Duffey, 2012; Kimokoti, 2012). Once dietary patterns were defined using factor analysis, pattern scores were calculated for each participant and after multivariate adjustment, the association between dietary pattern scores and type 2 diabetes risks by quintile or quartile were assessed. Generally, studies adjusted for baseline BMI, total energy intake, physical activity, sex, age, and smoking, but additional factors were considered by individual studies. Only Nettleton et al. (2008) controlled for change in body weight or waist circumference over the course of the study. When cluster analysis was used, a reference group was defined and analysis was conducted to assess the relationship between cluster group and risk of T2D.

Outcomes: The studies in this body of evidence evaluated associations between dietary patterns and endpoint outcomes and intermediate outcomes.

Endpoint Outcome: Twelve studies evaluated the association between dietary patterns and incidence of T2D. Only one of these studies used cluster analysis to define dietary patterns (Brunner, 2008). Factor and cluster name reflect those assigned by the author, followed by food components characteristic of the pattern.

Intermediate Outcome: One study measured fasting blood glucose with a cutoff of ≥6.1 mmol/L (Duffey, 2012); another study measured plasma glucose with a cutoff of ≥5.1 mmol/L (Kimokoti, 2012), while a third study measured plasma glucose after an overnight fast and after a standard 75 g oral glucose tolerance test (Lau, 2009). Table 2 provides a general overview of the study characteristics, dietary assessment methods, dietary patterns identified using factor and cluster analysis, and their association with plasma glucose levels. Factor and cluster name reflect those assigned by the author, followed by food components characteristic of the pattern.

Themes

T2D incidence: Twelve prospective cohort studies examined dietary patterns and their association with T2D incidence (table 4-C-II-1). Eleven studies used factor analysis and one used cluster analyses to identify one to four dietary patterns per study and a total of 35 diverse dietary patterns within the body of evidence. Studies ranged in size from 690 to 75,512 subjects, were conducted in the United States (five), Japan (two), the Netherlands, Australia, Finland, China, and the United Kingdom, and ranged in duration from 4 to 23 years. Results were mixed. There were many null findings, particularly among studies with duration of less than 7 years (Malik, 2012; Hodge, 2007; Nanri, 2012; Nettleton, 2008). Patterns associated with lower risk of T2D were characterized by vegetables, fruits, low-fat dairy products, and whole grains, and those associated with increased risk of T2D were characterized by red meat, sugar-sweetened foods and drinks, French fries, refined grains, and high-fat dairy products. However, there was substantial variation in the food groups identified, even among patterns with the same name.

Intermediate outcomes: Three prospective cohort studies assessed the association between dietary patterns and plasma glucose levels (table 4-C-II-2). Two U.S. studies derived patterns using cluster analysis (Duffy, 2012; Kimokoti, 2012) and one study conducted in Denmark used factor analysis (Lau, 2009). Studies ranged in size from 1,146 to 5,824 adults. Duffey et al. (2012) identified two diet clusters: "Prudent Diet" and "Western Diet"; Kimokoti et al. (2012) identified five clusters: "Heart Healthier," "Lighter Eating," "Wine and Moderate Eating," "Higher Fat," and "Empty Calories"; and Lau et al. (2009) derived two factors: "Modern" and "Traditional." Variations in population, dietary assessment methodologies, and methods used to derive patterns resulted in a highly variable set of dietary patterns, making it difficult to draw conclusions. No association with fasting plasma glucose was found with any of the nine dietary patterns identified. Lau (2009) assessed 2-hour plasma glucose concentration and found a dietary pattern characterized by high intake of vegetables, fruit, mixed vegetable dishes, vegetable oil and vinegar dressing, poultry, pasta, rice, and cereals associated with decreased T2D risk.

Table 4-C-II-1 Summary of Findings

Dietary patterns identified using factor (white rows) or cluster (colored rows) analysis and association with incidence of type 2 diabetes (T2D) in adults

Author, Year, Quality Rating, Study Design, Cohort	Sample Size, Location, Duration, Dietary Assessment, Methodology, No. Patterns	Age, % Female Race/Ethnicity, Outcome/ Comparison, Number Cases	Dietary Patterns Associated with Decreased T2D risk	Dietary Patterns with No Significant Association with T2D risk	Dietary Patterns Associated with Increased T2D risk
Bauer et al., 2012 Positive Prospective Cohort EPIC-NL study	N = 20,385 The Netherlands 8 y 178- item FFQ FA derived 2 dietary patterns	21–70 y, mean ~52y 73% NR T2D HR, Q4 vs. Q1 Incidence: 831 cases		• **"Pattern 1"** (shellfish, high-fat fish, low-fat fish, wine, raw vegetables, chicken and fruit juice), HR= 1.00 (95% CI: 0.81, 1.23), P for trend 0.73	• **"Pattern 2"** (soft drinks, other non-alcoholic beverages, French fries, snacks and low-fiber cereal bread), HR = 1.56 (95% CI: 1.20, 2.02), P for trend 0.0001
Brunner et al., 2008 Neutral Prospective Cohort Whitehall II study (1985-1988)	N = 6,471 U.K. 15 y 127- item FFQ CA derived 4 dietary patterns	Mean = 50 y 30% NR T2D HR, "healthy" pattern vs. "unhealthy pattern" 106,633 person years at risk; 410 cases	• **"Healthy"** (fruit, vegetables, whole-meal bread, low-fat dairy, and little alcohol), HR = 0.74 (95% CI: 0.58, 0.94), p = 0.016	• **"Sweet"** (white bread, biscuits, cakes, processed meat, puddings, and high-fat dairy products), NS • **"Mediterranean-like"** (fruit, vegetables, rice, pasta, and wine), NS Comparator: • **"Unhealthy"** (white bread, processed meat, fries, and full-cream milk, red meat, and low intake of low-fat dairy products)	

Table 4-C-II-1 Summary of Findings—continued

Dietary patterns identified using factor (white rows) or cluster (colored rows) analysis and association with incidence of type 2 diabetes (T2D) in adults

Author, Year, Quality Rating, Study Design, Cohort	Sample Size, Location, Duration, Dietary Assessment, Methodology, No. Patterns	Age, % Female Race/Ethnicity, Outcome/ Comparison, Number Cases	Dietary Patterns Associated with Decreased T2D risk	Dietary Patterns with No Significant Association with T2D risk	Dietary Patterns Associated with Increased T2D risk
Erber et al., 2009 Positive Prospective Cohort Multiethnic Cohort MEC study (Hawaii Component)	N = 75,512 U.S. 14 y FFQ ethnicity-specific FA derived 3 dietary patterns	45–75 y 52% Caucasian: 39% Japanese American: 47% Native Hawaiian: 14% T2D HR, Q5 vs. Q1 (95% CI), by gender and ethnicity Incidence: all men 4,555 cases	• **"Vegetable"** (dark-green, deep-yellow, and other vegetables; and with a relatively lower loading other fruits and citrus fruits, melons and berries). **Men**, cases by quintile Q1 - Q5: 783; 907; 982; 976; 907 --All men: HR = 0.86 (0.77, 0.95), P for trend 0.004 --Caucasian: HR = 0.67 (0.53, 0.84), P for trend 0.01 --Japanese American: HR = 0.86 (0.74–0.99), P for trend 0.007 • **"Fruit and milk"** (milk, yogurt, cheese, and other fruits and citrus fruits, melons and berries). **Men**, cases by quintile Q1 - Q5: 1,144; 1,011; 925; 770; 705 --All men: HR = 0.92 (0.83, 1.02), P for trend 0.04 --Caucasian: HR = 0.71 (0.56, 0.89), P for trend 0.02 **Women**, cases by quintile Q1 - Q5: 984; 862; 816; 725; 645 --All women: HR = 0.85 (0.76, 0.96), P for trend 0.05	• **"Vegetable"** (dark-green, deep-yellow, and other vegetables; and with a relatively lower loading other fruits and citrus fruits, melons and berries). NS for Native Hawaiian men **Women**, cases by quintile Q1 - Q5: 665; 808; 816; 858; 885 NS all women and women of all ethnicities • **"Fruit and milk"** (milk, yogurt, cheese, and other fruits and citrus fruits, melons and berries). NS in analysis of women by ethnic group and in Japanese American and Native Hawaiian men • **"Fat meat"** (discretionary fat, meat, eggs, cheese, white potatoes, and non-whole grains) NS for Native Hawaiian Men NS for Caucasian and Native Hawaiian women	• **"Fat meat"** (discretionary fat, meat, eggs, cheese, white potatoes, and non-whole grains) **Men**, cases by quintile Q1 - Q5: 773; 812; 912; 958; 1,100 --All men: HR = 1.4 (1.23-1.60), P for trend < 0.0001 --Caucasian: HR = 1.38 (1.05, 1.81), P for trend 0.007 --Japanese American: HR = 1.38 (1.16, 1.64), P for trend < 0.0002 **Women**, cases by quintile Q1 - Q5: 657; 691; 784; 823; 1,077 --All women: HR = 1.22 (1.06, 1.40), P for trend 0.004 --Japanese American: HR = 1.20 (1.00, 1.44), P for trend 0.045
Fung et al., 2004 Positive Prospective cohort Nurses' Health Study (NHS) (1984 – 1998)	N = 69,554 U.S. 14 y 116-item FFQ FA derived 2 dietary patterns	38–63 y 100% NR T2D RR, Q5 vs. Q1 (95% CI) Incidence: 2,699 cases		• **"Prudent"** (higher intakes of fruit, vegetables, whole grains, fish, poultry, and low-fat dairy products), cases by quintile Q1 - Q5: 533, 543, 496, 565, 561: RR = 0.89 (0.78, 1.02), P for trend 0.33, NS	• **"Western"** (higher intakes of red and processed meats, refined grains, sweets and desserts, and high-fat dairy products), cases by quintile Q1 - Q5: 391, 455, 562, 559, 731: RR = 1.49 (1.26-1.76), P for trend < 0.001

Table 4-C-II-1 Summary of Findings—continued

Dietary patterns identified using factor (white rows) or cluster (colored rows) analysis and association with incidence of type 2 diabetes (T2D) in adults

Author, Year, Quality Rating, Study Design, Cohort	Sample Size, Location, Duration, Dietary Assessment, Methodology, No. Patterns	Age, % Female Race/Ethnicity, Outcome/ Comparison, Number Cases	Dietary Patterns Associated with Decreased T2D risk	Dietary Patterns with No Significant Association with T2D risk	Dietary Patterns Associated with Increased T2D risk
Hodge et al., 2007 Positive Prospective cohort Melbourne Collaborative Cohort Study (1991-94)	N = 31,641 Australia 4 y 121-item FFQ FA derived 4 dietary patterns	Mean = 54.3 y 61% Migrants from Italy (15%), Greece (12%), and U.K. (7%) T2D OR, Q5 vs. Q1 (95% CI) Incidence: 365 cases		• Factor 1 (olive oil, salad vegetables, legumes, and avoidance of sweet bakery items, margarine, and tea), OR = 1.12 (0.71, 1.77), P for trend 0.63, NS • Factor 2 (salad and cooked vegetables), OR = 0.83 (0.56, 1.23), P for trend 0.19, NS • Factor 3 (meats, savory pastries, fried eggs, fried fish, and fried potatoes), OR = 1.65 (1.03, 2.63), P for trend 0.24, NS • Factor 4 (fruits), OR = 1.18 (0.81, 1.71), P for trend 0.85, NS	
Malik et al., 2012 Positive Prospective cohort Nurses' Health Study II	N = 37,038 U.S. 7 y 124-item FFQ FA derived 2 dietary patterns	24–44 y 100% NR T2D HR, Q5 vs. Q1 (95% CI) 290,703 person-years of follow-up; 550 cases		• **"Prudent"** (higher intakes of vegetables, fruit, legumes, fish, and better-quality grains and low consumption of snacks and soda), RR = 1.27 (0.96-1.67), P for trend 0.14, NS • **"Western"** (higher intakes of desserts, snacks, processed meats, red meat, French fries, and refined grains and low consumption of vegetables, fruits, and fish), RR = 1.19 (0.92-1.54), P for trend 0.14, NS	

Table 4-C-II-1 Summary of Findings—continued

Dietary patterns identified using factor (white rows) or cluster (colored rows) analysis and association with incidence of type 2 diabetes (T2D) in adults

Author, Year, Quality Rating, Study Design, Cohort	Sample Size, Location, Duration, Dietary Assessment, Methodology, No. Patterns	Age, % Female Race/Ethnicity, Outcome/ Comparison, Number Cases	Dietary Patterns Associated with Decreased T2D risk	Dietary Patterns with No Significant Association with T2D risk	Dietary Patterns Associated with Increased T2D risk
Montonen et al., 2005 Neutral Prospective cohort Finnish Mobile Clinic Health Examination Survey	N = 4,304 Finland 23 y Dietary history FA derived 2 dietary patterns	40–69 y NR NR T2D RR, Q4 vs. Q1 (95% CI) Incidence: 383 cases	• **"Prudent"** (vegetables, and fruits), RR = 0.72 (0.53, 0.97), P for trend 0.03		• **"Conservative"** (butter, potatoes, whole milk, and red meat), RR = 1.49 (1.11, 2.00), P for trend 0.01
Morimoto et al., 2012 Neutral Prospective cohort Dietary and cardiovascular risk factor prevalence survey (1995-1996)	N = 5,665 Japan 10.3 y 16-item FFQ FA derived 3 dietary patterns	40–69 y 65% NR T2D HR, Q4 vs. Q1 (95% CI) 58,151 person-years; 446 cases	One **"healthy" factor** was identified, and characterized by more frequent consumption of vegetables, potatoes, seaweeds, fruits and soybean products, HR = 0.78 (0.0.61, 0.95), P for trend 0.008 Results were similar when stratified by sex		

Table 4-C-II-1 Summary of Findings—continued

Dietary patterns identified using factor (white rows) or cluster (colored rows) analysis and association with incidence of type 2 diabetes (T2D) in adults

Author, Year, Quality Rating, Study Design, Cohort	Sample Size, Location, Duration, Dietary Assessment, Methodology, No. Patterns	Age, % Female Race/Ethnicity, Outcome/ Comparison, Number Cases	Dietary Patterns Associated with Decreased T2D risk	Dietary Patterns with No Significant Association with T2D risk	Dietary Patterns Associated with Increased T2D risk
Nanri et al., 2013 Neutral Prospective cohort Second Survey of the Japan Public Health Center-based Prospective	N = 64,705 Japan 5 y 134-item FFQ FA derived 3 dietary patterns	45–74 y, mean ~57 y 57% NR T2D OR, Q4 vs. Q1 (95% CI) Incidence: 1,194 new cases		• **"Prudent"** (high intakes of vegetables, fruit, potatoes, soy products, seaweed, mushrooms, fish and green tea): --Men: OR = 0.93 (0.74, 1.16), P for trend 0.25, NS --Women: OR = 0.90 (0.69, 1.16), P for trend 0.45, NS • **"Westernized"** (high intake of meats, processed meat, bread, dressing, dairy products, fish, coffee, black tea, and sauces): --Men: OR = 1.15 (0.90, 1.46), P for trend 0.12, NS --Women: OR = 0.81 (0.61, 1.08), P for trend 0.26, NS • **"Traditional Japanese"** (high intakes of fish, pickles, seafood other than fish, miso soup, and rice): --Men: OR = 0.97 (0.74, 1.27), P for trend 0.88, NS --Women: OR = 0.81 (0.61, 1.08), P for trend 0.26, NS	
Nettleton et al., 2008 Neutral Prospective cohort Multi-Ethnic Study of Atherosclerosis	N = 5,011 U.S. 5 y 120-item FFQ FA derived 4 dietary patterns	45–84 y, mean 61 y 47% White: 43.5% Black: 24% Hispanic: 20.3% Chinese: 12.2% T2D HR, Q5 vs. Q1 (95% CI) Incidence: 413 cases	•**"Whole grains and fruit"** (whole grains, fruit, nuts and seeds, green leafy vegetables, and low-fat dairy foods), HR = 0.73 (0.52, 1.04), P for trend 0.05	• **"Fats and processed meat"** (added fats, processed meat, fried potatoes, and desserts), NS • **"Vegetables and fish"** (several vegetable groups, fish, soup, Chinese foods, red meat, poultry, and soy), NS There were no significant associations between T2D race/ethnic specific dietary patterns	• **"Beans, tomatoes and refined grains"** (beans, tomatoes, refined grains, high-fat dairy foods, avocado, and red meat), HR = 1.28 (0.88, 1.84), P for trend 0.003

Table 4-C-II-1 Summary of Findings—continued

Dietary patterns identified using factor (white rows) or cluster (colored rows) analysis and association with incidence of type 2 diabetes (T2D) in adults

Author, Year, Quality Rating, Study Design, Cohort	Sample Size, Location, Duration, Dietary Assessment, Methodology, No. Patterns	Age, % Female Race/Ethnicity, Outcome/ Comparison, Number Cases	Dietary Patterns Associated with Decreased T2D risk	Dietary Patterns with No Significant Association with T2D risk	Dietary Patterns Associated with Increased T2D risk
Van Dam et al., 2002 Positive Prospective cohort Health Professionals Follow-up Study	N = 42,504 U.S. 12 y 131-item FFQ FA derived 2 dietary patterns	40–75 y; mean ~53 y 0% NR T2D RR, Q5 vs. Q1 (95% CI) 466,508 person-years of follow-up; 1,321 cases		• **"Prudent"** (vegetables, fruit, legumes, fish, poultry, and whole grains), RR = 0.84 (0.70, 1.00), P for trend 0.2, NS	• **"Western"** (red and processed meats, refined grains, French fries, high-fat dairy products, sweets and desserts, high-sugar drinks, and eggs), RR = 1.59 (1.32, 1.93), p for trend < 0.001
Yu et al., 2011 Neutral Prospective cohort Hong Kong, China	N = 690 Hong Kong, China 9–14 y 266-item FFQ FA derived 4 dietary patterns	25–74 y 52% NR T2D risk OR per 1 SD increase in score (95% CI) Incidence: 74 new cases	• **"More vegetables, fruit and fish"** (fish, seafood, fruit, other vegetables, dark green, and leafy vegetables), OR = 0.76 (0.58, 0.99)	• **"More snacks and drinks"** (chinese dim sum, tea, and soup), NS • **"More refined grains"** (sweets and desserts), NS	• **"More meat and milk products"** (red meat and milk), OR = 1.39 (1.04, 1.84)

Table 4-C-II-2. Summary of Findings

Dietary patterns identified using factor or cluster analysis (shaded rows) and association with risk of type 2 diabetes (T2D) in adults

Author, Year, Quality Rating, Study Design, Cohort	Sample Size, Location, Duration, Dietary Assessment, Methodology, No. Patterns	Age, % Female Race/Ethnicity, Outcome/ Comparison	Dietary Patterns Associated with Decreased T2D Risk	Dietary Patterns with No Significant Association with T2D Risk	Dietary Patterns Associated with Increased T2D risk
Duffey et al., 2012 Neutral Prospective cohort Coronary Artery Risk Development in Young Adults Study	N = 3,664 U.S. 20 y Dietary History CA derived 2 dietary patterns	18–30 y 59% NR High fasting glucose (≥ 6.1 mmol/L) "Prudent" vs "Western" pattern		• **"Prudent diet"** (fruit, milk, yogurt, cheese, nuts, seeds, fish, and whole grains). • **"Western diet"** (meats, poultry, refined grains, sugar-sweetened soda, fast food, fruit drinks, egg and egg dishes, legumes, and snacks) High fasting glucose HR = 0.93 (95%CI: 0.80, 1.09), NS	
Kimokoti et al., 2012 Positive Prospective cohort Framingham Offspring/Spouse Cohort	N = 1,146 U.S. 7 y 145-item FFQ CA derived 5 dietary patterns	25–77 y 100% NR High fasting plasma glucose (≥ 5.1 mmol/L) Incidence		• **"Heart healthier"** (vegetables, fruits, legumes, fish, whole grain, low-fat dairy milk), NS • **"Lighter eating"** (fattier poultry and beer), NS • **"Wine and moderate eating"** (wine, organ meats, eggs, high-fat dairy, and snack foods), NS • **"Higher fat"** (sweets and animal fats, refined grains, soft margarine, oils, diet beverages, and desserts), NS • **"Empty calorie"** (sweetened beverages, meat, mixed dishes and desserts), NS	
Lau et al., 2009 Neutral Prospective Cohort Danish population-based non-pharmacological Inter99 study	N = 5,824 Denmark 5 y 198-item FFQ FA derived 2 dietary patterns	30–60 y NR NR FPG and 2h-PG concentration (repeat measures) Change	2h-PG concentration: • **"Modern"** (higher intakes of vegetables, fruit, mixed vegetables dishes, vegetable oil and vinegar dressing, poultry, pasta, rice, and cereals) 2h-PG = -0.014 (-0.025,-0.004), P=0.009 [Estimates show that a higher score (of 1 SD) predicted change (in mmol/L) (95% CI)]	FPG: • **"Modern"** (higher intakes of vegetables, fruit, mixed vegetables dishes, vegetable oil and vinegar dressing, poultry, pasta, rice, and cereals) FPG = -0.000 (-0.004, 0.003), P=0.873, NS FPG and 2h-PG concentration: • **"Traditional"** (higher intakes of pate or high-fat sandwich meat, mayonnaise salads, red meat, potatoes, butter and lard, low-fat fish, low-fat sandwich meat, and sauces), 2h-PG = 0.002 (-0.009, 0.013), P=0.677, NS FPG = 0.001 (-0.003, 0.004), P=0.632, NS	

Qualitative Assessment of the Collected Evidence

Quality and Quantity

Twelve prospective cohort studies evaluated the association between dietary patterns and incidence of T2D**.** Six studies were found to be of positive quality, and six received a neutral quality rating. Studies ranged in size from 690 to 75,512 subjects. Three prospective cohort studies with 1,146 to 5,824 subjects evaluated the association between dietary patterns and intermediate outcomes, specifically fasting plasma glucose. Fasting plasma glucose criteria varied between studies and only one study (Lau, 2009) measured post-challenge 2-hour plasma glucose, in addition to a fasting measure.

Consistency

Among studies that showed significant associations, there were substantial variations in food group components and not all studies with similar patterns showed significant associations. There were many null findings, particularly among shorter studies (less than 7 years). In general, dietary patterns derived using factor or cluster analysis, characterized by vegetables, fruits, and low-fat dairy products tended to have an association with decreased risk of type 2 diabetes, and those patterns characterized by red meat, sugar-sweetened foods and drinks, French fries, refined grains, and high-fat dairy products tended to show an increased association for risk of type 2 diabetes in adults.

Impact

It is challenging to infer public health implications from these studies, since the results from cluster analysis and factor analysis are based on a specific population and hard to translate into detailed dietary prescriptions, aside from broad generalizations. Results were clinically meaningful for associations made between factors and clusters and incidence of T2D. The methodologies used in the included studies varied substantially. Patterns using the same naming convention may contain very different foods or groups of foods (e.g., a pattern labeled "prudent" may or may not contain fish, nuts, legumes, whole grains, poultry, or low-fat dairy products). Variations in the number of study subjects, cases, and subjective decisions involved in deriving and retaining factors and clusters for analysis likely influence the ability to detect associations.

Generalizability/External Validity

Studies recruited adult populations, and both men and women were well represented. Eight of twelve studies assessing T2D incidence were conducted outside the United States and one of three assessing intermediate outcomes. The majority of studies included White populations. Ethnicity and socioeconomic status were often not reported in analyses.

Limitations of the Evidence

- Variation in methodology used to derive and analyze dietary patterns (e.g., factor versus cluster analysis, subjective decisions regarding groupings of foods, number of patterns retained and naming conventions, population characteristics, sample size and case numbers) make the analysis challenging. Even factors with the same naming convention (e.g., "vegetable" or "prudent") included somewhat different foods or groups of foods.
- Patterns derived from either factor or cluster analysis may not be reproducible because of variations in populations, sample sizes, dietary assessment methods, and decisions made to define food variables used in factor and cluster analysis, and factors and clusters differ across studies.
- Differences in the statistical analysis approaches used to derive and retain factors and clusters influences power and the ability to detect an association.
- Patterns derived from factor analysis and cluster analyses were analyzed differently. In factor analysis, "high" scores were generally compared with "low" scores of the same pattern, though it was not clear what characteristic differences there were in a "high" versus "low" score factor. In cluster analysis, one cluster was compared with another one, making it difficult to interpret results together.
- Dietary patterns with significant association should not be construed as the best or worst possible diet associated with diabetes risk.

- Most longitudinal studies included only baseline measure of dietary intake and did not account for changes in subject's diets, availability, and variations in the food supply, which may have influenced the food components of patterns. Food frequency questionnaires may not accurately capture important elements of the diet.

Research Recommendations

- Evaluate and standardize methods used to assess, organize, aggregate, and adjust food variables to facilitate interpretation of findings across studies.
- Additional research is needed to examine if and how gender, age, SES, and ethnicity might influence the relationship between dietary patterns and risk for T2D.
- Consider important confounders that may modify or explain the association between dietary intake and T2D, for example weight change.

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Section III: Reduced Rank Regression Analysis
By Thomas V Fungwe and Julie E. Obaggy

What is the relationship between adherence to dietary guidelines/recommendations or specific dietary patterns, assessed using reduced rank regression analysis, and risk of type 2 diabetes?

TECHNICAL ABSTRACT

Background

The goal of this systematic review project is to identify patterns of food and beverage intake that promote health and prevent disease. Historically, most dietary guidance has been based on research conducted on individual food components or nutrients. Dietary patterns are defined as the quantities, proportions, variety, or combination of different foods, drinks, and nutrients (when available) in diets, and the frequency with which they are habitually consumed. Reduced rank regression (RRR) is a statistical method that determines dietary patterns (combinations of food intake) that explain as much variation as possible among a set of response variables related to a health outcome of interest. It is an *a posteriori* method since it uses both existing evidence and exploratory statistics. The objective of this systematic review was to assess the relationship between patterns of food and beverage intake identified using reduced rank regression, and risk for type 2 diabetes.

Conclusion Statement

There is insufficient evidence, due to a small number of studies, to examine the relationship between dietary patterns derived using reduced rank regression and risk of type 2 diabetes. The differences in the methods used and populations studied made it difficult to compare results, and therefore no conclusions were drawn. (Grade: Not Assignable)

Methods

Literature searches were conducted using PubMed, Embase, Navigator (BIOSIS, CAB Abstracts, and Food Science and Technology Abstracts), and Cochrane databases to identify studies that evaluated the association between dietary patterns derived using reduced rank regression analysis and risk of type 2 diabetes. Studies that met the following criteria were included in the review: Human subjects; Ages: 2 years and older; Populations: Healthy and those with elevated chronic disease risk; individuals with chronic disease; published in English in a peer-reviewed journal; Sample size: Minimum of 30 subjects per study arm; Dropout rate Less than 20 percent; Study assesses dietary intake using reduced rank regression analysis; study considered diabetes and risks of diabetes.; subjects from countries with high or very high human development (based on the 2011 Human Development Index). The date range for the conduct of the studies was unlimited.

The results of each included study were summarized in evidence worksheets (including a study quality rating) and evidence table. A group of subject matter experts were involved in a qualitative synthesis of the body of evidence, development of a conclusion statement, and assessment of the strength of the evidence (grade) using pre-established criteria including evaluation of the quality, quantity and consistency, magnitude of effect and generalizability of available evidence.

Findings

Three prospective cohort studies examined dietary patterns derived using reduced rank regression analysis and their association with T2D incidence. The studies ranged in size from 880 to 6,699 subjects, and two of the studies were conducted in the United States and one in the United Kingdom and ranged in duration from 5.2 to 11.6 years.

- Comparison across studies was limited by the small number of studies, differences in methodology, and in the populations studied. Therefore no conclusions were drawn.

Discussion

The ability to draw a gradable conclusion was limited due to the following issues:

- All three studies used different types of biomarkers as response variables, such as PAI-1 and fibrinogen; HOMA-IR index; and BMI, fasting glucose, TG, HDL, and hypertension, making it difficult to make comparisons across these studies.
- The dietary patterns derived in each of these studies were directly linked to the response variables selected; therefore, the variation in the response variables used suggest that the resulting dietary patterns may not be comparable.
- There were variations in dietary assessment methods used to assess dietary intake, as well as the food groupings using in the analyses across the studies. These methodological differences make it difficult to compare the resulting dietary patterns across studies and to determine how these differences may have contributed to differences in relationships between the patterns and type 2 diabetes risks.
- The studies were not consistent in their use of confounders in the analyses. For example, alcohol intake was not included as a confounder in one study, and alcohol, BMI, and smoking status were not controlled for in another study.

There was a positive association between derived dietary patterns that included meat intake and incident T2D in the two studies that used biomarkers as response variables, though the definitions of meat differed. However, because there were so few studies available, variability in the methodology used and different populations considered, there was insufficient information from which to assess consistency or draw conclusions about the relationship between dietary patterns derived using reduced rank regression and risk of type 2 diabetes.

PLAIN LANGUAGE SUMMARY

Are the amounts, types, variety, or combinations of foods and beverages people frequently eat and drink related to the likelihood of developing type 2 diabetes?

In the past, researchers looked at the relationship between individual foods and nutrients and health. Today, there is interest in looking at how combinations of foods and beverages intake, or dietary patterns, influence health by applying different scientific methods. A statistical method called reduced rank regression analysis can be used to describe the patterns of foods and beverages people eat based on a set of “response variables” that are known to be related to the health outcome of interest. This summary of a NEL review presents what research evidence currently exist when reduced rank regression analysis is the method used to study the dietary patterns of groups of people and their likelihood of developing type 2 diabetes.

Conclusion

There is insufficient evidence, due to a small number of studies, to examine the relationship between dietary patterns derived using reduced rank regression and risk of type 2 diabetes. The differences in the methods used and populations studied made it difficult to compare results, and therefore no conclusions were drawn.

What the Research Says

Three studies looked at dietary patterns found using reduced rank regression analysis and the risk of getting type 2 diabetes. However, these studies had some key issues that make it hard to make any recommendations:

- There were few studies available.
- There were many differences in how the studies were done.
- The populations studied were different between studies.

EVIDENCE PORTFOLIO

Conclusion Statement

There is insufficient evidence, due to a small number of studies, to examine the relationship between dietary patterns derived using reduced rank regression and risk of type 2 diabetes. The differences in the methods used and populations studied made it difficult to compare results, and therefore no conclusions were drawn.

Grade

IV – Not Assignable

Key Findings:

The three positive quality prospective cohort studies included in this review used reduced rank regression (see appendix A) analysis to examine the relationship between dietary patterns and the risk of type 2 diabetes (T2D). Comparison across studies was limited by the small number of studies, differences in methodology, and in the populations studied. Therefore, no conclusions were drawn.

Evidence Summary Overview

Description of the Evidence

Three prospective cohort studies that used RRR to examine the relationship between dietary patterns and T2D were included in this systematic review (Liese, 2009; McNaughton, 2008; Imamura, 2009). All of the studies were rated positive quality. Two of the studies were conducted in the USA and one in the United Kingdom. The sample sizes were 880 for Liese (2009), 2,879 for Imamura (2009), and 6,699 for McNaughton (2008). All three studies were conducted in adults, included females and males, used validated food frequency questionnaires to assess dietary intake, and included incidence of T2D as the primary study outcome.

The independent variables in these studies were dietary pattern scores and biomarkers used as response variables in two of the studies. The response variables used and the respective dietary patterns extracted for each study are described in more detail below.

Evidence Summary Paragraphs

Liese 2009 (positive quality) used plasminogen activator Inhibitor-I (PAI-1) and fibrinogen as response variables. One dietary pattern was extracted that was characterized by high intake of red meats, low-fiber bread and cereal, dried beans, fried potatoes, tomato vegetables, eggs, cheese, and cottage cheese and low intake of wine. Red meat and low-fiber bread/cereal explained 19.3 percent and 18.1 percent, respectively, of the variation in the pattern score. Taken together, all nine food groups within the pattern explained 72.8 percent of food pattern score variation.

McNaughton 2008 (positive quality) used Homeostasis Model assessment of Insulin resistance index (HOMA-IR index) as the response variable. One dietary pattern was extracted that was characterized by high consumption of low-calorie/diet soft drinks, onions, sugar-sweetened beverages, burgers and sausages, crisps and other snacks, and white bread; and low consumption of medium-/high-fiber breakfast cereals, jam, French dressing/vinaigrette, and whole meal bread. The extracted dietary pattern explained 5.7 percent of the variation in HOMA-IR, and the 10 food items with factor loadings >0.2 explained 66.5 percent of the variation in the dietary pattern score.

Imamura 2009 (positive quality) conducted confirmatory and exploratory analyses to compare internally and externally derived dietary patterns on the incidence of T2D using data from the Nurses' Health Study (NHS), European Prospective Investigation into Cancer and Nutrition Potsdam Study (EPIC), Whitehall II Study (WS). Response variables were: NHS: Inflammatory cytokines; EPIC: HDL, glycated hemoglobin, c-reactive protein, adiponectin; WS: HOMA-IR. For the exploratory analyses, three RRR analyses were done within the FOS cohort using BMI, fasting glucose, triglycerides (TG), HDL cholesterol, and hypertension as response variables and each food grouping of the NHS, EPIC, and WS cohorts was applied. All three exploratory scores had similar positive contributions (increased risk; meat, processed meat, eggs, margarine, fried products, refined grains, and caloric/noncaloric soft drinks), but the negative contributors (decreased risk) differed (with the exceptions of tea and whole grains).

Table 4-C-III-1 Summary of Findings

Results from studies examining what combinations of food intake (assessed using reduced rank regression) explain the most variation in the risk of type 2 diabetes

Study; Quality Rating; Study Design; Cohort; Location	Study Description	Response Variables	Dietary Pattern	Results
Liese, 2009 Positive Quality PCS Insulin Resistance Atherosclerosis Study United States	Examined the relationship between dietary patterns and incidence of T2D	Plasminogen Activator Inhibitor-I (PAI-1), Fibrinogen	(+) red meats, low-fiber bread and cereal, dried beans, fried potatoes, tomato vegetables, eggs, cheese, and cottage cheese (-) wine	T2D incident cases = 144 (crude incidence of 162 per 1000) Comparing the highest and lowest quintiles of food pattern scores (based on Model 3): OR = 4.51 (95% CI = 1.60-12.69), P for trend = 0.0173 Results stratified by obesity status: The association was strongly present in non-obese subjects (P for trend = 0.02), it was not for obese individuals (P for trend = 0.77).
McNaughton, 2008 Positive Quality PCS Whitehall II Cohort United Kingdom	Examined the relationship between dietary patterns and incidence of T2D	Homeostatic Model assessment of Insulin resistance index (HOMA-IR)	(+) low-calorie/diet soft drinks, onions, sugar-sweetened beverages, burgers and sausages, crisps and other snacks, and white bread; (-) medium-/high-fiber breakfast cereals, jam, French dressing/ vinaigrette, and whole meal bread	T2D (77,440 person-years) incident cases = 427 DP Score and risk of T2D, high vs. low quartiles (based on Model 8): HR = 1.51 [95% CI 1.10 - 2.09]; P for trend <0.0001
Imamura, 2009 Positive Quality PCS Framingham Offspring United States	Examined the relationship between dietary patterns and incidence of T2D, and conducted confirmatory and exploratory studies using RRR to determine the generalizability of DPs from prior studies conducted in different (NHS, EPIC), WS) to predict T2D and to compare internally and externally derived scores on the predictability of T2D.	FOS: BMI, fasting glucose, triglycerides, HDL cholesterol, and hypertension NHS: Inflammatory cytokines; EPIC: HDL, glycated hemoglobin, C-reactive protein, adiponectin; WS: HOMA-IR	(+) meat, processed meat, eggs, margarine, fried products, refined grains, and caloric/noncaloric soft drinks (-) tea, whole grains	HRs for T2D for exploratory and confirmatory scores respectively: NHS: HR = 1.58 (95% CI:1.37, 1.83); 1.44 (95% CI: 1.25, 1.66) EPIC: HR = 1.60 (95% CI: 1.39, 1.83); 1.14 (95% CI: 0.99, 1.32) WS: HR = 1.60 (95% CI: 1.39, 1.83); 1.16 (95% CI: 1.00, 1.35) Ratios of the confirmatory and exploratory scores: EPIC: HR = 0.76 [95% CI 0.64, 0.90], P=0.027 WS: HR = 0.75 [95% CI 0.62, 0.90], P=0.021 NHS: HR = 0.91 [95% CI 0.82, 1.01], P=0.16 DPs and prediction of T2D: DP derived from NHS as predictive as DP derived from FOS. DP derived from EPIC and WS were less predictive.

Key: **(+)** Higher intake **(-)** Lower intake

Assessment of the Body of Evidence:

This review included three positive-quality prospective cohort studies. There was a positive association between dietary patterns that included meat intake and incident T2D in the two studies (Liese, 2009; McNaughton, 2008) that used biomarkers as response variables, though the definitions of meat differed. However, because there were so few studies available, variability in the methodology used and different populations considered, there was insufficient information from which to assess consistency or draw conclusions about the relationship between dietary patterns derived using RRR and risk of T2D.

Limitations of the Evidence

Methodological Differences:

- All of the studies used different types of biomarkers as response variables, such as PAI-1 and fibrinogen; HOMA-IR index; and BMI, fasting glucose, TG, HDL, and hypertension, making it difficult to make comparisons across these studies.
- The dietary patterns described in each of these studies were directly linked to the response variables selected; therefore, the variation in the response variables used suggest that the resulting dietary patterns may not be comparable.
- There were variations in dietary assessment methods used to assess dietary intake, as well as the food groupings used in the analyses across the studies. For example, Liese (2009) used a 114-item validated semi-quantitative FFQ, created 33 food groups on the basis of similarities in food and nutrient composition, and queried alcoholic beverages separately. McNaughton (2008) used a 127-item validated FFQ and the food and beverage items were aggregated into 71 groups on the basis of nutrient content, cooking, and preparation methods. Imamura 2009 used a 126-item validated semi-quantitative FFQ (FOS) and used food groupings from previous studies to each RRR-derived dietary pattern and applied to the FOS data to create three different sets of food groups used in their analyses. These methodological differences make it difficult to compare the resulting dietary patterns across studies and to determine how these differences may have contributed to differences in relationships between the patterns and type 2 diabetes risks.
- The studies were not consistent in their use of confounders in the analyses. For example, as compared to McNaughton (2008), alcohol intake was not included as a confounder in the analyses by Liese (2009), and alcohol, BMI, and smoking status were not included as confounders by Imamura (2009).

Population Differences:

Two of the studies were conducted in the United States and one in the United Kingdom and represented populations in different regions of the world, which limited the ability to compare and interpret the results due to potential differences in dietary patterns between these regions.

Research Recommendations

More research using reduced rank regression analyses should be conducted to investigate the relationship between dietary patterns and type 2 diabetes, particularly among U.S.-based populations, and including both intermediate outcomes (glucose intolerance, insulin resistance), as well as incidence of disease. Additionally, standardization in methodology, such as response variables and food groupings used, are also needed.

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Section IV: Other Methods

By Jean M. Altman and Mary M. McGrane

What is the relationship between adherence to dietary guidelines/recommendations or specific dietary patterns (assessed using methods other than index/score, cluster or factor, or reduced rank regression analyses) and risk of type 2 diabetes?

TECHNICAL ABSTRACT

Background

The goal of this systematic review project is to identify patterns of food and beverage intake that promote health and prevent disease. Historically, most dietary guidance has been based on research conducted on individual food components or nutrients. Dietary patterns are defined as the quantities, proportions, variety, or combination of different foods, drinks, and nutrients (when available) in diets, and the frequency with which they are habitually consumed. Different methods of analyses are used to assess dietary patterns including index or score, cluster or factor, reduced rank regression, in addition to other methods, to examine the relationship between adherence to dietary guidelines/recommendations or specific dietary patterns of a population and outcomes of public health concern. The objective of this systematic review was to assess the relationship between patterns of food and beverage intake identified using methods other than index or score, factor or cluster, or reduced rank analyses, and risk of type 2 diabetes.

Conclusion Statement

There is insufficient evidence on a relationship between adherence to a Mediterranean-style or vegetarian diet pattern and incidence of type 2 diabetes. There is limited, inconsistent evidence that adherence to a Mediterranean-style, DASH or modified DASH, or Nordic dietary pattern results in improved glucose tolerance and insulin resistance. (Grade IV-Not Assignable – Incidence of type 2 diabetes; Grade: III-Limited-Glucose tolerance and insulin resistance)

Methods

Literature searches were conducted using PubMed, Embase, Navigator (BIOSIS, CAB Abstracts, and Food Science and Technology Abstracts), and Cochrane databases to identify studies that evaluated the association between dietary patterns defined using methods other than index factor or cluster analysis and body weight status. Studies that met the following criteria were included in the review: conducted in subjects aged 2 to 18 years; randomized controlled trials, non-randomized controlled trials, or quasi-experimental studies; subjects from countries with high or very high human development (based on the 2011 Human Development Index); subjects who were healthy or at elevated chronic disease risk; published in English in a peer-reviewed journal. The date range was unlimited.

The results of each included study were summarized in evidence worksheets (including a study quality rating) and an evidence table. A group of subject matter experts were involved in a qualitative synthesis of the body of evidence, development of a conclusion statement, and assessment of the strength of the evidence (grade) using pre-established criteria including evaluation of the quality, quantity, consistency, magnitude of effect, and generalizability of available evidence.

Findings

- Four types of dietary patterns were identified using other methods of assessing dietary exposure related to type 2 diabetes risk: (1) a Mediterranean-style pattern, (2) a DASH or modified DASH pattern, (3) a vegetarian pattern, and (4) a Nordic pattern.

- Overall, there were too few articles and the dietary patterns and study characteristics were too varied to compare across studies.
- A favorable association was found in a Mediterranean-style diet combined with olive oil and/or nuts, and in a vegetarian diet compared to a non-vegetarian diet with incidence of type 2 diabetes higher in Black versus non-Blacks.
- Five out of eight studies were conducted outside of the United States with only three out of eight articles reported race/ethnicity and, of those, only one study reported results based on race/ethnicity.
- Limitations of the studies include:
  - All of the randomized controlled trials (RCTs) included different at-risk populations.
  - Too few articles examined a relationship between dietary patterns and the endpoint outcome of incident type 2 diabetes to draw a conclusion, although the two patterns studied (one Mediterranean-style and one vegetarian) showed a favorable effect.
  - Too few articles assessed the intermediate outcomes of impaired glucose tolerance and/or insulin resistance. The results related to impaired glucose tolerance and/or insulin resistance were too mixed to identify a consistent pattern.

Discussion

It is difficult to synthesize the results from the studies in this review because there were too few studies and they examined different dietary patterns or patterns that were operationalized differently. The studies included a predominantly Caucasian population with varied baseline health status.

PLAIN LANGUAGE SUMMARY

Are the amounts, types, variety or combinations of foods and beverages people frequently eat and drink related to the likelihood of developing type 2 diabetes?

In the past, researchers looked at the relationship between individual foods and nutrients and health. Today, there is interest in looking at how combinations of foods and beverages, or dietary patterns, impact health. This summary of a NEL review presents what we know about different healthy eating patterns and the amounts, variety or combination of different foods and drinks, and how often they are eaten may affect body weight.

Conclusion

There is insufficient evidence on a relationship between adherence to a Mediterranean-style or vegetarian diet pattern and incidence of type 2 diabetes. There is limited, inconsistent evidence that adherence to a Mediterranean-style, DASH or modified DASH, or Nordic dietary pattern results in improved glucose tolerance and insulin resistance.

What the Research Says

- Four types of dietary patterns were identified using other methods to measure how well participants followed a specific pattern and relate it to risk of getting type 2 diabetes: (1) a Mediterranean-style pattern, (2) a DASH or modified DASH pattern, (3) a vegetarian pattern, and (4) a Nordic pattern.
- Overall, there were too few studies, too many different dietary patterns, and the study components were too different to compare the results across studies.
- A reduced chance of getting type 2 diabetes was found in a Mediterranean-style diet combined with olive oil and/or nuts, and in a vegetarian diet compared to a non-vegetarian diet where Black participants had a higher rate of type 2 diabetes than non-Blacks.
- Five out of eight studies were done outside of the United States. Only three out of eight articles reported the race/ethnicity of the participants and, of those, only one study showed results based on race/ethnicity.
- Limitations of the studies include:
  - All of the randomized controlled trials (RCTs) included participants with different health issues.

- Too few studies looked at dietary patterns and the incidence of type 2 diabetes to be able to say whether a specific pattern or patterns protect against getting type 2 diabetes. However, two patterns studied (one Mediterranean-style and one vegetarian) showed a reduced chance of getting type 2 diabetes.
- Too few studies looked at impaired glucose tolerance and/or insulin resistance that affect risk of type 2 diabetes, and the results were too different to identify a consistent pattern.
- It is difficult to list the specific foods and beverages because there were too few studies looking at several different patterns that were defined differently.

EVIDENCE PORTFOLIO

Conclusion Statement

There is insufficient evidence on a relationship between adherence to a Mediterranean-style or vegetarian diet pattern and incidence of type 2 diabetes. There is limited, inconsistent evidence that adherence to a Mediterranean-style, DASH or modified DASH, or Nordic dietary pattern results in improved glucose tolerance and insulin resistance.

Grade

IV-Not Assignable – Incidence of type 2 diabetes; III-Limited-Glucose tolerance and insulin resistance

Key Findings:

- Four types of dietary patterns were identified using other methods of assessing dietary exposure related to type 2 diabetes risk: (1) a Mediterranean-style pattern, (2) a DASH or modified DASH pattern, (3) a vegetarian pattern, and (4) a Nordic pattern.
- Overall, there were too few articles and the dietary patterns and study characteristics were too varied to compare across studies.
- A favorable association was found in a Mediterranean-style diet combined with olive oil and/or nuts, and in a vegetarian diet compared to a non-vegetarian diet with incidence of type 2 diabetes higher in Black versus non-Blacks.
- Five out of eight studies were conducted outside of the United States with only three out of eight articles reported race/ethnicity and, of those, only one study reported results based on race/ethnicity.
- Limitations of the studies include:
    - All of the randomized controlled trials (RCTs) included different at-risk populations.
    - Too few articles examined a relationship between dietary patterns and the endpoint outcome of incident type 2 diabetes to draw a conclusion, although the two patterns studied (one Mediterranean-style and one vegetarian) showed a favorable effect.
    - Too few articles assessed the intermediate outcomes of impaired glucose tolerance and/or insulin resistance. The results related to impaired glucose tolerance and/or insulin resistance were too mixed to identify a consistent pattern.
    - It is difficult to assess food components, as there were too few studies across several different patterns that were operationalized differently.

Evidence Summary Overview

Description of the Evidence

A total of eight articles met the inclusion criteria for this systematic review on dietary patterns and incident type 2 diabetes outcomes assessed using methods other than index/score, cluster or factor, or reduced rank regression analyses. The body of evidence examined seven studies (two articles on PREDIMED) consisting of six RCTs (RCTs) (Adamsson, 2011; Blumenthal, 2010; Esposito, 2004; Gadgil, 2013; Rallidis, 2009; Salas-Salvado, 2008 and 2001) and one PCS (PCS) (Tonstad, 2013). In terms of study quality, seven of the eight articles received a positive quality rating and one was rated neutral (Tonstad, 2013). The studies were carried out between 2004 and 2013. Two studies were conducted in the United States; one in the United States and Canada; one in Spain (2 PREDIMED articles); and one each in Greece, Italy, and Sweden. The sample sizes of the RCTs ranged from 82 to 1,224 participants and the PCS had a sample size of 41,387 participants (in total, 2 studies <100; 3 studies >100; 1 study >400; 1 study >1,000; and 1 study >40,000). All eight studies were conducted in adults. RCT duration ranged from 6 weeks to a median of 4 years and the PCS duration was 2 years (in total, 5 studies $\leq$1 year, 2 studies $\leq$2 years, and 1 study >3 years).

Population:

The RCTs were primary prevention studies of at-risk subjects. Baseline health status in these subjects included subjects with mild hypercholesterolemia (Adamsson, 2011); overweight or obese subjects (Blumenthal, 2010; Gadgil, 2013); subjects with metabolic syndrome (Esposito, 2004); subjects with abdominal obesity (Rallidis, 2009); and subjects with three or more CVD risk factors, including metabolic syndrome (Salas-Salvado, 2008 and 2011). The PCS subjects were non-diabetic individuals in the Adventist Health Study (Tonstad, 2013). The mean age in six of the studies was between 44 and 67 years and the age of participants in one study ranged from 25 to 65 years (Adamsson, 2011). Female participation in the seven studies was between 45 and 67 percent. Race or ethnicity was not reported in the three studies that looked at a Mediterranean-style diet (Esposito, 2004; Rallidis, 2009, Salas-Salvado, 2008 and 2011) and one study examining the Nordic diet (Adamsson, 2011). Three studies that looked at either at the DASH diet or variation of the DASH diet (Blumenthal, 2010; Gadgil, 2013) or a vegetarian diet (Tonstad, 2013) had a representative Black subgroup which accounted for 17 to 55 percent of the study population.

Dietary Exposure:

Four of the seven studies (all RCTs) examined a Mediterranean-style dietary pattern or variation of one. One study looked at the Mediterranean-style diet with addition of either olive oil or nuts compared to a control, low-fat diet in the PREDIMED trial of subjects at risk for CVD (Salas-Salvado, 2008 and 2011). One study looked at the Mediterranean-style diet versus a "Prudent" diet as control in subjects with metabolic syndrome (Esposito, 2004) and one study looked at a Greek Mediterranean diet in subjects with abdominal obesity (Rallidis, 2009). The other three RCTs looked at either a variation of the DASH dietary pattern (Blumenthal, 2010 [ENCORE]; Gadgil, 2013 [OmniHeart]); and the Nordic diet (Adamsson, 2011). The PCS looked at vegetarian patterns, including vegan, lacto-ovo vegetarian, pesco vegetarian, and semi-vegetarian (Tonstad, 2013). Table 1 provides an overview of the study characteristics, a description of the dietary patterns examined, and the results as intermediate and endpoint outcomes.

Dietary Assessment:

Dietary intake in this review was assessed using a variety of methods, including food frequency questionnaires (FFQs), diet adherence questionnaires, dietary history interviews, 24-hour recalls, and food records, diaries, and checklists.

Four of the seven studies used a FFQ to assess dietary intake in addition to other assessment methods. In the PREDIMED trial, a 137-item validated FFQ and a 14-item validated questionnaire on adherence to the traditional Mediterranean diet were used (Salas-Salvado, 2008 and 2011). In the ENCORE trial, a self-reported FFQ (4-week recall) and 4-day food diary were used (Blumenthal, 2010). The only PCS in this review, Tonstad (2013), used a validated FFQ of 130 commonly consumed food/food groups and included a write-in option. The FFQ was developed specifically for the study population.

Other methods of assessing dietary intake included weekly diet diaries (Esposito, 2004); 3-day food diaries, 24-hour recalls, check list of foods consumed daily, and the return of empty food packages (Rallidis, 2009); and diet history interviews by trained dieticians before baseline and after 6 weeks with self-reported daily checklists to record deviations from the menu (Adamsson, 2011). Gadgil (2013) provided all meals and snacks to subjects who were also asked to limit alcohol consumption to usual patterns.

Qualitative Synthesis of the Collected Evidence

Themes and Key Findings

Health Outcomes:
The eight articles in this review examined (1) type 2 diabetes incidence or (2) impaired glucose tolerance and/or insulin resistance.

<u>Incidence of Type 2 Diabetes</u>
Studies that examined incidence of type 2 diabetes as the primary outcome were included in this category (table 1). Subjects who met the American Diabetes Association or World Health Organization criteria for fasting blood glucose or oral glucose tolerance, or were taking hypoglycemic medication, were considered having incident type 2 diabetes. Two studies examined the association between adherence to a dietary pattern and incidence of type 2 diabetes (Salas-Salvados, 2011; Tonstad, 2013).

Although the results of both studies showed a favorable association between either a Mediterranean-style or a vegetarian dietary pattern and incidence of type 2 diabetes, the studies differed in design and dietary pattern used to assess diet exposure. In the PREDIMED trial, Salas-Salvado (2011) compared adherence to a Mediterranean-style diet with a low-fat diet (<35 percent fat) in subjects with three or more CVD risk factors in Spain. The Mediterranean-style diet included the provision of olive oil or nuts to the two treatment groups, and both groups showed decreased incidence of type 2 diabetes compared to the control low-fat group. In a PCS, Tonstad (2013) compared a vegetarian diet with a non-vegetarian diet in non-diabetic subjects in the United States and Canada (Adventist Health Study-2). In addition to a favorable association among vegetarians compared to non-vegetarians, Tonstad also stratified results by race/ethnicity (Blacks and non-Blacks) and vegetarian category (vegan, lacto-ovo, pesco, and semi-vegetarians). For incident type 2 diabetes, Blacks had an increased risk compared to non-Blacks. In Whites, vegan, lacto-ovo vegetarian, and semi-vegetarian diets were protective against type 2 diabetes; whereas, in Blacks, only the vegan and lacto-ovo vegetarian diets showed a decreased risk of type 2 diabetes, compared to a non-vegetarian diet.

<u>Impaired Glucose Tolerance and/or Insulin Resistance</u>
This category included studies that assessed fasting blood glucose, oral glucose tolerance, fasting blood insulin, insulin resistance using the Homeostasis Model Assessment-Insulin Resistance (HOMA-IR) equation, or the quantitative insulin sensitivity check index (*QUICKI)* (table 4-C-IV-1). These outcomes were measured by standard clinical and laboratory methods. Six articles (all RCTs) looked at the effect of adherence to a dietary pattern and intermediate outcomes related to glucose tolerance and/or insulin resistance (Adamsson, 2011; Blumenthal, 2010; Esposito, 2004; Gadgil, 2013; Rallidis, 2009; Salas-Salvado, 2008). Salas-Salvado (2008) did not examine insulin resistance. The results from these studies on glucose tolerance and/or insulin resistance are mixed.

The three RCTs examining a Mediterranean-style diet pattern reported inconsistent results on glucose tolerance and/or insulin resistance. The PREDIMED trial in Spain found no effect of a Mediterranean-style diet on fasting glucose in subjects with three or more CVD risk factors (Salas-Salvado 2008). Instruction to adhere to a Mediterranean-style diet resulted in improved glucose tolerance and insulin resistance, compared to a Prudent diet, in subjects with metabolic syndrome in Italy (Esposite 2004); however, this had no effect on insulin resistance among subjects with abdominal obesity in Greece (Rallidis, 2009).

The DASH diet and modified DASH diet were examined in two RCTs (Blumenthal, 2010; Gadgil, 2013). In the ENCORE trial, results showed that the DASH diet alone had no effect on fasting glucose or fasting insulin and HOMA-IR among overweight or obese subjects with high blood pressure (Blumenthal, 2010). In the OmniHeart trial, results showed that a DASH diet modified to be high in unsaturated fat (primarily monounsaturated fat), when compared to a carbohydrate-rich diet (similar to DASH), had a favorable effect on HOMA-IR, but no effect on fasting blood glucose or insulin levels in overweight or obese subjects with high blood pressure (Gadgil, 2013). The high carbohydrate/DASH-style diet and the high protein diet had no effect on HOMA-IR, fasting glucose or fasting insulin.

Adamsson (2011) (RCT) found that a Nordic diet in Sweden among subjects with mild hypercholesterolemia resulted in a decrease in fasting insulin resistance and HOMA-IR, but no effect on fasting glucose.

Qualitative Assessment of the Collected Evidence

Quality and Quantity

Quality assessment for the studies included in this systematic review involved determining the validity of each study. Validity was assessed by examining the scientific soundness of study design and execution to avoid potential bias in the findings related to outcomes. The majority of evidence for this body of evidence consisted of positive quality studies (7 out of 8 articles). This was a limited number of studies with variation in the outcomes measured.

Consistency

There were too few articles related to the clinical endpoint outcome, incident type 2 diabetes, with different study designs, countries, and dietary patterns to make them comparable even though the studies found a favorable outcome associated with either a Mediterranean-style diet (PREDIMED) or a vegetarian diet. Glucose tolerance and/or insulin resistance were assessed in six large RCTs that examined three different dietary patterns (Mediterranean-style, DASH-style, and Nordic) with mixed findings. There were differences within the Mediterranean-style and DASH-style patterns that made comparison difficult.

Impact

The body of evidence directly addressed the exposures and health outcomes of interest for this systematic review, but only two studies measured the endpoint outcome, incident type 2 diabetes. When there were associations between a dietary pattern and incidence of type 2 diabetes, these were clinically meaningful. However the two studies cannot be compared since they looked at different dietary patterns.

Generalizability/External Validity

Five out of the eight studies were conducted outside of the United States/Canada so those dietary patterns examined may not be representative of a U.S. diet. Also, five of the studies did not report race/ethnicity and only one study stratified their results based on race/ethnicity (Blacks versus non-Blacks). However, the European studies were likely conducted with a predominantly Caucasian population; therefore, it may be representative of a U.S. Caucasian population. Overall, there were too few studies on either incident type 2 diabetes or glucose tolerance and/or insulin resistance to draw a conclusion based on the findings.

Limitations of the Evidence

It is difficult to synthesize the results from the studies in this review because there were too few studies and they examined different dietary patterns or patterns that were operationalized differently. The studies included a predominantly Caucasian population with varied baseline health status.

Research Recommendations

Overall, there is a need for additional research RCTs and observational studies conducted in the United States on risk of type 2 diabetes that address the key dietary patterns in a standardized way. In addition, more analysis of key subpopulation groups would further inform policy in this area.

Abbreviations

Dietary Approaches to Stop Hypertension (DASH), Exercise & Nutrition interventions for Cardiovascular Health (ENCORE), Nordic Diet (NORDIET), Optimal Macronutrient Intake trial to Prevent Heart Disease (OmniHeart), Prevention with Mediterranean Diet (PREDIMED).

Table 4-C-IV-1Summary of Findings

Impaired glucose tolerance, insulin resistance, and incident type 2 diabetes

Study/Design/Diet Pattern	Glucose Tolerance	Insulin Resistance	Incident Type 2 Diabetes
Salas-Salvado 2011/ RCT/PREDIMED			↓ T2D (Med + VOO) (Med + Nuts) (Both)
Tonstad 2013/ PCS/Vegetarian Diet			(↓) Vegetarian vs. Non-vegetarians (↓) Vegan, Lacto-ovo, Semi (∅) Pesco (↑) Blacks vs. non-Blacks
Salas-Salvado 2008/ RCT/PREDIMED	(∅) Fasting glucose		
Esposito, 2004/RCT/ Mediterranean Diet	(↓) Fasting glucose	(↓) Fasting insulin	
Rallidis 2009/RCT/ Greek MED Diet	(∅) Fasting glucose	(∅) Fasting insulin, HOMA-IR	
Blumenthal 2010/RCT/ ENCORE (DASH)	(∅) OGTT DASH-A vs. UC	(∅) Fasting insulin DASH-A vs. UC	
Gadgil 2013/ RCT/ OmniHeart/(modified DASH)	(∅) Fasting glucose	(↓) Unsaturated fat diet (∅) Carbohydrate diet (similar to DASH) (∅) Protein diet Fasting insulin, HOMA-IR	
Adamsson 2011/ RCT/NORDIET	(∅) Fasting glucose	(↓) Fasting insulin, HOMA-IR	

Table 4-C-IV-2 Overview Table: Type 2 Diabetes

	Citation Quality Rating Location	Study Design Duration Study/Cohort	Sample Size Age Gender Race/Ethnicity	Dietary Pattern	Health Outcomes
Incidence of Type 2 Diabetes					
Mediterranean-Style Pattern					
1.	Salas-Salvado et al., 2011 Positive Spain	Randomized Controlled Trial 4 y median (inter-quartile range 3-5 y) PREDIMED Study (Mediterranean Diet)	Initial N = 418 Final N = NR/<418 (attrition rates described as "low" and attributed to major disease events or death) 67.3 y 58% female Not reported	Mediterranean Diet Pattern Med Diet : (a) a high consumption of grains, legumes, nuts, vegetables, and fruits; (b) a relatively high-fat consumption (up to 40% of total energy intake), mostly from MUFA (20% or more of the total energy intake; (c) olive oil for culinary use and dressing of vegetables as the principal source of fat; (d) moderate to high fish consumption; (e) poultry and dairy products (usually as yogurt or cheese) consumed in moderate to small amounts; (f) low consumption of red meats, processed meats, and meat products; (g) moderate alcohol intake, usually in the form of red wine consumed with meals. Low fat diet not described--goal total fat <35%. Med Diet Goals: Improved adherence to MedDiet (>10 points in the 14-point score), High (>2) MUFA-to-SFA ratio, high olive oil consumption (>20 g/1,000 kcal/day), high nut consumption (>10g/1,000 kcal/day), high dietary fiber intake (>14 g/1,000 kcal/day), substantial weight loss (> 5% of initial body weight), and high physical activity (> 395 kcal/day, the top tertile).	T2D Incidence: <u>Cases of incident T2D</u>: MedDiet+VOO: 10.1% (95% CI = 5.5 - 15.1) P=0.05 MedDiet+Nuts: 11.0% (95% CI = 5.9 - 16.1) P=0.05 Control: 17.9% (95% CI: = 11.4 - 24.4) <u>Comparing MedDiet+virgin olive oil (VOO) and MedDiet+nuts to low-fat diet (control group)</u>: MedDiet+VOO: HR=0.49 (95% CI = 0.25 - 0.97) MedDiet+Nuts: HR=0.48 (95% CI = 0.24 -0.96) Both MedDiets: HR=0.48 (95% CI = 0.27 - 0.86)
Vegetarian Pattern					
2.	Tonstad, et al, 2013 Neutral U.S., Canada	Prospective Cohort Study 2 y Adventist Health Study-2 (Vegetarian)	Initial N = 97,586 Final N = 41,387 58.5 y ~63% female 17.3% Black (African American, West Indian/ Caribbean, African or other Black) No % given:Non-Black (White non-Hispanic, Hispanic, Middle Eastern, Asian, Native Hawaiian/other Pacific Islander or American Indian	Vegetarian Diet Pattern Vegetarian status: 1. Vegans—no animal products (red meat, poultry, fish, eggs, milk and dairy products <1 time/mo) 2. Lacto-ovo vegetarians—dairy products and/or eggs >1 time/mo, but no fish or meat (red meat, poultry and fish <1 time/mo) 3. Pesco vegetarians—fish >1 time/mo and dairy products and/or eggs but no red meat or poultry (red meat and poultry <1 time/mo) 4. Semi-vegetarians—dairy products and/or eggs and (red meat and poultry >1 time/mo and <1 time/wk) 5. Non-vegetarians—animal products (red meat, poultry, fish, eggs, milk and dairy products >1 time/wk). Alcohol was defined as consumption of any amount or none during the past 12 mos.	T2D Incidence: <u>Cases of incident T2D, comparing vegetarians to non-vegetarians</u>: Vegan: 0.54% (P<0.0001) Lacto-ovo: 1.08% (P<0.0001) Pesco-vegetarian 1.29% (P<0.0001) Semi-vegetarian: 0.92% (P<0.0001) <u>Comparing vegetarians to non-vegetarians</u>: Vegan: OR = 0.381(95% CI = 0.236 - 0.617) Lacto-ovo: OR = 0.618 (95% CI = 0.503 - 0.760) Pesco-vegetarian: OR = 0.790 (95% CI = 0.575 - 1.086) NS Semi-vegetarian: OR = 0.486 (95% CI = 0.312 - 0.755) <u>Comparing Blacks to non-Blacks</u>: Black ethnicity: OR = 1.364 (95% CI = 1.093 - 1.702)

Table 4-C-IV-2 Overview Table: Type 2 Diabetes—continued

	Citation Quality Rating Location	Study Design Duration Study/Cohort	Sample Size Age Gender Race/Ethnicity	Dietary Pattern	Health Outcomes
					<u>Comparing vegetarians to non-vegetarians in Blacks</u>: Vegan: OR = 0.304 (95% CI = 0.110 - 0.842) Lacto-ovo: OR = 0.472 (95% CI = 0.270 - 0.825) Pesco: OR = 0.618 (95% CI = 0.352 - 1.086) NS Semi-vegetarian: OR = 0.469 (95% CI = 0.153 - 1.438) NS
Impaired Glucose Tolerance and Insulin Resistance					
Mediterranean-Style Pattern					
1.	Esposito, et al, 2004 Positive Italy	Randomized Controlled Trial 2 y Mediterranean Diet	Initial N = 180 Final N = 164 Attrition = 9% Analyses included all 180 subjects 43.9 y 45% female Not reported	Mediterranean Diet Pattern Intervention (Mediterranean diet): Dietary advice based on 3-day food records provided monthly with the nutritionist for 1st y and bimonthly for 2nd y. Diet: 50–60% CHO, 15-20% protein, <30% total fat, <10% sat fat, <300 mg cholesterol; at least 250 to 300 g of fruits (1 - 1.3 cups), 125 to 150 g of vegetables (0.5 - 0.65 cups), 25 to 50 g of walnuts (1.75 - 3.5 Tbsp), and 400 g of whole grains (14 oz; including legumes) daily and increase olive oil consumption Control (Prudent diet): Provided oral and written information about healthy food choices at baseline and at bimonthly sessions but not offered individualized advice; Diet: 50-60% CHO, 15-20% protein, and <30% total fat * The volumes listed above are approximations and depend on the actual food consumed.	Glucose Tolerance: <u>Comparing Mediterranean-style diet to Prudent diet (change over 2 y)</u>: Plasma glucose: -6 mg/dL (95% CI = -11 to -2) P<0.001 Insulin Resistance: <u>Comparing Mediterranean-style diet to Prudent diet (change over 2 y)</u>: Serum insulin: -3.5 μU/mL (95% -6.1 to -1.0) P = 0.01 HOMA-IR: -1.1 (95% CI = -1.9 to -0.3) P<0.001
2.	Rallidis, et al, 2009 Positive Greece	Randomized Controlled Trial 2 months Greek Mediterranean Diet	Initial N = 90 Final N = 82 Attrition = 9% 50.4 y ~48% female Not reported	Mediterranean Diet Pattern Intervention group (Greek Mediterranean diet): Daily consumption of whole-wheat grains, 2–3 portions of low-fat dairy, 2 salads (one with 1 tomato) and 3 fruits together with a concentrated fruit juice made without preservatives, 5 mL olive oil–based margarine, extra virgin olive oil as main source of fat, 45 mL extra virgin olive oil with 1 of the 2 salads, 6 whole raw almonds, 150 mL (1 glass) red wine with main meal, 1 portion of fish and at the most 1 portion of red meat weekly	Glucose Tolerance: <u>Comparing a Greek Mediterranean-style diet to control diet</u>: Glucose, mmol/L: P=0.95, NS Insulin Resistance: <u>Comparing a Greek Mediterranean-style diet to control diet</u>: Insulin, μU/mL: P=0.35, NS HOMA-IR score: P=0.07, NS

Table 4-C-IV-2 Overview Table: Type 2 Diabetes—continued

	Citation Quality Rating Location	Study Design Duration Study/Cohort	Sample Size Age Gender Race/Ethnicity	Dietary Pattern	Health Outcomes
3.	Salas-Salvado, et al, 2008 Positive Spain	Randomized Controlled Trial 1 y PREDIMED Study (Mediterranean Diet)	Initial N = 1,264 Final N = 1,224 Attrition = 3% 67.4 y 55% female Not reported	Mediterranean Diet Pattern MedDiet: high intake of cereals, vegetables, fruits, and olive oil; a moderate intake of fish and alcohol, mostly wine; and a low intake of dairy products, meats, and sweets MedDiet + VOO (1 L/wk) MedDiet + nuts (30 g/d) Control (advice about low-fat diet)	Comparing MedDiet+Virgin Olive Oil (VOO) and MedDiet+Nuts to low-fat diet (control group): Elevated fasting glucose, reduction at 1 y: MedDiet+VOO: NS MedDiet+nuts: NS
DASH/modified DASH Pattern					
4.	Blumenthal, Babyak, Sherwood, et al., 2010 Positive U.S.	Randomized Controlled Trial 4 mos ENCORE (Exercise & Nutrition interventions for Cardiovascular Health)- DASH	Initial N = 144 Final N = 138 4% attrition Mean: 52±10 y 67% female 60% White 39% Black 1% Asian	Dietary Approaches to Stop Hypertension (DASH) Pattern Control diet (UC): Participants maintained their usual diet and exercise habits; 34% E from fat, 15% from protein; K, Mg, Ca and fiber levels ~ 25th percentile of U.S. consumption. DASH diet: Rich in fruits and vegetables (8-10 svgs/d), and low-fat dairy foods; reduced amounts of saturated fat, total fat, and cholesterol; K, Mg, Ca content at ~ 75th percentile of US consumption, high amounts of fiber and protein; 27% E from fat, and 18% E from protein. Sodium content: 2400 mg/2000 kcal. DASH diet alone (DASH-A): Subjects received instruction to meet DASH guidelines, told not to exercise or attempt to lose weight; met weekly in a small group for coaching on diet.	Glucose Tolerance: Comparing DASH-A to UC: Fasting glucose P=0.21, NS Glucose AUC: P=0.98, NS Insulin Resistance: Comparing DASH-A to UC: Fasting insulin: P=0.71, NS Insulin sensitivity (ISI): P=0.98, NS QUICKI: P=0.85, NS
5.	Gadgil et al, 2013 Positive U.S.	Randomized Controlled Trial 6 wks OmniHeart (Optimal Macronutrient Intake Trial for Heart Health) – modified DASH	Initial N = 164 Final N = 164 Mean: 53.6 y 45% female 55% African-American, 40% Non-Hispanic White, 5% Other	Healthful Pattern 3 healthful diets that model the principles of the Dietary Approaches to Stop Hypertension (DASH) dietary pattern. Each study diet differed in the amount of carbohydrates, protein, and unsaturated fat while keeping the calorie levels the same. Each diet was reduced in saturated fat, cholesterol, and sodium, and rich in fruits, vegetables, fiber, potassium, and other minerals at recommended levels.	Glucose Tolerance: Comparing changes in Fasting Glucose (mg/dL): Carb: 0.84 (95% CI, -1.29 to 2.97), NS Unsat: 0.11 (95% CI, -2.25 to 2.47), NS Protein: 0.28 (95% CI, -1.37 to 1.93), NS Unsat vs. Carb: -0.77 (95% CI, -2.18 to 0.73), NS Prot vs. Carb: -0.56 (95% CI, -2.23 to 1.20), NS Unsat vs. Prot: -0.16 (95% CI, -2.11 to 1.77), NS Insulin Resistance: Comparing changes in Insulin Sensitivity: QUICKI: Carb: 0.002 (95% CI, -0.003 to 0.007), NS Unsat: 0.007 (95% CI, 0.002 to 0.012), P<0.5 Protein: 0.004 (95% CI, -0.002 to 0.009), NS Unsat vs. Carb: 0.005 (95% CI, 0.000 to 0.009), P=0.04 Prot vs. Carb: 0.001 (95% CI, -0.004 to 0.007), NS

Table 4-C-IV-2 Overview Table: Type 2 Diabetes—continued

	Citation Quality Rating Location	Study Design Duration Study/Cohort	Sample Size Age Gender Race/Ethnicity	Dietary Pattern	Health Outcomes
					Unsat vs. Prot: 0.003 (95% CI, -0.002 to 0.009), NS HOMA-IR: Carb: 0.03 (95% CI, -0.07 to 0.12), NS Unsat: 0.14 (95% CI, 0.02 to 0.26), P<0.5 Protein: 0.06 (95% CI, -0.04 to 0.17), NS Unsat vs. Carb: 0.11 (95% CI, 0.03 to 0.20), P<0.05 Prot vs. Carb: 0.04 (95% CI, -0.07 to 0.14), NS Unsat vs. Prot: 0.08 (95% CI, -0.05 to 0.20), NS Comparing changes in Fasting Insulin (µIU/mL): Carb: -0.41 (95% CI, -1.72 to 0.91), NS Unsat: -0.77 (95% CI, -1.75 to 0.21), NS Protein: -0.06 (95% CI, -1.64 to 0.40), NS Unsat vs. Carb: -0.36 (95% CI, -1.64 to 0.92), NS Prot vs. Carb: -0.22 (95% CI, -1.56 to 1.12), NS Unsat vs. Prot: 0.14 (95% CI, 1.0 to 0.67), NS
Nordic Pattern					
6.	Adamsson et al., 2011 Positive Sweden	Randomized Controlled Trial 6 wks NORDIET (Nordic Diet)	Initial N = 88 Final N = 86 2% attrition Mean: ~53 y ~63% female Not reported	Nordic Diet Pattern Dietary goals: Consume Nordic Diet (ND) based on Nordic nutrition recommendations. ND rich in high-fiber plant foods from fruits, berries, vegetables, whole grains (oats and barley), rapeseed oil, nuts, fatty fish, and low-fat dairy products, but low in salt, added sugars, and saturated fats. Contains some poultry, red meat, fish, and low-fat milk. Macronutrient distribution: 27%, 52%, 19%, and 2% of energy from fat, carbohydrate, protein, and alcohol, respectively.	Glucose Tolerance: Comparing the Nordic diet to the control diet: Change in plasma glucose: Control = 0.05±0.34 mmol/L; Nordic diet = 0.00±0.41mmol/L (P=0.52), NS Insulin Resistance: Comparing the Nordic diet to the control diet: Change in plasma insulin: Control = 0.90±2.88 mU/L; Nordic diet = 0.51±2.25 mU/L (P=0.01) Change in HOMA-IR: Control = 0.22±0.64; Nordic diet = 0.11±0.51 (P=0.01)

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Chapter 5. **Conflict of Interest**

Role of the Stakeholder Group and Peer Reviewers

The Stakeholder Group was comprised of Federal USDA and HHS employees, who represented potential end-users of the review and possessed varying perspectives and expertise related to dietary patterns. The Stakeholder Group ensured that the results of the project would be valuable for informing Federal policy and programs by:

- Providing input on the systematic review questions; and
- Assisting in refining the inclusion and exclusion criteria.

Peer Reviewers reviewed and provided comment on the systematic review report. The Peer Reviewers were instructed to focus their review on ensuring the readability and clarity of the final report and could not make changes to the conclusion statements or grades.

Conflicts of Interest

None of the Systematic Review Management Team members, Technical Expert Collaborative members, Stakeholders, or Peer Reviewers declared any conflicts of interest.

Appendices A-E

Appendix A: Methods Used to Assess Dietary Patterns

Appendix B: Analytical Framework

Appendix C: Research Design and Implementation Checklist for Primary Research Articles

Appendix D: Key Trends Questionnaire

Appendix E: Conclusion Statement Grading Criteria

Appendix A: Methods Used to Assess Dietary Patterns

Dietary patterns can be assessed in a number of ways, including numerical indices designed to gauge adherence to a particular pattern (e.g., Healthy Eating Index [HEI]) or data-driven approaches that use mathematics to empirically derive food intake patterns inherent among the study population (e.g., factor or cluster analysis). Each methodology provides information about dietary patterns from a different perspective. A summary of the methods used to assess dietary patterns using index analysis, factor or cluster analysis, and reduced rank regression is provided below.

Index Analysis

Hypothesis-oriented dietary patterns are assessed by use of *a priori* scores that measure the degree of adherence to specific dietary guidelines/recommendations or adherence to a healthy diet defined by scientific evidence on diet and disease. *A priori* scores are composite numeric scores of foods, food components, and/or nutrients that are assessed as dichotomous variables (with predefined cut-points), ordinal variables such as quintiles, or as continuous variables. The individual components are summed to derive a total score so that all subjects can be ranked from maximum to minimum score (Schulze, 2006; Reedy, 2010).

Mediterranean Dietary Pattern

Examples of Mediterranean diet scores that were used in the studies included in this systematic review project are described below.

- The **Mediterranean Diet Score (MDS)** of Trichopolou et al. (2003) has nine components that include food and nutrients that are scored dichotomously (0, 1) with positive (+), positive in moderation (+m), or negative (-) scoring. There are six (+) components: vegetables, fruit & nuts, legumes, cereals, fish, and the MUFA/SFA ratio; one (+m) component, alcohol; and two (-) components: meat and dairy. For (+) components, persons whose consumption is below the median are assigned 0 points and those at or above the median are assigned 1 point. For (-) components, persons whose consumption is below the median are assigned 1 point and those at or above the median are assigned 0 points. For alcohol, a value of 1 is assigned to men who consume between 10-50 g/d and to women who consume 5-25 g/d, and 0 points for above and below the sex-specific ranges. For fat intake, a ratio of monounsaturated fats to saturated fats is used. The total MDS ranges from 0 (minimal adherence) to 9 (maximal adherence).

- The **relative Med Diet Score (rMED)** described by Buckland et al. (2009) is a variation on the original nine component MDS. Each rMED component (except alcohol) is measured as g/1,000 kcal/day and is divided into tertiles of dietary intake with values of 0, 1, 2 assigned to 1^{st}, 2^{nd}, and 3^{rd} tertiles of intake, respectively. There are six (+) components: fruit (including nuts and seeds, but excluding fruit juices), vegetables (excluding potatoes), legumes, cereals (including whole-grain and refined flour, pasta, rice, other grains, and bread), fresh fish (including seafood), and olive oil. There are two (-) components: total meat (including processed meat) and dairy products (including low-fat and high-fat milk, yogurt, cheese, cream desserts, and dairy and non-dairy creams) positively scoring lower intakes. Alcohol, considered beneficial in moderation, is scored as a dichotomous variable: 2 points are assigned for moderate consumption, 5-25 g/d for women and 10-50 g/d for men, and 0 points for above and below the sex-specific ranges. The total rMED score ranges from 0 (minimal adherence) to 18 (maximal adherence).

- The **Mediterranean Style Diet Pattern Score (MSDPS)** of Rumawas et al. (2009) is constructed on the basis of the Mediterranean diet pyramid. The score has 13 components that correspond to the 13 food groups of the pyramid: whole-grain cereals, fruits, vegetables, dairy, wine, fish, poultry, olives-legumes-nuts, potatoes, eggs, sweets, meats, and olive oil. For each food group, the pyramid recommends the number of daily or weekly servings. Each group is scored from 0-10 depending on the degree of correspondence with recommendations (e.g., consuming 60 percent of the recommended servings results in score of 6). There are also negative points related to overconsumption; in this case subtracting a point proportionally to the number of servings that exceed the recommended intake (e.g., exceeding the recommendation by 60 percent results in a score of 4). Olive oil scoring is categorical, based on exclusive use of olive oil (10 points), olive w/other vegetable oils (5 points), or no olive oil (0 points). The total MSDPS ranges from 0 (minimal adherence) to 130 (maximal adherence).

Dietary Guidelines-Related Patterns

Examples of dietary guidelines-related indices that were used in the studies included in this systematic review project are described below.

- The **Healthy Eating Index (HEI)** of Kennedy et al. (1995) has 10 components with 1-10 points each. Components 1-5 measure the degree to which a person's diet conforms to the serving recommendations of the 1990 USDA Food Guide Pyramid for 5 major food groups: grains, vegetables, fruits, milk, and meat. Component 6 is based on overall fat consumption as a percent of total energy (E) (<30%E to >45%E); component 7 is based on saturated fat (SFA) intake (<10%E to >15%E); and component 8 is based on cholesterol intake (<300 mg to >450 mg). Component 9 is based on sodium intake (<2400 mg to >4800 mg) and component 10 is based on the amount of variety in a person's diet. The points for each component are determined by the number of servings for a given energy intake level. A person who consumes the recommended number of servings from any food group receives 10 points for that group (e.g., if 4 servings/d of vegetables is recommended, consumption of 4 servings receives 10 points) and a person who consumes no servings receives a 0. The points are calculated proportionately from 0 to 10. Components 6-9 are scored inversely such that the low end of recommended intake receives 10 points. Component 10 refers to diet variety, with >16 different foods per 3 days given 10 points, and <6 different foods per 3 days given 0 points. The total HEI ranges from 0 (minimal adherence) to 100 (maximal adherence).

- The **Alternate Healthy Eating Index (AHEI)** of McCullough et al. (2002) incorporates several aspects of the original HEI and some components correspond to existing dietary guidelines. There are six (+) components: vegetables, fruit, nuts and soy, cereal fiber, PUFA/SFA, and white/red meat; one (+m) component: alcohol; and one (-) component: *trans* fats. These components of the AHEI each contributed 0-10 points to the total score, with inverse scoring for *trans* fats. Intermediate intakes are scored proportionately between 0 and 10. The multivitamin component is dichotomous, contributing either 2.5 points (use <5y) or 7.5 points (use ≥5y). All component scores are summed to obtain a total AHEI score ranging from 2.5 (minimum) to 87.5 (maximum).

- The **Diet Quality Index 2005** of Zamora et al. (2010) is an update of the revised DQI (DQI-R) to reflect the *Dietary Guidelines for Americans, 2005* (2005 DGAs; U.S. Department of Health and Human Services and U.S. Department of Agriculture, 2005). Each of the 10 DQI-2005 components, 0-10 points each, are scored based on the percentage of dietary recommendations met, specific cutoffs for nutrient intake, or distribution of values in a given sample. There are four (+) components: vegetables, fruit, whole grains, and low-fat milk; two (+m) components: sodium and alcohol; and four (-) components: total fat, SFA, cholesterol, and sugar. The specific serving recommendations for different levels of energy intake are from the 2005 DGAs. Points are neither added nor subtracted for servings in excess of recommended intakes. The last component relates to the broader health message to consume a variety of foods. The diversity component reflects consumption of foods from 17 food group categories. The total DQI-2005 ranges from 0 (minimal adherence) to 100 (maximal adherence).

- The **Programme National Nutrition Santé Guideline Score (PNNS-GS)** is a score based on adherence to nutrition guidelines for the general population in France as described by Estaquio et al. (2009). The score is based on French national guidelines and includes 13 components that refer to French food serving recommendations or consumption limitation. PNNS-GS can be negative owing to negative points and penalties for high energy intakes. There are 12 nutritional components: fruit and vegetables 0-2 points, starchy foods 0-1 point, whole grains 0-1 point, dairy products 0-1 point, meat 0-1 point, seafood 0-1 point, added fat 0-1 point, vegetable fat 0-1 point, sweets -0.5 to 1 points, water and soda 0-1 point, alcohol 0-1 point, and salt -0.5 to 1.5 points. The last component is adherence to physical activity recommendations, scored from 0-1.5 points. There are penalties for energy intake >5 percent of energy need. The total PNNS-GS ranges from 0 (minimal adherence) to 15 (maximal adherence).

- **DASH Food Group Score** of Levitan et al. (2009) was designed to reflect adherence to a DASH eating pattern as described in the 2005 DGAs. There are a total of 10 components: fruits, vegetables, nuts/seeds/legumes, low-fat dairy, total grains, whole grains, sweets and added sugars, lean meats/poultry/fish, discretionary fats and oils, and alcoholic beverages. Each component receives 1 point for meeting guidelines. For total grains, dairy, lean meats, and nuts/seeds/legumes, 1 point is given for consumption at guideline level, with partial points for consuming more or less depending on the percentage of deviation. For vegetables, fruits, and whole grains, 1 point is given for consumption at guideline level, with partial points for less consumption but not for overconsumption. The total DASH Food Group Score ranges from 0 (minimal adherence) to 7 (maximal adherence).

Factor or Cluster Analysis[1]

Factor and cluster analyses are data-driven approaches that use mathematics to empirically derive food intake patterns. Dietary data is often assessed using food frequency questionnaires (FFQs), 24-hour recalls, or diet records. When factor or cluster analysis is used, a larger set of dietary variables is aggregated and reduced to form a smaller set of variables. Each dietary pattern is designated by a descriptive name based on predominant food groupings (largest or smallest amount relative to the other patterns). Briefly, the methods used by the articles reviewed in this portfolio are:

Factor Analysis

Factor analysis is a method that reduces the number of dietary variables by finding factors that are composed of correlated dietary variables (Kant, 2004; Newby, 2004).

Principal components analysis (PCA) is a form of exploratory factor analysis. PCA does not assume an underlying model of the factors and uses matrix algebra to identify the principal components in the data based on a correlation or covariance matrix of the input variables. The patterns are derived based on the relationships between the input variables (i.e., the foods or food groups).

The resulting components, or factors, are linear combinations of the observed variables that explain the variance in the data. The factors can be rotated to improve interpretability; orthogonal rotation is commonly used. Output from the principal components analysis includes factor loadings (or scoring coefficients) for each variable, which can be interpreted as correlation coefficients. For example, food is separated into groups based on the correlation between food items or food groups, and a person receives a factor score for each of the

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[1] The methodology outlined here is based upon standard statistical principles and procedures. Examples of the method may be found in Moeller et al. (2007) (K-means method, Ward's method); Kant (2004) (factor analysis); Newby et al. (2004) (factor analysis); Martinez et al. (1997) (subjective elements in factor and cluster analysis); Hu et al. (1999) (limitations of dietary pattern analysis, limitations of generalizability of results); and Reedy et al. (2009) (limitations of generalizability of results).

derived factors. A person's dietary pattern would be best represented by assessing his or her factor scores for each of the derived factors. Factors are not mutually exclusive: individuals receive factor scores for each derived factor. Factors are continuous variables that often are categorized into quartiles.

Confirmatory factor analysis (CFA) involves specifying both the number of factors and the types of variables that will load in each factor, allowing the researcher to use prior knowledge about the subject matter. The researcher then builds the factor model and "confirms" the factor structure and loadings for each variable.

Cluster Analysis

Cluster analysis derives patterns by aggregating individuals based on differences in their food intakes. In this method, individuals are placed into distinct non-overlapping groups on the basis of some common dietary intake (Kant, 2004; Newby, 2004). Several types of clustering methods are available. Clustering methods used in nutritional epidemiology separate individuals into mutually exclusive, non-overlapping groups. Individuals belong to one cluster only, and clusters can then be used as categorical (nominal) variables in research. Many of the procedures are sensitive to outliers, and researchers often standardize their data before entering variables into the analysis.

K-means method is an optimization technique. It requires the researcher to prespecify the number of clusters in the analysis (Moeller, 2007).

Ward's method is a hierarchical agglomerative clustering technique. It does not require that the number of clusters in the analysis be prespecified (Moeller, 2007).

Reduced Rank Regression

Reduced rank regression (RRR) is a statistical method that is used to determine dietary patterns (combinations of food intake) that explain as much variation as possible among a set of response variables. It is an *a posteriori* method since it combines both existing evidence and exploratory statistics. The method uses prior knowledge gained from existing science about nutrient-disease relations to identify response variables. These response variables can either be nutrients or biomarkers that have been shown to be associated with the development of the health outcome being investigated. Dietary patterns that explain variation in the response variables are identified. Typically, subsequent analyses are done using only those patterns that explain the most variation in the response variables. Then, for each pattern, a dietary pattern score is calculated for each study subject. Analyses are done using these scores to determine whether any of the dietary patterns are associated with the health outcomes of interest.

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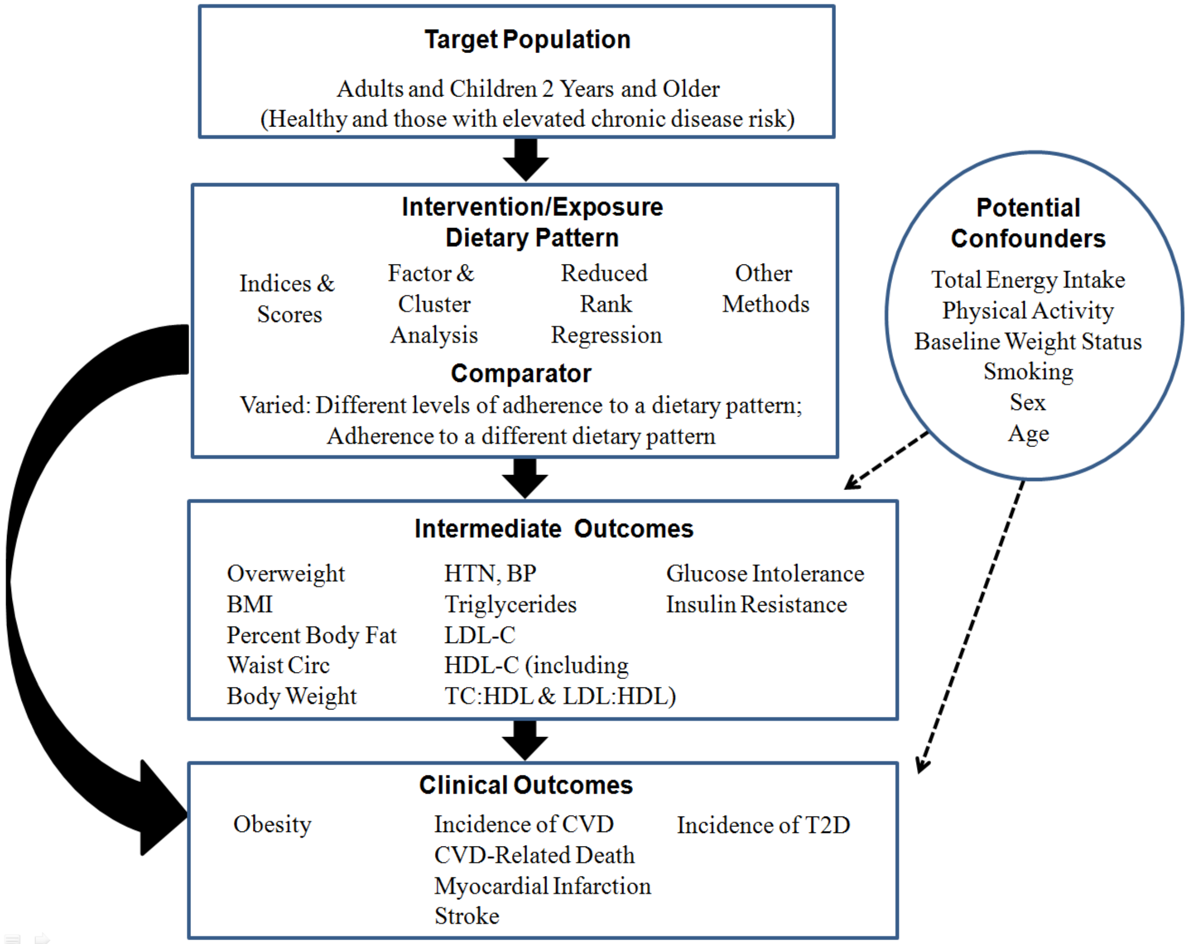
Appendix B: Analytical Framework



Appendix C: Research Design and Implementation Checklist for Primary Research Articles

Each study included in a NEL systematic review receives a quality rating of positive, neutral, or negative, based upon a predefined scoring system. The appraisal of study quality is a critical component of the systematic review methodology because in a highly transparent manner, it indicates the relevance (external validity/generalizability) and validity of each study's results.

The Research Design and Implementation Checklist: Primary Research includes 10 validity questions based on the AHRQ domains for research studies. Sub-questions are listed under each validity question that identify important aspects of sound study design and execution relevant to each domain. Some sub-questions also identify how the domain applies in specific research designs.

Validity Questions	
1.	**Was the research question clearly stated?** 1.1 Was the specific intervention(s) or procedure (independent variable(s)) identified? 1.2 Was the outcome(s) (dependent variable(s)) clearly indicated? 1.3 Were the target population and setting specified?
2.	**Was the selection of study subjects/patients free from bias?** 2.1 Were inclusion/exclusion criteria specified (e.g., risk, point in disease progression, diagnostic or prognosis criteria), and with sufficient detail and without omitting criteria critical to the study? 2.2 Were criteria applied equally to all study groups? 2.3 Were health, demographics, and other characteristics of subjects described? 2.4 Were the subjects/patients a representative sample of the relevant population?
3.	**Were study groups comparable?** 3.1 Was the method of assigning subjects/patients to groups described and unbiased? (Method of randomization identified if RCT.) 3.2 Were distribution of disease status, prognostic factors, and other factors (e.g., demographics) similar across study groups at baseline? 3.3 Were concurrent controls used? (Concurrent preferred over historical controls.) 3.4 If cohort study or cross-sectional study, were groups comparable on important confounding factors and/or were preexisting differences accounted for by using appropriate adjustments in statistical analysis? 3.5 If case control or cross-sectional study, were potential confounding factors comparable for cases and controls? (If case series or trial with subjects serving as own control, this criterion is not applicable. Criterion may not be applicable in some cross-sectional studies.) 3.6 If diagnostic test, was there an independent blind comparison with an appropriate reference standard (e.g., "gold standard")?
4.	**Was method of handling withdrawals described?** 4.1 Were follow-up methods described and the same for all groups? 4.2 Was the number, characteristics of withdrawals (i.e., dropouts, lost to follow up, attrition rate), and/or response rate (cross-sectional studies) described for each group? (Follow-up goal for a strong study is 80 percent.) 4.3 Were all enrolled subjects/patients (in the original sample) accounted for? 4.4 Were reasons for withdrawals similar across groups? 4.5 If diagnostic test, was decision to perform reference test not dependent on results of test under study?
5.	**Was blinding used to prevent introduction of bias?** 5.1 In intervention study, were subjects, clinicians/practitioners, and investigators blinded to treatment group, as appropriate? 5.2 Were data collectors blinded for outcomes assessment? (If outcome is measured using an objective test, such as a lab value, this criterion is assumed to be met.) 5.3 In cohort study or cross-sectional study, were measurements of outcomes and risk factors blinded? 5.4 In case control study, was case definition explicit and case ascertainment not influenced by exposure status? 5.5 In diagnostic study, were test results blinded to patient history and other test results?

6.	**Were intervention/therapeutic regimens/exposure factor or procedure and any comparison(s) described in detail? Were intervening factors described?** 6.1 In RCT or other intervention trial, were protocols described for all regimens studied? 6.2 In observational study, were interventions, study settings, and clinicians/provider described? 6.3 Was the intensity and duration of the intervention or exposure factor sufficient to produce a meaningful effect? 6.4 Was the amount of exposure and, if relevant, subject/patient compliance measured? 6.5 Were co-interventions (e.g., ancillary treatments, other therapies) described? 6.6 Were extra or unplanned treatments described? 6.7 Was the information for 6.4, 6.5, and 6.6 assessed the same way for all groups? 6.8 In diagnostic study, were details of test administration and replication sufficient?
7.	**Were outcomes clearly defined and the measurements valid and reliable?** 7.1 Were primary and secondary endpoints described and relevant to the question? 7.2 Were nutrition measures appropriate to question and outcomes of concern? 7.3 Was the period of follow-up long enough for important outcome(s) to occur? 7.4 Were the observations and measurements based on standard, valid, and reliable data collection instruments/tests/procedures? 7.5 Was the measurement of effect at an appropriate level of precision? 7.6 Were other factors accounted for (measured) that could affect outcomes? 7.7 Were the measurements conducted consistently across groups?
8.	**Was the statistical analysis appropriate for the study design and type of outcome indicators?** 8.1 Were statistical analyses adequately described and the results reported appropriately? 8.2 Were correct statistical tests used and assumptions of test not violated? 8.3 Were statistics reported with levels of significance and/or confidence intervals? 8.4 Was "intent to treat" analysis of outcomes done (and as appropriate, was there an analysis of outcomes for those maximally exposed or a dose-response analysis)? 8.5 Were adequate adjustments made for effects of confounding factors that might have affected the outcomes (e.g., multivariate analyses)? 8.6 Was clinical significance as well as statistical significance reported? 8.7 If negative findings, was a power calculation reported to address type 2 error?
9.	**Are conclusions supported by results with biases and limitations taken into consideration?** 9.1 Is there a discussion of findings? 9.2 Are biases and study limitations identified and discussed?
10.	**Is bias due to study's funding or sponsorship unlikely?** 10.1 Were sources of funding and investigators' affiliations described? 10.2 Was the study free from apparent conflict of interest?
MINUS/NEGATIVE If most (six or more) of the answers to the above validity questions are "No," the report should be designated with a minus (-) symbol on the Evidence Research Design and Implementation Worksheet.	
NEUTRAL If the answers to validity criteria questions 2, 3, 6, and 7 do not indicate that the study is exceptionally strong, the report should be designated with a neutral (ø) symbol on the Evidence Research Design Worksheet.	
PLUS/POSITIVE If most of the answers to the above validity questions are "Yes" (including criteria 2, 3, 6, 7 and at least one additional "Yes"), the report should be designated with a plus symbol (+) on the Evidence Research Design Worksheet.	

Appendix D: Key Trends Questionnaire

Dietary Patterns Systematic Review Project: Key Trends

After reviewing the attached evidence portfolio, please provide concise answers to the following questions that will aid in the development of a draft evidence synthesis, key findings, and conclusion statement for this systematic review question:

Systematic Review Question: [Inserted]

Major Trends and Key Observations from this Body of Evidence		
1	What are the key associations between one or more dietary patterns and [insert health outcome of interest]?	
2	a.	What are the patterns of agreement related to the association between a dietary pattern and clinical endpoint outcomes among the articles? Are results related to certain endpoints more consistent than others?
	b.	What are the patterns of agreement related to intermediate outcomes among the articles? Are results related to certain intermediate outcomes more consistent than others?
3	a.	What are the patterns of disagreement related to the clinical endpoint outcomes among the articles?
	b.	What are the patterns of disagreement related to intermediate outcomes among the articles?
	c.	Are there methodological differences between the studies (e.g., diet intake/dietary pattern score determination, populations and confounders considered, or outcome assessment) that may explain disagreement among the articles?
4	a.	Are there certain dietary patterns that are consistently related (or not related) to [insert health outcome of interest]?
	b.	Are there certain dietary patterns that are consistently related (or not related) to [insert health outcome of interest]?
5	What are the similarities among the dietary patterns that are consistently related to [insert health outcome of interest]?	
6	Are there any sub-groups (e.g., sex, race/ethnicity, age) identified in this body of evidence that merit discussion when describing the relationship between dietary patterns and [insert health outcome of interest]?	

Theme for Conclusion Statement and Key Findings	
7	Please identify the main theme, or themes, you think are important to convey in the conclusion statement for this question.
8	Are there other key findings that should be highlighted?

Evaluating the Body of Evidence	
9	**What methodological problems or limitations of the studies included in this review warrant discussion in the evidence synthesis?**
10	**Were results observed clinically meaningful from a public health perspective? (Magnitude of effect)**
11	**Are the participants included in this body of evidence representative of the general U.S. population, including key subpopulations? (Generalizability)**

Research Recommendations	
12	**Please identify any research recommendations you think should be made related to this topic.**

Feedback on Evidence Portfolio	
13	**Is there additional information that should be highlighted in the evidence portfolio? (Did we miss anything?)**

Appendix E: Conclusion Statement Grading Criteria

USDA Nutrition Evidence Library Conclusion Statement Evaluation Criteria Criteria for judging the strength of the body of evidence supporting the Conclusion Statement				
Elements	**Grade I: Strong**	**Grade II: Moderate**	**Grade III: Limited**	**Grade IV: Grade Not Assignable***
Quality (as determined using the RDI checklist) • Scientific rigor and validity • Consider study design and execution	Studies of strong design Free from design flaws, bias, and execution problems	Studies of strong design with minor methodological concerns OR only studies of weaker study design for question	Studies of weak design for answering the question OR inconclusive findings due to design flaws, bias, or execution problems	Serious design flaws, bias, or execution problems across the body of evidence
Consistency of findings across studies	Findings generally consistent in direction and size of effect or degree of association, and statistical significance with very minor exceptions	Some inconsistency in results across studies in direction and size of effect, degree of association, or statistical significance	Unexplained inconsistency among results from different studies	Independent variables and/or outcomes are too disparate to synthesize OR single small study unconfirmed by other studies
Quantity • Number of studies • Number of subjects in studies	Several good quality studies Large number of subjects studied Studies have sufficiently large sample size for adequate statistical power	Several studies by independent investigators Doubts about adequacy of sample size to avoid Type I and Type II error	Limited number of studies Low number of subjects studied and/or inadequate sample size within studies	Available studies do not directly answer the question OR no studies available
Impact • Directness of studied outcomes • Magnitude of effect	Studied outcome relates directly to the question Size of effect is clinically meaningful	Some study outcomes relate to the question indirectly Some doubt about the clinical significance of the effect	Most studied outcomes relate to the question indirectly Size of effect is small or lacks clinical significance	Studied outcomes relate to the question indirectly Size of effect cannot be determined
Generalizability to the U.S. population of interest	Studied population, intervention and outcomes are free from serious doubts about generalizability	Minor doubts about generalizability	Serious doubts about generalizability due to narrow or different study population, intervention or outcomes studied	Highly unlikely that the studied population, intervention AND/OR outcomes are generalizable to the population of interest

Appendices F-H

Appendix F: Literature Search Results – Body Weight

Index/Score

Factor/Cluster and Reduced Rank Regression

Other Methods

Appendix G: Literature Search Results – Cardiovascular Disease (All Questions Combined)

Appendix H: Literature Search Results – Type 2 Diabetes (All Questions Combined)

Appendix F: Literature Search Results – Body Weight

Systematic Review Question:

What is the relationship between adherence to dietary guidelines/ recommendations or specific dietary patterns, *assessed using an index or score,* and measures of body weight or obesity?

Search Results:

Total Hits: 3,550
Total Selected: 400
Total Included: 14

Databases Searched:

A. PubMed

Search date: 01/2012
Date range: No limit

Search Terms:
PubMed: ("Body Weights and Measures"[Mesh] OR “body weight”[mh] OR “body weight”[tiab] OR obesity[tiab] or obesity[mh] OR overweight[tiab] OR overweight[mh]) AND (index[tiab] OR score[tiab]) AND (“diet quality” OR dietary[tiab] OR nutrient* OR eating[tiab] OR food[tiab] OR diet[tiab] OR diet[mh]) AND (pattern* OR habit* OR Mediterranean[tiab] OR DASH OR vegan* OR vegetarian*)

(“Diet Quality Index” OR “Recommended Food Score” OR “Eating Plan Score” OR “Diet Score” OR MedDietScore OR “Dietary Pattern Score”) AND ("Body Weights and Measures"[Mesh] OR “body weight”[mh] OR “body weight”[tiab] OR obesity[tiab] or obesity[mh] OR overweight[tiab] OR overweight[mh])

B. Embase

Search date: 01/2012
Date range: No limit

Search Terms:
('body weight'/exp OR obesity/exp) AND ((index[tiab] OR score[tiab]) NEAR/2 (“diet quality” OR dietary OR nutrient* OR eating OR food OR diet[tiab]))

(('adipose tissue'/exp OR 'skinfold thickness'/exp OR 'body mass'/exp OR 'waist hip ratio'/exp) NOT ('body weight'/exp OR obesity/exp)) AND (index OR score) NEAR/2 ('diet quality' OR dietary OR nutrient* OR eating OR food OR diet)

C. Navigator (FSTA/CAB Abstracts/BIOSIS)

Search date: 01/2012
Date range: No limit

Search Terms:
("body weight" or title:obesity or abstract:obesity or overweight or adiposity) and ((index or score) NEAR/2 ("diet quality" or dietary or nutrient* or eating or food or diet)) doc-type:Articles language:English -(database:medline OR database:agricola OR database:agris OR database:zoor)

D. Cochrane:

Search date: 01/2012
Date range: No limit

Search Terms:
("body weight" OR obesity:ti,kw,ab OR overweight:ti,kw,ab) AND (index:ti,ab,kw OR score:ti,kw,ab) AND ('diet quality' OR dietary:ti,ab,kw OR nutrient*:ti,kw,ab OR eating:ti,kw,ab OR food:ti,kw,ab OR diet:ti,ab,kw) NOT (("accession number" near pubmed) OR ("accession number" near2 embase))
("body weight" OR obesity:ti,kw,ab OR overweight:ti,kw,ab) AND ("diet quality index" OR "recommended food score" OR "eating plan score" OR "diet score" OR meddietscore OR "dietary pattern score") NOT (("accession number" near pubmed) OR ("accession number" near2 embase))

E. Hand Search:

Search Date: 01/25/2012, 02/22/2012
Selected Articles:

1. Estruch R, Martínez-González MA, Corella D, Salas-Salvadó J, Ruiz-Gutiérrez V, Covas MI, Fiol M, Gómez-Gracia E, López-Sabater MC, Vinyoles E, Arós F, Conde M, Lahoz C, Lapetra J, Sáez G, Ros E; PREDIMED Study Investigators. Effects of a Mediterranean-style diet on cardiovascular risk factors: a randomized trial.Ann Intern Med. 2006 Jul 4;145(1):1-11. PubMed PMID:16818923.
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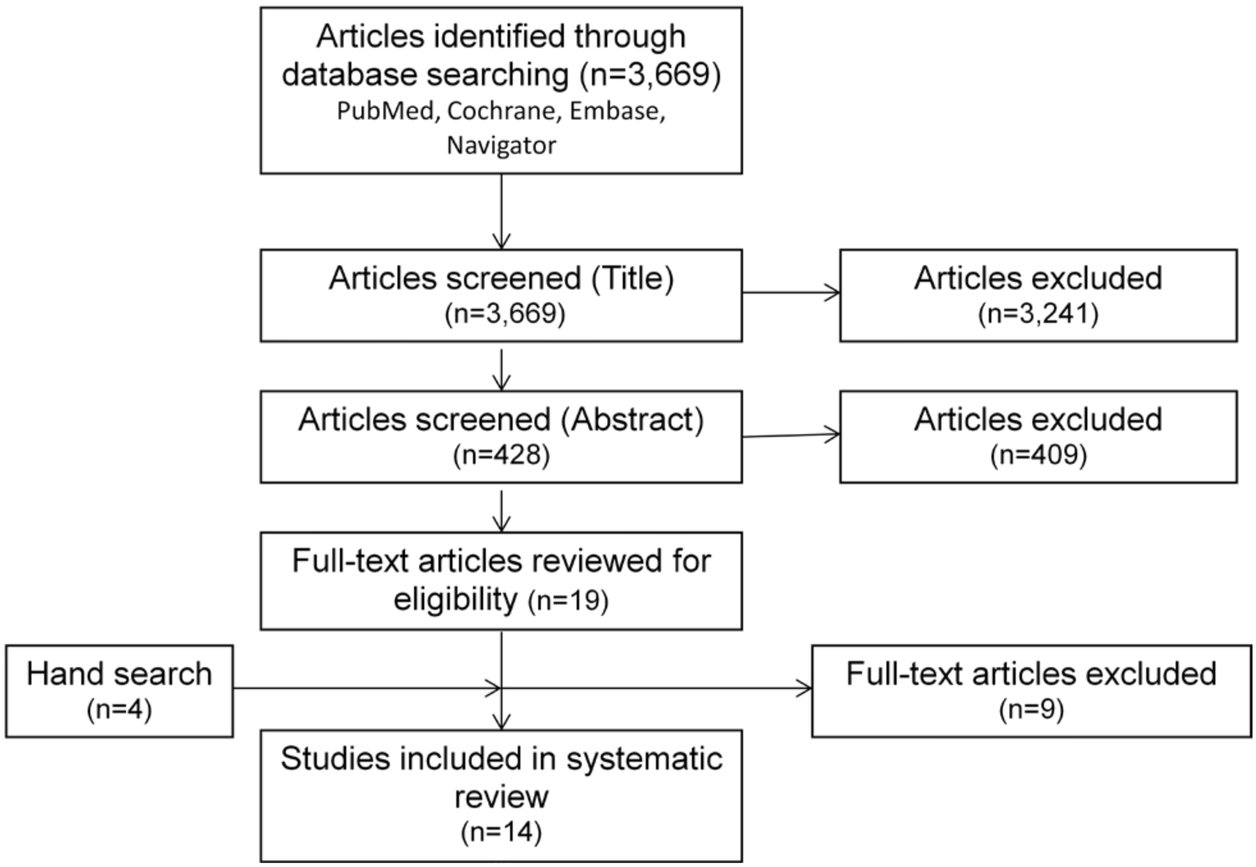
Figure F.1. Flow chart of literature search results for studies examining the relationship between dietary patterns, assessed using an index or score, and risk of obesity



INCLUDED ARTICLES

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Framingham Offspring Cohort. Am J Clin Nutr. 2009 Dec;90(6):1608-14. Epub 2009 Oct 14. PubMed PMID:19828705.

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EXCLUDED ARTICLES

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#	Citation	Rationale for Exclusion
1	Abidoye RO, Madueke LA, Abidoye GO. The relationship between dietary habits and body-mass index using the Federal Airport Authority of Nigeria as the sample. Nutr Health. 2002;16(3):215-27. PubMed PMID: 12418805.	Nigeria classified as "low" on Human Development Index (HDI)
2	Aeberli I, Kaspar M, Zimmermann MB. Dietary intake and physical activity of normal weight and overweight 6 to 14 year old Swiss children. Swiss Med Wkly.2007 Jul 28;137(29-30):424-30. PubMed PMID: 17705105..	Study did not examine dietary intake using an index/ score
3	Ahluwalia N, Ferrières J, Dallongeville J, Simon C, Ducimetière P, Amouyel P, Arveiler D, Ruidavets JB. Association of macronutrient intake patterns with being overweight in a population-based random sample of men in France. Diabetes Metab. 2009 Apr;35(2):129-36. Epub 2009 Feb 28. PubMed PMID: 19251447.	Study did not examine dietary intake using an index/ score
4	Akman M, Akan H, Izbirak G, Tanriöver Ö, Tilev SM, Yildiz A, Tektaş S, Vitrinel A, Hayran O Eating patterns of Turkish adolescents: a cross-sectional survey. Nutr J. 2010 Dec 19;9:67. PubMed PMID: 21167070; PubMed Central PMCID:PMC3018368.	Study did not examine dietary intake using an index/ score
5	Al Mamun A, Cramb SM, O'Callaghan MJ, Williams GM, Najman JM. Childhood overweight status predicts diabetes at age 21 years: a follow-up study. Obesity (Silver Spring). 2009 Jun;17(6): 1255-61. Epub 2009 Feb 12. PubMed PMID: 19214172.	Study did not examine dietary intake using an index/ score
6	Al-Rethaiaa AS, Fahmy AE, Al-Shwaiyat NM. Obesity and eating habits among college students in Saudi Arabia: a cross sectional study. Nutr J. 2010 Sep19;9:39. PubMed PMID: 20849655; PubMed Central PMCID: PMC2949783.	Study did not examine dietary intake using an index/ score
7	Al-Solaiman Y, Jesri A, Mountford WK, Lackland DT, Zhao Y, Egan BM. DASH lowers blood pressure in obese hypertensives beyond potassium, magnesium and fibre. J Hum Hypertens. 2010 Apr;24(4):237-46. Epub 2009 Jul 23. PubMed PMID:19626043; PubMed Central PMCID: PMC2841705.	Study did not examine dietary intake using index/ score and BW not outcome
8	Alexy U, Libuda L, Mersmann S, Kersting M. Convenience foods in children's diet and association with dietary quality and body weight status. Eur J Clin Nutr. 2011 Feb;65(2):160-6. Epub 2010 Dec 8. PubMed PMID: 21139631.	Study did not examine dietary intake using an index/ score
9	Alexy U, Sichert-Hellert W, Kersting M, Schultze-Pawlitschko V. Pattern of long-term fat intake and BMI during childhood and adolescence--results of the DONALD Study. Int J Obes Relat Metab Disord. 2004 Oct;28(10):1203-9. PubMed PMID:15211368.	Study did not examine dietary intake using an index/ score
10	Amin TT, Al-Sultan AI, Ali A. Overweight and obesity and their relation to dietary habits and socio-demographic characteristics among male primary school children in Al-Hassa, Kingdom of Saudi Arabia. Eur J Nutr. 2008 Sep;47(6):310-8. Epub 2008 Aug 1. PubMed PMID: 18677544.	Study did not examine dietary intake using an index/ score
11	Andreoli A, Lauro S, Di Daniele N, Sorge R, Celi M, Volpe SL. Effect of a moderately hypoenergetic Mediterranean diet and exercise program on body cell mass and cardiovascular risk factors in obese women. Eur J Clin Nutr. 2008Jul;62(7): 892-7. Epub 2007 May 16. PubMed PMID: 17522604.	Study did not examine dietary intake using an index/ score
12	Arata A, Battini V, Chiorri C, Masini B. An exploratory survey of eating behaviour patterns in adolescent students. Eat Weight Disord. 2010 Dec;15(4):e200-7. PubMed PMID: 21406943.	Study did not examine dietary intake using an index/ score
13	Ask AS, Hernes S, Aarek I, Johannessen G, Haugen M. Changes in dietary pattern in 15 year old adolescents following a 4 month dietary intervention with school breakfast--a pilot study. Nutr J. 2006 Dec 7;5:33. PubMed PMID: 17150115; PubMed Central PMCID: PMC1713247.	Study did not examine relationship between dietary patterns and body weight

14	Atikessé L, de Grosbois SB, St-Jean M, Penashue BM, Benuen M. Innu food consumption patterns: traditional food and body mass index. Can J Diet Pract Res. 2010 Fall;71(3):e41-9. PubMed PMID: 20825693..	Study examined Innu population
15	Azadbakht L, Kimiagar M, Mehrabi Y, Esmaillzadeh A, Padyab M, Hu FB, Willett WC. Soy inclusion in the diet improves features of the metabolic syndrome: a randomized crossover study in postmenopausal women. Am J Clin Nutr. 2007 Mar;85(3):735-41. PubMed PMID: 17344494.	Study did not examine dietary intake using an index/ score
16	Babio N, Bulló M, Salas-Salvadó J. Mediterranean diet and metabolic syndrome: the evidence. Public Health Nutr. 2009 Sep;12(9A):1607-17. Review. PubMed PMID:19689829.	Narrative review
17	Bach A, Serra-Majem L, Carrasco JL, Roman B, Ngo J, Bertomeu I, Obrador B. The use of indexes evaluating the adherence to the Mediterranean diet in epidemiological studies: a review. Public Health Nutr. 2006 Feb;9(1A):132-46.PubMed PMID: 16512961.	Narrative review
18	Balcells E, Delgado-Noguera M, Pardo-Lozano R, Roig-González T, Renom A, González-Zobl G, Muñoz-Ortego J, Valiente-Hernández S, Pou-Chaubron M, Schröder H. Soft drinks consumption, diet quality and BMI in a Mediterranean population. Public Health Nutr. 2011 May;14(5):778-84. Epub 2010 Oct 19. PubMed PMID: 20955643.	Does not examine relationship between dietary pattern and body weight measure
19	Bautista-Castaño I, Molina-Cabrillana J, Montoya-Alonso JA, Serra-Majem L. Variables predictive of adherence to diet and physical activity recommendations in the treatment of obesity and overweight, in a group of Spanish subjects. Int J Obes Relat Metab Disord. 2004 May;28(5):697-705. PubMed PMID: 14993911.	Does not examine dietary pattern with index or score
20	Becquey E, Savy M, Danel P, Dabiré HB, Tapsoba S, Martin-Prével Y. Dietary patterns of adults living in Ouagadougou and their association with overweight.Nutr J. 201	Burkina Faso classified as "low" HDI
21	Bédard A, Goulet J, Riverin M, Lamarche B, Lemieux S. Effects of a dietary intervention promoting the adoption of a Mediterranean food pattern on fast-food consumption among healthy French-Canadian women. Br J Nutr. 2010. Dec;104(11):1662-5. Epub 2010 Aug 9. PubMed PMID: 20691126.	Before and after study
22	Bemelmans WJ, Broer J, de Vries JH, Hulshof KF, May JF, Meyboom-De Jong B. Impact of Mediterranean diet education versus posted leaflet on dietary habits and serum cholesterol in a high risk population for cardiovascular disease. Public Health Nutr. 2000 Sep;3(3):273-83. PubMed PMID: 10979147.	Study did not examine dietary intake using an index/ score
23	Berg CM, Lappas G, Strandhagen E, Wolk A, Torén K, Rosengren A, Aires N, Thelle DS, Lissner L. Food patterns and cardiovascular disease risk factors: the Swedish INTERGENE research program. Am J Clin Nutr. 2008 Aug;88(2):289-97. PubMedPMID: 18689363.	Study did not examine dietary intake using an index/ score
24	Bilenko N, Fraser D, Vardi H, Shai I, Shahar DR. Mediterranean diet and cardiovascular diseases in an Israeli population. Prev Med. 2005 Mar;40(3):299-305. PubMed PMID: 15533543.	Does not include body weight as an outcome
25	Bisset S, Gauvin L, Potvin L, Paradis G. Association of body mass index and dietary restraint with changes in eating behaviour throughout late childhood and early adolescence: a 5-year study. Public Health Nutr. 2007 Aug;10(8):780-9. PubMed PMID: 17381909.	Examined dietary behaviors, not dietary patterns
26	Blum JW, Jacobsen DJ, Donnelly JE. Beverage consumption patterns in elementary school aged children across a two-year period. J Am Coll Nutr. 2005Apr;24(2):93-8. PubMed PMID: 15798075.	Examined beverage patterns, not diet patterns
27	Blumenthal JA, Babyak MA, Sherwood A, Craighead L, Lin PH, Johnson J, Watkins LL, Wang JT, Kuhn C, Feinglos M, Hinderliter A. Effects of the dietary approaches to stop hypertension diet alone and in combination with exercise and caloric restriction on insulin sensitivity and lipids. Hypertension. 2010May;55(5):1199-205. PubMed PMID: 20212264.	Does not examine dietary pattern with index or score

28	Bouchard-Mercier A, Paradis AM, Godin G, Lamarche B, Pérusse L, Vohl MC. Associations between dietary patterns and LDL peak particle diameter: a cross-sectional study. J Am Coll Nutr. 2010 Dec;29(6):630-7. PubMed PMID:21677127.	Study did not examine dietary intake using an index/ score
29	Boynton A, Neuhouser ML, Wener MH, Wood B, Sorensen B, Chen-Levy Z, Kirk EA, Yasui Y, Lacroix K, McTiernan A, Ulrich CM. Associations between healthy eating patterns and immune function or inflammation in overweight or obese postmenopausal women. Am J Clin Nutr. 2007 Nov;86(5):1445-55. PubMed PMID:17991658.	Does not include body weight as an outcome
30	Brandhagen M, Forslund HB, Lissner L, Winkvist A, Lindroos AK, Carlsson LM, Sjöström L, Larsson I. Alcohol and macronutrient intake patterns are related to general and central adiposity. Eur J Clin Nutr. 2011 Nov 16. doi: 10.1038/ejcn.2011.189. [Epub ahead of print] PubMed PMID: 22085868.	Study did not examine dietary intake using an index/ score
31	Brinkworth GD, Noakes M, Keogh JB, Luscombe ND, Wittert GA, Clifton PM.Long-term effects of a high-protein, low-carbohydrate diet on weight control and cardiovascular risk markers in obese hyperinsulinemic subjects. Int J Obes Relat Metab Disord. 2004 May;28(5):661-70. Erratum in: Int J Obes Relat Metab Disord.2004 Sep;28(9):1187. PubMed PMID: 15007396.	Study did not examine dietary intake using an index/ score
32	Brunt A, Rhee Y, Zhong L. Differences in dietary patterns among college students according to body mass index. J Am Coll Health. 2008 May-Jun;56(6): 629-34. PubMed PMID: 18477517.	Study did not examine dietary intake using an index/ score
33	Carrera PM, Gao X, Tucker KL. A study of dietary patterns in the Mexican-American population and their association with obesity. J Am Diet Assoc. 2007 Oct;107(10):1735-42. PubMed PMID: 17904933.	Study did not examine dietary intake using an index/ score
34	Carter SJ, Roberts MB, Salter J, Eaton CB. Relationship between Mediterranean Diet Score and atherothrombotic risk: findings from the Third National Health and Nutrition Examination Survey (NHANES III), 1988-1994. Atherosclerosis. 2010 Jun;210(2):630-6. Epub 2010 Jan 14. PubMed PMID: 20138282.	Does not include body weight as an outcome
35	Carty CL, Kooperberg C, Neuhouser ML, Tinker L, Howard B, Wactawski-Wende J, Beresford SA, Snetselaar L, Vitolins M, Allison M, Budrys N, Prentice R, Peters U. Low-fat dietary pattern and change in body-composition traits in the Women's Health Initiative Dietary Modification Trial. Am J Clin Nutr. 2011Mar;93(3):516-24. Epub 2010 Dec 22. PubMed PMID: 21177798; PubMed Central PMCID: PMC3041598.	Study did not examine dietary intake using an index/ score
36	Carvalho Francescantonio Menezes IH, Borges Neutzling M, Aguiar CarrazedoTaddei JA. Risk factors for overweight and obesity in adolescents of a Brazilian University: a case-control study. Nutr Hosp. 2009 Jan-Feb;24(1):17-24. PubMed PMID: 19266108.	Study did not examine dietary intake using an index/ score
37	Cho YA, Shin A, Kim J. Dietary patterns are associated with body mass index in a Korean population. J Am Diet Assoc. 2011 Aug;111(8):1182-6. PubMed PMID:21802564.	Study did not examine dietary intake using an index/ score
38	Choi J, Se-Young O, Lee D, Tak S, Hong M, Park SM, Cho B, Park M. Characteristics of diet patterns in metabolically obese, normal weight adults (Korean National Health and Nutrition Examination Survey III, 2005). Nutr Metab Cardiovasc Dis. 2010 Dec 24. [Epub ahead of print] PubMed PMID: 21186103.	Study did not examine dietary intake using an index/ score
39	Chourdakis M, Tzellos T, Papazisis G, Toulis K, Kouvelas D. Eating habits, health attitudes and obesity indices among medical students in northern Greece.	Study did not examine dietary intake using an index/ score
40	Chrysohoou C, Panagiotakos DB, Aggelopoulos P, Kastorini CM, Kehagia I, Pitsavos C, Stefanadis C. The Mediterranean diet contributes to the preservation of left ventricular systolic function and to the long-term favorable prognosis of patients who have had an acute coronary event. Am J Clin Nutr. 2010Jul;92(1):47-54. Epub 2010 May 19. PubMed PMID: 20484450.	Does not include body weight as an outcome

41	Cronk CE, Hoffmann RG, Mueller MJ, Zerpa-Uriona V, Dasgupta M, Enriquez F.Effects of a culturally tailored intervention on changes in body mass index and health-related quality of life of Latino children and their parents. Am J Health Promot. 2011 Mar-Apr;25(4):e1-11. PubMed PMID: 21473182.	Study did not examine dietary intake using an index/ score
42	Das SK, Gilhooly CH, Golden JK, Pittas AG, Fuss PJ, Cheatham RA, Tyler S,Tsay M, McCrory MA, Lichtenstein AH, Dallal GE, Dutta C, Bhapkar MV, Delany JP,Saltzman E, Roberts SB. Long-term effects of 2 energy-restricted diets differing in glycemic load on dietary adherence, body composition, and metabolism in CALERIE: a 1-y randomized controlled trial. Am J Clin Nutr. 2007Apr;85(4):1023-30. PubMed PMID: 17413101.	Study did not examine dietary intake using an index/ score
43	Davy BM, Harrell K, Stewart J, King DS. Body weight status, dietary habits, and physical activity levels of middle school-aged children in rural Mississippi. South Med J. 2004 Jun;97(6):571-7. PubMed PMID: 15255424.	Study did not examine dietary intake using an index/ score
44	de Andrade SC, de Azevedo Barros MB, Carandina L, Goldbaum M, Cesar CL, Fisberg RM. Dietary quality index and associated factors among adolescents of the state of Sao Paulo, Brazil. J Pediatr. 2010 Mar;156(3):456-60. Epub 2009 Dec 14. PubMed PMID: 20004911.	Does not include body weight as an outcome
45	De Lorenzo A, Noce A, Bigioni M, Calabrese V, Della Rocca DG, Di Daniele N, Tozzo C, Di Renzo L. The effects of Italian Mediterranean organic diet (IMOD) on health status. Curr Pharm Des. 2010;16(7):814-24. PubMed PMID: 20388092.	Study did not examine dietary intake using an index/ score
46	De Lorenzo A, Petroni ML, De Luca PP, Andreoli A, Morini P, Iacopino L, Innocente I, Perriello G. Use of quality control indices in moderately hypocaloric Mediterranean diet for treatment of obesity. Diabetes Nutr Metab.2001 Aug;14(4):181-8. PubMed PMID: 11716286.	Study examined hypocaloric diet for treatment of obesity
47	Dedoussis GV, Panagiotakos DB, Chrysohoou C, Pitsavos C, Zampelas A, Choumerianou D, Stefanadis C. Effect of interaction between adherence to a Mediterranean diet and the methylenetetrahydrofolate reductase 677C-->T mutation on homocysteine concentrations in healthy adults: the ATTICA Study. Am J Clin Nutr. 2004 Oct;80(4):849-54. PubMed PMID: 15447889.	Does not include body weight as an outcome
48	Drichoutis AC, Lazaridis P, Nayga RM Jr. Can Mediterranean diet really influence obesity? Evidence from propensity score matching. Eur J Health Econ.2009 Oct;10(4):371-88. Epub 2008 Dec 5. PubMed PMID: 19057934.	Review
49	Duc Son le NT, Hanh TT, Kusama K, Kunii D, Sakai T, Hung NT, Yamamoto S. Anthropometric characteristics, dietary patterns and risk of type 2 diabetes mellitus in Vietnam. J Am Coll Nutr. 2005 Aug;24(4):229-34. PubMed PMID:16093399.	Vietnam classified as “medium” on Human Development Index
50	Duvigneaud N, Wijndaele K, Matton L, Philippaerts R, Lefevre J, Thomis M, Delecluse C, Duquet W. Dietary factors associated with obesity indicators and level of sports participation in Flemish adults: a cross-sectional study. Nutr J. 2007 Sep 21;6:26. PubMed PMID: 17883880; PubMed Central PMCID: PMC2094711.	Study did not examine dietary intake using an index/ score
51	Earland J, Campbell J, Srivastava A. Dietary habits and health status of African-Caribbean adults. J Hum Nutr Diet. 2010 Jun;23(3):264-71. PubMed PMID: 20337851.	Study did not examine dietary intake using an index/ score
52	Elhayany A, Lustman A, Abel R, Attal-Singer J, Vinker S. A low carbohydrate A low carbohydrate Mediterranean diet improves cardiovascular risk factors and diabetes control among overweight patients with type 2 diabetes mellitus: a 1-year prospective randomized intervention study. Diabetes Obes Metab. 2010 Mar;12(3):204-9. PubMed PMID: 20151996.	Study did not examine dietary intake using an index/ score
53	Esmaillzadeh A, Azadbakht L. Major dietary patterns in relation to general obesity and central adiposity among Iranian women. J Nutr. 2008 Feb;138(2):358-63. PubMed PMID: 18203904.	Study did not examine dietary intake using an index/ score
54	Esposito K, Kastorini CM, Panagiotakos DB, Giugliano D. Mediterranean diet and weight loss: meta-analysis of randomized controlled trials. Metab Syndr Relat Disord. 2011 Feb;9(1):1-12. Epub 2010 Oct 25. Review. PubMed PMID: 20973675.	Study design is meta-analysis

55	Esposito K, Marfella R, Ciotola M, Di Palo C, Giugliano F, Giugliano G, D'Armiento M, D'Andrea F, Giugliano D. Effect of a mediterranean-style diet on endothelial dysfunction and markers of vascular inflammation in the metabolic syndrome: a randomized trial. JAMA. 2004 Sep 22;292(12):1440-6. PubMed PMID:15383514.	Study did not examine dietary intake using an index/ score
56	Fargnoli JL, Fung TT, Olenczuk DM, Chamberland JP, Hu FB, Mantzoros CS. Adherence to healthy eating patterns is associated with higher circulating total and high-molecular-weight adiponectin and lower resistin concentrations in women from the Nurses' Health Study. Am J Clin Nutr. 2008 Nov;88(5):1213-24. PubMedPMID: 18996855.	BW measures not primary outcomes
57	Ferreira SR, Gimeno SG, Hirai AT, Harima H, Matsumura L, Pittito Bde A. Effects of an intervention in eating habits and physical activity in Japanese-Brazilian women with a high prevalence of metabolic syndrome in Bauru, São Paulo State, Brazil. Cad Saude Publica. 2008;24 Suppl 2:S294-302. PubMed PMID: 18670709.	Study did not examine dietary intake using an index/ score
58	Filippidis FT, Tzavara Ch, Dimitrakaki C, Tountas Y. Compliance with a healthy lifestyle in a representative sample of the Greek population: preliminary results of the Hellas Health I study. Public Health. 2011 Jul;125(7):436-41.PubMed PMID: 21723571.	Does not include relationship between score and body weight
59	Fitzgerald KC, Chiuve SE, Buring JE, Ridker PM, Glynn RJ. Comparison of Associations of Adherence to a Dietary Approaches to Stop Hypertension (DASH)-style Diet With Risks of Cardiovascular Disease and Venous Thromboembolism. J Thromb Haemost. 2011 Dec 8. doi:10.1111/j.1538-7836.2011.04588.x. PubMed PMID: 22151600.	Does not include body weight as an outcome
60	Forbes LE, Storey KE, Fraser SN, Spence JC, Plotnikoff RC, Raine KD, Hanning RM, McCargar LJ. Dietary patterns associated with glycemic index and glycemic load among Alberta adolescents. Appl Physiol Nutr Metab. 2009 Aug;34(4):648-58. PubMed PMID: 19767800.	Study did not examine dietary intake using an index/ score
61	Fragopoulou E, Panagiotakos DB, Pitsavos C, Tampourlou M, Chrysohoou C, Nomikos T, Antonopoulou S, Stefanadis C. The association between adherence to the Mediterranean diet and adiponectin levels among healthy adults: the ATTICA study. J Nutr Biochem. 2010 Apr;21(4): 285-9. Epub 2009 Apr 14. PubMed PMID: 19369051.	Does not include body weight as an outcome
62	Francis DK, Van den Broeck J, Younger N, McFarlane S, Rudder K, Gordon-Strachan G, Grant A, Johnson A, Tulloch-Reid M, Wilks R. Fast-food and sweetened beverage consumption: association with overweight and high waist circumference in adolescents. Public Health Nutr. 2009 Aug;12(8):1106-14. PMID: 19243675.	Study did not examine dietary intake using an index/ score
63	Fraser A, Abel R, Lawlor DA, Fraser D, Elhayany A. A modified Mediterranean diet is associated with the greatest reduction in alanine aminotransferase levels in obese type 2 diabetes patients: results of a quasi-randomised controlled trial. Diabetologia. 2008 Sep;51(9):1616-22. Epub 2008 Jul 3. PubMed PMID:18597068.	Study did not examine dietary intake using an index/ score
64	Fung TT, Rimm EB, Spiegelman D, Rifai N, Tofler GH, Willett WC, Hu FB. Association between dietary patterns and plasma biomarkers of obesity and cardiovascular disease risk. Am J Clin Nutr. 2001 Jan;73(1):61-7. PubMed PMID:11124751.	Study did not examine dietary intake using an index/ score
65	Fung TT, Rexrode KM, Mantzoros CS, Manson JE, Willett WC, Hu FB. Mediterranean diet and incidence of and mortality from coronary heart disease and stroke in women.Circulation. 2009 Mar 3;119(8):1093-100. Epub 2009 Feb 16. Erratum in: Circulation. 2009 Mar 31;119(12):e379. PMID:19221219.	BW measures not primary outcomes
66	Gallant AR, Tremblay A, Pérusse L, Bouchard C, Després JP, Drapeau V. The Three-Factor Eating Questionnaire and BMI in adolescents: results from the Québec family study. Br J Nutr. 2010 Oct;104(7):1074-9. Epub 2010 May 7. PubMed PMID:20447324.	Study did not examine dietary intake using an index/ score

67	Galli-Tsinopoulou A, Grammatikopoulou MG, Stylianou C, Kokka P, Emmanouilidou E. A preliminary case-control study on nutritional status, body composition, and glycemic control of Greek children and adolescents with type 1 diabetes. JDiabetes. 2009 Mar;1(1):36-42. doi: 10.1111/j.1753-0407.2008.00002.x. Epub 2008 Dec 17. PubMed PMID: 20923518.	Study did not examine dietary intake using an index/ score
68	Garaulet M, Hernandez-Morante JJ, Tebar FJ, Zamora S. Relation between degree of obesity and site-specific adipose tissue fatty acid composition in a Mediterranean population. Nutrition. 2011 Feb;27(2):170-6. Epub 2010 Jun 11. PubMed PMID: 20541362.	Study does not examine relationship between dietary patterns and body weight measures
69	García-Lorda P, Salas-Salvadó J, Fernàndez Ballart J, Murphy MM, Bulló M, Arija V. Dietary calcium and body mass index in a Mediterranean population 2007 Jan;77(1):34-40. PubMed PMID: 17685093.	Study does not examine relationship between dietary patterns and body weight measures
70	Ghosh A, Bose K, Das Chaudhuri AB. Association of food patterns, central obesity measures and metabolic risk factors for coronary heart disease (CHD) in middle aged Bengalee Hindu men, Calcutta, India. Asia Pac J Clin Nutr. 2003;12(2):166-71. PubMed PMID: 12810406.	India classified as “medium” on Human Development Index
71	Goulet J, Lapointe A, Lamarche B, Lemieux S. Effect of a nutritional intervention promoting the Mediterranean food pattern on anthropometric profile in healthy women from the Québec city metropolitan area. Eur J Clin Nutr. 2007 Nov;61(11):1293-300. Epub 2007 Feb 7. PubMed PMID: 17299486.	Before and after
72	Goulet J, Lamarche B, Nadeau G, Lemieux S. Effect of a nutritional intervention promoting the Mediterranean food pattern on plasma lipids, lipoproteins and body weight in healthy French-Canadian women. Atherosclerosis. 2003 Sep;170(1):115-24. PubMed PMID: 12957689.	Before and after
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167	Panagiotakos DB, Pitsavos C, Chrysohoou C, Vlismas K, Skoumas Y, Palliou K, Stefanadis C. Dietary habits mediate the relationship between socio-economic status and CVD factors among healthy adults: the ATTICA study. Public Health Nutr. 2008 Dec;11(12):1342-9. Epub 2008 Jul 11. PubMed PMID: 18616850.	Does not examine the relationship between dietary patterns and body weight
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192	Sabaté J, Wien M. Vegetarian diets and childhood obesity prevention. Am J Clin Nutr. 2010 May;91(5):1525S-1529S. Epub 2010 Mar 17. PubMed PMID: 20237136.	Review article

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199	Serra-Majem L. Efficacy of diets in weight loss regimens: is the Mediterranean diet appropiate? Pol Arch Med Wewn. 2008 Dec;118(12):691-3. Review. PubMed PMID: 19202945.	Editorial
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204	Sichieri R. Dietary patterns and their associations with obesity in the Brazilian city of Rio de Janeiro. Obes Res. 2002 Jan;10(1):42-8. PubMed PMID: 11786600.	Independent variables do not include index or score
205	Smithers LG, Golley RK, Brazionis L, Lynch JW. Characterizing whole diets of young children from developed countries and the association between diet and health: a systematic review. Nutr Rev. 2011 Aug; 69(8):449-67. doi: 10.1111/j.1753 4887.2011. 00407.PubMed PMID: 21790612.	Systematic Review

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207	Soori H. Pattern of dietary behaviour and obesity in Ahwaz, Islamic Republic of Iran. East Mediterr Health J. 2001 Jan-Mar;7(1-2):163-70. PubMed PMID: 12596966.	Independent variable is composite dietary behavior score
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212	Togo P, Osler M, Sørensen TI, Heitmann BL. Food intake patterns and body mass index in observational studies. Int J Obes Relat Metab Disord. 2001 Dec;25(12):1741-51. Review. PubMed PMID: 11781753.	Systematic Review
213	Togo P, Osler M, Sørensen TI, Heitmann BL. A longitudinal study of food intake patterns and obesity in adult Danish men and women. Int J Obes Relat Metab Disord. 2004 Apr;28(4):583-93. PubMed PMID: 14770197.	Factor analysis
214	Tolstrup JS, Heitmann BL, Tjønneland AM, Overvad OK, Sørensen TI, Grønbaek MN. The relation between drinking pattern and body mass index and waist and hip circumference. Int J Obes (Lond). 2005 May;29(5):490-7. PubMed PMID: 15672114.	Independent variable is alcohol drinking pattern
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216	Trichopoulou A, Costacou T, Bamia C, Trichopoulos D. Adherence to a Mediterranean diet and survival in a Greek population. N Engl J Med. 2003 Jun 26;348(26):2599-608.PMID:12826634	BW measures not primary outcomes
217	Tripodi A, Daghio MM, Severi S, Ferrari L,Ciardullo AV. Surveillance of dietary habits and lifestyles among 5-6 year-old children and their families living in Central-North Italy. Soz Praventivmed. 2005;50(3):134-41. PubMed PMID: 16010812.	Independent variable is behavioral
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219	van Dam RM, Rimm EB, Willett WC, Stampfer MJ, Hu FB. Dietary patterns and risk for type 2 diabetes mellitus in U.S. men. Ann Intern Med. 2002 Feb 5;136(3):201-9. PubMed PMID: 11827496.	Factor analysis
220	van Dam RM, Grievink L, Ocké MC, Feskens EJ. Patterns of food consumption and risk factors for cardiovascular disease in the general Dutch population. AmClin Nutr. 2003 May;77(5):1156-63. PubMed PMID: 12716666.	Factor analysis

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222	Vansant G, Hulens M. The assessment of dietary habits in obese women: influence of eating behavior patterns. Eat Disord. 2006 Mar-Apr;14(2):121-9. PubMed PMID: 16777809.	Dependent variable is eating behavior
223	Velazquez CE, Pasch KE, Ranjit N, Mirchandani G, Hoelscher DM. Are adolescents' perceptions of dietary practices associated with their dietary behaviors? J Am Diet Assoc. 2011 Nov;111(11): 1735-40. PubMed PMID: 22027057.	Independent variable is perception of dietary practices; dependent variable is behaviors
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225	Villegas R, Yang G, Gao YT, Cai H, Li H, Zheng W, Shu XO. Dietary patterns are associated with lower incidence of type 2 diabetes in middle-aged women: the Shanghai Women's Health Study. Int J Epidemiol. 2010 Jun;39(3):889-99. Epub 2010 Mar 15. PubMed PMID: 20231261; PubMed Central PMCID: PMC2912484.	Independent variables do not include index or score
226	Vincent S, Gerber M, Bernard MC, Defoort C, Loundou A, Portugal H, Planells R, Juhan-Vague I, Charpiot P, Grolier P, Amiot-Carlin MJ, Vague P, Lairon D. The Medi-RIVAGE study (Mediterranean Diet, Cardiovascular Risks and Gene Polymorphisms): rationale, recruitment, design, dietary intervention and baseline characteristics of participants. Public Health Nutr. 2004 Jun;7(4):531-42. PubMed PMID: 15153259.	Independent variables do not include index or score
227	Vincent-Baudry S, Defoort C, Gerber M, Bernard MC, Verger P, Helal O, Portugal H, Planells R, Grolier P, Amiot-Carlin MJ, Vague P, Lairon D. The Medi-RIVAGE study: reduction of cardiovascular disease risk factors after a 3-mo intervention with a Mediterranean-type diet or a low-fat diet. Am J Clin Nutr. 2005 Nov;82(5):964-71. PubMed PMID: 16280426.	Independent variables do not include index or score
228	Waijers PM, Ocké MC, van Rossum CT, Peeters PH, Bamia C, Chloptsios Y, van der Schouw YT, Slimani N, Bueno-de-Mesquita HB. Dietary patterns and survival in older Dutch women. Am J Clin Nutr. 2006 May;83(5):1170-6. PubMed PMID: 16685062.	Independent variables do not include index or score
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230	Washino K, Takada H, Nagashima M, Iwata H. Significance of the atherosclerogenic index and body fat in children as markers for future, potential coronary heart disease. Pediatr Int. 1999 Jun;41(3):260-5. PubMed PMID: 10365574.	Independent variable is atherosclero-genic index
231	Weikert C, Hoffmann K, Dierkes J, Zyriax BC, Klipstein-Grobusch K, Schulze MB, Jung R, Windler E, Boeing H. A homocysteine metabolism-related dietary pattern and the risk of coronary heart disease in two independent German study populations. J Nutr. 2005 Aug;135(8):1981-8. PubMed PMID: 16046726.	Independent variables do not include index or score
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235	Yadav K, Krishnan A. Changing patterns of diet, physical activity and obesity among urban, rural and slum populations in north India. Obes Rev. 2008 Sep;9(5):400-8. Epub 2008 Jul 9. PubMed PMID: 18627500.	Independent variables do not include index or score
236	Yahia N, Achkar A, Abdallah A, Rizk S. Eating habits and obesity among Lebanese university students. Nutr J. 2008 Oct 30;7:32. PubMed PMID: 18973661; PubMed Central PMCID: PMC2584644.	Independent variables do not include index or score
237	Yannakoulia M, Panagiotakos D, Pitsavos C, Skoumas Y, Stafanadis C. Eating patterns may mediate the association between marital status, body mass index, and blood cholesterol levels in apparently healthy men and women from the ATTICA study. Soc Sci Med. 2008 Jun;66(11): 2230-9. Epub 2008 Mar 10. PubMed PMID: 18329772.	Independent variable is marital status
238	Yazici M, Kaya A, Kaya Y, Albayrak S, Cinemre H, Ozhan H. 322. Lifestyle modification decreases the mean platelet volume in prehypertensive patients. Platelets. 2009 Feb;20(1):58-63. PubMed PMID: 19172523.	Independent variables do not include index or score
239	Zizza CA, Xu B. Snacking Is Associated with Overall Diet Quality among Adults. J Am Diet Assoc. 2011 Nov 11. [Epub ahead of print] PubMed PMID: 22078892.	Independent variables do not include index or score
240	Zulet MA, Bondia-Pons I, Abete I, de la Iglesia R, López-Legarrea P, Forga L, Navas-Carretero S, Martínez JA. The reduction of the metabolyc syndrome in Navarra-Spain (RESMENA-S) study: a multidisciplinary strategy based on chrono nutrition and nutritional education, together with dietetic and psychological control. Nutr Hosp. 2011 Jan-Feb;26(1):16-26. PubMed PMID: 21519726.	Independent variables do not include index or score

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1	Akbaraly TN, Singh-Manoux A, Tabak AG, Jokela M, Virtanen M, Ferrie JE, Marmot MG, Shipley MJ, Kivimaki M. Overall diet history and reversibility of the metabolic syndrome over 5 years: the Whitehall II prospective cohort study Diabetes Care. 2010 Nov;33(11): 2339-41. Epub 2010 Jul 29. PMID:20671094.	Dependent variable was reversion to MetS
2	Albertson AM, Thompson DR, Franko DL, Holschuh NM. Weight indicators and nutrient intake in children and adolescents do not vary by sugar content in ready-to-eat cereal: results from National Health and Nutrition Examination Survey 2001-2006. Nutr Res. 2011 Mar;31(3):22936. PMID:21481717.	Independent variable is sugar content of cereals
3	Angelopoulos P, Kourlaba G, Kondaki K, Fragiadakis GA, Manios Y. Assessing children's diet quality in Crete based on Healthy Eating Index: the Children Study. Eur J Clin Nutr. 2009 Aug;63(8):964-9. Epub 2009 Feb 18. PMID:19223917.	Dependent variable is not BW or obesity
4	Ask AS, Hernes S, Aarek I, Johannessen G, Haugen M. Changes in dietary pattern in 15 year old adolescents following a 4 month dietary intervention with school breakfast--a pilot study. Nutr J. 2006 Dec 7;5:33. PMID:17150115.	Independent variable is school breakfast
5	Bolton-Smith C, Woodward M. Dietary composition and fat to sugar ratios in relation to obesity. Int J Obes Relat Metab Disord. 1994 Dec;18(12):820-8. PMID:7894521.	Independent variables are diet composition and fat/sugar
6	Cahill JM, Freeland-Graves JH, Shah BS, Lu H. Motivations to eat are related to diet quality and food intake in overweight and obese, low-income women in early postpartum. Appetite. 2010 Oct;55(2):263-70. Epub 2010 Jun 23. PMID:20600414.	Independent variable is diet quality, not pattern

7	Choi HJ, et al 2011 The influence of dietary patterns on the nutritional profile in a Korean child cohort study. Osong Public Health and Research Perspectives.	Diet pattern determined by factor/cluster analysis
8	Chrysohoou C et al. Mediterranean diet mediates the effect of diabetes mellitus on aortic distensibility in elderly individuals. IKARIA study. European Journal of Cardiovascular Prevention and Rehabilitation, 2011.	Dependent variable is not BW or obesity
9	Chrysohoou C et al. Long-term adherence to the mediterranean diet seems to confer to a lower risk of hyperuricaemia in elderly individuals. the ikaria study European Heart Journal 2011.	Dependent variable is not BW or obesity
10	De Marins, VMR, et al. Factors associated with overweight and central body fat in the city of Rio de Janeiro: Results of a two-stage random sampling survey Public Health 2011.	Independent variable is not dietary pattern
11	Dimitriadis K et al. Adherence to the mediterranean diet and albuminuria levels in adolescents: Emerging data from the lyceum leontio albuminuria (3L) study European Heart Journal 2011.	Dependent variable is not BW or obesity
12	Ford ES, Mokdad AH, Liu S. Healthy Eating Index and C-reactive protein concentration: findings from the National Health and Nutrition Examination Survey III, 1988-1994.Eur J Clin Nutr. 2005 Feb;59(2):278-83. PMID:15494735.	Dependent variable is C-reactive protein
13	Fung TT, Hu FB, Barbieri RL, Willett WC, Hankinson SE. Dietary patterns, the Alternate Healthy Eating Index and plasma sex hormone concentrations in postmeno- pausal women. Int J Cancer. 2007 Aug 15;121(4):803-9. PMID: 17455249.	Dependent variables are plasma sex hormones
14	Gaskins AJ, Rovner AJ, Mumford SL, Yeung E, Browne RW, Trevisan M, Perkins NJ, Wactawski-Wende J, Schisterman EF; BioCycle Study Group. Adherence to a Mediterranean diet and plasma concentrations of lipid peroxidation in premenopausal women.Am J Clin Nutr. 2010 Dec;92(6):1461-7. Epub 2010 Oct 13.PMID: 20943796.	Dependent variable is lipid peroxidation
15	Gregory CO, McCullough ML, Ramirez-Zea M, Stein AD. Diet scores and cardio-metabolic risk factors among Guatemalan young adults.Br J Nutr. 2009 Jun;101(12):1805-11. Epub 2008 Nov 24.PMID: 19025721.	Guatamala is not high HDI country
16	Harden CJ, Corfe BM, Richardson JC, Dettmar PW, Paxman JR. Body mass index and age affect Three-Factor Eating Questionnaire scores in male subjects. Nutr Res. 2009 Jun;29(6):379 82.PMID:19628103.	Dependent variable is behavioral
17	Hassan KM, et al. Obesity and health-related quality of life: A cross-sectional analysis of the US population International Journal of Obesity, 2003.	Dependent variable is behavioral
18	Héroux M, Janssen I, Lam M, Lee DC, Hebert JR, Sui X, Blair SN. Dietary patterns and the risk of **mortality**: impact of cardiorespiratory fitness.Int J Epidemiol. 2010 Feb;39(1):197-209. Epub 2009 Apr 20. PMID:19380370.	Independent variable is cardio-respiratory fitness
19	Hoebeeck LI, Rietzschel ER, Langlois M, De Buyzere M, De Bacquer D, De Backer G, Maes L, Gillebert T, Huybrechts I. The relationship between diet and subclinical atherosclerosis: results from the Asklepios Study. Eur J Clin Nutr. 2011 May;65(5): 606-13.Epub 2011 Jan 19.PMID:21245883.	Dependent variables BP, blood lipids, & inflammatory markers
20	Hu FB, van Dam RM, Liu S. Diet and risk of Type II diabetes: the role of types of fat and carbohydrate. Diabetologia. 2001 Jul;44(7):805-17. Review. PMID:11508264.	Narrative review
21	Huot I, Paradis G, Receveur O, Ledoux M; Quebec Heart Health Demonstration Project Research Group. Correlates of diet quality in the Quebec population. Public Health Nutr. 2004 Dec;7(8):1009-16. PMID:15548338.	Independent variable is high-fat diet
22	Jennings CS. Short communication: a system for remote monitoring of a hospital linear accelerator. Br J Radiol. 1996 May;69(821):469-71. PMID:8705186.	Short Commun

23	Knoops KT, Groot de LC, Fidanza F, Alberti-Fidanza A, Kromhout D, van Staveren WA. Comparison of three different dietary scores in relation to 10-year mortality in elderly European subjects: the HALE project. Eur J Clin Nutr. 2006 Jun;60(6):746-55. Epub 2006 Jan 18. PMID:16418742.	Dependent variable is mortality
24	Kosti RI, Panagiotakos DB, Mariolis A, Zampelas A, Athanasopoulos P, Tountas Y. The Diet-Lifestyle Index evaluating the quality of eating and lifestyle behaviours in relation to the prevalence of overweight/ obesity in adolescents. Int J Food Sci Nutr. 2009;60 Suppl 3:34-47. Epub 2009 May 25 PMID:19468950.	Independent variable is Diet-Lifestyle index
25	Larsen TM, Dalskov SM, van Baak M, Jebb SA, Papadaki A, Pfeiffer AF, Martinez JA, Handjieva-Darlenska T, Kunešová M, Pihlsgård M, Stender S, Holst C, Saris WH, Astrup A; Diet, Obesity, and Genes (Diogenes) Project. Diets with high or low protein content and glycemic index for weight-loss maintenance. N Engl J Med. 2010 Nov 25;363(22):2102-13. PMID:21105792.	Independent variable is not index or score
26	Lasheras C, Fernandez S, Patterson AM. Mediterranean diet and age with respect to overall survival in institutionalized, nonsmoking elderly people. Am J Clin Nutr. 2000 Apr;71(4):987 92. PMID:10731507.	Dependent variable is survival in an institution
27	Lazarou C, Panagiotakos DB, Matalas AL. Foods E-KINDEX: a dietary index associated with reduced blood pressure levels among young children: the CYKIDS study. J Am Diet Assoc. 2009 Jun;109(6):1070-5. PMID:19465190.	Dependent variable diet quality
28	Levitan EB, Wolk A, Mittleman MA. Consistency with the DASH diet and incidence of heart failure. Arch Intern Med. 2009 May 11;169(9):851-7. PMID:19433696.	Dependent variable is heart failure
29	Linardakis M et al. Metabolic syndrome in children and adolescents in Crete, Greece, and association with diet quality and physical fitness Journal of Public Health, 2008.	Cross-sectional study
30	Lyles TE 3rd, Desmond R, Faulk LE, Henson S, Hubbert K, Heimburger DC, Ard JD. Diet variety based on macronutrient intake and its relationship with body mass index. MedGenMed. 2006 Aug 16;8(3):39. PMID:17406172.	Cross-sectional study
31	Massari M, Freeman KM, Seccareccia F, Menotti A, Farchi G; Research Group of the RIFLE Project. An index to measure the association between dietary patterns and coronary heart disease risk factors: findings from two Italian studies. Prev Med. 2004 Oct;39(4):841-7. PMID: 15351554.	Independent variables are fatty and non-fatty foods
32	McCabe-Sellers BJ, Bowman S, Stuff JE, Champagne CM, Simpson PM, Bogle ML. Assessment of the diet quality of US adults in the Lower Mississippi Delta. Am J Clin Nutr. 2007 Sep;86(3):697-706. PMID:17823435.	Dependent variable is diet quality
33	McKeown, N. M. Carbohydrate Nutrition, Insulin Resistance, and the Prevalence of the Metabolic Syndrome in the Framingham Offspring Cohort Diabetes Care, 2004.	Independent variable is carbohydrate nutrition
34	O'Neil CE, Nicklas TA, Rampersaud GC, Fulgoni VL 3rd. One hundred percent orange juice consumption is associated with better diet quality, improved nutrient adequacy, and no increased risk for overweight/obesity in children. Nutr Res. 2011 Sep;31(9):673-82. PMID:22024491.	Independent variable is orange juice consumption
35	Osler M, Heitmann BL, Gerdes LU, Jørgensen LM, Schroll M. Dietary patterns and mortality in Danish men and women: a prospective observational study. Br J Nutr. 2001 Feb;85(2):219-25. PMID:11242490.	Dependent variable is mortality
36	Osler M, Heitmann BL, Høidrup S, Jørgensen LM, Schroll M. Food intake patterns, self rated health and mortality in Danish men and women. A prospective observational study.J Epidemiol Community Health. 2001 Jun;55(6):399-403. PMID:11350996.	Independent variable is self rated health

37	Osler M, Helms Andreasen A, Heitmann B, Høidrup S, Gerdes U, Mørch Jørgensen L, Schroll M. Food intake patterns and risk of coronary heart disease: a prospective cohort study examining the use of traditional scoring techniques.Eur J Clin Nutr. 2002 Jul;56(7):568-74. PMID:12080395.	Dependent variable was CHD
38	Otsuka R, Imai T, Kato Y, Ando F, Shimokata H. Relationship between number of metabolic syndrome components and dietary factors in middle-aged and elderly Japanese subjects. Hypertens Res. 2010 Jun;33(6):548-54. Epub 2010 Mar 12.PMID:20224573.	Independent variable is not index or score
39	Ozer e et al. Diet quality and obesity in Famagusta/North Cyprus Obesity Reviews	Cross-sectional study
40	Panagiotakos DB, Tzima N, Pitsavos C, Chrysohoou C, Zampelas A, Toussoulis D, Stefanadis C. The association between adherence to the Mediterranean diet and fasting indices of glucose homoeostasis: the ATTICA Study. J Am Coll Nutr. 2007 Feb;26(1):32-8.PMID:17353581.	Dependent variable is glucose homeostasis
41	Panagiotakos DB et alBackground dietary habits are strongly associated with the development of myocardial infarction at young ages: A case-control study e-SPEN, 2008.	Dependent variable is myocardial infarction
42	Provencher, V.; Drapeau, V.; Tremblay, A.; Després, J.P.; Lemieux, S. Eating behaviors and indexes of body composition in men and women from the Québec family study. Obesity research | 2003 v.11 no.6 pp.783-792.	Dependent variables are behavioral
43	Qi L, van Dam RM, Liu S, Franz M, Mantzoros C, Hu FB. Whole-grain, bran, and cereal fiber intakes and markers of systemic inflammation in diabetic women. Diabetes Care. 2006 Feb;29(2):207-11.PMID:16443861.	Independent variables are wholel grain, bran and fiber consumption
44	Rodríguez-Artalejo F, García EL, Gorgojo L, Garcés C, Royo MA, Martín Moreno JM, Benavente M, Macías A, De Oya M; Investigators of the Four Provinces Study. Consumption of bakery products, sweetened soft drinks and yogurt among children aged 6-7 years: association with **nutrient intake** and overall diet quality. Br J Nutr. 2003 Mar;89(3):419-29.PMID:12628036.	Does not answer the question: dependent variables are nutrient intake and diet quality
45	Ruidavets JB, Bongard V, Bataille V, Gourdy P, Ferrières J. Eating frequency and body fatness in middle-aged men. Int J Obes Relat Metab Disord. 2002 Nov;26(11):1476-83. PMID:12439650.	Independent variable is eating frequency
46	Ruidavets JB, Bongard V, Dallongeville J, Arveiler D, Ducimetière P, Perret B, Simon C, Amouyel P, Ferrières J. High consumptions of grain, fish, dairy products and combinations of these are associated with a low prevalence of metabolic syndrome. J Epidemiol Community Health. 2007 Sep;61(9):810-7. PMID:17699537.	Independent variables are food groups; dependent variable is insulin resistance syndrome
47	Rutherford JN, McDade TW, Feranil AB, Adair LS, Kuzawa CW. High prevalence of low HDL-c in the Philippines compared to the US: population differences in associations with diet and BMI.Asia Pac J Clin Nutr. 2010;19(1):57-67. PMID:20199988.	Independent variable is not index or score
48	Sahota P, Rudolf MC, Dixey R, Hill AJ, Barth JH, Cade J. Randomised controlled trial of primary school based intervention to reduce risk factors for obesity. BMJ. 2001 Nov 3;323(7320):1029-32.PMID:11691759.	independent variable is school meals
49	Satalic Z, Baric IC, Keser I. Diet quality in Croatian university students: energy, macronutrient and micronutrient intakes according to gender. Int J Food Sci Nutr. 2007 Aug;58(5):398-410 PMID:17558731.	Dependent variable is diet quality according to gender
50	Savy M, Martin-Prével Y, Sawadogo P, Kameli Y, Delpeuch F. Use of variety/diversity scores for diet quality measurement: relation with nutritional status of women in a rural area in Burkina Faso. Eur J Clin Nutr. 2005 May;59(5):703-16. PMID:15867942.	Dependent variable is nutritional status

51	Schulze MB, Hoffmann K, Manson JE, Willett WC, Meigs JB, Weikert C, Heidemann C, Colditz GA, Hu FB. Dietary pattern, inflammation, and incidence of type 2 diabetes in women.Am J Clin Nutr. 2005 Sep;82(3):675-84; quiz 714-5. PMID:16155283.	Independent variable is not index or score
52	Shah T, Jonnalagadda SS, Kicklighter JR, Diwan S, Hopkins BL. Prevalence of metabolic syndrome risk factors among young adult Asian Indians. J Immigr Health. 2005 Apr;7(2):117-26. PMID:15789164.	Independent variable is not index or score
53	Singh RB, et al. Coronary artery disease and coronary risk factors: The South Asian paradox Journal of Nutritional and Environmental Medicine 2001.	Narrative review
54	Spencer EA, Appleby PN, Davey GK, Key TJ. Diet and body mass index in 38000 EPIC-Oxford meat-eaters, fish-eaters, vegetarians and vegans. Int J Obes Relat Metab Disord. 2003 Jun;27(6):728-34. PMID:12833118.	Independent variable is not index or score
55	Tarabusi, V Quality of diet, screened by the Mediterranean diet quality index and the evaluation of the content of advanced glycation endproducts, in a population of high school students from Emilia Romagna Mediterranean Journal of Nutrition and Metabolism 2010.	Dependent variable is diet quality
56	Taveras EM, Berkey CS, Rifas-Shiman SL, Ludwig DS, Rockett HR, Field AE, Colditz GA, Gillman MW. Association of consumption of fried food away from home with body mass index and diet quality in older children and adolescents. Pediatrics. 2005 Oct;116(4):e518-24.PMID:16199680.	Independent variable is consumption of fried foods
57	Tsigga, M. et al. Associations between diet quality, health status and diabetic complications in patients with type 2 diabetes and diabesity Obesity Reviews, 2011.	Dependent variable is T2D
58	Tzima N, Pitsavos C, Panagiotakos DB, Chrysohoou C, Polychronopoulos E, Skoumas J, Stefanadis C. Adherence to the Mediterranean diet moderates the association of aminotransferases with the prevalence of the metabolic syndrome; the ATTICA study. Nutr Metab (Lond). 2009 Jul 30;6:30. PMID:19642977.	Dependent variable is amino-transferases and met syndrome
59	von Ruesten A, Illner AK, Buijsse B, Heidemann C, Boeing H. Adherence to recommendations of the German food pyramid and risk of chronic diseases: results from the EPIC-Potsdam study. Eur J Clin Nutr. 2010 Nov;64(11):1251-9. Epub 2010 Aug 18. PMID:20717136.	Dependent variables are CVD, T2D, cancer
70	Zhang X, Yao S, Sun G, Yu S, Sun Z, Zheng L, Xu C, Li J, Sun Y. Total and abdominal obesity among rural Chinese women and the association with hypertension. Nutrition. 2012 Jan;28(1):46-52. Epub 2011 May 31. PMID:21621392.	Cross-sectional study

Excluded Articles:
Vegetarian/Vegan Diet Pattern: Secondary Search on 1/25/2012

#	Citation	Rationale for Exclusion
1	Appleby PN, Davey GK, Key TJ. Hypertension and blood pressure among meat eaters, fish eaters, vegetarians and vegans in EPIC-Oxford. Public Health Nutr. 2002 Oct;5(5):645-54.PMID:12372158.	Independent variables do not include index or score
2	Appleby PN, Thorogood M, Mann JI, Key TJ. Low body mass index in non-meat eaters: the possible roles of animal fat, dietary fibre and alcohol. Int J Obes Relat Metab Disord. 1998 May;22(5):454-60.PMID:9622343.	Independent variables do not include index or score
3	Baines S, Powers J, Brown WJ. How does the health and well-being of young Australian vegetarian and semi-vegetarian women compare with non-vegetarians? Public Health Nutr. 2007 May;10(5):436-42. PMID:17411462.	Independent variables do not include index or score

4	Barnard ND, Scialli AR, Turner-McGrievy G, Lanou AJ, Glass J. The effects of a low-fat, plant-based dietary intervention on body weight, metabolism, and insulin sensitivity. Am J Med. 2005 Sep;118(9):991-7. PMID:16164885.	Independent variables do not include index or score
5	Barr SI, Broughton TM. Relative weight, weight loss efforts and nutrient intakes among health-conscious vegetarian, past vegetarian and nonvegetarian women ages 18 to 50. J Am Coll Nutr. 2000 Nov-Dec;19(6):781-8. PMID: 11194532.	Independent variables do not include index or score
6	Burke LE, Warziski M, Styn MA, Music E, Hudson AG, Sereika SM. A randomized clinical trial of a standard versus vegetarian diet for weight loss: the impact of treatment preference. Int J Obes (Lond). 2008 Jan;32(1):166-76. PMID:17700579.	Independent variables do not include index or score
7	Cade JE, Burley VJ, Greenwood DC; UK Women's Cohort Study Steering Group. The UK Women's Cohort Study: comparison of vegetarians, fish-eaters and meat-eaters. Public Health Nutr. 2004 Oct;7(7):871-8.PMID:15482612.	Independent variables do not include index or score
8	Chen CW, Lin YL, Lin TK, Lin CT, Chen BC, Lin CL. Total cardiovascular risk profile of Taiwanese vegetarians. Eur J Clin Nutr. 2008 Jan;62(1):138-44. Epub 2007 Mar 14. PMID:17356561.	Independent variables do not include index or score
9	Goff LM, Bell JD, So PW, Dornhorst A, Frost GS. Veganism and its relationship with insulin resistance and intramyocellular lipid. Eur J Clin Nutr. 2005 Feb;59(2):291-8.PMID:15523486.	Independent variables do not include index or score
10	Grant R, Bilgin A, Zeuschner C, Guy T, Pearce R, Hokin B, Ashton J. The relative impact of a vegetable-rich diet on key markers of health in a cohort of Australian adolescents. Asia Pac J Clin Nutr. 2008;17(1):107-15. PMID:18364335.	Independent variables do not include index or score
11	Harman SK, Parnell WR. The nutritional health of New Zealand vegetarian and non-vegetarian Seventh-day Adventists: selected vitamin, mineral and lipid levels. N Z Med J. 1998 Mar 27;111(1062):91-4.PMID:9577459.	Independent variables do not include index or score
12	Hoffmann I, Groeneveld MJ, Boeing H, Koebnick C, Golf S, Katz N, Leitzmann C. Giessen Wholesome Nutrition Study: relation between a health-conscious diet and blood lipids. Eur J Clin Nutr. 2001 Oct;55(10):887-95.PMID:11593351.	Independent variables do not include index or score
13	Høstmark AT, Lystad E, Vellar OD, Hovi K, Berg JE. Reduced plasma fibrinogen, serum peroxides, lipids, and apolipoproteins after a 3-week vegetarian diet. Plant Foods Hum Nutr. 1993 Jan;43(1):55-61. PMID: 8464845.	Independent variables do not include index or score
14	Janelle KC, Barr SI. Nutrient intakes and eating behavior scores of vegetarian and nonvegetarian women. J Am Diet Assoc. 1995 Feb;95(2):180-6, 189, quiz 187-8. PMID:7852684.	Independent variables do not include index or score
15	Krajcovicová-Kudlácková M, Simoncic R, Béderová A, Ondreicka R, Klvanová J. Selected parameters of lipid metabolism in young vegetarians. Ann Nutr Metab. 1994;38(6):331-5. PMID:7702361.	Independent variables do not include index or score
16	Kuo CS, Lai NS, Ho LT, Lin CL. Insulin sensitivity in Chinese ovo-lactovegetarians compared with omnivores. Eur J Clin Nutr. 2004 Feb;58(2):312-6.PMID:14749752.	Independent variables do not include index or score
17	Lee Y, Krawinkel M. Body composition and nutrient intake of Buddhist vegetarians. Asia Pac J Clin Nutr. 2009;18(2):265-71.PMID:19713187.	Independent variables do not include index or score
18	Lindsted K, Tonstad S, Kuzma JW. Body mass index and patterns of mortality among Seventh-day Adventist men. Int J Obes. 1991 Jun;15(6):397-406. PMID:1885263.	Independent variables do not include index or score
19	Nakamoto K, Watanabe S, Kudo H, Tanaka A. Nutritional characteristics of middle-aged Japanese vegetarians. J Atheroscler Thromb. 2008 Jun;15(3):122-9 PMID:18603818.	Independent variables do not include index or score
20	Newby PK, Tucker KL, Wolk A. Risk of overweight and obesity among semivegetarian, lactovegetarian, and vegan women. Am J Clin Nutr. 2005 Jun;81(6):1267-74. PMID:15941875.	Independent variables do not include index or score

21	Nieman DC, Underwood BC, Sherman KM, Arabatzis K, Barbosa JC, Johnson M, Shultz TD. Dietary status of Seventh-Day Adventist vegetarian and non-vegetarian elderly women. J Am Diet Assoc. 1989 Dec;89(12):1763-9. PMID:2592707.	Independent variables do not include index or score
22	Rosell M, Appleby P, Spencer E, Key T. Weight gain over 5 years in 21,966 meat-eating, fish-eating, vegetarian, and vegan men and women in EPIC-Oxford. Int J Obes (Lond). 2006 Sep;30(9):1389-96. PMID:16534521.	Independent variables do not include index or score
23	Rosell M, Appleby P, Key T. Height, age at menarche, body weight and body mass index in life-long vegetarians. Public Health Nutr. 2005 Oct;8(7):870-5. PMID:16277803.	Independent variables do not include index or score
24	Rouse IL, Armstrong BK, Beilin LJ. Vegetarian diet, lifestyle and blood pressure in two religious populations. Clin Exp Pharmacol Physiol. 1982 May-Jun;9(3):327-30. PMID:7140012.	Independent variables do not include index or score
25	Spencer EA, Appleby PN, Davey GK, Key TJ. Diet and body mass index in 38000 EPIC-Oxford meat-eaters, fish-eaters, vegetarians and vegans. Int J Obes Relat Metab Disord. 2003 Jun;27(6):728-34. PMID:12833118.	Independent variables do not include index or score
26	Thorogood M, McPherson K, Mann J. Relationship of body mass index, weight and height to plasma lipid levels in people with different diets in Britain. Community Med. 1989 Aug;11(3):230-3. PMID:2605890.	Independent variables do not include index or score
27	Toohey ML, Harris MA, DeWitt W, Foster G, Schmidt WD, Melby CL. Cardiovascular disease risk factors are lower in African-American vegans compared to lacto-ovo-vegetarians. J Am Coll Nutr. 1998 Oct;17(5):425-34. PMID:9791838.	Independent variables do not include index or score
28	Yen CE, Yen CH, Huang MC, Cheng CH, Huang YC. Dietary intake and nutritional status of vegetarian and omnivorous preschool children and their parents in Taiwan. Nutr Res. 2008 Jul;28(7):430-6. PMID:19083442.	Independent variables do not include index or score

Cross-sectional Studies: (Decision to exclude cross-sectional studies: 2/22/2012)
Mediterranean Diet Pattern

#	Citation	Rationale for Exclusion
1	Buckland G, González CA, Agudo A, Vilardell M, Berenguer A, Amiano P, ArdanazE, Arriola L, Barricarte A, Basterretxea M, Chirlaque MD, Cirera L, Dorronsoro M,Egües N, Huerta JM, Larrañaga N, Marin P, Martínez C, Molina E, Navarro C, Quirós R, Rodriguez L, Sanchez MJ, Tormo MJ, Moreno-Iribas C. Adherence to the Mediterranean diet and risk of coronary heart disease in the Spanish EPIC Cohort Study. Am J Epidemiol. 2009 Dec 15;170(12):1518-29. Epub 2009 Nov 10. PubMed PMID: 19903723.	Cross-sectional rMDS
2	de Koning L, Chiuve SE, Fung TT, Willett WC, Rimm EB, Hu FB. Diet-quality scores and the risk of type 2 diabetes in men. Diabetes Care. 2011May;34(5):1150-6. Epub 2011 Apr 4. PubMed PMID: 21464460; PubMed Central PMCID: PMC3114491.	Cross-sectional HEI-05, aHEI, RFS, aMDS, DASH score
3	Mantzoros CS, Williams CJ, Manson JE, Meigs JB, Hu FB. Adherence to the Mediterranean dietary pattern is positively associated with plasma adiponectin concentrations in diabetic women. Am J Clin Nutr. 2006 Aug;84(2):328-35. PubMed PMID: 16895879.	Cross-sectional MDS
4	Martínez-González MA, García-López M, Bes-Rastrollo M, Toledo E, Martínez-Lapiscina EH, Delgado-Rodriguez M, Vazquez Z, Benito S, Beunza JJ. Mediterranean diet and the incidence of cardiovascular disease: a Spanish cohort.Nutr Metab Cardiovasc Dis. 2011 Apr;21(4):237-44. Epub 2010 Jan 21. PubMed PMID: 20096543.	Cross-sectional MDS

5	Trichopoulou A, Naska A, Orfanos P, Trichopoulos D. Mediterranean diet in relation to body mass index and waist-to-hip ratio: the Greek European Prospective Investigation into Cancer and Nutrition Study. Am J Clin Nutr. 2005 Nov;82(5):935-40. PubMed PMID: 16280422.	Cross-sectional MDS
6	Tzima N, Pitsavos C, Panagiotakos DB, Skoumas J, Zampelas A, Chrysohoou C, Stefanadis C. Mediterranean diet and insulin sensitivity, lipid profile and blood pressure levels, in overweight and obese people; the Attica study. Lipids Health Dis. 2007 Sep 19;6:22. PubMed PMID: 17880675; PubMed Central PMCID: PMC2045655.	Cross-sectional MedDietScore
7	van den Brandt PA. The impact of a Mediterranean diet and healthy lifestyle on premature mortality in men and women. Am J Clin Nutr. 2011 Sep;94(3): 913-20.PubMed PMID: 21795445.	Cross-sectional Adherence to Med Diet
8	Baldini M, Pasqui F, Bordoni A, Maranesi M. Is the Mediterranean lifestyle still a reality? Evaluation of food consumption and energy expenditure in Italian and Spanish university students. Public Health Nutr. 2009 Feb;12(2):148-55. PubMed PMID: 18503726.	Cross-sectional Med DQI
9	Bulló M, Garcia-Aloy M, Martínez-González MA, Corella D, Fernández-Ballart JD, Fiol M, Gómez-Gracia E, Estruch R, Ortega-Calvo M, Francisco S, Flores-Mateo G, Serra-Majem L, Pintó X, Covas MI, Ros E, Lamuela-Raventós R, Salas-Salvadó J. Association between a healthy lifestyle and general obesity and abdominal obesity in an elderly population at high cardiovascular risk. Prev Med. 2011 Sep1;53(3):155-61.PubMed PMID:21708186.	Cross-sectional Adherence to Med Diet
10	Dedoussis GV, Kanoni S, Mariani E, Cattini L, Herbein G, Fulop T, Varin A, Rink L, Jajte J, Monti D, Marcellini F, Malavolta M, Mocchegiani E. Mediterranean diet and plasma concentration of inflammatory markers in old and very old subjects in the ZINCAGE population study. Clin Chem Lab Med. 2008;46(7):990-6. PubMed PMID: 18605965.	Cross-sectional MDS
11	Delisle HF, Vioque J, Gil A. Dietary patterns and quality in West-African immigrants in Madrid. Nutr J. 2009 Jan 23;8:3. PubMed PMID: 19166606.	Cross-sectional aMDS & aHEI
12	Farajian P, Risvas G, Karasouli K, Pounis GD, Kastorini CM, Panagiotakos DB, Zampelas A. Very high childhood obesity prevalence and low adherence rates to the Mediterranean diet in Greek children: the GRECO study. Atherosclerosis. 2011Aug;217(2):525-30. Epub 2011 Apr 13. PubMed PMID: 21561621.	Cross-sectional KIDMED score
13	Fung TT, McCullough ML, Newby PK, Manson JE, Meigs JB, Rifai N, Willett WC, Hu FB. Diet-quality scores and plasma concentrations of markers of inflammation and endothelial dysfunction. Am J Clin Nutr. 2005 Jul;82(1):163-73.PMID: 16002815.	Cross-sectional HEI, aHEI, DQI-R,RFS, aMED
14	Jennings A, Welch A, van Sluijs EM, Griffin SJ, Cassidy A. Diet quality is independently associated with weight status in children aged 9-10 years. J Nutr. 2011 Mar;141(3):453-9. Epub 2011 Jan 26. PubMed PMID: 21270356.	Cross-sectional DQI, HEI, and MDS
15	Kontogianni MD, Farmaki AE, Vidra N, Sofrona S, Magkanari F, Yannakoulia M. Associations between lifestyle patterns and body mass index in a sample of Greek children and adolescents. J Am Diet Assoc. 2010 Feb;110(2):215-21. PubMed PMID:20102848.	Cross-sectional KIDMED score
16	Kontogianni MD, Vidra N, Farmaki AE, Koinaki S, Belogianni K, Sofrona S,Magkanari F, Yannakoulia M. 147.Adherence rates to the Mediterranean diet are low in a representative sample of Greek children and adolescents. J Nutr. 2008 Oct;138(10):1951-6. PubMed PMID: 18806106.	Cross-sectional KIDMED score
17	Lazarou C, Panagiotakos DB, Matalas AL. 163.Physical activity mediates the protective effect of the Mediterranean diet on children's obesity status: The CYKIDS study. Nutrition. 2010 Jan;26(1):61-7. PubMed PMID: 19632093.	Cross-sectional KIDMED score

18	Mazaraki A, Tsioufis C, Dimitriadis K, Tsiachris D, Stefanadi E, Zampelas A,Richter D, Mariolis A, Panagiotakos D, Tousoulis D, Stefanadis C. Adherence to the Mediterranean diet and albuminuria levels in Greek adolescents: data from the Leontio Lyceum ALbuminuria (3L study).. Eur J Clin Nutr. 2011 Feb;65(2):219-25.PubMed PMID: 21063428.	Cross-sectional KIDMED score
19	Muñoz MA, Fíto M, Marrugat J, Covas MI, Schröder H; REGICOR and HERMES investigators. Adherence to the Mediterranean diet is associated with better mental and physical health. Br J Nutr. 2009 Jun;101(12):1821-7. Epub 2008 Dec 15.PubMed PMID: 19079848.	Cross-sectional MDS
20	Paletas K, Athanasiadou E, Sarigianni M, Paschos P, Kalogirou A, Hassapidou M, Tsapas A. The protective role of the Mediterranean diet on the prevalence of metabolic syndrome in a population of Greek obese subjects. J Am Coll Nutr. 2010 Feb;29(1):41-5. PubMed PMID: 20595644.	Cross-sectional MDS
21	Panagiotakos DB, Pitsavos C, Arvaniti F, Stefanadis C. Adherence to the Mediterranean food pattern predicts the prevalence of hypertension, hypercholesterolemia, diabetes and obesity, among healthy adults; the accuracy of the MedDietScore. Prev Med. 2007 Apr;44(4):335-40. Epub 2006 Dec 30. PubMed PMID: 17350085.	Cross-sectional study MedDietScore
22	Panagiotakos DB, Polystipioti A, Papairakleous N, Polychronopoulos E.Long-term adoption of a Mediterranean diet is associated with a better health status in elderly people; a cross-sectional survey in Cyprus. Asia Pac J Clin Nutr. 2007;16(2):331-7. PubMed PMID: 17468091.	Cross-sectional study MedDietScore
23	Panagiotakos DB, Chrysohoou C, Pitsavos C, Stefanadis C. Association between the prevalence of obesity and adherence to the Mediterranean diet: the ATTICA study.Nutrition. 2006 May;22(5):449-56. PubMed PMID: 16457990.	Cross-sectional study MedDietScore
24	Romaguera D, Norat T, Mouw T, May AM, Bamia C, et al.Adherence to the Mediterranean diated with lower abdominal adiposity in European men and women.J Nutr. 2009 Sep;139(9):1728-37. Epub 2009 Jul 1. PubMed PMID: 19571036.	Cross-sectional study Modified MDS (mMDS)
25	Rossi M, Negri E, Bosetti C, Dal Maso L, Talamini R, Giacosa A, Montella M, Franceschi S, La Vecchia C. Mediterranean diet in relation to body mass index and waist-to-hip ratio. Public Health Nutr. 2008 Feb;11(2):214-7. Epub 2007 Aug 9. PubMed PMID: 17686205.	Cross-sectional MDS
26	Satalić Z, Barić IC, Keser I, Marić B. Evaluation of diet quality with the mediterranean dietary quality index in university students. Int J Food Sci Nutr. 2004 Dec;55(8):589-97. PubMed PMID: 16019303.	Cross-sectional study Med DQI
27	Schröder H, Mendez MA, Ribas-Barba L, Covas MI, Serra-Majem L. Mediterranean diet and waist circumference in a representative national sample of young Spaniards. Int J Pediatr Obes. 2010 Dec;5(6):516-9. PubMedPMID: 20863166.	Cross-sectional HEI and MDS
28	Schröder H, Marrugat J, Vila J, Covas MI, Elosua R. Adherence to the traditional mediterranean diet is inversely associated with body mass index and obesity in a spanish population. J Nutr. 2004 Dec;134(12):3355-61.PMID:15570037	Cross-sectional MDS
29	Shubair MM, McColl RS, Hanning RM. Mediterranean dietary components and body mass index in adults: the peel nutrition and heart health survey. Chronic DisCan. 2005 Spring-Summer;26(2-3):43-51. PubMed PMID: 16251009.	Cross-sectional PCA M-score
30	Sánchez-Benito JL, Sánchez-Soriano E, Ginart Suárez J. Assessment of the Mediterranean Diet Adequacy Index of a collective of young cyclists. Nutr Hosp. 2009 Jan-Feb;24(1):77-86. PubMed PMID: 19266118.	Cross-sectional Mediterranean Adequacy Index (MAI)
31	Sánchez-Taínta A, Estruch R, Bulló M, Corella D, Gómez-Gracia E, Fiol M,Algorta J, Covas MI, Lapetra J, Zazpe I, Ruiz-Gutiérrez V, Ros E,Martínez-González MA; PREDIMED group. Adherence to a Mediterranean-type diet and reduced prevalence of clustered cardiovascular risk factors in a cohort of 3,204 high-risk patients. Eur J Cardiovasc Prev Rehabil. 2008 Oct;15(5):589-93. PubMed PMID: 18830087.	Cross-sectional MeDiet score

32	Tucak-Zorić S, Curcić IB, Mihalj H, Dumancić I, Zelić Z, Cetina NM, SmolićR, Volarević M, Missoni S, Tomljenović A, Szirovicza L, Duraković Z, Xi H, Chakraborty R, Deka R, Tucak A, Rudan P. Prevalence of metabolic syndrome in the interior of Croatia: the Baranja region.Coll Antropol. 2008 Sep;32(3):659-65.PubMed PMID: 18982734.	Cross-sectional Adherence to Med Diet
33	Tyrovolas S, Psaltopoulou T, Pounis G, Papairakleous N, Bountziouka V,Zeimbekis A, Gotsis E, Antonopoulou M, Metallinos G, Polychronopoulos E, Lionis C, Panagiotakos DB. Nutrient intake in relation to central and overall obesity status among elderly people living in the Mediterranean islands: the MEDIS study. Nutr Metab Cardiovasc Dis. 2011 Jun;21(6):438-45. Epub 2010 Feb 13. PubMed PMID: 20153615.	Cross-sectional MedDietScore
34	Tyrovolas S, Bountziouka V, Papairakleous N, Zeimbekis A, Anastassiou F, Gotsis E, Metallinos G, Polychronopoulos E, Lionis C, Panagiotakos D. Adherence to the Mediterranean diet is associated with lower prevalence of obesity among elderly people living in Mediterranean islands: the MEDIS study. Int J Food Sci Nutr. 2009 Aug 11:1-14. PubMed PMID: 19672745.	Cross-sectional MedDietScore

DASH Diet Pattern:

#	Citation	Rationale for Exclusion
1	Fung TT, Chiuve SE, McCullough ML, Rexrode KM, Logroscino G, Hu FB. Adherence to a DASH-style diet and risk of coronary heart disease and stroke in women. Arch Intern Med. 2008 Apr 14;168(7):713-20. PMID:18413553	Cross-sectional DASH score
2	Karanja NM, McCullough ML, Kumanyika SK, Pedula KL, Windhauser MM, Obarzanek E, Lin PH, Champagne CM, Swain JF. Pre-enrollment diets of Dietary Approaches to Stop Hypertension trial participants. DASH Collaborative Research Group. J AmDiet Assoc. 1999 Aug;99(8 Suppl):S28-34. PubMed PMID: 10450291.	Cross-sectional Diet Quality Index (DQI)

Other Dietary Patterns:

#	Citation	Rationale for Exclusion
1	Lyles TE 3rd, Desmond R, Faulk LE, Henson S, Hubbert K, Heimburger DC, Ard JD. Diet variety based on macronutrient intake and its relationship with body mass index. MedGenMed. 2006 Aug 16;8(3):39. PubMed PMID: 17406172; PubMed Central PMCID: PMC1781268.	Cross-sectional Dietary Variety Score
2	Manios Y, Kourlaba G, Grammatikaki E, Androutsos O, Moschonis G, Roma-Giannikou E. Development of a diet-lifestyle quality index for young children and its relation to obesity: the Preschoolers Diet-Lifestyle Index. Public Health Nutr. 2010 Dec;13(12):2000-9. PubMed PMID: 20409357.	Cross-sectional Diet-Lifestyle Index

Healthy Eating Index:

#	Citation	Rationale for Exclusion
1	Beydoun MA, Boueiz A, Shroff MR, Beydoun HA, Wang Y, Zonderman AB. Associations among 25-hydroxyvitamin D, diet quality, and metabolic disturbance differ by adiposity in adults in the United States. J Clin Endocrinol Metab. 2010 Aug;95(8):3814-27. PMID:20463091.	Cross-sectional HEI-2005 HEI-dairy
2	Boynton A, Neuhouser ML, Sorensen B,McTiernan A, Ulrich CM. Predictors of diet quality among overweight and obese postmenopausal women. J Am Diet Assoc.2008 Jan;108(1):125-30. PubMed PMID: 18155998.	Cross-sectional HEI DQI
3	Drewnowski A, Fiddler EC, Dauchet L, Galan P, Hercberg S. Diet quality measures and cardiovascular risk factors in France: applying the Healthy Eating Index to the SU.VI.MAX study.J Am Coll Nutr. 2009 Feb;28(1):22-9. PMID:19571156.	Cross-sectional HEI

4	Duffy P, Zizza C, Jacoby J, Tayie FA. Diet quality is low among female food pantry clients in Eastern Alabama. J Nutr Educ Behav. 2009 Nov-Dec;41(6):414-9. PubMed PMID: 19879497.	Cross-sectional HEI-2005
5	Farmer B, Larson BT, Fulgoni VL 3rd, Rainville AJ, Liepa GU. A vegetarian dietary pattern as a nutrient-dense approach to weight management: an analysis of the national health and nutrition examination survey 1999-2004. J Am Diet Assoc. 2011 Jun;111(6):819-27. PubMed PMID:21616194.	Cross-sectional HEI-2005 Vegetarian
6	Fisberg RM, Morimoto JM, Slater B, Barros MB, Carandina L, Goldbaum M, deOliveira Latorre Mdo R, César CL. Dietary quality and associated factors among adults living in the state of São Paulo, Brazil. J Am Diet Assoc. 2006 Dec;106(12):2067-72. PubMed PMID:17126640.	Cross-sectional HEI
7	Ford ES, Mokdad AH, Liu S. Healthy Eating Index and **C-reactive** protein concentration: findings from the National Health and Nutrition Examination Survey III, 1988-1994.Eur J Clin Nutr. 2005 Feb;59(2):278-83. PMID:15494735	Cross-sectional HEI
8	Guo X, Warden BA, Paeratakul S, Bray GA. Healthy Eating Index and obesity. Eur J Clin Nutr. 2004 Dec;58(12):1580-6.PMID: 15162130.	Cross-sectional HEI-1995
9	Huffman FG, Zarini GG, McNamara E, Nagarajan A. The Healthy Eating Index and the Alternate Healthy Eating Index as predictors of 10-year CHD risk in Cuban Americans with and without type 2 diabetes. Public Health Nutr.2011Nov;14(11):2006-14 PubMed PMID: 21729463.	Cross-sectional HEI & aHEI
10	Hurley KM, Oberlander SE, Merry BC, Wrobleski MM, Klassen AC, Black MM. The healthy eating index and youth healthy eating index are unique, nonredundant measures of diet quality among low-income, African American adolescents.J Nutr. 2009 Feb;139(2):359-64. PMID:19074210.	Cross-sectional Youth HEI (YHEI)
11	Jennings A, Welch A, van Sluijs EM, Griffin SJ, Cassidy A. Diet quality is independently associated with weight status in children aged 9-10 years. J Nutr. 2011 Mar;141(3):453-9. Epub 2011 Jan 26. PubMed PMID: 21270356.	Cross-sectional Diet Quality Index (DQI), HEI, and MDS
12	Jovanović GK, Zezelj SP, Malatestinić D, Sutić IM, Stefanac VN, Dorcić F. Diet quality of middle age and older women from Primorsko-Goranska County evaluated by healthy eating index and association with body mass index. Coll Antropol. 2010 Apr;34 Suppl 2:155-60. PubMed PMID: 21302715.	Cross-sectional HEI
13	Kant AK, Graubard BI. 131.A comparison of three dietary pattern indexes for predicting biomarkers of diet and disease. J Am Coll Nutr. 2005 Aug;24(4):294-303. PubMed PMID: 16093407.	Cross-sectional HEI, RFS and Dietary Div Score
14	Keast DR, O'Neil CE, Jones JM. 135.Dried fruit consumption is associated with improved diet quality and reduced obesity in US adults: National Health and Nutrition Examination Survey, 1999-2004. Nutr Res. 2011 Jun;31(6):460-7. PubMedPMID: 21745628.	Cross-sectional HEI 2005
15	Khalil CB, Johnson-Down L, Egeland GM. 138. Emerging obesity and dietary habits among James Bay Cree youth. Public Health Nutr. 2010 Nov;13(11):1829-37. PubMed PMID: 20392310.	Cross-sectional HEI
16	Ledikwe JH, Smiciklas-Wright H, Mitchell DC, Miller CK, Jensen GL. Dietary patterns of rural older adults are associated with weight and nutritional status.J Am Geriatr Soc. 2004 Apr;52(4):589-95. PubMed PMID: 15066076.	Cross-sectional HEI
17	Previdelli AN, Lipi M, Castro MA, Marchioni DM. Dietary quality and associated factors among factory workers in the metropolitan region of São Paulo, Brazil. J Am Diet Assoc. 2010 May;110(5):786-90. PubMed PMID: 20430142.	Cross-sectional study “Modified Healthy Eating Index”
18	Schröder H, Mendez MA, Ribas-Barba L, Covas MI, Serra-Majem L. Mediterranean diet and waist circumference in a representative national sample of young Spaniards. Int J Pediatr Obes. 2010 Dec;5(6):516-9. Epub 2010 Sep 23. PubMed PMID: 20863166.	Cross-sectional HEI & MDS
19	Silva KF, Prata A, Cunha DF. Frequency of metabolic syndrome and the food intake patterns in adults living in a rural area of Brazil. Rev Soc Bras Med Trop. 2011 Jul-Aug;44(4):425-9. PMID:21860887.	Cross-sectional HEI

20	Tande DL, Magel R, Strand BN. Healthy Eating Index and abdominal obesity. Public Health Nutr. 2010 Feb;13(2):208-14. Epub 2009 Aug 4. PubMed PMID: 19650960.	Cross-sectional HEI
21	Tardivo AP, Nahas-Neto J, Nahas EA, Maesta N, Rodrigues MA, Orsatti FL. Associations between healthy eating patterns and indicators of metabolic risk in postmenopausal women. Nutr J. 2010 Dec 8;9:64. PubMed PMID: 21143838; PubMedCentral PMCID: PMC3004808.	Cross-sectional HEI
22	Thacker, R et al. Healthy eating index and anthropometric, inflammatory, and lipid markers of cardiovascular risk in u.s. adolescents: Insights NHANES III Congenital Heart Disease 2011.	Cross-sectional HEI
23	Thomson JL, Tussing-Humphreys LM, Onufrak SJ, Zoellner JM, Connell CL, Bogle ML, Yadrick K. A simulation study of the potential effects of healthy food and beverage substitutions on diet quality and total energy intake in Lower Mississippi Delta adults. J Nutr. 2011 Dec;141(12): 2191-7. Epub 2011 Oct 26. PubMed PMID: 22031664.	Cross-sectional HEI-2005
24	Thomson JL, Tussing-Humphreys LM, Onufrak SJ, Connell CL, Zoellner JM, Bogle ML, Yadrick K. Simulated reductions in consumption of sugar-sweetened beverages improves diet quality in Lower Mississippi Delta adults. Food Nutr Res. 2011;55. PubMed PMID: 22022303; PubMed Central PMCID: PMC3198507.	Cross-sectional HEI-2005
25	Wang Y, Jahns L, Tussing-Humphreys L, Xie B, Rockett H, Liang H, Johnson L. Dietary intake patterns of low-income urban african-american adolescents. J Am Diet Assoc. 2010 Sep;110(9):1340-5. PubMed PMID: 20800126; PubMed Central PMCID: PMC2929676.	Cross-sectional HEI
26	Woodruff SJ, Hanning RM, McGoldrick K, Brown KS. Healthy eating index-C is positively associated with family dinner frequency among students in grades 6-8 from Southern Ontario, Canada. Eur J Clin Nutr. 2010 May;64(5):454-60. Epub 2010 Mar 3. PubMed PMID: 20197788.	Cross-sectional HEI-C (Canada)
27	Woodruff SJ, Hanning RM. Associations between diet quality and physical activity measures among a southern Ontario regional sample of grade 6 students. Appl Physiol Nutr Metab. 2010 Dec;35(6):826-33. PubMed PMID: 21164554.	Cross-sectional HEI-C (Canada)
28	Woodruff SJ, Hanning RM, Lambraki I, Storey KE, McCargar L. Healthy Eating Index-C is compromised among adolescents with body weight concerns, weight loss dieting, and meal skipping. Body Image. 2008 Dec;5(4):404-8.	Cross-sectional HEI-C (Canada)

Diet Quality Index:

#	Citation	Rationale for Exclusion
1	Aounallah-Skhiri H, Traissac P, El Ati J, Eymard-Duvernay S, Landais E, Achour N, Delpeuch F, Ben Romdhane H, Maire B. Nutrition transition among adolescents of a south-Mediterranean country: dietary patterns, association with socio-economic factors, overweight and blood pressure. A cross-sectional study in Tunisia. Nutr J. 2011 Apr 24;10:38. PubMed PMID: 21513570; PubMed Central PMCID: PMC3098773.	Cross-sectional DQI-International
2	Azadbakht L, Mirmiran P, Esmaillzadeh A, Azizi F. Dietary diversity score and cardiovascular risk factors in Tehranian adults. Public Health Nutr. 2006 Sep;9(6):728-36. PubMed PMID: 16925878.	Cross-sectional Dietary Diversity Score DQI – Revised
3	Biltoft-Jensen A, Groth MV, Matthiessen J, Wachmann H, Christensen T, Fagt S. Diet quality: associations with health messages included in the Danish Dietary Guidelines 2005, personal attitudes and social factors. Public Health Nutr. 2009 Aug;12(8):1165-73. Epub 2008 Sep 15. PubMed PMID: 18789168.	Cross-sectional Simple DQI (SDQI)
4	Kourlaba G, Panagiotakos D. 150. The number of index components affects the diagnostic accuracy of a diet quality index: the role of intracorrelation and intercorrelation structure of the components. Ann Epidemiol. 2009 Oct;19(10):692-700. Epub 2009 Jun 26. PubMed PMID: 19560370.	Cross-sectional DQI

5	Kranz S, Findeis JL, Shrestha SS. 152. Use of the Revised Children's Diet Quality Index to assess preschooler's diet quality, its sociodemographic predictors, and its association with body weight status. J Pediatr (Rio J). 2008 Jan-Feb;84(1):26-34. PubMed PMID: 18264615.	Cross-sectional Revised Children's DQI
6	Méjean C, Traissac P, Eymard-Duvernay S, El Ati J, Delpeuch F, Maire B. Diet quality of North African migrants in France partly explains their lower prevalence of diet-related chronic conditions relative to their native French peers. J Nutr. 2007 Sep;137(9):2106-13. PubMed PMID: 17709450.	Cross-sectional DQI – International
7	Scali, J.; Siari, S.; Richard, A.; Gerber, M. Food patterns in Mediterranean Southern France.Recent research developments in nutrition | 2001 v.4 no. pp.121-138.	DQI-Revised

Other Indices:

#	Citation	Rationale for Exclusion
1	Azadbakht L, Esmaillzadeh A. Dietary diversity score is related to obesity and abdominal adiposity among Iranian female youth. Public Health Nutr. 2011Jan;14(1):62-9. Epub 2010 Mar 31. PubMed PMID: 20353617.	Cross-Sectional Diet Diversity Score (DDS)
2	Azadbakht L, et al Dietary diversity score is favorably associated with the metabolic syndrome in Tehranian adults.Int J Obes (Lond). 2005 Nov;29(11):1361-7. PMID:16116493	Cross-sectional DDS
3	Bingham CM, Jallinoja P, Lahti-Koski M, Absetz P, Paturi M, Pihlajamäki H,Sahi T, Uutela A. Quality of diet and food choices of Finnish young men: a sociodemographic and health behaviour approach. Public Health Nutr. 2010Jun;13(6A):980-6. PubMed PMID: 20513269.	Cross-sectional Core Food Index (CFI) Extra Food Index (EFI)
4	Drogan D, Hoffmann K, Schulz M, Bergmann MM, Boeing H, Weikert C. A food pattern predicting prospective weight change is associated with risk of fatal but not with nonfatal cardiovascular disease. J Nutr. 2007 Aug;137(8):1961-7. PubMed PMID: 17634271.	Cross-sectional Food Pattern Score
5	Golley RK, Hendrie GA, McNaughton SA. Scores on the dietary guideline index for children and adolescents are associated with nutrient intake and socio-economic position but not adiposity. J Nutr. 2011 Jul;141(7):1340-7. Epub 2011 May 25. PubMed PMID: 21613454.	Cross-sectional Dietary Guidelines Index Children & Adolescents
6	Høstmark AT. The Oslo Health Study: a Dietary Index estimating high intake of soft drinks and low intake of fruits and vegetables was positively associated with components of the metabolic syndrome. Appl Physiol Nutr Metab. 2010 Dec;35(6):816-25. PubMed PMID: 21164553.	Cross-sectional Dietary Index score Oslo Health study Adults
7	Lazarou C, Panagiotakos DB, Spanoudis G, Matalas AL. 162. E-KINDEX: a dietary screening tool to assess children's obesogenic dietary habits. J Am Coll Nutr.2011 Apr;30(2):100-12. PubMed PMID: 21730218.	Cross-sectional Electronic (E-KINDEX) Children, Greece
8	Massari M, Freeman KM, Seccareccia F, Menotti A, Farchi G; Research Group of the RIFLE Project. An index to measure the association between dietary patterns and coronary heart disease risk factors: findings from two Italian studies. Prev Med. 2004 Oct;39(4):841-7. PubMed PMID: 15351554.	Cross-sectional Italian Risk Factors & Life Expectancy project Dietary index
9	McNaughton SA, Dunstan DW, Ball K, Shaw J, Crawford D. Dietary quality is associated with diabetes and cardio-metabolic risk factors.J Nutr. 2009 Apr;139(4):734-42. Epub 2009 Feb 11.PMID:19211825	Cross-sectional Australian Diabetes, Obesity, Lifestyle Index
10	Heidemann C, Hoffmann K, Spranger J, Klipstein-Grobusch K, Möhlig M, Pfeiffer AF, Boeing H; A dietary pattern protective against type 2 diabetes in the European Prospective Investigation into Cancer and Nutrition (EPIC)--Potsdam Study cohort. Diabetologia. 2005 Jun;48(6):1126-34. Epub 2005 May12. PubMed PMID: 15889235.	Nested Case-control study Dietary pattern score

Factor/Cluster Analysis and Reduced Rank Regression

Systematic Review Questions

- Are prevailing patterns of diet intake in a population related to body weight or risk of obesity?
    - factor analysis, principal component analysis; cluster analysis (FA)
- What combinations of food intake explain the most variation in risk of obesity?
    - reduced rank regression; discriminant analysis (RRR)

Search Results:

Total Hits: 1,505
Total Selected: 413
Total articles excluded in review: 397
Total articles selected 16
Total Hand-search articles: 1
Total articles included: 17

Databases Searched:

Search date: January 2012; update August 2012
Date range: No limits

A. PubMed:

Search Terms:
("Principal component analysis"[tiab] OR "Factor analysis"[tiab] OR "Cluster analysis"[tiab] OR "rank regression"[tiab] OR "Discriminant analysis"[tiab] OR "Cluster Analysis"[Mesh] OR "Factor Analysis, Statistical"[Mesh] OR "Principal Component Analysis"[Mesh] OR "Discriminant Analysis"[Mesh] OR "Regression Analysis"[Mesh]) AND ("Body Weights and Measures"[Mesh] OR "body weight"[mh] OR "body weight"[tiab] OR obesity[tiab] or obesity[mh] OR overweight[tiab] OR overweight[mh] OR "Body Composition"[Mesh] OR "body fat"[tiab] OR adipos*[tiab] OR weight[tiab] OR waist[tiab]) AND ("diet quality" OR dietary[tiab] OR nutrient* OR eating[tiab] OR food[tiab] OR diet[tiab] OR diet[mh]) AND (pattern* OR habit* OR Mediterranean[tiab] OR DASH OR (dietary approaches to stop hypertension) OR vegan* OR vegetarian* OR "Diet, Vegetarian"[Mesh]) Limit Eng/hum

B. Embase:

Search Terms:
'body weight'/exp OR 'adipose tissue'/exp OR 'skinfold thickness'/exp OR 'body mass'/exp OR 'waist hip ratio'/exp OR 'body fat'/exp OR 'body fat distribution'/exp OR 'waist circumference'/exp OR overweight:ab,ti OR 'body mass index':ab,ti) AND ("diet quality" OR dietary:ab,ti OR nutrient*:ab,ti OR eating:ab,ti OR food:ab,ti OR diet:ab,ti OR 'eating habit'/exp) AND (pattern? OR habit?:ab,ti OR Mediterranean:ab,ti OR DASH OR 'dietary approaches to stop hypertension':ti,ab OR vegan*:ab,ti OR vegetarian*:ab,ti OR vegan*:ab,ti OR vegetarian*:ti,ab OR 'vegetarian diet'/exp OR 'vegetarian'/exp) AND ("Principal component analysis":ab,ti OR "Factor analysis":ab,ti OR "Cluster analysis":ab,ti OR "rank regression":ab,ti OR "Discriminant analysis":ab,ti OR 'cluster analysis'/exp OR 'factorial analysis'/exp OR 'principal component analysis'/exp OR 'discriminant

analysis'/exp OR 'regression analysis'/exp) (Limit to Embase alone without Medline; eng/hum; articles & reviews)

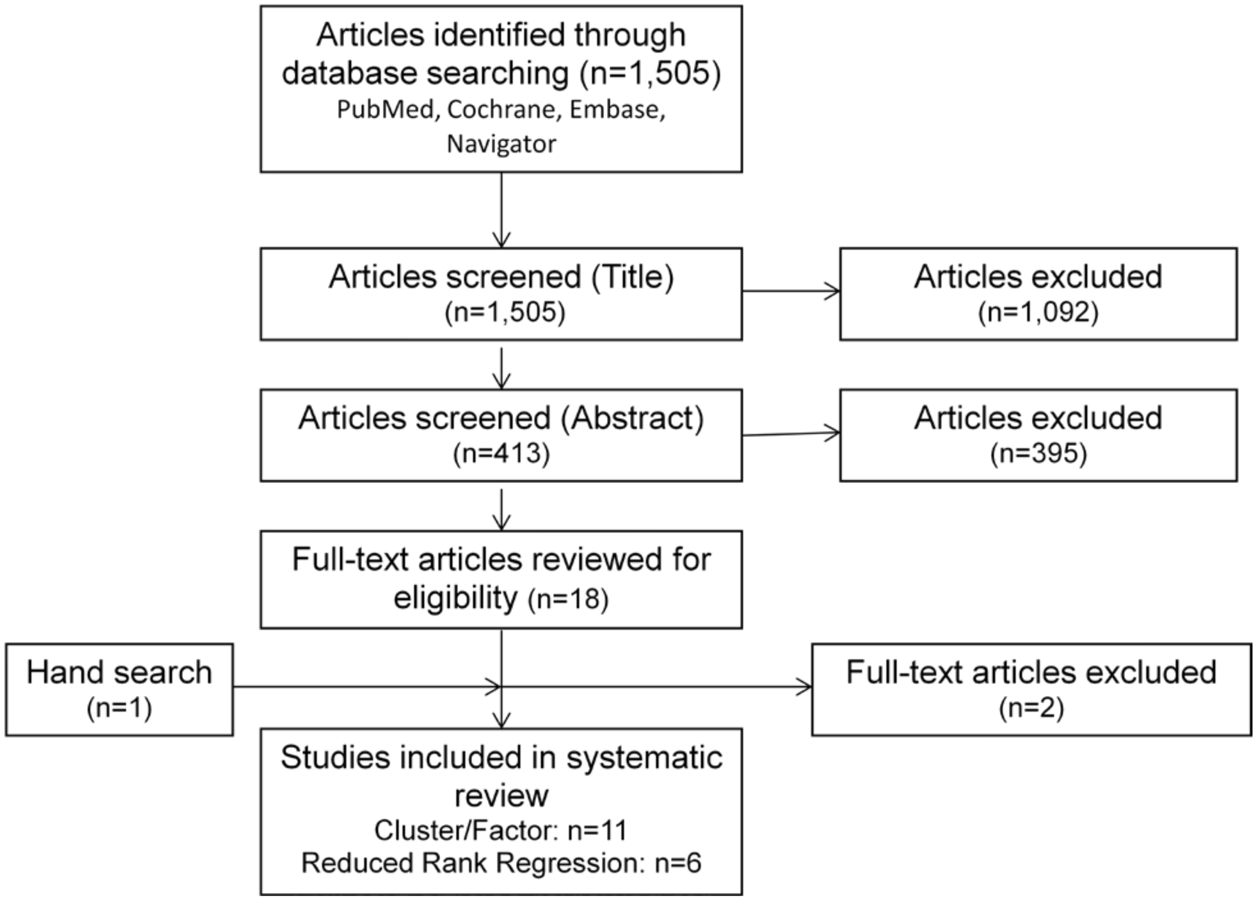
C. Navigator (FSTA/CAB Abstracts/BIOSIS):

Search Terms: ("body weight" or title:obesity or abstract:obesity or overweight or adiposity or "body fat" or adipos*) and (nutrient* or eating or food or diet? or dietary) and ("principal component analysis" or "factor analysis" or "cluster analysis" or "rank regression" or "discriminant analysis") -database:medline -(database:zoor OR database:agris) -database:Agricola 3; none humans

D. Cochrane:

Search Terms:
("body weight" OR obesity:ti,kw,ab OR overweight:ti,kw,ab) AND ("Principal component analysis" OR "Factor analysis" OR "Cluster analysis" OR "rank regression" OR "Discriminant analysis") AND ("diet quality" OR dietary:ti,ab,kw OR nutrient*:ti,kw,ab OR eating:ti,kw,ab OR food:ti,kw,ab OR diet:ti,ab,kw) NOT (("accession number" near pubmed) OR ("accession number" near2 embase))
Imported into EndNote folder:- None

Figure F.2. Flow chart of literature search results for studies examining the relationship between dietary patterns derived using factor and cluster analysis and reduced rank regression and risk of obesity



INCLUDED ARTICLES

Factor/Cluster Analysis

1. Boggs DA, Palmer JR, Spiegelman D, Stampfer MJ, Adams-Campbell LL, Rosenberg L. Dietary patterns and 14-y weight gain in African American women. Am J Clin Nutr. 2011 Jul;94(1):86-94. Epub 2011 May 18. PMID: 21593501
2. Duffey KJ, Steffen LM, Van Horn L, Jacobs DR Jr, Popkin BM. Dietary patterns matter: diet beverages and cardiometabolic risks in the longitudinal Coronary Artery Risk Development in Young Adults (CARDIA) Study. Am J Clin Nutr. 2012 Apr;95(4):909-15. Epub 2012 Feb 29. PMID: 22378729
3. Hosseini-Esfahani F, Djazaieri SA, Mirmiran P, Mehrabi Y, Azizi F. Which Food Patterns Are Predictors of Obesity in Tehranian Adults? J Nutr Educ Behav. 2011 Jun 7. [Epub ahead of print] PMID: 21652267
4. McNaughton SA, Mishra GD, Stephen AM, Wadsworth ME. Dietary patterns throughout adult life are associated with body mass index, waist circumference, blood pressure, and red cell folate. J Nutr. 2007 Jan;137(1):99-105. PubMed PMID: 17182808
5. Newby PK, Weismayer C, Akesson A, Tucker KL, Wolk A. Longitudinal changes in food patterns predict changes in weight and body mass index and the effects are greatest in obese women. J Nutr. 2006 Oct;136(10):2580-7. PMID: 16988130
6. Newby PK, Muller D, Hallfrisch J, Andres R, Tucker KL. Food patterns measured by factor analysis and anthropometric changes in adults. Am J Clin Nutr. 2004 Aug;80(2):504-13. PMID: 15277177
7. Newby PK, Muller D, Hallfrisch J, Qiao N, Andres R, Tucker KL. Dietary patterns and changes in body mass index and waist circumference in adults. Am J Clin Nutr. 2003 Jun;77(6):1417-25. PMID: 12791618
8. Quatromoni PA, Copenhafer DL, D'Agostino RB, Millen BE. Dietary patterns predict the development of overweight in women: The Framingham Nutrition Studies. J Am Diet Assoc. 2002 Sep;102(9):1239-46. PMID: 12792620
9. Ritchie LD, Spector P, Stevens MJ, Schmidt MM, Schreiber GB, Striegel-Moore RH, Wang MC, Crawford PB. Dietary patterns in adolescence are related to adiposity in young adulthood in black and white females. J Nutr. 2007 Feb;137(2):399-406. PMID: 17237318
10. Schulze MB, Fung TT, Manson JE, Willett WC, Hu FB. Dietary patterns and changes in body weight in women. Obesity (Silver Spring). 2006 Aug;14(8):1444-53. PMID: 16988088
11. Togo P, Osler M, Sørensen TI, Heitmann BL. A longitudinal study of food intake patterns and obesity in adult Danish men and women. Int J Obes Relat Metab Disord. 2004 Apr;28(4):583-93. PMID: 14770197

Reduced Rank Regression

1. Ambrosini DL, Emmett PM,Northstone K, Howe LD, Tilling K and Jebb SA. Identification of a dietary pattern prospectively associated with increased adiposity during childhood and adolescence. International Journal of Obesity (2012) 36, 1299–1305; doi:10.1038/ijo.2012.127; published online 7 August 2012 Open

2. Johnson L, Mander AP, Jones LR, Emmett PM, Jebb SA. Energy-dense, low-fiber, high-fat dietary pattern is associated with increased fatness in childhood. Am J Clin Nutr. 2008 Apr;87(4):846-54. PMID: 18400706
3. Noh HY, Song YJ, Lee JE, Joung H, Park MK, Li SJ, Paik HY. Dietary patterns are associated with physical growth among school girls aged 9-11 years. Nutr Res Pract. 2011 Dec;5(6):569-77. Epub 2011 Dec 31. PMID: 22259683
4. Schulz M, Nöthlings U, Hoffmann K, Bergmann MM, Boeing H. Identification of a food pattern characterized by high-fiber and low-fat food choices associated with low prospective weight change in the EPIC-Potsdam cohort. J Nutr. 2005 May;135(5):1183-9. PMID: 15867301
5. Sherafat-Kazemzadeh R, Egtesadi S, Mirmiran P, Gohari M, Farahani SJ, Esfahani FH, Vafa MR, Hedayati M, Azizi F. Dietary patterns by reduced rank regression predicting changes in obesity indices in a cohort study: Tehran Lipid and Glucose Study. Asia Pac J Clin Nutr. 2010;19(1):22-32. PMID: 20199984
6. Wosje KS, Khoury PR, Claytor RP, Copeland KA, Hornung RW, Daniels SR, Kalkwarf HJ. Dietary patterns associated with fat and bone mass in young children. Am J Clin Nutr. 2010 Aug;92(2):294-303. Epub 2010 Jun 2. PMID: 20519562 (Hand search)

EXCLUDED ARTICLES

	Citations	Rationale for Exclusion
1.	Abdel-Megeid FY, Abdelkarem HM, El-Fetouh AM. Unhealthy nutritional habits in university students are a risk factor for cardiovascular diseases. Saudi Med J. 2011 Jun;32(6):621-7. PMID: 21666946.	Does not include body weight as an outcome (related to CVD)
2.	Agurs-Collins T, Rosenberg L, Makambi K, Palmer JR, Adams-Campbell L. Dietary patterns and breast cancer risk in women participating in the Black Women's Health Study. Am J Clin Nutr. 2009 Sep;90(3):621-8. Epub 2009 Jul 8. PubMed PMID: 19587089; PubMed Central PMCID: PMC2728646.	Does not meet inclusion criteria for methodology (cross-sectional analysis of CVD factors)
3.	Alexander H, Lockwood LP, Harris MA, Melby CL. Risk factors for cardiovascular disease and diabetes in two groups of Hispanic Americans with differing dietary habits. J Am Coll Nutr. 1999 Apr;18(2):127-36. PMID: 10204828.	Does not include body weight as an outcome (related to CVD and T2D)
4.	Alexy U, Sichert-Hellert W, Kersting M, Schultze-Pawlitschko V. Pattern of long-term fat intake and BMI during childhood and adolescence--results of the DONALD Study. Int J Obes Relat Metab Disord. 2004 Oct;28(10):1203-9. PMID: 15211368.	Does not meet inclusion criteria for methodology (focused on fruit juice consumption)
5.	Alves JG, Falcão RW, Pinto RA, Correia JB. Obesity patterns among women in a slum area in Brazil. J Health Popul Nutr. 2011 Jun;29(3):286-9. PMID: 21766564.	Does not meet inclusion criteria for methodology
6.	Amini M, Esmaillzadeh A, Shafaeizadeh S, Behrooz J, Zare M. Relationship between major dietary patterns and metabolic syndrome among individuals with impaired glucose tolerance. Nutrition. 2010 Oct;26(10):986-92. Epub 2010 Jul 10. PMID: 20624672.	Cross-sectional analysis (read full text to confirm the methodology)
7.	Anderson AL, Harris TB, Houston DK, Tylavsky FA, Lee JS, Sellmeyer DE, Sahyoun NR. Relationships of dietary patterns with body composition in older adults differ by gender and PPAR-γ Pro12Ala genotype. Eur J Nutr. 2010 Oct;49(7):385-94. Epub 2010 Feb 21. PMID: 20174813.	Cross-sectional analysis (used The Health, Aging and Body Composition prospective data)

8.	Anderson AL, Harris TB, Tylavsky FA, Perry SE, Houston DK, Hue TF, Strotmeyer ES, Sahyoun NR; Health ABC Study. Dietary patterns and survival of older adults. J Am Diet Assoc. 2011 Jan;111(1):84-91. PMID: 21185969.	Cross-sectional analysis (secondary analysis)
9.	Aounallah-Skhiri H, Traissac P, El Ati J, Eymard-Duvernay S, Landais E, Achour N, Delpeuch F, Ben Romdhane H, Maire B. Nutrition transition among adolescents of a south-Mediterranean country: dietary patterns, association with socio-economic factors, overweight and blood pressure. A cross-sectional study in Tunisia. Nutr J. 2011 Apr 24;10:38. PMID: 21513570.	Cross-sectional analysis
10.	Artinian NT, Schim SM, Vander Wal JS, Nies MA. Eating patterns and cardiovascular disease risk in a Detroit Mexican American population. Public Health Nurs. 2004 Sep-Oct;21(5):425-34. PMID: 15363023.	Does not meet inclusion criteria for methodology (descriptive study)
11.	Atkin LM, Davies PS. Diet composition and body composition in preschool children. Am J Clin Nutr. 2000 Jul;72(1):15-21. PMID: 10871555.	Does not meet inclusion criteria for methodology
12.	Baer Wilson D, Nietert PJ. Patterns of fruit, vegetable, and milk consumption among smoking and nonsmoking female teens. Am J Prev Med. 2002 May;22(4):240-6. PMID: 11988380.	Does not include body weight as an outcome (related to fruit and vegetable consumption and smoking)
13.	Bailey RL, Gutschall MD, Mitchell DC, Miller CK, Lawrence FR, Smiciklas-Wright H. Comparative strategies for using cluster analysis to assess dietary patterns. J Am Diet Assoc. 2006 Aug;106(8):1194-200. PMID: 16863714.	Cross-sectional analysis
14.	Bamia C, Orfanos P, Ferrari P, Overvad K, Hundborg HH, Tjønneland A, Olsen A, Kesse E, Boutron-Ruault MC, Clavel-Chapelon F, Nagel G, Boffetta P, Boeing H, Hoffmann K, Trichopoulos D, Baibas N, Psaltopoulou T, Norat T, Slimani N, Palli D, Krogh V, Panico S, Tumino R, Sacerdote C, Bueno-de-Mesquita HB, Ocké MC, Peeters PH, van Rossum CT, Quirós JR, Sánchez MJ, Navarro C, Barricarte A, Dorronsoro M, Berglund G, Wirfält E, Hallmans G, Johansson I, Bingham S, Khaw KT, Spencer EA, Roddam AW, Riboli E, Trichopoulou A. Dietary patterns among older Europeans: the EPIC-Elderly study. Br J Nutr. 2005 Jul;94(1):100-13. PMID: 16115339.	Cross-sectional analysis
15.	Barba G, Troiano E, Russo P, Venezia A, Siani A. Inverse association between body mass and frequency of milk consumption in children. Br J Nutr. 2005 Jan;93(1):15-9. PMID: 15705220.	Does not include independent variable (measured milk consumption only)
16.	Barnard ND, Cohen J, Jenkins DJ, Turner-McGrievy G, Gloede L, Jaster B, Seidl K, Green AA, Talpers S. A low-fat vegan diet improves glycemic control and cardiovascular risk factors in a randomized clinical trial in individuals with type 2 diabetes. Diabetes Care. 2006 Aug;29(8):1777-83. PMID: 16873779.	Participants diagnosed with T2D
17.	Barnard ND, Gloede L, Cohen J, Jenkins DJ, Turner-McGrievy G, Green AA, Ferdowsian H. A low-fat vegan diet elicits greater macronutrient changes, but is comparable in adherence and acceptability, compared with a more conventional diabetes diet among individuals with type 2 diabetes. J Am Diet Assoc. 2009 Feb;109(2):263-72. PMID: 19167953.	Participants diagnosed with T2D
18.	Baş M, Altan T, Dinçer D, Aran E, Kaya HG, Yüksek O. Determination of dietary habits as a risk factor of cardiovascular heart disease in Turkish adolescents. Eur J Nutr. 2005 Mar;44(3):174-82. Epub 2004 May 21. PMID: 15309435.	Does not meet inclusion criteria for methodology (description of cross-sectional data)

19.	Beaudry M, Galibois I, Chaumette P. Dietary patterns of adults in Québec and their nutritional adequacy. Can J Public Health. 1998 Sep-Oct;89(5):347-51. PMID: 9813927.	Does not include body weight as an outcome (related to nutritional adequacy)
20.	Becquey E, Savy M, Danel P, Dabiré HB, Tapsoba S, Martin-Prével Y. Dietary patterns of adults living in Ouagadougou and their association with overweight. Nutr J. 2010 Mar 22;9:13. PMID: 20307296.	Not considered very high or high human-development country
21.	Belahsen R, Rguibi M. Population health and Mediterranean diet in southern Mediterranean countries. Public Health Nutr. 2006 Dec;9(8A):1130-5. PMID: 17378952.	Does not meet inclusion criteria for methodology (descriptive study)
22.	Berg C, Lappas G, Wolk A, Strandhagen E, Torén K, Rosengren A, Thelle D, Lissner L. Eating patterns and portion size associated with obesity in a Swedish population. Appetite. 2009 Feb;52(1):21-6. Epub 2008 Jul 25. PMID: 18694791.	Does not meet inclusion criteria for methodology
23.	Berg CM, Lappas G, Strandhagen E, Wolk A, Torén K, Rosengren A, Aires N, Thelle DS, Lissner L. Food patterns and cardiovascular disease risk factors: the Swedish INTERGENE research program. Am J Clin Nutr. 2008 Aug;88(2):289-97. PMID: 18689363.	Cross-sectional analysis
24.	Birch LL, Fisher JO, Grimm-Thomas K, Markey CN, Sawyer R, Johnson SL. Confirmatory factor analysis of the Child Feeding Questionnaire: a measure of parental attitudes, beliefs and practices about child feeding and obesity proneness. Appetite. 2001 Jun;36(3):201-10. PMID: 11358344.	Does not include body weight as an outcome (related to parental beliefs, attitudes, and practices regarding child feeding)
25.	Bisset S, Gauvin L, Potvin L, Paradis G. Association of body mass index and dietary restraint with changes in eating behaviour throughout late childhood and early adolescence: a 5-year study. Public Health Nutr. 2007 Aug;10(8):780-9. Epub 2007 Mar 7. PMID: 17381909.	Does not meet inclusion criteria for methodology (use hierarchical linear modeling/evaluates obesity)
26.	Bloomer RJ, Kabir MM, Canale RE, Trepanowski JF, Marshall KE, Farney TM, Hammond KG. Effect of a 21 day Daniel Fast on metabolic and cardiovascular disease risk factors in men and women. Lipids Health Dis. 2010 Sep 3;9:94. PMID: 20815907.	Does not evaluate dietary patterns (related to a caloric restriction diet)
27.	Bond MJ, McDowell AJ, Wilkinson JY. The measurement of dietary restraint, disinhibition and hunger: an examination of the factor structure of the Three Factor Eating Questionnaire (TFEQ). Int J Obes Relat Metab Disord. 2001 Jun;25(6):900-6. PMID: 11439306.	Does not address the question (related to disordered eating behavior)
28.	Bouchard-Mercier A, Paradis AM, Godin G, Lamarche B, Pérusse L, Vohl MC. Associations between dietary patterns and LDL peak particle diameter: a cross-sectional study. J Am Coll Nutr. 2010 Dec;29(6):630-7. PMID: 21677127.	Does not include body weight as an outcome (measured LDL only)
29.	Boylan S, Welch A, Pikhart H, Malyutina S, Pajak A, Kubinova R, Bragina O, Simonova G, Stepaniak U, Gilis-Januszewska A, Milla L, Peasey A, Marmot M, Bobak M. Dietary habits in three Central and Eastern European countries: the HAPIEE study. BMC Public Health. 2009 Dec 1;9:439. PMID: 19951409.	Does not address the question (evaluation of Healthy Diet Indicator)
30.	Brustad M, Parr CL, Melhus M, Lund E. Dietary patterns in the population living in the Sámi core areas of Norway--the SAMINOR study. Int J Circumpolar Health. 2008 Feb;67(1):82-96. PMID: 18468261.	Cross-sectional analysis

31.	Buscemi S, Verga S, Tranchina MR, Cottone S, Cerasola G. Effects of hypocaloric very-low-carbohydrate diet vs. Mediterranean diet on endothelial function in obese women*. Eur J Clin Invest. 2009 May;39(5):339-47. PMID: 19302563.	Does not meet inclusion criteria for methodology (evaluates a hypo-caloric diet)
32.	Cade JE, Taylor EF, Burley VJ, Greenwood DC. Does the Mediterranean dietary pattern or the Healthy Diet Index influence the risk of breast cancer in a large British cohort of women? Eur J Clin Nutr. 2011 Aug;65(8):920-8. doi: 10.1038/ejcn.2011.69. Epub 2011 May 18. PubMed PMID: 21587285.	Does not address the question (related to diet breast cancer)
33.	Canales A, Benedí J, Nus M, Librelotto J, Sánchez-Montero JM, Sánchez-Muniz FJ. Effect of walnut-enriched restructured meat in the antioxidant status of overweight/obese senior subjects with at least one extra CHD-risk factor. J Am Coll Nutr. 2007 Jun;26(3):225-32. PMID: 17634167.	Does not address the question (evaluates antioxidants)
34.	Cao YT, Svensson V, Marcus C, Zhang J, Zhang JD, Sobko T. Eating behaviour patterns in Chinese children aged 12-18 months and association with relative weight - factorial validation of the Children's Eating Behaviour Questionnaire. Int J Behav Nutr Phys Act. 2012 Jan 24;9(1):5. [Epub ahead of print] PMID: 22272572	Does not address the question (related to eating behaviors)
35.	Carević V, Kuzmanić M, Rumboldt M, Rumboldt Z; INTERHEART Investigators. Predictive impact of coronary risk factors in southern Croatia: a case control study. Coll Antropol. 2010 Dec;34(4):1363-8. PMID: 21874722.	Does not address the question (related to MI)
36.	Carrera PM, Gao X, Tucker KL. A study of dietary patterns in the Mexican-American population and their association with obesity. J Am Diet Assoc. 2007 Oct;107(10):1735-42. PMID: 17904933.	Cross-sectional analysis
37.	Cavalcanti CB, Barros MV, Menêses AL, Santos CM, Azevedo AM, Guimarães FJ. Abdominal obesity in adolescents: prevalence and association with physical activity and eating habits. Arq Bras Cardiol. 2010 Mar;94(3):350-6, 371-7. English, Portuguese. PMID: 20730265.	Does not evaluate dietary patterns (related to physical activity and its association with obesity)
38.	Chatzi L, Mendez M, Garcia R, Roumeliotaki T, Ibarluzea J, Tardón A, Amiano P,Lertxundi A, Iñiguez C, Vioque J, Kogevinas M, Sunyer J; INMA and RHEA study groups. Mediterranean diet adherence during pregnancy and fetal growth: INMA (Spain) and RHEA (Greece) mother-child cohort studies. Br J Nutr. 2012 Jan;107(1):135-45. Epub 2011 Jun 29. PubMed PMID: 21733314.	Not considered very high or high development country, same as above
39.	Chen ST, Maruthur NM, Appel LJ. The effect of dietary patterns on estimated coronary heart disease risk: results from the Dietary Approaches to Stop Hypertension (DASH) trial. Circ Cardiovasc Qual Outcomes. 2010 Sep;3(5):484-9. Epub 2010 Aug 31. PMID: 20807884.	Does not address the question (evaluation of DASH diet using Framingham risk equations)
40.	Chiuve SE, Fung TT, Rexrode KM, Spiegelman D, Manson JE, Stampfer MJ, Albert CM. Adherence to a low-risk, healthy lifestyle and risk of sudden cardiac death among women. JAMA. 2011 Jul 6;306(1):62-9. PMID: 21730242.	Does not evaluate dietary patterns
41.	Cho YA, Kim J, Cho ER, Shin A. Dietary patterns and the prevalence of metabolic syndrome in Korean women. Nutr Metab Cardiovasc Dis. 2011 Nov;21(11):893-900. Epub 2010 Jul 31. PMID: 20674302.	Cross-sectional analysis
42.	Cho YA, Shin A, Kim J. Dietary patterns are associated with body mass index in a Korean population. J Am Diet Assoc. 2011 Aug;111(8):1182-6. PMID: 21802564.	Cross-sectional analysis

43.	Chockalingam A, Ganesan N, Venkatesan S, Gnanavelu G, Subramaniam T, Jaganathan V, Elangovan S, Alagesan R, Dorairajan S, Subramaniam A, Rafeeq K, Elangovan C, Rajendran V. Patterns and predictors of prehypertension among "healthy" urban adults in India. Angiology. 2005 Sep-Oct;56(5):557-63. PMID: 16193194.	Does not evaluate dietary patterns
44.	Chourdakis M, Tzellos T, Pourzitaki C, Toulis KA, Papazisis G, Kouvelas D. Evaluation of dietary habits and assessment of cardiovascular disease risk factors among Greek university students. Appetite. 2011 Oct;57(2):377-83. Epub 2011 May 27. PMID: 21651931.	Does not evaluate dietary patterns (related to AHA recommendations and CVD))
45.	Chrysohoou C, Panagiotakos DB, Aggelopoulos P, Kastorini CM, Kehagia I, Pitsavos C, Stefanadis C. The Mediterranean diet contributes to the preservation of left ventricular systolic function and to the long-term favorable prognosis of patients who have had an acute coronary event. Am J Clin Nutr. 2010 Jul;92(1):47-54. Epub 2010 May 19. PMID: 20484450.	Does not address the question (evaluation of the Mediterranean diet and CVD)
46.	Cimadon HM, Geremia R, Pellanda LC. Dietary habits and risk factors for atherosclerosis in students from Bento Gonçalves (state of Rio Grande do Sul). Arq Bras Cardiol. 2010 Aug;95(2):166-72. Epub 2010 Jul 9. English, Portuguese. PMID: 20602005.	Does not meet inclusion criteria for methodology
47.	Clinton D, Button E, Norring C, Palmer R. Cluster analysis of key diagnostic variables from two independent samples of eating-disorder patients: evidence for a consistent pattern. Psychol Med. 2004 Aug;34(6):1035-45. PMID: 15554574.	Does not address the question (evaluated eating disorders)
48.	Corvalán C, Kain J, Weisstaub G, Uauy R. Impact of growth patterns and early diet on obesity and cardiovascular risk factors in young children from developing countries. Proc Nutr Soc. 2009 Aug;68(3):327-37. Epub 2009 Apr 29. PMID: 19400973.	Does not meet inclusion criteria for methodology
49.	Costa MB, Ferreira SR, Franco LJ, Gimeno SG, Iunes M. Dietary patterns in a high-risk population for glucose intolerance. Japanese-Brazilian Diabetes Study Group. J Epidemiol. 2000 Mar;10(2):111-7. PMID: 10778035.	Does not meet inclusion criteria for methodology (evaluates glucose intolerance)
50.	Croll JK, Neumark-Sztainer D, Story M, Wall M, Perry C, Harnack L. Adolescents involved in weight-related and power team sports have better eating patterns and nutrient intakes than non-sport-involved adolescents. J Am Diet Assoc. 2006 May;106(5):709-17. PMID: 16647329.	Does not meet inclusion criteria for methodology (evaluates eating habits and physical activity)
51.	Cucó G, Fernández-Ballart J, Sala J, Viladrich C, Iranzo R, Vila J, Arija V. Dietary patterns and associated lifestyles in preconception, pregnancy and postpartum. Eur J Clin Nutr. 2006 Mar;60(3):364-71. PMID: 16340954.	Does not address the question (related to dietary patterns in women who are planning immediate pregnancy and preconception)
52.	Cunha DB, de Almeida RM, Sichieri R, Pereira RA. Association of dietary patterns with BMI and waist circumference in a low-income neighbourhood in Brazil. Br J Nutr. 2010 Sep;104(6):908-13. Epub 2010 Apr 27. PMID: 20420750.	Cross-sectional analysis
53.	Cusatis DC, Chinchilli VM, Johnson-Rollings N, Kieselhorst K, Stallings VA, Lloyd T. Longitudinal nutrient intake patterns of US adolescent women: the Penn State Young Women's Health Study. J Adolesc Health. 2000 Mar;26(3):194-204. PMID: 10706167.	Does not meet inclusion criteria for methodology (used year-to-year Pearson correlation analysis)
54.	Cutting TM, Fisher JO, Grimm-Thomas K, Birch LL. Like mother, like daughter: familial patterns of overweight are mediated by mothers' dietary disinhibition. Am J Clin Nutr. 1999 Apr;69(4):608-13. PMID: 10197561.	Does not address the question (examined parental characteristics associated with overweight and eating behaviors in preschool children)

55.	Dammann KW, Smith C. Food-related environmental, behavioral, and personal factors associated with body mass index among urban, low-income African-American, American Indian, and Caucasian women. Am J Health Promot. 2011 Jul-Aug;25(6):e1-e10. PubMed PMID: 21721954.	Does not address the question (related to the Mediterranean diet and breast cancer)
56.	Daniel CR, Prabhakaran D, Kapur K, Graubard BI, Devasenapathy N, Ramakrishnan L, George PS, Shetty H, Ferrucci LM, Yurgalevitch S, Chatterjee N, Reddy KS, Rastogi T, Gupta PC, Mathew A, Sinha R. A cross-sectional investigation of regional patterns of diet and cardio-metabolic risk in India. Nutr J. 2011 Jan 28;10:12. PMID: 21276235.	Cross-sectional analysis
57.	Datta Banik S. Nutritional status adiposity and body composition of Oraon and Sarak females in Ranchi District, India--a comparison. Ecol Food Nutr. 2011 Jan-Feb;50(1):43-62. PMID: 21888587.	Does not meet inclusion criteria for methodology (related to under-nutrition factors)
58.	Davis MS, Miller CK, Mitchell DC. More favorable dietary patterns are associated with lower glycemic load in older adults. J Am Diet Assoc. 2004 Dec;104(12):1828-35. PMID: 15565077.	Does not include body weight as an outcome (related to lower glycemic load)
59.	de Gouw L, Klepp KI, Vignerová J, Lien N, Steenhuis IH, Wind M. Associations between diet and (in)activity behaviors with overweight and obesity among 10-18-year-old Czech Republic adolescents. Public Health Nutr. 2010 Oct;13(10A):1701-7. PMID: 20883569.	Does not meet inclusion criteria for methodology (related to behavioral risk factors of being overweight/obese)
60.	Del Mar Bibiloni M, Martínez E, Llull R, Pons A, Tur JA. Western and Mediterranean dietary patterns among Balearic Islands' adolescents: socio-economic and lifestyle determinants. Public Health Nutr. 2011 Sep 8:1-10. [Epub ahead of print] PMID: 21899802.	Does not include body weight as an outcome (related to lifestyle and diet)
61.	Delavar MA, Lye MS, Khor GL, Hassan ST, Hanachi P. Dietary patterns and the metabolic syndrome in middle aged women, Babol, Iran. Asia Pac J Clin Nutr. 2009;18(2):285-92. PMID: 19713190.	Does not include inclusion criteria for methodolgy (uses Spearman's rank correlation coefficient)
62.	Delisle HF, Vioque J, Gil A. Dietary patterns and quality in West-African immigrants in Madrid. Nutr J. 2009 Jan 23;8:3. PMID: 19166606.	Cross-sectional analysis
63.	Denova-Gutiérrez E, Castañón S, Talavera JO, Flores M, Macías N, Rodríguez-Ramírez S, Flores YN, Salmerón J. Dietary patterns are associated with different indexes of adiposity and obesity in an urban Mexican population. J Nutr. 2011 May;141(5):921-7. Epub 2011 Mar 30. PMID: 21451126.	Cross-sectional analysis
64.	Denova-Gutiérrez E, Castañón S, Talavera JO, Gallegos-Carrillo K, Flores M, Dosamantes-Carrasco D, Willett WC, Salmerón J. Dietary patterns are associated with metabolic syndrome in an urban Mexican population. J Nutr. 2010 Oct;140(10):1855-63. Epub 2010 Aug 11. PMID: 20702749.	Cross-sectional analysis
65.	Deshmukh-Taskar PR, O'Neil CE, Nicklas TA, Yang SJ, Liu Y, Gustat J, Berenson GS. Dietary patterns associated with metabolic syndrome, sociodemographic and lifestyle factors in young adults: the Bogalusa Heart Study. Public Health Nutr. 2009 Dec;12(12):2493-503. Epub 2009 Sep 11. PMID: 19744354.	Cross-sectional analysis
66.	Díez-Espino J, Buil-Cosiales P, Serrano-Martínez M, Toledo E, Salas-Salvadó J, Martínez-González MÁ. Adherence to the Mediterranean diet in patients with type 2 diabetes mellitus and HbA1c level. Ann Nutr Metab. 2011;58(1):74-8. Epub 2011 Mar 24. PMID: 21430378.	Participants diagnosed with T2D (cross-sectional analysis)

67.	Dosamantes-Carrasco D, Méndez-Hernández P, Denova-Gutiérrez E, Lamure M, Morales L, Talavera JO, Espinosa P, Salmerón J. Scale for assessing the quality of Mexican adults' mealtime habits. Salud Publica Mex. 2011 Mar-Apr;53(2):152-9. PMID: 21537806.	Does not address the question (related to mealtime habits)
68.	Drogan D, Hoffmann K, Schulz M, Bergmann MM, Boeing H, Weikert C. A food pattern predicting prospective weight change is associated with risk of fatal but not with nonfatal cardiovascular disease. J Nutr. 2007 Aug;137(8):1961-7. PMID: 17634271.	Does not include body weight as an outcome (related to CVD and a food pattern)
69.	Dugee O, Khor GL, Lye MS, Luvsannyam L, Janchiv O, Jamyan B, Esa N. Association of major dietary patterns with obesity risk among Mongolian men and women. Asia Pac J Clin Nutr. 2009;18(3):433-40. PMID: 19786392.	Not considered very high or high human-development country
70.	Dwyer JT, Evans M, Stone EJ, Feldman HA, Lytle L, Hoelscher D, Johnson C, Zive M, Yang M; Child and Adolescent Trial for Cardiovascular Health (CATCH) Cooperative Research Group. Adolescents' eating patterns influence their nutrient intakes. J Am Diet Assoc. 2001 Jul;101(7):798-802. No abstract available. PMID: 11478479.	Does not meet inclusion criteria for methodology
71.	Ebrahim S, Smith GD. Systematic review of randomised controlled trials of multiple risk factor interventions for preventing coronary heart disease. BMJ. 1997 Jun 7;314(7095):1666-74. PMID: 9193292.	Does not meet inclusion criteria for methodology (systematic review of RCTs; related to CVD)
72.	Egeberg R, Frederiksen K, Olsen A, Johnsen NF, Loft S, Overvad K, Tjønneland A. Intake of wholegrain products is associated with dietary, lifestyle, anthropometric and socio-economic factors in Denmark. Public Health Nutr. 2009 Sep;12(9):1519-30. Epub 2009 Feb 6. PMID: 19195420.	Cross-sectional analysis
73.	Eilat-Adar S, Mete M, Nobmann ED, Xu J, Fabsitz RR, Ebbesson SO, Howard BV. Dietary patterns are linked to cardiovascular risk factors but not to inflammatory markers in Alaska Eskimos. J Nutr. 2009 Dec;139(12):2322-8. Epub 2009 Oct 14. PMID: 19828690.	Does not include body weight as an outcome (cross-sectional analysis of CVD risk factors)
74.	Engeset D, Alsaker E, Ciampi A, Lund E. Dietary patterns and lifestyle factors in the Norwegian EPIC cohort: the Norwegian Women and Cancer (NOWAC) study. Eur J Clin Nutr. 2005 May;59(5):675-84. PMID: 15785773.	Does not include body weight as an outcome (cross-sectional analysis of lifestyle factors)
75.	Erber E, Hopping BN, Grandinetti A, Park SY, Kolonel LN, Maskarinec G. Dietary patterns and risk for diabetes: the multiethnic cohort. Diabetes Care. 2010 Mar;33(3):532-8. Epub 2009 Dec 10. PMID: 20007939.	Does not include body weight as an outcome (related to dietary patterns and risk for diabetes)
76.	Esmaillzadeh A, Azadbakht L. J Major dietary patterns in relation to general obesity and central adiposity among Iranian women. Nutr. 2008 Feb;138(2):358-63. PMID: 18203904.	Cross-sectional analysis
77.	Esmaillzadeh A, Kimiagar M, Mehrabi Y, Azadbakht L, Hu FB, Willett WC. Dietary patterns and markers of systemic inflammation among Iranian women. J Nutr. 2007 Apr;137(4):992-8. PMID: 17374666.	Does not include body weight as an outcome (related to CRP)
78.	Esmaillzadeh A, Kimiagar M, Mehrabi Y, Azadbakht L, Hu FB, Willett WC. Dietary patterns, insulin resistance, and prevalence of the metabolic syndrome in women. Am J Clin Nutr. 2007 Mar;85(3):910-8. PMID: 17344515.	Cross-sectional analysis

79.	Esposito K, Maiorino MI, Ciotola M, Di Palo C, Scognamiglio P, Gicchino M, Petrizzo M, Saccomanno F, Beneduce F, Ceriello A, Giugliano D. Effects of a Mediterranean-style diet on the need for antihyperglycemic drug therapy in patients with newly diagnosed type 2 diabetes: a randomized trial. Ann Intern Med. 2009 Sep 1;151(5):306-14. Erratum in: Ann Intern Med. 2009 Oct 20;151(8):591. PMID: 19721018.	Participants diagnosed with T2D (compared 2 diets)
80.	Estruch R, Martínez-González MA, Corella D, Basora-Gallisá J, Ruiz-Gutiérrez V, Covas MI, Fiol M, Gómez-Gracia E, López-Sabater MC, Escoda R, Pena MA, Diez-Espino J, Lahoz C, Lapetra J, Sáez G, Ros E; PREDIMED Study Investigators. Effects of dietary fibre intake on risk factors for cardiovascular disease in subjects at high risk. J Epidemiol Community Health. 2009 Jul;63(7):582-8. Epub 2009 Mar 15. PMID: 19289389.	Does not include body weight as an outcome (related to dietary fiber and CVD)
81.	Estruch R, Martínez-González MA, Corella D, Salas-Salvadó J, Ruiz-Gutiérrez V, Covas MI, Fiol M, Gómez-Gracia E, López-Sabater MC, Vinyoles E, Arós F, Conde M, Lahoz C, Lapetra J, Sáez G, Ros E; PREDIMED Study Investigators. Effects of a Mediterranean-style diet on cardiovascular risk factors: a randomized trial. Ann Intern Med. 2006 Jul 4;145(1):1-11. PMID: 16818923.	Does not include body weight as an outcome (related to Mediterranean diet and CVD)
82.	Fardy PS, White RE, Haltiwanger-Schmitz K, Magel JR, McDermott KJ, Clark LT, Hurster MM. Coronary disease risk factor reduction and behavior modification in minority adolescents: the PATH program. J Adolesc Health. 1996 Apr;18(4):247-53. PMID: 8860788.	Does not include body weight as an outcome (related to physical activity and CVD)
83.	Feskens EJ, Bowles CH, Kromhout D. Inverse association between fish intake and risk of glucose intolerance in normoglycemic elderly men and women. Diabetes Care. 1991 Nov;14(11):935-41. PMID: 1797505.	Does not meet inclusion criteria for methodology (related to fish intake and glucose intolerance)
84.	Festi D, Scaioli E, Baldi F, Vestito A, Pasqui F, Di Biase AR, Colecchia A. Body weight, lifestyle, dietary habits and gastroesophageal reflux disease. World J Gastroenterol. 2009 Apr 14;15(14):1690-701. Review. PMID: 19360912.	Does not meet inclusion criteria for methodology (related to gastro-esophageal/reflux disease)
85.	Fezeu L, Andreeva VA, Hercberg S, Kengne AP, Czernichow S, Kesse-Guyot E. Association between dietary scores and 13-year weight change and obesity risk in a French prospective cohort. Int J Obes (Lond). 2012 Jan 17. doi: 10.1038/ijo.2011.264. [Epub ahead of print] PubMed PMID: 22249228.	Does not include body weight as an outcome (related to bone mineral density)
86.	Flores M, Macias N, Rivera M, Lozada A, Barquera S, Rivera-Dommarco J, Tucker KL. Dietary patterns in Mexican adults are associated with risk of being overweight or obese. J Nutr. 2010 Oct;140(10):1869-73. Epub 2010 Aug 25. PMID: 20739452.	Cross-sectional analysis
87.	Francis DK, Van den Broeck J, Younger N, McFarlane S, Rudder K, Gordon-Strachan G, Grant A, Johnson A, Tulloch-Reid M, Wilks R. Fast-food and sweetened beverage consumption: association with overweight and high waist circumference in adolescents. Public Health Nutr. 2009 Aug;12(8):1106-14. Epub 2009 Feb 26. PMID: 19243675.	Does not meet inclusion criteria for methodology
88.	Franzen L, Smith C. Differences in stature, BMI, and dietary practices between US born and newly immigrated Hmong children. Soc Sci Med. 2009 Aug;69(3):442-50. Epub 2009 Jun 24. PMID: 19556047	Does not meet inclusion criteria for methodology (related to acculturation)
89.	Frentzel-Beyme R, Claude J, Eilber U. Mortality among German vegetarians: first results after five years of follow-up. Nutr Cancer. 1988;11(2):117-26. PMID: 3362722.	Does not address the question (related to mortality among German vegetarians)

90.	Fung TT, Rimm EB, Spiegelman D, Rifai N, Tofler GH, Willett WC, Hu FB. Association between dietary patterns and plasma biomarkers of obesity and cardiovascular disease risk. Am J Clin Nutr. 2001 Jan;73(1):61-7. PMID: 11124751.	Does not include body weight as an outcome
91.	Fung TT, Schulze M, Manson JE, Willett WC, Hu FB. Dietary patterns, meat intake, and the risk of type 2 diabetes in women. Arch Intern Med. 2004 Nov 8;164(20):2235-40. PMID: 15534160.	Does not address the question (related to T2D)
92.	Gabriel CG, Corso AC, Caldeira GV, Gimeno SG, Schmitz Bde A, de Vasconcelos Fde A. Overweight and obesity related factors in schoolchildren in Santa Catarina State, Brazil. Arch Latinoam Nutr. 2010 Dec;60(4):332-9. PMID: 21866682.	Does not meet inclusion criteria for methodology (cross-sectional analysis)
93.	Gambera PJ, Schneeman BO, Davis PA. Use of the Food Guide Pyramid and US Dietary Guidelines to improve dietary intake and reduce cardiovascular risk in active-duty Air Force members. J Am Diet Assoc. 1995 Nov;95(11):1268-73. PMID: 7594122.	Does not meet inclusion criteria for methodology (RCT that evaluates exercise alone and dietary and exercise intervention)
94.	Ganguli D, Das N, Saha I, Biswas P, Datta S, Mukhopadhyay B, Chaudhuri D, Ghosh S, Dey S. Major dietary patterns and their associations with cardiovascular risk factors among women in West Bengal, India. Br J Nutr. 2011 May;105(10):1520-9. Epub 2011 Jan 28. PMID: 21272403.	Cross-sectional analysis
95.	Ganji V, Kafai MR, McCarthy E. Serum leptin concentrations are not related to dietary patterns but are related to sex, age, body mass index, serum triacylglycerol, serum insulin, and plasma glucose in the US population. Nutr Metab (Lond). 2009 Jan 14;6:3. PubMed PMID: 19144201; PubMed Central PMCID: PMC2657130.	Participants are pregnant
96.	Garaulet M, Marín C, Pérez-Llamas F, Canterasl M, Tebar FJ, Zamora S. Adiposity and dietary intake in cardiovascular risk in an obese population from a Mediterranean area. J Physiol Biochem. 2004 Mar;60(1):39-49. PMID: 15352383.	Does not meet inclusion criteria for methodology (evaluated Mediterranean population and CVD)
97.	Garaulet M, Pérez-Llamas F, Canteras M, Tebar FJ, Zamora S. Endocrine, metabolic and nutritional factors in obesity and their relative significance as studied by factor analysis. Int J Obes Relat Metab Disord. 2001 Feb;25(2):243-51. PMID: 11410827.	Does not meet inclusion criteria for methodology (related to factors contributing to obesity)
98.	Gavrila D, Salmerón D, Egea-Caparrós JM, Huerta JM, Pérez-Martínez A, Navarro C, Tormo MJ. Prevalence of metabolic syndrome in Murcia Region, a southern European Mediterranean area with low cardiovascular risk and high obesity. BMC Public Health. 2011 Jul 14;11:562. PMID: 21752307.	Does not meet inclusion criteria for methodology (cross-sectional analysis)
99.	Genest J Jr, Cohn JS. Clustering of cardiovascular risk factors: targeting high-risk individuals. Am J Cardiol. 1995 Jul 13;76(2):8A-20A. Review. PMID: 7604805.	Does not meet inclusion criteria for methodology (narrative review)
100.	Gera T, Khetarpaul N. Food consumption pattern and nutrient intake of Indian obese males. Nutr Health. 2000;14(4):205-16. PMID: 11142609.	Does not meet inclusion criteria for methodology (descriptive study)
101.	Gerber M. Qualitative methods to evaluate Mediterranean diet in adults. Public Health Nutr. 2006 Feb;9(1A):147-51. PMID: 16512962.	Does not meet inclusion criteria for methodology (cross-sectional analysis)
102.	Gex-Fabry M, Raymond L, Jeanneret O. Multivariate analysis of dietary patterns in 939 Swiss adults: sociodemographic parameters and alcohol consumption profiles. Int J Epidemiol. 1988 Sep;17(3):548-55. PMID: 3209335.	Cross-sectional analysis

103.	Gharib N, Rasheed P. Energy and macronutrient intake and dietary pattern among school children in Bahrain: a cross-sectional study. Nutr J. 2011 Jun 5;10:62. PMID: 21645325.	Does not meet inclusion criteria for methodology (cross-sectional analysis)
104.	Ghosh A. Obesity measures, metabolic profiles and dietary fatty acids in lean and obese postmenopausal diabetic Asian Indian women. Anthropol Anz. 2009 Mar;67(1):83-93. PMID: 19462679.	Does not meet inclusion criteria for methodology (descriptive study)
105.	Gibson S, Lambert J, Neate, D. Associations between weight status, physical activity, and consumption of biscuits, cakes and confectionery among young people in Britain. Nutrition Bulletin. 2004 29;4:301-309.	Does not include body weight as an outcome (related to serum leptin)
106.	Gimeno SG, Andreoni S, Ferreira SR, Franco LJ, Cardoso MA. Assessing food dietary intakes in Japanese-Brazilians using factor analysis. Cad Saude Publica. 2010 Nov;26(11):2157-67. PMID: 21180989.	Cross-sectional analysis
107.	Gittelsohn J, Wolever TM, Harris SB, Harris-Giraldo R, Hanley AJ, Zinman B. Specific patterns of food consumption and preparation are associated with diabetes and obesity in a Native Canadian community. J Nutr. 1998 Mar;128(3):541-7. PMID: 9482761.	Does not include body weight as an outcome
108.	Gray CL, Cinciripini PM, Cinciripini LG. The relationship of gender, diet patterns, and body type to weight change following smoking reduction: a multivariate approach. J Subst Abuse. 1995;7(4):405-23. PMID: 8838624.	Does not meet inclusion criteria for methodology
109.	Greenwood DC, Cade JE, Draper A, Barrett JH, Calvert C, Greenhalgh A. Seven unique food consumption patterns identified among women in the UK Women's Cohort Study. Eur J Clin Nutr. 2000 Apr;54(4):314-20. PMID: 10745282.	Cross-sectional analysis
110.	Gubbels JS, Kremers SP, Goldbohm RA, Stafleu A, Thijs C. Energy balance-related behavioural patterns in 5-year-old children and the longitudinal association with weight status development in early childhood. Public Health Nutr. 2011 Nov 29:1-9. [Epub ahead of print] PMID: 22124196.	Includes behavioral patterns
111.	Halkjaer J, Sørensen TI, Tjønneland A, Togo P, Holst C, Heitmann BL. Food and drinking patterns as predictors of 6-year BMI-adjusted changes in waist circumference. Br J Nutr. 2004 Oct;92(4):735-48. PubMed PMID: 15522143.	Does not address the question (cross-sectional analysis related to food-related environmental factors)
112.	Harriss LR, English DR, Powles J, Giles GG, Tonkin AM, Hodge AM, Brazionis L, O'Dea K. Dietary patterns and cardiovascular mortality in the Melbourne Collaborative Cohort Study. Am J Clin Nutr. 2007 Jul;86(1):221-9. PMID: 17616784.	Does not include body weight as an outcome (related to CVD)
113.	Hart CN, Jelalian E, Raynor HA, Mehlenbeck R, Lloyd-Richardson EE, Kaplan J, Flynn-O'Brien K, Wing RR. Early patterns of food intake in an adolescent weight loss trial as predictors of BMI change. Eat Behav. 2010 Dec;11(4):217-22. Epub 2010 May 26. PMID: 20850055.	Does not meet inclusion criteria for methodology (evaluated food intake predictors of BMI)
114.	Hartline-Grafton HL, Rose D, Johnson CC, Rice JC, Webber LS. The influence of weekday eating patterns on energy intake and BMI among female elementary school personnel. Obesity (Silver Spring). 2010 Apr;18(4):736-42. Epub 2009 Aug 20. PMID: 19696760.	Does not meet inclusion criteria for methodology (evaluated eating behavior)
115.	He Y, Ma G, Zhai F, Li Y, Hu Y, Feskens EJ, Yang X. Dietary patterns and glucose tolerance abnormalities in Chinese adults. Diabetes Care. 2009 Nov;32(11):1972-6. Epub 2009 Aug 12. PMID: 19675202.	Does not include body weight as an outcome (evaluated dietary patterns and glucose tolerance)

116.	Heidemann C, Hoffmann K, Spranger J, Klipstein-Grobusch K, Möhlig M, Pfeiffer AF, Boeing H; European Prospective Investigation into Cancer and Nutrition (EPIC)--Potsdam Study Cohort. A dietary pattern protective against type 2 diabetes in the European Prospective Investigation into Cancer and Nutrition (EPIC)--Potsdam Study cohort. Diabetologia. 2005 Jun;48(6):1126-34. Epub 2005 May 12. PMID: 15889235.	Does not meet inclusion criteria for methodology
117.	Heidemann C, Scheidt-Nave C, Richter A, Mensink GB. Dietary patterns are associated with cardiometabolic risk factors in a representative study population of German adults. Br J Nutr. 2011 Oct;106(8):1253-62. Epub 2011 May 17. PMID: 21736839.	Cross-sectional analysis
118.	Hendricks KM, Mwamburi DM, Newby PK, Wanke CA. Dietary patterns and health and nutrition outcomes in men living with HIV infection. Am J Clin Nutr. 2008 Dec;88(6):1584-92. PMID: 19064519.	Participants diagnosed with HIV
119.	Héroux M, Janssen I, Lam M, Lee DC, Hebert JR, Sui X, Blair SN. Dietary patterns and the risk of mortality: impact of cardiorespiratory fitness. Int J Epidemiol. 2010 Feb;39(1):197-209. Epub 2009 Apr 20. PMID: 19380370.	Cross-sectional analysis (focused in mortality)
120.	Hittner JB, Faith MS. Typology of emergent eating patterns in early childhood. Eat Behav. 2011 Dec;12(4):242-8. Epub 2011 Jun 26. PMID: 22051354.	Does not include body weight as an outcome (related to emergent eating patterns)
121.	Höglund D, Samuelson G, Mark A. Food habits in Swedish adolescents in relation to socioeconomic conditions. Eur J Clin Nutr. 1998 Nov;52(11):784-9. PMID: 9846589.	Does not meet inclusion criteria for methodology (cross-sectional analysis)
122.	Holmbäck I, Ericson U, Gullberg B, Wirfält E. A high eating frequency is associated with an overall healthy lifestyle in middle-aged men and women and reduced likelihood of general and central obesity in men. Br J Nutr. 2010 Oct;104(7):1065-73. Epub 2010 May 26. PMID: 20500929.	Does not meet inclusion criteria for methodology (cross-sectional analysis)
123.	Hong S, Song Y, Lee KH, Lee HS, Lee M, Jee SH, Joung H. A fruit and dairy dietary pattern is associated with a reduced risk of metabolic syndrome. Metabolism. 2011 Dec 28. [Epub ahead of print] PMID: 22209672.	Cross-sectional analysis
124.	Horn LV, Tian L, Neuhouser ML, Howard BV, Eaton CB, Snetselaar L, Matthan NR, Lichtenstein AH. Dietary patterns are associated with disease risk among participants in the Women's Health Initiative Observational Study. J Nutr. 2012 Feb;142(2):284-91. Epub 2011 Dec 21. PubMed PMID: 22190026; PubMed Central PMCID: PMC3260060.	Does not include body weight as an outcome
125.	Hosseini-Esfahani F, Jessri M, Mirmiran P, Bastan S, Azizi F. Adherence to dietary recommendations and risk of metabolic syndrome: Tehran Lipid and Glucose Study. Metabolism. 2010 Dec;59(12):1833-42. Epub 2010 Jul 29. PMID: 20667561.	Does not meet inclusion criteria for methodology (cross-sectional analysis)
126.	Howard BV, Curb JD, Eaton CB, Kooperberg C, Ockene J, Kostis JB, Pettinger M, Rajkovic A, Robinson JG, Rossouw J, Sarto G, Shikany JM, Van Horn L. Low-fat dietary pattern and lipoprotein risk factors: the Women's Health Initiative Dietary Modification Trial. Am J Clin Nutr. 2010 Apr;91(4):860-74. Epub 2010 Feb 17. PMID: 20164311.	Does not include body weight as an outcome (related to lipids and lipoprotein analysis)
127.	Hu D, Taylor T, Blow J, Cooper TV. Multiple health behaviors: patterns and correlates of diet and exercise in a Hispanic college sample. Eat Behav. 2011 Dec;12(4):296-301. Epub 2011 Jul 24. PMID: 22051363.	Does not meet inclusion criteria for methodology (related to exercise and dietary behavior)

128.	Hu FB, Rimm EB, Stampfer MJ, Ascherio A, Spiegelman D, Willett WC. Prospective study of major dietary patterns and risk of coronary heart disease in men. Am J Clin Nutr. 2000 Oct;72(4):912-21. PMID: 11010931.	Does not include body weight as an outcome (dietary patterns related to CHD)
129.	Jacobs DR Jr, Andersen LF, Blomhoff R. Whole-grain consumption is associated with a reduced risk of noncardiovascular, noncancer death attributed to inflammatory diseases in the Iowa Women's Health Study. Am J Clin Nutr. 2007 Jun;85(6):1606-14. PMID: 17556700.	Does not include body weight as an outcome (related to whole-grain intake)
130.	Jacobsen BK, Thelle DS. The Tromsø Heart Study: the relationship between food habits and the body mass index. J Chronic Dis. 1987;40(8):795-800. PMID: 3496347.	Does not meet inclusion criteria for methodology (cross-sectional data)
131.	Jiménez-Cruz A, Bacardí-Gascón M, Jones EG. Consumption of fruits, vegetables, soft drinks, and high-fat-containing snacks among Mexican children on the Mexico-U.S. border. Arch Med Res. 2002 Jan-Feb;33(1):74-80. PMID: 11825635.	Does not meet inclusion criteria for methodology (cross-sectional data)
132.	Jollie-Trottier T, Holm JE, McDonald JD. Correlates of overweight and obesity in american Indian children. J Pediatr Psychol. 2009 Apr;34(3):245-53. Epub 2008 May 22. PMID: 18499740.	Does not meet inclusion criteria for methodology
133.	Jonnalagadda SS, Diwan S. Regional variations in dietary intake and body mass index of first-generation Asian-Indian immigrants in the United States. J Am Diet Assoc. 2002 Sep;102(9):1286-9. PMID: 12792628.	Does not meet inclusion criteria for methodology
134.	Jouret B, Ahluwalia N, Cristini C, Dupuy M, Nègre-Pages L, Grandjean H, Tauber M. Factors associated with overweight in preschool-age children in southwestern France. Am J Clin Nutr. 2007 Jun;85(6):1643-9. PMID: 17556704.	Does not meet inclusion criteria for methodology (related to factors associated with overweight)
135.	Kamath CC, Vickers KS, Ehrlich A, McGovern L, Johnson J, Singhal V, Paulo R, Hettinger A, Erwin PJ, Montori VM. Clinical review: behavioral interventions to prevent childhood obesity: a systematic review and metaanalyses of randomized trials. J Clin Endocrinol Metab. 2008 Dec;93(12):4606-15. Epub 2008 Sep 9. Review. PMID: 18782880.	Does not meet inclusion criteria for methodology (systematic review of RCTs related to behavioral interventions)
136.	Kant AK, Ballard-Barbash R, Schatzkin A. Evening eating and its relation to self-reported body weight and nutrient intake in women, CSFII 1985-86. J Am Coll Nutr. 1995 Aug;14(4):358-63. PMID: 8568112.	Does not meet inclusion criteria for methodology
137.	Kant AK, Graubard BI. Secular trends in patterns of self-reported food consumption of adult Americans: NHANES 1971-1975 to NHANES 1999-2002. Am J Clin Nutr. 2006 Nov;84(5):1215-23. PMID: 17093177.	Does not meet inclusion criteria for methodology (cross-sectional analysis related to trends in dietary and other factors that may increase adiposity)
138.	Kant AK, Leitzmann MF, Park Y, Hollenbeck A, Schatzkin A. Patterns of recommended dietary behaviors predict subsequent risk of mortality in a large cohort of men and women in the United States. J Nutr. 2009 Jul;139(7):1374-80. Epub 2009 May 27. PMID: 19474153.	Does not include body weight as an outcome (related to dietary behaviors and mortality)
139.	Kastorini CM, Milionis HJ, Esposito K, Giugliano D, Goudevenos JA, Panagiotakos DB. The effect of Mediterranean diet on metabolic syndrome and its components: a meta-analysis of 50 studies and 534,906 individuals. J Am Coll Cardiol. 2011 Mar 15;57(11):1299-313. PMID: 21392646.	Does not meet inclusion criteria for methodology (meta-analysis of prospective studies and clinical trials related to Mediterranean diet and metabolic syndrome)

140.	Kayrooz K, Moy TF, Yanek LR, Becker DM. Dietary fat patterns in urban African American women. J Community Health. 1998 Dec;23(6):453-69. PMID: 9824794.	Does not meet inclusion criteria for methodology
141.	Keding GB, Msuya JM, Maass BL, Krawinkel MB.Dietary patterns and nutritional health of women: the nutrition transition in rural Tanzania. Food Nutr Bull. 2011 Sep;32(3):218-26. PMID: 22073796	Not considered very high or high human-development country
142.	Kesse-Guyot E, Bertrais S, Péneau S, Estaquio C, Dauchet L, Vergnaud AC, Czernichow S, Galan P, Hercberg S, Bellisle F. Dietary patterns and their sociodemographic and behavioural correlates in French middle-aged adults from the SU.VI.MAX cohort. Eur J Clin Nutr. 2009 Apr;63(4):521-8. Epub 2008 Jan 23. PMID: 18212801	Cross-sectional analysis
143.	Kim J, Jo I. Grains, vegetables, and fish dietary pattern is inversely associated with the risk of metabolic syndrome in South korean adults. J Am Diet Assoc. 2011 Aug;111(8):1141-9. PMID: 21802559	Cross-sectional analysis
144.	King DE, Mainous AG 3rd, Carnemolla M, Everett CJ. Adherence to healthy lifestyle habits in US adults, 1988-2006. Am J Med. 2009 Jun;122(6):528-34. PMID: 19486715	Cross-sectional analysis (comparison of 2 surveys)
145.	Kitchen MS, Ransley JK, Greenwood DC, Clarke GP, Conner MT, Jupp J, Cade JE. Study protocol: a cluster randomised controlled trial of a school based fruit and vegetable intervention - Project Tomato. BMC Health Serv Res. 2009 Jun 16;9:101. PMID: 19531246	Does not meet inclusion criteria for methodology (fruit and vegetable intervention)
146.	Kjøllesdal MR, Holmboe-Ottesen G, Mosdøl A, Wandel M. The relative importance of socioeconomic indicators in explaining differences in BMI and waist:hip ratio, and the mediating effect of work control, dietary patterns and physical activity. Br J Nutr. 2010 Oct;104(8):1230-40. Epub 2010 May 21. PMID: 20487579	Cross-sectional analysis
147.	Kjøllesdal MR, Holmboe-Ottesen G, Wandel M. Frequent use of staff canteens is associated with unhealthy dietary habits and obesity in a Norwegian adult population. Public Health Nutr. 2011 Jan;14(1):133-41. Epub 2010 Jun 8. PMID: 20529403	Does not address the question (cross-sectional analysis of staff canteen use)
148.	Knol LL, Haughton B, Fitzhugh EC. Dietary patterns of young, low-income US children. J Am Diet Assoc. 2005 Nov;105(11):1765-73. PMID: 16256761	Cross-sectional analysis (continuing Survey of Food Intakes by Individuals 1994-1996, 1998)
149.	Knudsen VK, Orozova-Bekkevold IM, Mikkelsen TB, Wolff S, Olsen SF. Major dietary patterns in pregnancy and fetal growth. Eur J Clin Nutr. 2008 Apr;62(4):463-70. Epub 2007 Mar 28. PMID: 17392696	Does not address the question (related to diet during pregnancy and fetal growth)
150.	Ko GT, Chan JC, Tong SD, Chan AW, Wong PT, Hui SS, Kwok R, Chan CL. Associations between dietary habits and risk factors for cardiovascular diseases in a Hong Kong Chinese working population--the "Better Health for Better Hong Kong" (BHBHK) health promotion campaign. Asia Pac J Clin Nutr. 2007;16(4):757-65. PMID: 18042539	Does not meet inclusion criteria for methodology
151.	Kolodinsky JM, Goldstein AB. Time use and food pattern influences on obesity. Obesity (Silver Spring). 2011 Dec;19(12):2327-35. doi: 10.1038/oby.2011.130. Epub 2011 May 26. PubMed PMID: 21617636; PubMed Central PMCID: PMC3223413.	Does not meet inclusion criteria for methodology
152.	Kontogianni MD, Farmaki AE, Vidra N, Sofrona S, Magkanari F, Yannakoulia M. Associations between lifestyle patterns and body mass index in a sample of Greek children and adolescents. J Am Diet Assoc. 2010 Feb;110(2):215-21. PMID: 20102848	Cross-sectional analysis (confirm dietary patterns with full text)

153.	Kosti RI, Panagiotakos DB, Mihas CC, Alevizos A, Zampelas A, Mariolis A, Tountas Y. Dietary habits, physical activity and prevalence of overweight/obesity among adolescents in Greece: the Vyronas study. Med Sci Monit. 2007 Oct;13(10):CR437-44. PMID: 17901850	Does not meet inclusion criteria for methodology
154.	Kourlaba G, Panagiotakos DB, Mihas K, Alevizos A, Marayiannis K, Mariolis A, Tountas Y. Dietary patterns in relation to socio-economic and lifestyle characteristics among Greek adolescents: a multivariate analysis. Public Health Nutr. 2009 Sep;12(9):1366-72. Epub 2008 Dec 9. PMID: 19063765	Does not include body weight as an outcome
155.	Kourlaba G, Polychronopoulos E, Zampelas A, Lionis C, Panagiotakos DB. Development of a diet index for older adults and its relation to cardiovascular disease risk factors: the Elderly Dietary Index. J Am Diet Assoc. 2009 Jun;109(6):1022-30. PMID: 19465184	Does not address the question (development of a diet index and CVD)
156.	Kristeller JL, Rodin J. Identifying eating patterns in male and female undergraduates using cluster analysis. Addict Behav. 1989;14(6):631-42. PMID: 2618846	Does not include body weight as an outcome
157.	Kruger R, Kruger HS, Macintyre UE. The determinants of overweight and obesity among 10- to 15-year-old schoolchildren in the North West Province, South Africa - the THUSA BANA (Transition and Health during Urbanisation of South Africans; BANA, children) study. Public Health Nutr. 2006 May;9(3):351-8. PMID: 16684387	Does not meet inclusion criteria for methodology
158.	Kulesza W, Rywik S, Baláz V, Budlovský I, Marczuk A. Prevalence of ischaemic heart disease risk factors in male populations aged 45-54 years in Warsaw and Bratislava. Part IV: Relationship between dietary habits and IHD risk factors. Cor Vasa. 1984;26(1):61-71. PMID: 6723318	Does not meet inclusion criteria for methodology (descriptive study)
159.	Kyrø C, Skeie G, Dragsted LO, Christensen J, Overvad K, Hallmans G, Johansson I, Lund E, Slimani N, Johnsen NF, Halkjær J, Tjønneland A, Olsen A. Intake of whole grains in Scandinavia is associated with healthy lifestyle, socio-economic and dietary factors. Public Health Nutr. 2011 Oct;14(10):1787-95. Epub 2011 Feb 22. PMID: 21338557	Does not meet inclusion criteria for methodology (cross-sectional analysis of whole-grain consumption)
160.	Lagström H, Hakanen M, Niinikoski H, Viikari J, Rönnemaa T, Saarinen M, Pahkala K, Simell O. Growth patterns and obesity development in overweight or normal-weight 13-year-old adolescents: the STRIP study. Pediatrics. 2008 Oct;122(4):e876-83. PMID: 18829786	Does not meet inclusion criteria for methodology
161.	Langsetmo L, Hanley DA, Prior JC, Barr SI, Anastassiades T, Towheed T, Goltzman D, Morin S, Poliquin S, Kreiger N; CaMos Research Group. Dietary patterns and incident low-trauma fractures in postmenopausal women and men aged ≥ 50 y: a population-based cohort study. Am J Clin Nutr. 2011 Jan;93(1):192-9. Epub 2010 Nov 10. PubMed PMID: 21068350.	Does not address the question (related to diet and CHD)
162.	Langsetmo L, Poliquin S, Hanley DA, Prior JC, Barr S, Anastassiades T, Towheed T, Goltzman D, Kreiger N; CaMos Research Group. Dietary patterns in Canadian men and women ages 25 and older: relationship to demographics, body mass index, and bone mineral density. BMC Musculoskelet Disord. 2010 Jan 28;11:20. PMID: 20109205	Does not include body weight as an outcome
163.	Lapidus L, Andersson H, Bengtsson C, Bosaeus I. Dietary habits in relation to incidence of cardiovascular disease and death in women: a 12-year follow-up of participants in the population study of women in Gothenburg, Sweden. Am J Clin Nutr. 1986 Oct;44(4):444-8. PMID: 3766431	Does not include body weight as an outcome (related to incidence of CVD)

164.	Larkin FA, Basiotis PP, Riddick HA, Sykes KE, Pao EM. Dietary patterns of women smokers and non-smokers. J Am Diet Assoc. 1990 Feb;90(2):230-7. PMID: 2154514	Does not include body weight as an outcome (related to smokers and dietary patterns)
165.	LaRowe TL, Moeller SM, Adams AK. Beverage patterns, diet quality, and body mass index of US preschool and school-aged children. J Am Diet Assoc. 2007 Jul;107(7):1124-33. PMID: 17604741	Does not address the question (related to beverage patterns)
166.	Larson N, Neumark-Sztainer D, Laska MN, Story M. Young adults and eating away from home: associations with dietary intake patterns and weight status differ by choice of restaurant. J Am Diet Assoc. 2011 Nov;111(11):1696-703. PMID: 22027052	Does not meet inclusion criteria for methodology
167.	Larson NI, Neumark-Sztainer D, Story M, Burgess-Champoux T. Whole-grain intake correlates among adolescents and young adults: findings from Project EAT. J Am Diet Assoc. 2010 Feb;110(2):230-7. PMID: 20102850	Does not meet inclusion criteria for methodology (cross-sectional analysis related to whole-grain)
168.	Larsson H, Elmståhl S, Berglund G, Ahrén B. Habitual dietary intake versus glucose tolerance, insulin sensitivity and insulin secretion in postmenopausal women. J Intern Med. 1999 Jun;245(6):581-91. PMID: 10395187	Does not include body weight as an outcome (related to dietary intake and glucose tolerance)
169.	Laurenzi M, Stamler R, Trevisan M, Dyer A, Stamler J. Is Italy losing the "Mediterranean advantage?" Report on the Gubbio population study: cardiovascular risk factors at baseline. Gubbio Collaborative Study Group. Prev Med. 1989 Jan;18(1):35-44. PMID: 2710761	Does not meet inclusion criteria for methodology (narrative review0
170.	Lazarou C, Panagiotakos DB, Matalas AL. Foods E-KINDEX: a dietary index associated with reduced blood pressure levels among young children: the CYKIDS study. J Am Diet Assoc. 2009 Jun;109(6):1070-5. PMID: 19465190	Does not address the question (related to foods E-INDEX score and levels of BP in children)
171.	Lazarou C, Panagiotakos DB, Matalas AL. Level of adherence to the Mediterranean diet among children from Cyprus: the CYKIDS study. Public Health Nutr. 2009 Jul;12(7):991-1000. Epub 2008 Aug 27. PMID: 18752695	Does not meet inclusion criteria for methodology (cross-sectional analysis)
172.	Ledikwe JH, Smiciklas-Wright H, Mitchell DC, Miller CK, Jensen GL. Dietary patterns of rural older adults are associated with weight and nutritional status. J Am Geriatr Soc. 2004 Apr;52(4):589-95. PMID: 15066076	Cross-sectional analysis
173.	Lee JE, Kim JH, Son SJ, Ahn Y, Lee J, Park C, Lee L, Erickson KL, Jung IK. Dietary pattern classifications with nutrient intake and health-risk factors in Korean men. Nutrition. 2011 Jan;27(1):26-33. Epub 2010 Feb 19. PMID: 20171845	Cross-sectional analysis
174.	Lee JW, Hwang J, Cho HS. Dietary patterns of children and adolescents analyzed from 2001 Korea National Health and Nutrition Survey. Nutr Res Pract. 2007 Summer;1(2):84-8. Epub 2007 Jun 30. PMID: 20535391	Cross-sectional analysis
175.	Lee SK, Novotny R, Daida YG, Vijayadeva V, Gittelsohn J. Dietary patterns of adolescent girls in Hawaii over a 2-year period. J Am Diet Assoc. 2007 Jun;107(6):956-61. PMID: 17524716	Does not meet inclusion criteria for methodology
176.	Lehto R, Ray C, Lahti-Koski M, Roos E. Health behaviors, waist circumference and waist-to-height ratio in children. Eur J Clin Nutr. 2011 Jul;65(7):841-8. doi: 10.1038/ejcn.2011.49. Epub 2011 Apr 13. PMID: 21487427	Does not meet inclusion criteria for methodology (cross-sectional analysis)
177.	Leite ML, Nicolosi A. Dietary patterns and metabolic syndrome factors in a non-diabetic Italian population. Public Health Nutr. 2009	Cross-sectional analysis

	Sep;12(9):1494-503. Epub 2009 Jan 15. PMID: 19144241	
178.	Li M, Dibley MJ, Sibbritt DW, Yan H. Dietary habits and overweight/obesity in adolescents in Xi'an City, China. Asia Pac J Clin Nutr. 2010;19(1):76-82. PMID: 20199990	Does not meet inclusion criteria for methodology
179.	Li Y, He Y, Lai J, Wang D, Zhang J, Fu P, Yang X, Qi L. Dietary patterns are associated with stroke in Chinese adults. J Nutr. 2011 Oct;141(10):1834-9. Epub 2011 Aug 24. PMID: 21865562	Does not include body weight as an outcome (related to dietary intake and CVD)
180.	Libuda L, Alexy U, Sichert-Hellert W, Stehle P, Karaolis-Danckert N, Buyken AE, Kersting M. Pattern of beverage consumption and long-term association with body-weight status in German adolescents--results from the DONALD study. Br J Nutr. 2008 Jun;99(6):1370-9. Epub 2007 Nov 23. PMID: 18034911	Does not meet inclusion criteria for methodology
181.	Liese AD, Bortsov A, Günther AL, Dabelea D, Reynolds K, Standiford DA, Liu L, Williams DE, Mayer-Davis EJ, D'Agostino RB Jr, Bell R, Marcovina S. Association of DASH diet with cardiovascular risk factors in youth with diabetes mellitus: the SEARCH for Diabetes in Youth study. Circulation. 2011 Apr 5;123(13):1410-7. Epub 2011 Mar 21. PMID: 21422385	Does not meet inclusion criteria for methodology (related to DASH diet)
182.	Liese AD, Schulz M, Moore CG, Mayer-Davis EJ. Dietary patterns, insulin sensitivity and adiposity in the multi-ethnic Insulin Resistance Atherosclerosis Study population. Br J Nutr. 2004 Dec;92(6):973-84. PMID: 15613260	Cross-sectional analysis
183.	Lim JH, Lee YS, Chang HC, Moon MK, Song Y. Association between dietary patterns and blood lipid profiles in Korean adults with type 2 diabetes. J Korean Med Sci. 2011 Sep;26(9):1201-8. Epub 2011 Sep 1. PMID: 21935277	Does not include body weight as an outcome (cross-sectional analysis related to blood lipids)
184.	Lim SS, Noakes M, Keogh JB, Clifton PM. Long-term effects of a low carbohydrate, low fat or high unsaturated fat diet compared to a no-intervention control. Nutr Metab Cardiovasc Dis. 2010 Oct;20(8):599-607. Epub 2009 Aug 19. PMID: 19692216	Does not meet inclusion criteria for methodology (related to the effects of low carbs diet)
185.	Lin H, Bermudez OI, Tucker KL. Dietary patterns of Hispanic elders are associated with acculturation and obesity. J Nutr. 2003 Nov;133(11):3651-7. PMID: 14608089	Cross-sectional analysis
186.	Lindeberg S, Jönsson T, Granfeldt Y, Borgstrand E, Soffman J, Sjöström K, Ahrén B. A Palaeolithic diet improves glucose tolerance more than a Mediterranean-like diet in individuals with ischaemic heart disease. Diabetologia. 2007 Sep;50(9):1795-807. Epub 2007 Jun 22. PMID: 17583796	Participants diagnosed with ischaemic heart disease plus either glucose intolerance or T2D
187.	Lioret S, Touvier M, Lafay L, Volatier JL, Maire B. Dietary and physical activity patterns in French children are related to overweight and socioeconomic status. J Nutr. 2008 Jan;138(1):101-7. PMID: 18156411	Cross-sectional analysis
188.	Liu E, McKeown NM, Newby PK, Meigs JB, Vasan RS, Quatromoni PA, D'Agostino RB, Jacques PF. Cross-sectional association of dietary patterns with insulin-resistant phenotypes among adults without diabetes in the Framingham Offspring Study. Br J Nutr. 2009 Aug;102(4):576-83. Epub 2009 Feb 16. PMID: 19216828	Does not include body weight as an outcome (cross-sectional analysis related to insulin resistant)
189.	Liu L, Mizushima S, Ikeda K, Hattori H, Miura A, Gao M, Nara Y, Yamori Y. Comparative studies of diet-related factors and blood pressure among Chinese and Japanese: results from the China-Japan Cooperative Research of the WHO-CARDIAC Study. Cardiovascular Disease and Alimentary Comparison. Hypertens Res. 2000 Sep;23(5):413-20. PMID: 11016794	Does not meet inclusion criteria for methodology (related to blood pressure)

190.	Lo Siou G, Yasui Y, Csizmadi I, McGregor SE, Robson PJ. Exploring statistical approaches to diminish subjectivity of cluster analysis to derive dietary patterns: The Tomorrow Project. Am J Epidemiol. 2011 Apr 15;173(8):956-67. Epub 2011 Mar 18. PMID: 21421742	Cross-sectional analysis (Check for secondary analysis in full text)
191.	Longo-Mbenza B, Kadima-Tshimanga B, Buassa-bu-Tsumbu B, M'buyamba K Jr. Diets rich in vegetables and physical activity are associated with a decreased risk of pregnancy induced hypertension among rural women from Kimpese, DR Congo. Niger J Med. 2008 Jan-Mar;17(1):45-9. PMID: 18390132	Participants are pregnant (same as above but different PMID)
192.	Longo-Mbenza B, Tshimanga KB, Buassa-bu-Tsumbu B, Kabangu MJ. Diets rich in vegetables and physical activity are associated with a decreased risk of pregnancy induced hypertension among rural women from Kimpese, DR Congo. Niger J Med. 2008 Jul-Aug;17(3):265-9. PMID: 18788250	Participants are pregnant
193.	Lopez CN, Martinez-Gonzalez MA, Sanchez-Villegas A, Alonso A, Pimenta AM, Bes-Rastrollo M. Costs of Mediterranean and western dietary patterns in a Spanish cohort and their relationship with prospective weight change. J Epidemiol Community Health. 2009 Nov;63(11):920-7. Epub 2009 Sep 17. PMID: 19762456	Does not meet inclusion criteria for methodology. This study reported associations between daily food cost and weight gain only
194.	López EP, Rice C, Weddle DO, Rahill GJ. The relationship among cardiovascular risk factors, diet patterns, alcohol consumption, and ethnicity among women aged 50 years and older. J Am Diet Assoc. 2008 Feb;108(2):248-56. PMID: 18237573	Cross-sectional analysis
195.	Lovejoy J, DiGirolamo M. Habitual dietary intake and insulin sensitivity in lean and obese adults. Am J Clin Nutr. 1992 Jun;55(6):1174-9. PMID: 1317665	Does not meet inclusion criteria for methodology
196.	Lowe MR, Annunziato RA, Markowitz JT, Didie E, Bellace DL, Riddell L, Maille C, McKinney S, Stice E. Multiple types of dieting prospectively predict weight gain during the freshman year of college. Appetite. 2006 Jul;47(1):83-90. Epub 2006 May 2. PMID: 16650913	Does not meet inclusion criteria for methodology
197.	Luepker RV, Perry CL, McKinlay SM, Nader PR, Parcel GS, Stone EJ, Webber LS, Elder JP, Feldman HA, Johnson CC, et al. Outcomes of a field trial to improve children's dietary patterns and physical activity. The Child and Adolescent Trial for Cardiovascular Health. CATCH collaborative group. JAMA. 1996 Mar 13;275(10):768-76. PMID: 8598593	Does not meet inclusion criteria for methodology
198.	Ma Y, Bertone ER, Stanek EJ 3rd, Reed GW, Hebert JR, Cohen NL, Merriam PA, Ockene IS. Association between eating patterns and obesity in a free-living US adult population. Am J Epidemiol. 2003 Jul 1;158(1):85-92. PMID: 12835290	Does not meet inclusion criteria for methodology
199.	Makkes S, Montenegro-Bethancourt G, Groeneveld IF, Doak CM, Solomons NW. Beverage consumption and anthropometric outcomes among schoolchildren in Guatemala. Matern Child Nutr. 2011 Oct;7(4):410-20. doi: 10.1111/j.1740-8709.2010.00249.x. Epub 2010 Jun 11. PMID: 21902808	Not consider very high or high development country
200.	Malik VS, Fung TT, van Dam RM, Rimm EB, Rosner B, Hu FB. Dietary patterns during adolescence and risk of type 2 diabetes in middle-aged women. Diabetes Care. 2012 Jan;35(1):12-8. Epub 2011 Nov 10. PMID: 22074723	Does not include body weight as an outcome (seven year risk of T2D and dietary patterns -BMI is accounted as mediator)
201.	Manios Y, Kourlaba G, Grammatikaki E, Androutsos O, Ioannou E, Roma-Giannikou E. Comparison of two methods for identifying dietary patterns associated with obesity in preschool children: the GENESIS study. Eur J Clin Nutr. 2010 Dec;64(12):1407-14. Epub 2010 Sep 1. PMID: 20808335	Cross-sectional analysis; reduce rank regression (RRR) analysis

202.	Mantzoros CS, Williams CJ, Manson JE, Meigs JB, Hu FB. Adherence to the Mediterranean dietary pattern is positively associated with plasma adiponectin concentrations in diabetic women. Am J Clin Nutr. 2006 Aug;84(2):328-35. PMID: 16895879	Participants are diabetic women
203.	Mar Bibiloni M, Martínez E, Llull R, Maffiotte E, Riesco M, Llompart I, Pons A, Tur JA. Metabolic syndrome in adolescents in the Balearic Islands, a Mediterranean region. Nutr Metab Cardiovasc Dis. 2011 Jun;21(6):446-54. Epub 2010 Mar 7. PMID: 20211550	Does not meet inclusion criteria for methodology
204.	Marín-Guerrero AC, Gutiérrez-Fisac JL, Guallar-Castillón P, Banegas JR, Rodríguez-Artalejo F. Eating behaviours and obesity in the adult population of Spain. Br J Nutr. 2008 Nov;100(5):1142-8. Epub 2008 Apr 1. PMID: 18377684	Does not meet inclusion criteria for methodology (cross-sectional analysis of eating behaviors)
205.	Martínez-González MA, García-López M, Bes-Rastrollo M, Toledo E, Martínez-Lapiscina EH, Delgado-Rodriguez M, Vazquez Z, Benito S, Beunza JJ. Mediterranean diet and the incidence of cardiovascular disease: a Spanish cohort. Nutr Metab Cardiovasc Dis. 2011 Apr;21(4):237-44. Epub 2010 Jan 21. PMID: 20096543	Does not meet inclusion criteria for methodology (related to CVD)
206.	Martínez-Ortiz JA, Fung TT, Baylin A, Hu FB, Campos H. Dietary patterns and risk of nonfatal acute myocardial infarction in Costa Rican adults. Eur J Clin Nutr. 2006 Jun;60(6):770-7. Epub 2006 Feb 8. PMID: 16465200	Does not include body weight as an outcome (case-control study related to MI and HDL cholesterol)
207.	Masala G, Bendinelli B, Versari D, Saieva C, Ceroti M, Santagiuliana F, Caini S, Salvini S, Sera F, Taddei S, Ghiadoni L, Palli D. Anthropometric and dietary determinants of blood pressure in over 7000 Mediterranean women: the European Prospective Investigation into Cancer and Nutrition-Florence cohort. J Hypertens. 2008 Nov;26(11):2112-20. PMID: 18854749	Does not meet inclusion criteria for methodology
208.	Maskarinec G, Novotny R, Tasaki K. Dietary patterns are associated with body mass index in multiethnic women. J Nutr. 2000 Dec;130(12):3068-72. PMID: 11110871	Cross-sectional analysis
209.	Massari M, Freeman KM, Seccareccia F, Menotti A, Farchi G; Research Group of the RIFLE Project. An index to measure the association between dietary patterns and coronary heart disease risk factors: findings from two Italian studies. Prev Med. 2004 Oct;39(4):841-7. PMID: 15351554	Does not meet inclusion criteria for methodology (related to and index to measure dietary patterns and CHD)
210.	Mattei J, Noel SE, Tucker KL. A meat, processed meat, and French fries dietary pattern is associated with high allostatic load in Puerto Rican older adults. J Am Diet Assoc. 2011 Oct;111(10):1498-506. PMID: 21963016	Does not meet inclusion criteria for methodology
211.	Matthews VL, Wien M, Sabaté J. The risk of child and adolescent overweight is related to types of food consumed. Nutr J. 2011 Jun 24;10:71. PMID: 21702912	Does not meet inclusion criteria for methodology
212.	McCarron DA, Reusser ME. Reducing cardiovascular disease risk with diet. Obes Res. 2001 Nov;9 Suppl 4:335S-340S. PMID: 11707562	Does not meet inclusion criteria for methodology
213.	McCrory MA, Fuss PJ, McCallum JE, Yao M, Vinken AG, Hays NP, Roberts SB. Dietary variety within food groups: association with energy intake and body fatness in men and women. Am J Clin Nutr. 1999 Mar;69(3):440-7. PMID: 10075328	Does not meet inclusion criteria for methodology
214.	McNaughton SA, Ball K, Mishra GD, Crawford DA. Dietary patterns of adolescents and risk of obesity and hypertension. J Nutr. 2008 Feb;138(2):364-70. PMID: 18203905	Cross-sectional analysis

215.	McNutt SW, Hu Y, Schreiber GB, Crawford PB, Obarzanek E, Mellin L. A longitudinal study of the dietary practices of black and white girls 9 and 10 years old at enrollment: the NHLBI Growth and Health Study. J Adolesc Health. 1997 Jan;20(1):27-37. PMID: 9007656	Does not meet inclusion criteria for methodology
216.	Meckling KA, Sherfey R. A randomized trial of a hypocaloric high-protein diet, with and without exercise, on weight loss, fitness, and markers of the Metabolic Syndrome in overweight and obese women. Appl Physiol Nutr Metab. 2007 Aug;32(4):743-52. PMID: 17622289	Does not meet inclusion criteria for methodology (related to macronutrients)
217.	Mercille G, Receveur O, Macaulay AC. Are snacking patterns associated with risk of overweight among Kahnawake schoolchildren? Public Health Nutr. 2010 Feb;13(2):163-71. Epub 2009 Aug 4. PMID: 19650958	Does not meet inclusion criteria for methodology (related to snacking patterns)
218.	Michaud DS, Skinner HG, Wu K, Hu F, Giovannucci E, Willett WC, Colditz GA, Fuchs CS. Dietary patterns and pancreatic cancer risk in men and women. J Natl Cancer Inst. 2005 Apr 6;97(7):518-24. PubMed PMID: 15812077.	Does not address the question (related to diet and bone fracture)
219.	Middleman AB, Vazquez I, Durant RH. Eating patterns, physical activity, and attempts to change weight among adolescents. J Adolesc Health. 1998 Jan;22(1):37-42. PMID: 9436065	Does not meet inclusion criteria for methodology
220.	Millen BE, Quatromoni PA, Copenhafer DL, Demissie S, O'Horo CE, D'Agostino RB. Validation of a dietary pattern approach for evaluating nutritional risk: the Framingham Nutrition Studies. J Am Diet Assoc. 2001 Feb;101(2):187-94. PMID: 11271691	Does not include body weight as an outcome (related to nutrient intakes)
221.	Millen BE, Quatromoni PA, Pencina M, Kimokoti R, Nam BH, Cobain S, Kozak W, Appugliese DP, Ordovas J, D'Agostino RB. Unique dietary patterns and chronic disease risk profiles of adult men: the Framingham nutrition studies. J Am Diet Assoc. 2005 Nov;105(11):1723-34. PMID: 16256756	Cross-sectional analysis
222.	Mills JP, Perry CD, Reicks M. Eating frequency is associated with energy intake but not obesity in midlife women. Obesity (Silver Spring). 2011 Mar;19(3):552-9. Epub 2010 Oct 21. PMID: 20966909	Does not meet inclusion criteria for methodology (cross-sectional analysis related to eating frequency)
223.	Mishra GD, McNaughton SA, Ball K, Brown WJ, Giles GG, Dobson AJ. Major dietary patterns of young and middle aged women: results from a prospective Australian cohort study. Eur J Clin Nutr. 2010 Oct;64(10):1125-33. Epub 2010 Aug 4. PMID: 20683460	Does not include body weight as an outcome
224.	Miura K, Greenland P, Stamler J, Liu K, Daviglus ML, Nakagawa H. Relation of vegetable, fruit, and meat intake to 7-year blood pressure change in middle-aged men: the Chicago Western Electric Study. Am J Epidemiol. 2004 Mar 15;159(6):572-80. PMID: 15003961	Does not include body weight as an outcome
225.	Mizoue T, Yamaji T, Tabata S, Yamaguchi K, Ogawa S, Mineshita M, Kono S. Dietary patterns and glucose tolerance abnormalities in Japanese men. J Nutr. 2006 May;136(5):1352-8. PMID: 16614429	Does not include body weight as an outcome (related to glucose tolerance)
226.	Mohindra NA, Nicklas TA, O'neil CE, Yang SJ, Berenson GS. Eating patterns and overweight status in young adults: the Bogalusa Heart Study. Int J Food Sci Nutr. 2009;60 Suppl 3:14-25. Epub 2009 May 21. PubMed PMID: 19462322; PubMed Central PMCID: PMC2769992.	Does not address the question (related to diet and pancreatic cancer)
227.	Moreira P, Santos S, Padrão P, Cordeiro T, Bessa M, Valente H, Barros R, Teixeira V, Mitchell V, Lopes C, Moreira A. Food patterns according to sociodemographics, physical activity, sleeping and obesity in Portuguese children. Int J Environ Res Public Health. 2010 Mar;7(3):1121-38. Epub 2010 Mar 17. PMID: 20617022	Cross-sectional analysis

228.	Mozaffarian D, Hao T, Rimm EB, Willett WC, Hu FB. Changes in diet and lifestyle and long-term weight gain in women and men. N Engl J Med. 2011 Jun 23;364(25):2392-404. PMID: 21696306	Does not meet inclusion criteria for methodology
229.	Mullie P, Aerenhouts D, Clarys P. Demographic, socioeconomic and nutritional determinants of daily versus non-daily sugar-sweetened and artificially sweetened beverage consumption. Eur J Clin Nutr. 2012 Feb;66(2):150-5. doi: 10.1038/ejcn.2011.138. Epub 2011 Aug 10. PMID: 21829215	Does not include body weight as an outcome
230.	Muñoz MA, Fíto M, Marrugat J, Covas MI, Schröder H; REGICOR and HERMES investigators. Adherence to the Mediterranean diet is associated with better mental and physical health. Br J Nutr. 2009 Jun;101(12):1821-7. Epub 2008 Dec 15. PMID: 19079848	Does not include body weight as an outcome
231.	Murtaugh MA, Herrick JS, Sweeney C, Baumgartner KB, Guiliano AR, Byers T, Slattery ML. Diet composition and risk of overweight and obesity in women living in the southwestern United States. J Am Diet Assoc. 2007 Aug;107(8):1311-21. PMID: 17659896	Cross-sectional analysis
232.	Muti P, Trevisan M, Panico S, Micheli A, Celentano E, Freudenheim JL, Berrino F. Body fat distribution, peripheral indicators of androgenic activity, and blood pressure in women. Ann Epidemiol. 1996 May;6(3):181-7. PMID: 8827152	Does not address the question (related to body far distribution and BP)
233.	Naja F, Nasreddine L, Itani L, Chamieh MC, Adra N, Sibai AM, Hwalla N. Dietary patterns and their association with obesity and sociodemographic factors in a national sample of Lebanese adults. Public Health Nutr. 2011 Sep;14(9):1570-8. Epub 2011 May 4. PMID: 21557871	Cross-sectional analysis
234.	Nakade M, Lee JS, Kawakubo K, Amano Y, Mori K, Akabayashi A. Correlation between food intake change patterns and body weight loss in middle-aged women in Japan. Obesity Research and Clinical Practice. 2007 1;2:79-89.	Non-controlled trial. Individuals received dietary advice to reduce energy intake to 1600 Kcal.
235.	Nakade M, Lee JS, Kawakubo K, Kondo K, Mori K, Akabayashi A. Changes in food intake patterns associated with body weight loss during a 12-week health promotion program and a 9-month follow-up period in a Japanese population. Obesity Research and Clinical Practice. 2009 3;2:85-98	Non-controlled trial.
236.	Nettleton JA, Polak JF, Tracy R, Burke GL, Jacobs DR Jr. Dietary patterns and incident cardiovascular disease in the Multi-Ethnic Study of Atherosclerosis. Am J Clin Nutr. 2009 Sep;90(3):647-54. Epub 2009 Jul 22. PMID: 19625679	Cross-sectional analysis (measured waist circumference)
237.	Nettleton JA, Schulze MB, Jiang R, Jenny NS, Burke GL, Jacobs DR Jr. A priori-defined dietary patterns and markers of cardiovascular disease risk in the Multi-Ethnic Study of Atherosclerosis (MESA). Am J Clin Nutr. 2008 Jul;88(1):185-94. PMID: 18614740	Does not include body weight as an outcome (rank analysis related to CVD)
238.	Nettleton JA, Steffen LM, Mayer-Davis EJ, Jenny NS, Jiang R, Herrington DM, Jacobs DR Jr. Dietary patterns are associated with biochemical markers of inflammation and endothelial activation in the Multi-Ethnic Study of Atherosclerosis (MESA). Am J Clin Nutr. 2006 Jun;83(6):1369-79. PMID: 16762949	Does not include body weight as an outcome
239.	Neutzling MB, Taddei JA, Gigante DP. Risk factors of obesity among Brazilian adolescents: a case-control study. Public Health Nutr. 2003 Dec;6(8):743-9. PMID: 14641944	Does not meet inclusion criteria for methodology
240.	Newby PK, Tucker KL, Wolk A. Risk of overweight and obesity among semivegetarian, lactovegetarian, and vegan women. Am J Clin Nutr. 2005 Jun;81(6):1267-74. PMID: 15941875	Does not meet inclusion criteria for methodology (cross-sectional analysis related to vegetarian diets)

241.	Nicholson AS, Sklar M, Barnard ND, Gore S, Sullivan R, Browning S. Toward improved management of NIDDM: A randomized, controlled, pilot intervention using a lowfat, vegetarian diet. Prev Med. 1999 Aug;29(2):87-91. PMID: 10446033	Does not meet inclusion criteria for methodology (RCT using a low fat, vegetarian diet)
242.	Nicklas TA, Morales M, Linares A, Yang SJ, Baranowski T, De Moor C, Berenson G. Children's meal patterns have changed over a 21-year period: the Bogalusa Heart Study. J Am Diet Assoc. 2004 May;104(5):753-61. PMID: 15127060	Does not meet inclusion criteria for methodology (data from 7 cross-sectional surveys)
243.	Noel SE, Newby PK, Ordovas JM, Tucker KL. A traditional rice and beans pattern is associated with metabolic syndrome in Puerto Rican older adults. J Nutr. 2009 Jul;139(7):1360-7. Epub 2009 May 20. PMID: 19458029	Cross-sectional analysis
244.	Noel SE, Newby PK, Ordovas JM, Tucker KL. Adherence to an (n-3) fatty acid/fish intake pattern is inversely associated with metabolic syndrome among Puerto Rican adults in the Greater Boston area. J Nutr. 2010 Oct;140(10):1846-54. Epub 2010 Aug 11. PMID: 20702744	Does not meet inclusion criteria for methodology (related to fatty acids and metabolic syndrome)
245.	Northstone K, Emmett P, Rogers I. Dietary patterns in pregnancy and associations with socio-demographic and lifestyle factors. Eur J Clin Nutr. 2008 Apr;62(4):471-9. Epub 2007 Mar 21. PMID: 17375108	Participants are pregnant
246.	Northstone K, Ness AR, Emmett PM, Rogers IS. Adjusting for energy intake in dietary pattern investigations using principal components analysis. Eur J Clin Nutr. 2008 Jul;62(7):931-8. Epub 2007 May 16. PMID: 17522611	Participants are pregnant
247.	Nowson CA, Wattanapenpaiboon N, Pachett A. Low-sodium Dietary Approaches to Stop Hypertension-type diet including lean red meat lowers blood pressure in postmenopausal women. Nutr Res. 2009 Jan;29(1):8-18. PMID: 19185772	Does not meet inclusion criteria for methodology [RCT comparing 2 diets (DASH)]
248.	Obarzanek E, Sacks FM, Vollmer WM, Bray GA, Miller ER 3rd, Lin PH, Karanja NM, Most-Windhauser MM, Moore TJ, Swain JF, Bales CW, Proschan MA; DASH Research Group. Effects on blood lipids of a blood pressure-lowering diet: the Dietary Approaches to Stop Hypertension (DASH) Trial. Am J Clin Nutr. 2001 Jul;74(1):80-9. PMID: 11451721	Does not meet inclusion criteria for methodology (RCT related to blood lipids and DASH diet)
249.	O'Doherty MG, Skidmore PM, Young IS, McKinley MC, Cardwell C, Yarnell JW, Gey FK, Evans A, Woodside JV. Dietary patterns and smoking in Northern Irish men: a population at high risk of coronary heart disease. Int J Vitam Nutr Res. 2011 Jan;81(1):21-33. PubMed PMID: 22002215.	Does not meet inclusion criteria for methodology (related to dietary scores)
250.	Oellingrath IM, Svendsen MV, Brantsaeter AL. Eating patterns and overweight in 9- to 10-year-old children in Telemark County, Norway: a cross-sectional study. Eur J Clin Nutr. 2010 Nov;64(11):1272-9. Epub 2010 Aug 18. PMID: 20717128	Cross-sectional analysis
251.	Oellingrath IM, Svendsen MV, Brantsaeter AL. Tracking of eating patterns and overweight - a follow-up study of Norwegian schoolchildren from middle childhood to early adolescence. Nutr J. 2011 Oct 6;10:106. PubMed PMID: 21978299; PubMed Central PMCID: PMC3200168.	Does not include body weight as an outcome (related to smoking)
252.	Ohmura S, Moji K, Aoyagi K, Yoshimi I, Yahata Y, Takemoto T, Iwai N, Yoshiike N, Date C, Tanaka H. Body mass index, physical activity, dietary intake, serum lipids and blood pressure of middle-aged Japanese women living in a community in the Goto archipelago. J Physiol Anthropol Appl Human Sci. 2002 Jan;21(1):21-8. PMID: 11938606	Does not meet inclusion criteria for methodology (cross-sectional analysis)

253.	Okubo H, Miyake Y, Sasaki S, Tanaka K, Murakami K, Hirota Y; Osaka Maternal and Child Health Study Group. Maternal dietary patterns in pregnancy and fetal growth in Japan: the Osaka Maternal and Child Health Study. Br J Nutr. 2011 Sep 20:1-8. [Epub ahead of print] PMID: 21929833	Patients were pregnant
254.	Okubo H, Sasaki S, Murakami K, Kim MK, Takahashi Y, Hosoi Y, Itabashi M; Freshmen in Dietetic Courses Study II group. Three major dietary patterns are all independently related to the risk of obesity among 3760 Japanese women aged 18-20 years. Int J Obes (Lond). 2008 Mar;32(3):541-9. Epub 2007 Sep 25. PMID: 17895884	Cross-sectional analysis
255.	O'Neil CE, Nicklas TA, Kleinman R. Relationship between 100% juice consumption and nutrient intake and weight of adolescents. Am J Health Promot. 2010 Mar-Apr;24(4):231-7. Erratum in: Am J Health Promot. 2010 May-Jun;24(5):368. PMID: 20232604	Does not meet inclusion criteria for methodology (cross-sectional analysis)
256.	Osler M, Heitmann BL, Gerdes LU, Jørgensen LM, Schroll M. Dietary patterns and mortality in Danish men and women: a prospective observational study. Br J Nutr. 2001 Feb;85(2):219-25. PMID: 11242490	Does not include body weight as an outcome
257.	Osler M, Heitmann BL, Høidrup S, Jørgensen LM, Schroll M. Food intake patterns, self rated health and mortality in Danish men and women. A prospective observational study. J Epidemiol Community Health. 2001 Jun;55(6):399-403. PMID: 11350996	Does not address the question (evaluated dietary patterns and self rated health)
258.	Osler M, Helms Andreasen A, Heitmann B, Høidrup S, Gerdes U, Mørch Jørgensen L, Schroll M. Food intake patterns and risk of coronary heart disease: a prospective cohort study examining the use of traditional scoring techniques. Eur J Clin Nutr. 2002 Jul;56(7):568-74. PMID: 12080395	Does not include body weight as an outcome
259.	Ottevaere C, Huybrechts I, Benser J, De Bourdeaudhuij I, Cuenca-Garcia M, Dallongeville J, Zaccaria M, Gottrand F, Kersting M, Rey-López JP, Manios Y, Molnár D, Moreno LA, Smpokos E, Widhalm K, De Henauw S; HELENA Study Group. Clustering patterns of physical activity, sedentary and dietary behavior among European adolescents: The HELENA study. BMC Public Health. 2011 May 17;11:328. PMID: 21586158	Does not include body weight as an outcome
260.	Pachucki MA. Food pattern analysis over time: unhealthful eating trajectories predict obesity. Int J Obes (Lond). 2011 Jul 26. doi: 10.1038/ijo.2011.133. [Epub ahead of print] PubMed PMID: 21792169; PubMed Central PMCID: PMC3212637.	Does not meet inclusion criteria for methodology
261.	Pala V, Sieri S, Masala G, Palli D, Panico S, Vineis P, Sacerdote C, Mattiello A, Galasso R, Salvini S, Ceroti M, Berrino F, Fusconi E, Tumino R, Frasca G, Riboli E, Trichopoulou A, Baibas N, Krogh V. Associations between dietary pattern and lifestyle, anthropometry and other health indicators in the elderly participants of the EPIC-Italy cohort. Nutr Metab Cardiovasc Dis. 2006 Apr;16(3):186-201. Epub 2006 Feb 17. PMID: 16580586	Cross-sectional analysis
262.	Panagiotakos DB, Pitsavos C, Skoumas Y, Stefanadis C. The association between food patterns and the metabolic syndrome using principal components analysis: The ATTICA Study. J Am Diet Assoc. 2007 Jun;107(6):979-87; quiz 997. PMID: 17524719	Cross-sectional analysis
263.	Panagiotakos DB, Rallidis LS, Katsiotis E, Pitsavos C, Stefanadis C, Kremastinos DT. Background dietary habits are strongly associated with the development of myocardial infarction at young ages: A case-control study. e-SPEN. 2008 3;6:e328-e334.	Does not meet inclusion criteria for methodology

264.	Paniagua JA, de la Sacristana AG, Sánchez E, Romero I, Vidal-Puig A, Berral FJ, Escribano A, Moyano MJ, Peréz-Martinez P, López-Miranda J, Pérez-Jiménez F. A MUFA-rich diet improves posprandial glucose, lipid and GLP-1 responses in insulin-resistant subjects. J Am Coll Nutr. 2007 Oct;26(5):434-44. PMID: 17914131	Participants are obese and diagnosed with T2D
265.	Paoli A, Cenci L, Grimaldi KA. Effect of ketogenic Mediterranean diet with phytoextracts and low carbohydrates/high-protein meals on weight, cardiovascular risk factors, body composition and diet compliance in Italian council employees. Nutr J. 2011 Oct 12;10:112. PMID: 21992535	Does not address the question (study of a ketogenic Mediterranean diet)
266.	Paradis AM, Godin G, Pérusse L, Vohl MC. Associations between dietary patterns and obesity phenotypes. Int J Obes (Lond). 2009 Dec;33(12):1419-26. Epub . PMID: 19736556	Cross-sectional analysis
267.	Paradis AM, Pérusse L, Vohl MC. Dietary patterns and associated lifestyles in individuals with and without familial history of obesity: a cross-sectional study. Int J Behav Nutr Phys Act. 2006 Oct 31;3:38. PMID: 17076904	Cross-sectional analysis
268.	Paradis AM, Pérusse L, Vohl MC. Dietary patterns and associated lifestyles in individuals with and without familial history of obesity: a cross-sectional study. Int J Behav Nutr Phys Act. 2006 Oct 31;3:38. PubMed PMID: 17076904; PubMed Central PMCID: PMC1635721.	Cross-sectional analysis
269.	Park SY, Murphy SP, Wilkens LR, Yamamoto JF, Sharma S, Hankin JH, Henderson BE, Kolonel LN. Dietary patterns using the Food Guide Pyramid groups are associated with sociodemographic and lifestyle factors: the multiethnic cohort study. J Nutr. 2005 Apr;135(4):843-9. PMID: 15795445	Cross-sectional analysis
270.	Pearcey SM, de Castro JM. Food intake and meal patterns of weight-stable and weight-gaining persons. Am J Clin Nutr. 2002 Jul;76(1):107-12. PMID: 12081823	Does not meet inclusion criteria for methodology
271.	Pedone C, Napoli N, Pozzilli P, Rossi FF, Lauretani F, Bandinelli S, Ferrucci L, Antonelli-Incalzi R. Dietary pattern and bone density changes in elderly women: a longitudinal study. J Am Coll Nutr. 2011 Apr;30(2):149-54. PMID: 21730223	Does not include body weight as an outcome (measured bone density)
272.	Pérez-Jiménez F, López-Miranda J, Pinillos MD, Gómez P, Paz-Rojas E, Montilla P, Marín C, Velasco MJ, Blanco-Molina A, Jiménez Perepérez JA, Ordovás JM. A Mediterranean and a high-carbohydrate diet improve glucose metabolism in healthy young persons. Diabetologia. 2001 Nov;44(11):2038-43. PMID: 11719836	Does not meet inclusion criteria for methodology; does not include body weight as an outcome
273.	Persson LA. Dietary habits and health risks in Swedish children. Hum Nutr Clin Nutr. 1984 Jul;38(4):287-97. PMID: 6469706	Does not meet inclusion criteria for methodology
274.	Pesa JA, Turner LW. Fruit and vegetable intake and weight-control behaviors among US youth. Am J Health Behav. 2001 Jan-Feb;25(1):3-9. PMID: 11289726	Does not meet inclusion criteria for methodology
275.	Peterson KE, Sorensen G, Pearson M, Hebert JR, Gottlieb BR, McCormick MC. Design of an intervention addressing multiple levels of influence on dietary and activity patterns of low-income, postpartum women. Health Educ Res. 2002 Oct;17(5):531-40. PMID: 12408198	Does not address the question (related to nutrition instruction)
276.	Pierce BL, Austin MA, Crane PK, Retzlaff BM, Fish B, Hutter CM, Leonetti DL, Fujimoto WY. Measuring dietary acculturation in Japanese Americans with the use of confirmatory factor analysis of food-frequency data. Am J Clin Nutr. 2007 Aug;86(2):496-503. PMID: 17684224	Cross-sectional analysis

277.	Pitsavos C, Chrysohoou C, Panagiotakos DB, Lentzas Y, Stefanadis C. Abdominal obesity and inflammation predicts hypertension among prehypertensive men and women: the ATTICA Study. Heart Vessels. 2008 Mar;23(2):96-103. Epub 2008 Apr 4. PMID: 18389333	Does not meet inclusion criteria for methodology
278.	Pomerleau CS, Saules K. Body image, body satisfaction, and eating patterns in normal-weight and overweight/obese women current smokers and never-smokers. Addict Behav. 2007 Oct;32(10):2329-34. Epub 2007 Jan 23. PMID: 17320305	Does not meet inclusion criteria for methodology
279.	Porkka KV, Viikari JS, Taimela S, Dahl M, Akerblom HK. Tracking and predictiveness of serum lipid and lipoprotein measurements in childhood: a 12-year follow-up. The Cardiovascular Risk in Young Finns study. Am J Epidemiol. 1994 Dec 15;140(12):1096-110. PMID: 7998592	Does not meet inclusion criteria for methodology; does not include body weight as an outcome
280.	Post GB, Kemper HC, Twisk J, van Mechelen W. The association between dietary patterns and cardio vascular disease risk indicators in healthy youngsters: results covering fifteen years of longitudinal development. Eur J Clin Nutr. 1997 Jun;51(6):387-93. PMID: 9192197	Does not meet inclusion criteria for methodology; does not include body weight as an outcome
281.	Prentice RL, Caan B, Chlebowski RT, Patterson R, Kuller LH, Ockene JK, Margolis KL, Limacher MC, Manson JE, Parker LM, Paskett E, Phillips L, Robbins J, Rossouw JE, Sarto GE, Shikany JM, Stefanick ML, Thomson CA, Van Horn L, Vitolins MZ, Wactawski-Wende J, Wallace RB, Wassertheil-Smoller S, Whitlock E, Yano K, Adams-Campbell L, Anderson GL, Assaf AR, Beresford SA, Black HR, Brunner RL, Brzyski RG, Ford L, Gass M, Hays J, Heber D, Heiss G, Hendrix SL, Hsia J, Hubbell FA, Jackson RD, Johnson KC, Kotchen JM, LaCroix AZ, Lane DS, Langer RD, Lasser NL, Henderson MM.Low-fat dietary pattern and risk of invasive breast cancer: the Women's Health Initiative Randomized Controlled Dietary Modification Trial. JAMA. 2006 Feb 8;295(6):629-42. PMID: 16467232	Does not meet inclusion criteria for methodology; does not include body weight as an outcome
282.	Pryer JA, Nichols R, Elliott P, Thakrar B, Brunner E, Marmot M. Dietary patterns among a national random sample of British adults. J Epidemiol Community Health. 2001 Jan;55(1):29-37. PMID: 11112948	Does not include body weight as an outcome
283.	Pryer JA, Rogers S. Dietary patterns among a national sample of British children aged 1 1/2-4 1/2 years. Public Health Nutr. 2009 Jul;12(7):957-66. Epub 2009 Jan 12. PMID: 19134239	Does not include body weight as an outcome
284.	Puder JJ, Marques-Vidal P, Schindler C, Zahner L, Niederer I, Bürgi F, Ebenegger V, Nydegger A, Kriemler S. Effect of multidimensional lifestyle intervention on fitness and adiposity in predominantly migrant preschool children (Ballabeina): cluster randomised controlled trial. BMJ. 2011 Oct 13;343:d6195. doi: 10.1136/bmj.d6195. PMID: 21998346	Does not meet inclusion criteria for methodology
285.	Rallidis LS, Lekakis J, Kolomvotsou A, Zampelas A, Vamvakou G, Efstathiou S, Dimitriadis G, Raptis SA, Kremastinos DT. Close adherence to a Mediterranean diet improves endothelial function in subjects with abdominal obesity. Am J Clin Nutr. 2009 Aug;90(2):263-8. Epub 2009 Jun 10. PMID: 19515732	Does not address the question (RT Analysis of 2 diets)
286.	Rankin JW, Turpyn AD. Low carbohydrate, high fat diet increases C-reactive protein during weight loss. J Am Coll Nutr. 2007 Apr;26(2):163-9. PMID: 17536128	Does not meet inclusion criteria for methodology (evaluated the effect of a weight loss diet)

287.	Rauma AL, Nenonen M, Helve T, Hänninen O. Effect of a strict vegan diet on energy and nutrient intakes by Finnish rheumatoid patients. Eur J Clin Nutr. 1993 Oct;47(10):747-9. PMID: 8269890	Does not meet inclusion criteria for methodology
288.	Raza S, Sheikh MA, Hussain MF, Siddiqui SE, Muhammad R, Aziz S, Qamar S, Saleem MA, Waki N, Faruqi H, Zia A. Dietary modification, body mass index (BMI), blood pressure (BP) and cardiovascular risk in medical students of a government medical college of Karachi. J Pak Med Assoc. 2010 Nov;60(11):970-4. PMID: 21375210	Does not meet inclusion criteria for methodology
289.	Razquin C, Alfredo Martinez J, Martinez-Gonzalez MA, Corella D, Santos JM, Marti A. The Mediterranean diet protects against waist circumference enlargement in 12Ala carriers for the PPARgamma gene: 2 years' follow-up of 774 subjects at high cardiovascular risk. Br J Nutr. 2009 Sep;102(5):672-9. Epub 2009 Mar 9. PMID: 19267951	Does not meet inclusion criteria for methodology (related to Mediterranean diet)
290.	Razquin C, Martínez JA, Martínez-González MA, Salas-Salvadó J, Estruch R, Marti A. A 3-year Mediterranean-style dietary intervention may modulate the association between adiponectin gene variants and body weight change. Eur J Nutr. 2010 Aug;49(5):311-9. Epub 2009 Dec 25. PMID: 20035337	Does not meet inclusion criteria for methodology (related to Mediterranean diet and gene interaction)
291.	Rezazadeh A, Rashidkhani B. The association of general and central obesity with major dietary patterns of adult women living in Tehran, Iran. J Nutr Sci Vitaminol (Tokyo). 2010;56(2):132-8. PMID: 20495295	Cross-sectional analysis
292.	Richard C, Couture P, Desroches S, Charest A, Lamarche B. Effect of the Mediterranean diet with and without weight loss on cardiovascular risk factors in men with the metabolic syndrome. Nutr Metab Cardiovasc Dis. 2011 Sep;21(9):628-35. Epub 2010 Jun 2. PMID: 20554173	Does not meet inclusion criteria for methodology
293.	Romaguera D, Norat T, Mouw T, May AM, Bamia C, Slimani N, Travier N, Besson H, Luan J, Wareham N, Rinaldi S, Couto E, Clavel-Chapelon F, Boutron-Ruault MC, Cottet V, Palli D, Agnoli C, Panico S, Tumino R, Vineis P, Agudo A, Rodriguez L, Sanchez MJ, Amiano P, Barricarte A, Huerta JM, Key TJ, Spencer EA, Bueno-de-Mesquita HB, Büchner FL, Orfanos P, Naska A, Trichopoulou A, Rohrmann S, Kaaks R, Bergmann M, Boeing H, Johansson I, Hellstrom V, Manjer J, Wirfält E, Uhre Jacobsen M, Overvad K, Tjonneland A, Halkjaer J, Lund E, Braaten T, Engeset D, Odysseos A, Riboli E, Peeters PH. Adherence to the Mediterranean diet is associated with lower abdominal adiposity in European men and women. J Nutr. 2009 Sep;139(9):1728-37. Epub 2009 Jul 1. PMID: 19571036	Does not meet inclusion criteria for methodology
294.	Rossi M, Negri E, Bosetti C, Dal Maso L, Talamini R, Giacosa A, Montella M, Franceschi S, La Vecchia C. Mediterranean diet in relation to body mass index and waist-to-hip ratio. Public Health Nutr. 2008 Feb;11(2):214-7. Epub 2007 Aug 9. PMID: 17686205	Does not meet inclusion criteria for methodology
295.	Ruidavets JB, Bongard V, Bataille V, Gourdy P, Ferrières J. Eating frequency and body fatness in middle-aged men. Int J Obes Relat Metab Disord. 2002 Nov;26(11):1476-83. PMID: 12439650	Does not meet inclusion criteria for methodology (related to eating occasions)
296.	Ruixing Y, Jinzhen W, Yaoheng H, Jing T, Hai W, Muyan L, Yiyang L, Dongmei F, Hanjun Y, Yuming C. Associations of diet and lifestyle with hyperlipidemia for middle-aged and elderly persons among the Guangxi Bai Ku Yao and Han populations. J Am Diet Assoc. 2008 Jun;108(6):970-6. PMID: 18502227	Does not meet inclusion criteria for methodology

297.	Ruixing Y, Yuming C, Shangling P, Fengping H, Tangwei L, Dezhai Y, Jinzhen W, Limei Y, Weixiong L, Rongshan L, Jiandong H. Effects of demographic, dietary and other lifestyle factors on the prevalence of hyperlipidemia in Guangxi Hei Yi Zhuang and Han populations. Eur J Cardiovasc Prev Rehabil. 2006 Dec;13(6):977-84. PMID: 17143131	Does not address the question (cross-sectional analysis; measured hyperlipidemia)
298.	Rumawas ME, Meigs JB, Dwyer JT, McKeown NM, Jacques PF. Mediterranean-style dietary pattern, reduced risk of metabolic syndrome traits, and incidence in the Framingham Offspring Cohort. Am J Clin Nutr. 2009 Dec;90(6):1608-14. Epub 2009 Oct 14. PMID: 19828705	Does not meet inclusion criteria for methodology
299.	Sabbe D, De Bourdeaudhuij I, Legiest E, Maes L. A cluster-analytical approach towards physical activity and eating habits among 10-year-old children. Health Educ Res. 2008 Oct;23(5):753-62. Epub 2007 Nov 17. PMID: 18024978	Does not address the question (related to physical activity)
300.	Sadakane A, Tsutsumi A, Gotoh T, Ishikawa S, Ojima T, Kario K, Nakamura Y, Kayaba K. Dietary patterns and levels of blood pressure and serum lipids in a Japanese population. J Epidemiol. 2008;18(2):58-67. PMID: 18403855	Does not include body weight as an outcome (measured serum lipids)
301.	Salas-Salvadó J, Bulló M, Babio N, Martínez-González MÁ, Ibarrola-Jurado N, Basora J, Estruch R, Covas MI, Corella D, Arós F, Ruiz-Gutiérrez V, Ros E; PREDIMED Study Investigators. Reduction in the incidence of type 2 diabetes with the Mediterranean diet: results of the PREDIMED-Reus nutrition intervention randomized trial. Diabetes Care. 2011 Jan;34(1):14-9. Epub 2010 Oct 7. PMID: 20929998	Does not meet inclusion criteria for methodology
302.	Salas-Salvadó J, Martinez-González MÁ, Bulló M, Ros E. The role of diet in the prevention of type 2 diabetes. Nutr Metab Cardiovasc Dis. 2011 Sep;21 Suppl 2:B32-48. Epub 2011 Jul 13. Review. PMID: 21745730	Does not meet inclusion criteria for methodology (narrative review)
303.	Samieri C, Jutand MA, Féart C, Capuron L, Letenneur L, Barberger-Gateau P. Dietary patterns derived by hybrid clustering method in older people: association with cognition, mood, and self-rated health. J Am Diet Assoc. 2008 Sep;108(9):1461-71. PMID: 18755318	Does not include body weight as an outcome (cross-sectional analysis)
304.	Sanchez A, Norman GJ, Sallis JF, Calfas KJ, Rock C, Patrick K. Patterns and correlates of multiple risk behaviors in overweight women. Prev Med. 2008 Mar;46(3):196-202. Epub 2007 Oct 18. PMID: 18022220	Does not include body weight as an outcome (cross-sectional analysis)
305.	Sarri K, Bertsias G, Linardakis M, Tsibinos G, Tzanakis N, Kafatos A. The effect of periodic vegetarianism on serum retinol and alpha-tocopherol levels. Int J Vitam Nutr Res. 2009 Sep;79(5-6):271-80. PMID: 20533213	Does not meet inclusion criteria for methodology (cross-sectional analysis)
306.	Sartorelli DS, Franco LJ, Cardoso MA. High intake of fruits and vegetables predicts weight loss in Brazilian overweight adults. Nutr Res. 2008 Apr;28(4):233-8. PMID: 19083413	Does not meet inclusion criteria for methodology
307.	Satia JA, Tseng M, Galanko JA, Martin C, Sandler RS. Dietary patterns and colon cancer risk in Whites and African Americans in the North Carolina Colon Cancer Study. Nutr Cancer. 2009;61(2):179-93. PubMed PMID: 31219235034.	Does not meet inclusion criteria for methodology
308.	Scali J, Siari S, Grosclaude P, Gerber M. Dietary and socio-economic factors associated with overweight and obesity in a southern French population. Public Health Nutr. 2004 Jun;7(4):513-22. PMID: 15153257	Does not meet inclusion criteria for methodology (cross-sectional analysis)

309.	Schacht M, Richter-Appelt H, Schulte-Markwort M, Hebebrand J, Schimmelmann BG. Eating Pattern Inventory for Children: a new self-rating questionnaire for preadolescents. J Clin Psychol. 2006 Oct;62(10):1259-73. PMID: 16897691	Does not meet inclusion criteria for methodology
310.	Schmidt SL, Hickey MS, Koblenz KM, Klamer H, Botero MF, Pfaffenbach KT, Pagliassotti MJ, Melby CL. Cardiometabolic plasticity in response to a short-term diet and exercise intervention in young Hispanic and nonHispanic white adults. PLoS One. 2011 Feb 22;6(2):e16987. PMID: 21364957	Does not include body weight as an outcome (measured LDL-cholesterol and TG)
311.	Schröder H, Fitó M, Estruch R, Martínez-González MA, Corella D, Salas-Salvadó J, Lamuela-Raventós R, Ros E, Salaverría I, Fiol M, Lapetra J, Vinyoles E, Gómez-Gracia E, Lahoz C, Serra-Majem L, Pintó X, Ruiz-Gutierrez V, Covas MI. A short screener is valid for assessing Mediterranean diet adherence among older Spanish men and women. J Nutr. 2011 Jun;141(6):1140-5. Epub 2011 Apr 20. PMID: 21508208	Does not meet inclusion criteria for methodology
312.	Schröder H, Mendez MA, Ribas-Barba L, Covas MI, Serra-Majem L. Mediterranean diet and waist circumference in a representative national sample of young Spaniards. Int J Pediatr Obes. 2010 Dec;5(6):516-9. Epub 2010 Sep 23. PMID: 20863166	Does not meet inclusion criteria for methodology
313.	Schröder H, Rohlfs I, Schmelz EM, Marrugat J; REGICOR investigators. Relationship of socioeconomic status with cardiovascular risk factors and lifestyle in a Mediterranean population. Eur J Nutr. 2004 Apr;43(2):77-85. Epub 2004 Jan 6. PubMed PMID: 15083314.	Does not meet inclusion criteria for methodology (related to colon cancer)
314.	Schubert E, Randler C. Association between chronotype and the constructs of the Three-Factor-Eating-Questionnaire. Appetite. 2008 Nov;51(3):501-5. Epub 2008 Apr 8. PMID: 18479778	Does not address the question (related to chronotype and the Three-Factor-Eating-Questionnaire)
315.	Schulze MB, Hoffmann K, Manson JE, Willett WC, Meigs JB, Weikert C, Heidemann C, Colditz GA, Hu FB. Dietary pattern, inflammation, and incidence of type 2 diabetes in women. Am J Clin Nutr. 2005 Sep;82(3):675-84; quiz 714-5. PMID: 16155283	Does not include body weight as an outcome (rank regression analysis related to T2D)
316.	Schutte AE, van Rooyen JM, Huisman HW, Kruger HS, de Ridder JH. Factor analysis of possible risks for hypertension in a black South African population. J Hum Hypertens. 2003 May;17(5):339-48. PMID: 12756407	Does not address the question (evaluated factors related to hypertension)
317.	Schwerin HS, Stanton JL, Riley AM Jr, Schaefer AE, Leveille GA, Elliott JG, Warwick KM, Brett BE. Food eating patterns and health: a reexamination of the Ten-State and HANES I surveys. Am J Clin Nutr. 1981 Apr;34(4):568-80. PMID: 7223707	Cross-sectional analysis
318.	Seghers J, Rutten C. Clustering of multiple lifestyle behaviours and its relationship with weight status and cardiorespiratory fitness in a sample of Flemish 11- to 12-year-olds. Public Health Nutr. 2010 Nov;13(11):1838-46. Epub 2010 Mar 18. PMID: 20236562	Does not address the question (related to lifestyle factors)
319.	Serra-Majem L, Roman B, Estruch R. Scientific evidence of interventions using the Mediterranean diet: a systematic review. Nutr Rev. 2006 Feb;64(2 Pt 2):S27-47. Review. PMID: 16532897	Does not meet inclusion criteria for methodology (systematic review related to Mediterranean diet and health outcomes)
320.	Shi Z, Hu X, Yuan B, Hu G, Pan X, Dai Y, Byles JE, Holmboe-Ottesen G. Vegetable-rich food pattern is related to obesity in China. Int J Obes (Lond). 2008 Jun;32(6):975-84. Epub 2008 Mar 4. PMID: 18317472	Cross-sectional analysis

321.	Shi Z, Lien N, Kumar BN, Holmboe-Ottesen G. Socio-demographic differences in food habits and preferences of school adolescents in Jiangsu Province, China. Eur J Clin Nutr. 2005 Dec;59(12):1439-48. PMID: 16118652	Does not meet inclusion criteria for methodology (cross-sectional analysis)
322.	Shi Z, Yuan B, Hu G, Dai Y, Zuo H, Holmboe-Ottesen G. Dietary pattern and weight change in a 5-year follow-up among Chinese adults: results from the Jiangsu Nutrition Study. Br J Nutr. 2011 Apr;105(7):1047-54. Epub 2010 Nov 25. PMID: 21106132	Population of a country is not listed in the HDI
323.	Shimazu T, Kuriyama S, Hozawa A, Ohmori K, Sato Y, Nakaya N, Nishino Y, Tsubono Y, Tsuji I. Dietary patterns and cardiovascular disease mortality in Japan: a prospective cohort study. Int J Epidemiol. 2007 Jun;36(3):600-9. Epub 2007 Feb 22. PMID: 17317693	Does not include body weight as an outcome (related to CVD)
324.	Shin KO, Oh SY, Park HS. Empirically derived major dietary patterns and their associations with overweight in Korean preschool children. Br J Nutr. 2007 Aug;98(2):416-21. Epub 2007 Apr 16. PMID: 17433127	Cross-sectional analysis
325.	Shubair MM, McColl RS, Hanning RM. Mediterranean dietary components and body mass index in adults: the peel nutrition and heart health survey. Chronic Dis Can. 2005 Spring-Summer;26(2-3):43-51. PMID: 16251009	Cross-sectional analysis
326.	Sibai AM, Hwalla N, Adra N, Rahal B. Prevalence and covariates of obesity in Lebanon: findings from the first epidemiological study. Obes Res. 2003 Nov;11(11):1353-61. PMID: 14627756	Does not meet inclusion criteria for methodology (descriptive study)
327.	Sichieri R. Dietary patterns and their associations with obesity in the Brazilian city of Rio de Janeiro. Obes Res. 2002 Jan;10(1):42-8. PMID: 11786600	Cross-sectional analysis
328.	Siegrist M, Hanssen H, Lammel C, Haller B, Halle M. A cluster randomised school-based lifestyle intervention programme for the prevention of childhood obesity and related early cardiovascular disease (JuvenTUM 3). BMC Public Health. 2011 Apr 22;11:258. PMID: 21513530	Does not meet inclusion criteria for methodology
329.	Slattery ML, Edwards SL, Boucher KM, Anderson K, Caan BJ. Lifestyle and colon cancer: an assessment of factors associated with risk. Am J Epidemiol. 1999 Oct 15;150(8):869-77. PubMed PMID: 10522658.	Does not meet inclusion criteria for methodology (related to cardiovascular factors)
330.	Smith PJ, Blumenthal JA, Babyak MA, Craighead L, Welsh-Bohmer KA, Browndyke JN, Strauman TA, Sherwood A. Effects of the dietary approaches to stop hypertension diet, exercise, and caloric restriction on neurocognition in overweight adults with high blood pressure. Hypertension. 2010 Jun;55(6):1331-8. Epub 2010 Mar 19. PMID: 20305128	Does not meet inclusion criteria for methodology
331.	Smithers LG, Golley RK, Brazionis L, Lynch JW. Characterizing whole diets of young children from developed countries and the association between diet and health: a systematic review. Nutr Rev. 2011 Aug;69(8):449-67. doi: 10.1111/j.1753-4887.2011.00407.x. Review. PMID: 21790612.	Does not meet inclusion criteria for methodology (systematic review; it includes cross-sectional analysis)
332.	Smithers LG, Golley RK, Brazionis L, Lynch JW. Characterizing whole diets of young children from developed countries and the association between diet and health: a systematic review. Nutr Rev. 2011 Aug;69(8):449-67. doi: 10.1111/j.1753-4887.2011.00407.x. Review. PubMed PMID: 21790612.	Does not include body weight as an outcome (related to dietary habits and individuals with myocardial infarction)
333.	Snowdon DA, Phillips RL, Fraser GE. Meat consumption and fatal ischemic heart disease. Prev Med. 1984 Sep;13(5):490-500. PMID: 6527990.	Does not address the question (related to meat consumption and ischemic heart disease)

334.	Snowdon DA, Phillips RL. Does a vegetarian diet reduce the occurrence of diabetes? Am J Public Health. 1985 May;75(5):507-12. PMID: 3985239.	Does not meet inclusion criteria for methodology
335.	Sodjinou R, Agueh V, Fayomi B, Delisle H. Obesity and cardio-metabolic risk factors in urban adults of Benin: relationship with socio-economic status, urbanisation, and lifestyle patterns. BMC Public Health. 2008 Mar 4;8:84. PubMed PMID: 18318907; PubMed Central PMCID: PMC2315643.	Does not meet inclusion criteria for methodology (narrative review related to characterization of young children's diets)
336.	Sone Y, Yamaguchi K, Fujiwara A, Kido T, Kawahara K, Ishiwaki A, Kondo K, Morita Y, Tominaga N, Otsuka Y. Association of lifestyle factors, polymorphisms in adiponectin, perilipin and hormone sensitive lipase, and clinical markers in Japanese males. J Nutr Sci Vitaminol (Tokyo). 2010;56(2):123-31. PMID: 20495294.	Does not address the question (related to clinical markers and lifestyle factors)
337.	Song Y, Park MJ, Paik HY, Joung H. Secular trends in dietary patterns and obesity-related risk factors in Korean adolescents aged 10-19 years. Int J Obes (Lond). 2010 Jan;34(1):48-56. Epub 2009 Oct 13. PMID: 19823182	Cross-sectional analysis
338.	Sonnenberg L, Pencina M, Kimokoti R, Quatromoni P, Nam BH, D'Agostino R, Meigs JB, Ordovas J, Cobain M, Millen B. Dietary patterns and the metabolic syndrome in obese and non-obese Framingham women. Obes Res. 2005 Jan;13(1):153-62. PMID: 15761175	Does not meet inclusion criteria for methodology
339.	Stang J, Kong A, Story M, Eisenberg ME, Neumark-Sztainer D. Food and weight-related patterns and behaviors of Hmong adolescents. J Am Diet Assoc. 2007 Jun;107(6):936-41. PMID: 17524713	Does not address the question (cross-sectional analysis of dietary behaviors)
340.	Stang J, Zephier EM, Story M, Himes JH, Yeh JL, Welty T, Howard BV. Dietary intakes of nutrients thought to modify cardiovascular risk from three groups of American Indians: The Strong Heart Dietary Study, Phase II. J Am Diet Assoc. 2005 Dec;105(12):1895-903. PMID: 16321595	Does not include body weight as an outcome (cross-sectional analysis; evaluated CVD)
341.	Summerbell CD, Moody RC, Shanks J, Stock MJ, Geissler C. Relationship between feeding pattern and body mass index in 220 free-living people in four age groups. Eur J Clin Nutr. 1996 Aug;50(8):513-9. PMID: 8863011	Does not meet inclusion criteria for methodology
342.	Svensson V, Lundborg L, Cao Y, Nowicka P, Marcus C, Sobko T. Obesity related eating behaviour patterns in Swedish preschool children and association with age, gender, relative weight and parental weight - factorial validation of the Children's Eating Behaviour Questionnaire. Int J Behav Nutr Phys Act. 2011 Dec 8;8(1):134. [Epub ahead of print] PMID: 22152012	Does not address the question (analyzed of dietary behaviors)
343.	Takahashi MM, de Oliveira EP, Moreto F, Portero-McLellan KC, Burini RC. Association of dyslipidemia with intakes of fruit and vegetables and the body fat content of adults clinically selected for a lifestyle modification program. Arch Latinoam Nutr. 2010 Jun;60(2):148-54. PMID: 21425719	Does not meet inclusion criteria for methodology
344.	Thomas NE, Baker JS, Graham MR, Cooper SM, Davies B. C-reactive protein in schoolchildren and its relation to adiposity, physical activity, aerobic fitness and habitual diet. Br J Sports Med. 2008 May;42(5):357-60. Epub 2008 Jan 4. PMID: 18178678	Does not address the question (cross-sectional analysis of CRP and health factors)
345.	Tinker LF, Bonds DE, Margolis KL, Manson JE, Howard BV, Larson J, Perri MG, Beresford SA, Robinson JG, Rodríguez B, Safford MM, Wenger NK, Stevens VJ, Parker LM; Women's Health Initiative. Low-fat dietary pattern and risk of treated diabetes mellitus in postmenopausal women: the Women's Health Initiative randomized controlled dietary modification trial. Arch Intern Med. 2008 Jul 28;168(14):1500-11. PMID: 18663162	Does not meet inclusion criteria for methodology

346.	Togo P, Osler M, Sørensen TI, Heitmann BL. Food intake patterns and body mass index in observational studies. Int J Obes Relat Metab Disord. 2001 Dec;25(12):1741-51. Review. PMID: 11781753	Does not meet inclusion criteria for methodology (systematic review)
347.	Trichopoulou A, Naska A, Orfanos P, Trichopoulos D. Mediterranean diet in relation to body mass index and waist-to-hip ratio: the Greek European Prospective Investigation into Cancer and Nutrition Study. Am J Clin Nutr. 2005 Nov;82(5):935-40. PMID: 16280422	Does not meet inclusion criteria for methodology
348.	Tupe R, Chiplonkar SA. Diet patterns of lactovegetarian adolescent girls: need for devising recipes with high zinc bioavailability. Nutrition. 2010 Apr;26(4):390-8. Epub 2009 Jul 22. PMID: 19628369	Does not include body weight as an outcome (related to dietary patterns of lacto vegetarian and zinc deficiency)
349.	Turcinov D, Stanley C, Rutherford GW, Novotny TE, Begovac J. Adherence to the Mediterranean diet is associated with a lower risk of body-shape changes in Croatian patients treated with combination antiretroviral therapy. Eur J Epidemiol. 2009;24(5):267-74. Epub 2009 Mar 26. PMID: 19322667	Does not meet inclusion criteria for methodology (evaluated adherence to the Mediterranean diet and lipoatrophy)
350.	Tyrovolas S, Panagiotakos DB. The role of Mediterranean type of diet on the development of cancer and cardiovascular disease, in the elderly: a systematic review. Maturitas. 2010 Feb;65(2):122-30. Epub 2009 Aug 4. Review. PMID: 19656644	Does not meet inclusion criteria for methodology (systematic review; evaluated adherence to Mediterranean diet and CVD and Cancer)
351.	Tyrovolas S, Pounis G, Zeimbekis A, Antonopoulou M, Bountziouka V, Gotsis E, Metallinos G, Polystipioti A, Polychronopoulos E, Lionis C, Panagiotakos DB. Associations of energy intake and type 2 diabetes with hypertryglyceridemia in older adults living in the Mediterranean islands: the MEDIS study. J Nutr Elder. 2010 Jan;29(1):72-86. PMID: 20391043	Does not meet inclusion criteria for methodology
352.	Tzima N, Pitsavos C, Panagiotakos DB, Skoumas J, Zampelas A, Chrysohoou C, Stefanadis C. Mediterranean diet and insulin sensitivity, lipid profile and blood pressure levels, in overweight and obese people; the Attica study. Lipids Health Dis. 2007 Sep 19;6:22. PMID: 17880675	Does not meet inclusion criteria for methodology (evaluated adherence to the Mediterranean diet and insulin sensitivity and lipid profile)
353.	Uglem S, Stea TH, Frølich W, Wandel M. Body weight, weight perceptions and food intake patterns. A cross-sectional study among male recruits in the Norwegian National Guard. BMC Public Health. 2011 May 19;11:343. PMID: 21595899	Cross-sectional analysis
354.	Ursoniu S, Vernic C, Vlaicu B, Petrescu C, Fira-Mladinescu C, Putnoky S, Suciu O, Fira-Mladinescu O, Vlaicu S. Eating habits in an adolescent population from Timiş county. Rev Med Chir Soc Med Nat Iasi. 2010 Oct-Dec;114(4):1155-61. PMID: 21495459	Does not include body weight as an outcome (cross-sectional analysis related to eating habits and school performance)
355.	Uusitalo U, Arkkola T, Ovaskainen ML, Kronberg-Kippilä C, Kenward MG, Veijola R, Simell O, Knip M, Virtanen SM. Unhealthy dietary patterns are associated with weight gain during pregnancy among Finnish women. Public Health Nutr. 2009 Dec;12(12):2392-9. Epub 2009 Mar 27. PMID:19323867	Participants are pregnant
356.	van Dam RM, Grievink L, Ocké MC, Feskens EJ. Patterns of food consumption and risk factors for cardiovascular disease in the general Dutch population. Am J Clin Nutr. 2003 May;77(5):1156-63. PMID: 12716666	Does not include body weight as an outcome (cross-sectional analysis related to cholesterol, glucose concentration and blood pressure)
357.	van Dam RM, Rimm EB, Willett WC, Stampfer MJ, Hu FB. Dietary patterns and risk for type 2 diabetes mellitus in U.S. men. Ann Intern Med. 2002 Feb 5;136(3):201-9. PMID: 11827496	Does not include body weight as an outcome (this study adjusted for BMI)

358.	van den Brandt PA. The impact of a Mediterranean diet and healthy lifestyle on premature mortality in men and women. Am J Clin Nutr. 2011 Sep;94(3):913-20. Epub 2011 Jul 27. PubMed PMID: 21795445.	Does not address the question (related to diet and pancreatic cancer)
359.	Van Horn L, Dolecek TA, Grandits GA, Skweres L. Adherence to dietary recommendations in the special intervention group in the Multiple Risk Factor Intervention Trial. Am J Clin Nutr. 1997 Jan;65(1 Suppl):289S-304S. PMID: 8988943	Does not meet inclusion criteria for methodology
360.	Van Horn LV, Ballew C, Liu K, Ruth K, McDonald A, Hilner JE, Burke GL, Savage PJ, Bragg C, Caan B, et al. Diet, body size, and plasma lipids-lipoproteins in young adults: differences by race and sex. The Coronary Artery Risk Development in Young Adults (CARDIA) study. Am J Epidemiol. 1991 Jan;133(1):9-23. PMID: 1983903	Does not meet inclusion criteria for methodology (cross-sectional analysis)
361.	Vanhala ML, Keinänen-Kiukaanniemi SM, Kaikkonen KM, Laitinen JH, Korpelainen RI. Factors associated with parental recognition of a child's overweight status--a cross sectional study. BMC Public Health. 2011 Aug 24;11:665. PMID: 21864365	Does not address the question (cross-sectional analysis of child's lifestyle and parental recognition)
362.	Vardavas CI, Linardakis MK, Hatzis CM, Saris WH, Kafatos AG. Cardiovascular disease risk factors and dietary habits of farmers from Crete 45 years after the first description of the Mediterranean diet. Eur J Cardiovasc Prev Rehabil. 2010 Aug;17(4):440-6. PMID: 20531009	Does not include body weight as an outcome (cross-sectional analysis related to dietary habits)
363.	Venkaiah K, Brahmam GN, Vijayaraghavan K.Application of factor analysis to identify dietary patterns and use of factor scores to study their relationship with nutritional status of adult rural populations. J Health Popul Nutr. 2011 Aug;29(4):327-38. PMID: 21957671	Does not include body weight as an outcome (cross-sectional analysis related to dietary patterns and chronic energy deficiency)
364.	Ventura EE, Davis JN, Alexander KE, Shaibi GQ, Lee W, Byrd-Williams CE, Toledo-Corral CM, Lane CJ, Kelly LA, Weigensberg MJ, Goran MI. Dietary intake and the metabolic syndrome in overweight Latino children. J Am Diet Assoc. 2008 Aug;108(8):1355-9. PMID: 18656576	Does not meet inclusion criteria for methodology (cross-sectional analysis of dietary intake and metabolic syndrome)
365.	Vergnaud AC, Norat T, Romaguera D, Mouw T, May AM, Travier N, Luan J, Wareham N, Slimani N, Rinaldi S, Couto E, Clavel-Chapelon F, Boutron-Ruault MC, Cottet V, Palli D, Agnoli C, Panico S, Tumino R, Vineis P, Agudo A, Rodriguez L, Sanchez MJ, Amiano P, Barricarte A, Huerta JM, Key TJ, Spencer EA, Bueno-de-Mesquita B, Büchner FL, Orfanos P, Naska A, Trichopoulou A, Rohrmann S, Hermann S, Boeing H, Buijsse B, Johansson I, Hellstrom V, Manjer J, Wirfält E, Jakobsen MU, Overvad K, Tjonneland A, Halkjaer J, Lund E, Braaten T, Engeset D, Odysseos A, Riboli E, Peeters PH. Meat consumption and prospective weight change in participants of the EPIC-PANACEA study. Am J Clin Nutr. 2010 Aug;92(2):398-407. Epub 2010 Jun 30. PMID: 20592131	Does not meet inclusion criteria for methodology
366.	Vernarelli JA, Mitchell DC, Hartman TJ, Rolls BJ. Dietary energy density is associated with body weight status and vegetable intake in U.S. children. J Nutr. 2011 Dec;141(12):2204-10. Epub 2011 Nov 2. PMID: 22049295	Does not meet inclusion criteria for methodology (cross-sectional analysis)
367.	Veugelers PJ, Fitzgerald AL. Prevalence of and risk factors for childhood overweight and obesity. CMAJ. 2005 Sep 13;173(6):607-13. PMID: 16157724	Does not meet inclusion criteria for methodology (evaluated dietary habits)
368.	Videon TM, Manning CK. Influences on adolescent eating patterns: the importance of family meals. J Adolesc Health. 2003 May;32(5):365-73. PMID: 12729986	Does not meet inclusion criteria for methodology (evaluated dietary habits)

369.	Villard LC, Rydén L, Ståhle A. Predictors of healthy behaviours in Swedish school children. Eur J Cardiovasc Prev Rehabil. 2007 Jun;14(3):366-72. PMID: 17568234	Does not meet inclusion criteria for methodology (evaluated dietary habits)
370.	Villegas R, Kearney PM, Perry IJ. The cumulative effect of core lifestyle behaviours on the prevalence of hypertension and dyslipidemia. BMC Public Health. 2008 Jun 13;8:210. PubMed PMID: 18554385; PubMed Central PMCID: PMC2442070.	Does not meet inclusion criteria for methodology (cross-sectional analysis related to CVD risk factors)
371.	Villegas R, Salim A, Collins MM, Flynn A, Perry IJ. Dietary patterns in middle-aged Irish men and women defined by cluster analysis. Public Health Nutr. 2004 Dec;7(8):1017-24. PMID: 15548339	Cross-sectional analysis
372.	Villegas R, Shu XO, Gao YT, Yang G, Elasy T, Li H, Zheng W. Vegetable but not fruit consumption reduces the risk of type 2 diabetes in Chinese women. J Nutr. 2008 Mar;138(3):574-80. PMID: 18287369	Does not include body weight as an outcome (related to T2D)
373.	Villegas R, Yang G, Gao YT, Cai H, Li H, Zheng W, Shu XO. Dietary patterns are associated with lower incidence of type 2 diabetes in middle-aged women: the Shanghai Women's Health Study. Int J Epidemiol. 2010 Jun;39(3):889-99. Epub 2010 Mar 15. PMID: 20231261	Does not include body weight as an outcome
374.	Vioque J, Weinbrenner T, Castelló A, Asensio L, Garcia de la Hera M. Intake of fruits and vegetables in relation to 10-year weight gain among Spanish adults. Obesity (Silver Spring). 2008 Mar;16(3):664-70. Epub 2008 Jan 17. PMID: 18239583	Does not meet inclusion criteria for methodology
375.	Vitolins MZ, Anderson AM, Delahanty L, Raynor H, Miller GD, Mobley C, Reeves R, Yamamoto M, Champagne C, Wing RR, Mayer-Davis E; Look AHEAD Research Group. Action for Health in Diabetes (Look AHEAD) trial: baseline evaluation of selected nutrients and food group intake. J Am Diet Assoc. 2009 Aug;109(8):1367-75. PMID: 19631042	Does not meet inclusion criteria for methodology (cross-sectional analysis)
376.	Vlismas K, Panagiotakos DB, Pitsavos C, Chrysohoou C, Skoumas Y, Stavrinos V, Stefanadis C. Hellenic J. The role of dietary and socioeconomic status assessment on the predictive ability of the HellenicSCORE. Cardiol. 2011 Sep-Oct;52(5):391-8. PMID: 21940286	Does not address the question (related to CVD and SES)
377.	Vollmer WM, Sacks FM, Ard J, Appel LJ, Bray GA, Simons-Morton DG, Conlin PR, Svetkey LP, Erlinger TP, Moore TJ, Karanja N; DASH-Sodium Trial Collaborative Research Group. Effects of diet and sodium intake on blood pressure: subgroup analysis of the DASH-sodium trial. Ann Intern Med. 2001 Dec 18;135(12):1019-28. PMID: 11747380	Does not address the question (related to Na intake and blood pressure)
378.	Votruba SB, Blanc S, Schoeller DA. Pattern and cost of weight gain in previously obese women. Am J Physiol Endocrinol Metab. 2002 Apr;282(4):E923-30. PMID: 11882514	Does not address the question (measure energy expenditure and metabolizable energy intake)
379.	Waijers PM, Ocké MC, van Rossum CT, Peeters PH, Bamia C, Chloptsios Y, van der Schouw YT, Slimani N, Bueno-de-Mesquita HB. Dietary patterns and survival in older Dutch women. Am J Clin Nutr. 2006 May;83(5):1170-6. PMID: 16685062	Does not include body weight as an outcome (related to mortality risk)
380.	Wanke KL, Daston C, Slonim A, Albert PS, Snyder K, Schatzkin A, Lanza E; Polyp Prevention Study Group. Adherence to the polyp prevention trial dietary intervention is associated with a behavioral pattern of adherence to nondietary trial requirements and general health recommendations. J Nutr. 2007 Feb;137(2):391-8. PMID: 17237317	Does not meet inclusion criteria for methodology

381.	Webber LS, Osganian SK, Feldman HA, Wu M, McKenzie TL, Nichaman M, Lytle LA, Edmundson E, Cutler J, Nader PR, Luepker RV. Cardiovascular risk factors among children after a 2 1/2-year intervention-The CATCH Study. Prev Med. 1996 Jul-Aug;25(4):432-41. PMID: 8818067	Does not address the question (related to cardiovascular factors)
382.	Weikert C, Hoffmann K, Dierkes J, Zyriax BC, Klipstein-Grobusch K, Schulze MB, Jung R, Windler E, Boeing H. A homocysteine metabolism-related dietary pattern and the risk of coronary heart disease in two independent German study populations. J Nutr. 2005 Aug;135(8):1981-8. PMID: 16046726	Does not include body weight as an outcome (measured CHD risk biomarkers)
383.	White E, Shattuck AL, Kristal AR, Urban N, Prentice RL, Henderson MM, Insull W Jr, Moskowitz M, Goldman S, Woods MN. Maintenance of a low-fat diet: follow-up of the Women's Health Trial. Cancer Epidemiol Biomarkers Prev. 1992 May-Jun;1(4):315-23. PMID: 1338896	Does not meet inclusion criteria for methodology
384.	Williams DE, Prevost AT, Whichelow MJ, Cox BD, Day NE, Wareham NJ. A cross-sectional study of dietary patterns with glucose intolerance and other features of the metabolic syndrome. Br J Nutr. 2000 Mar;83(3):257-66. PMID: 10884714	Cross-sectional analysis
385.	Williams DE, Wareham NJ, Cox BD, Byrne CD, Hales CN, Day NE. Frequent salad vegetable consumption is associated with a reduction in the risk of diabetes mellitus. J Clin Epidemiol. 1999 Apr;52(4):329-35. PMID: 10235173	Does not include body weight as an outcome (measured glucose intolerance)
386.	Wirfält AK, Jeffery RW. Using cluster analysis to examine dietary patterns: nutrient intakes, gender, and weight status differ across food pattern clusters. J Am Diet Assoc. 1997 Mar;97(3):272-9. PMID: 9060944	Cross-sectional analysis
387.	Wirfält E, Hedblad B, Gullberg B, Mattisson I, Andrén C, Rosander U, Janzon L, Berglund G. Food patterns and components of the metabolic syndrome in men and women: a cross-sectional study within the Malmö Diet and Cancer cohort. Am J Epidemiol. 2001 Dec 15;154(12):1150-9. PMID: 11744521	Cross-sectional analysis
388.	Woo J, Cheung B, Ho S, Sham A, Lam TH. Influence of dietary pattern on the development of overweight in a Chinese population. Eur J Clin Nutr. 2008 Apr;62(4):480-7. Epub 2007 Feb 28. PMID: 17327865	Does not meet inclusion criteria for methodology
389.	Würbach A, Zellner K, Kromeyer-Hauschild K. Meal patterns among children and adolescents and their associations with weight status and parental characteristics. Public Health Nutr. 2009 Aug;12(8):1115-21. Epub 2009 Feb 26. PMID: 19243677	Does not address the question (measured meal patterns)
390.	Yannakoulia M, Ntalla I, Papoutsakis C, Farmaki AE, Dedoussis GV. Consumption of vegetables, cooked meals, and eating dinner is negatively associated with overweight status in children. J Pediatr. 2010 Nov;157(5):815-20. Epub 2010 Jun 17. PMID: 20955852	Cross-sectional analysis
391.	Yannakoulia M, Panagiotakos D, Pitsavos C, Skoumas Y, Stafanadis C. Eating patterns may mediate the association between marital status, body mass index, and blood cholesterol levels in apparently healthy men and women from the ATTICA study. Soc Sci Med. 2008 Jun;66(11):2230-9. Epub 2008 Mar 10. PMID: 18329772	Does not address the question (evaluated dietary patterns and marital status)
392.	Yannakoulia M, Panagiotakos DB, Pitsavos C, Tsetsekou E, Fappa E, Papageorgiou C, Stefanadis C. Eating habits in relations to anxiety symptoms among apparently healthy adults. A pattern analysis from the ATTICA Study. Appetite. 2008 Nov;51(3):519-25. Epub 2008 Apr 8. PMID: 18495296	Does not include body weight as an outcome (measured dietary patterns and anxiety)

393.	Yannakoulia M, Yiannakouris N, Melistas L, Fappa E, Vidra N, Kontogianni MD, Mantzoros CS. Dietary factors associated with plasma high molecular weight and total adiponectin levels in apparently healthy women. Eur J Endocrinol. 2008 Oct;159(4):R5-10. Epub 2008 Jul 1. PMID: 18593824	Does not address the question (evaluated dietary patterns and HMW adiponectin)
394.	Yeh CJ, Chang HY, Pan WH. Time trend of obesity, the metabolic syndrome and related dietary pattern in Taiwan: from NAHSIT 1993-1996 to NAHSIT 2005-2008. Asia Pac J Clin Nutr. 2011;20(2):292-300. PMID: 21669598	Unsure of study designs. Authors did nopt respond to inquiry
395.	Young TK. Obesity, central fat patterning, and their metabolic correlates among the inuit of the central Canadian Arctic. Hum Biol. 1996 Apr;68(2):245-63. PMID: 8838915	Does not meet inclusion criteria for methodology (descriptive study)
396.	Yu R, Woo J, Chan R, Sham A, Ho S, Tso A, Cheung B, Lam TH, Lam K. Relationship between dietary intake and the development of type 2 diabetes in a Chinese population: the Hong Kong Dietary Survey. Public Health Nutr. 2011 Apr 5:1-9. [Epub ahead of print] PMID: 21466742	Does not include body weight as an outcome (measured T2D)
397.	Zhang Y, Tan H, Dai X, Huang H, He G. Dietary patterns are associated with weight gain in newlyweds: findings from a cross-sectional study in Shanghai, China. Public Health Nutr. 2011 Oct 18:1-9. [Epub ahead of print] PMID: 22005131	Cross-sectional analysis

Other Methods

Systematic Review Question

- What is the relationship between adherence to dietary guidelines/ recommendations or specific dietary patterns and body weight or risk of obesity?
    - studies that do not use methodologies included in the other questions (Other Methods)

Search Results:

Total Hits: 5,128
Total Selected: 663
Total Included: 7

Databases Searched:

Search date: April 2012
Date range: No limits

A. PubMed:

Search Terms:
("Body Weights and Measures"[Mesh] OR “body weight”[mh] OR “body weight”[tiab] ORobesity[tiab] or obesity[mh] OR overweight[tiab] OR overweight[mh] OR "Body Composition"[Mesh] OR “body fat”[tiab] OR adipos*[tiab] OR weight[tiab] OR waist[tiab] OR "Anthropometry"[Mesh:noexp] OR “Metabolic syndrome”) 2. (“diet quality” OR dietary pattern* OR eating pattern* OR food pattern* OR eating habit* OR dietary habit* OR food habit* OR dietary profile* OR food profile* OR diet profile* OR eating profile* OR dietary guideline* OR dietary recommendation* OR food intake pattern* OR dietary intake pattern* OR diet pattern*) 3. (DASH OR (dietary approaches to stop hypertension) OR "Diet, Mediterranean"[Mesh] OR vegan* OR vegetarian* OR "Diet, Vegetarian"[Mesh] OR

“prudent diet” OR “western diet” OR ((Okinawa* OR "Ethnic Groups"[Mesh] OR omniheart OR omni[tiab] OR "Optimal Macronutrient Intake Trial to Prevent Heart Disease" OR “plant based” OR Mediterranean[tiab]) AND (diet[mh] OR diet[tiab]))) #1 OR (#2 OR #3) AND (“clinical trial”[ptyp] OR "Epidemiologic Studies"[Mesh] OR "Support of Research"[ptyp]) NOT (editorial[ptyp] OR comment[ptyp] OR news[ptyp] OR review[ptyp]) Also included search results from: ("Guideline Adherence"[Mesh] AND (diet OR food OR eating OR eat OR dietary OR feeding))

B. EMBASE:

Search Terms:

('body weight'/exp OR 'adipose tissue'/exp OR 'skinfold thickness'/exp OR 'body mass'/exp OR 'waist hip ratio'/exp OR ‘body fat’/exp OR ‘body fat distribution’/exp OR 'waist circumference'/exp OR overweight:ab,ti OR 'body mass index':ab,ti) AND

(‘diet quality’ OR 'eating habit'/exp OR 'Mediterranean diet'/exp OR DASH:ti,ab OR ‘dietary approaches to stop hypertension’:ti,ab OR vegan*:ab,ti OR vegetarian*:ab,ti OR 'vegetarian diet'/exp OR 'vegetarian'/exp OR ‘prudent diet’:ti,ab OR ‘western diet’:ti,ab OR omniheart:ti,ab OR omni:ti OR ‘plant based diet’) (limit to Embase only)

('body weight'/exp OR 'adipose tissue'/exp OR 'skinfold thickness'/exp OR 'body mass'/exp OR 'waist hip ratio'/exp OR ‘body fat’/exp OR ‘body fat distribution’/exp OR 'waist circumference'/exp OR overweight:ab,ti OR 'body mass index':ab,ti) AND

(((dietary OR eating OR food OR diet) NEAR/2 (pattern? OR habit?)):ab,ti) OR

('ethnic, racial and religious groups'/exp AND (diet/exp OR eating/exp OR 'food intake'/de))

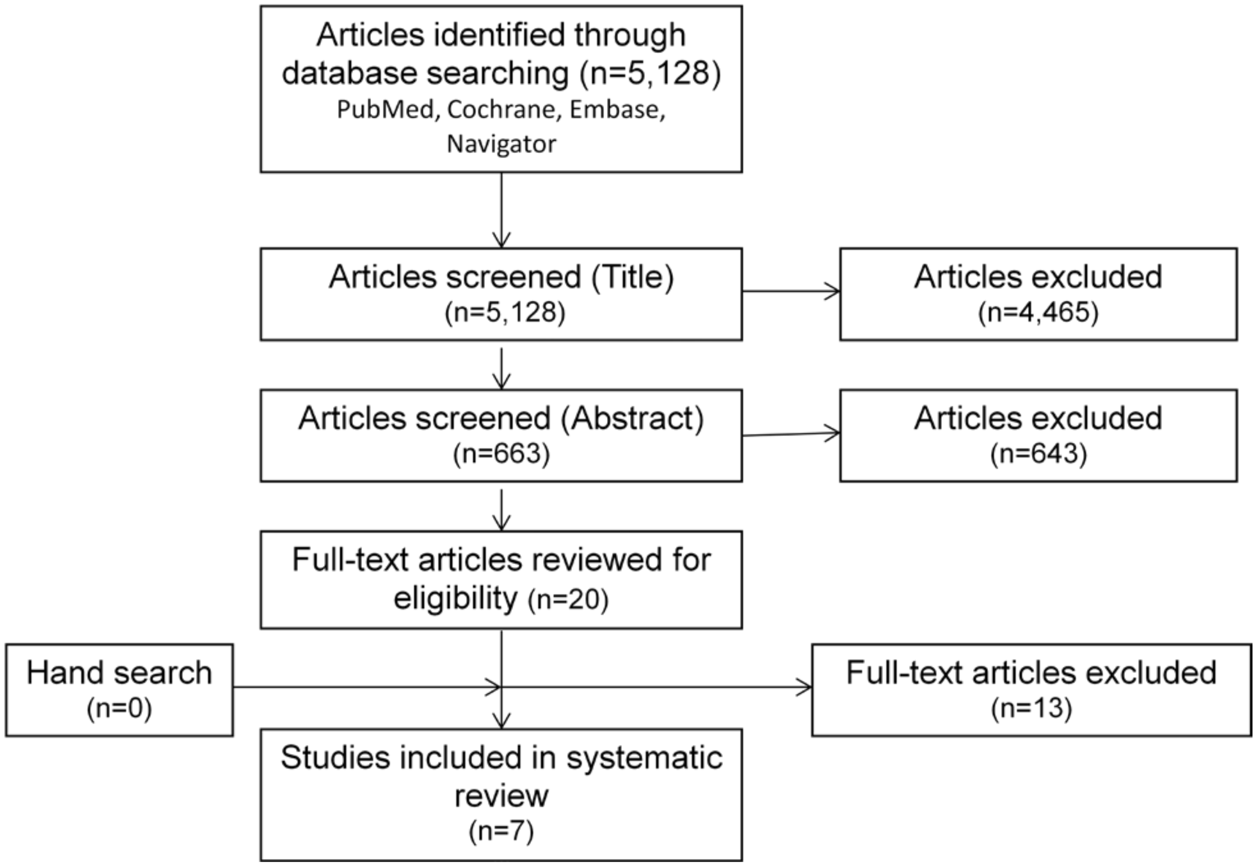
Limits Eng/hum; article or article in press; Embase only (i.e. NOT Medline)

C. Navigator (FSTA/CAB Abstracts/BIOSIS):

(“body weight” or title:obesity or abstract:obesity or overweight or adiposity or “body fat” or “body mass” or bmi or title:weight or “metabolic syndrome”) and ((Diet or dietary or eating or food) NEAR/3 (pattern* or profile* or habit* or guideline* or recommendation*)) -database:medline (doc-type:Articles OR doc-type:Reviews) language:English -(database:zoor OR database:ffab OR database:wesw)

(“body weight” or title:obesity or abstract:obesity or overweight or adiposity or “body fat” or “body mass” or bmi or title:weight or “metabolic syndrome”) and ((dietary approaches to stop hypertension) or vegan* or vegetarian* or “prudent diet” or “western diet” or omniheart or "Optimal Macronutrient Intake Trial to Prevent Heart Disease" or ((Okinawa* or asia* or Chinese or japan* or Hispanic* or ethnic or “plant based” or title:omni or title:Mediterranean or DASH) NEAR/3 (title:diet* or abstract:diet*))) -database:medline doc-type:Articles language:English

Figure F.3. Flow chart of literature search results for studies examining the effects of dietary patterns on body weight



INCLUDED ARTICLES

1. Blumenthal JA, Babyak MA, Sherwood A, Craighead L, Lin PH, Johnson J, Watkins LL, Wang JT, Kuhn C, Feinglos M, Hinderliter A. Effects of the dietary approaches to stop hypertension diet alone and in combination with exercise and caloric restriction on insulin sensitivity and lipids. Hypertension. 2010 May;55(5):1199-205. Epub 2010 Mar 8. PMID: 20212264
2. Carty CL, Kooperberg C, Neuhouser ML, Tinker L, Howard B, Wactawski-Wende J, Beresford SA, Snetselaar L, Vitolins M, Allison M, Budrys N, Prentice R, Peters U. Low-fat dietary pattern and change in body-composition traits in the Women's Health Initiative Dietary Modification Trial. Am J Clin Nutr. 2011 Mar;93(3):516-24. Epub 2010 Dec 22. PMID: 21177798
3. Esposito K, Marfella R, Ciotola M, Di Palo C, Giugliano F, Giugliano G, D'Armiento M, D'Andrea F, Giugliano D. Effect of a mediterranean-style diet on endothelial dysfunction and markers of vascular inflammation in the metabolic syndrome: a randomized trial. JAMA. 2004 Sep 22;292(12):1440-6. PMID: 15383514

4. Howard BV, Manson JE, Stefanick ML, Beresford SA, Frank G, Jones B, Rodabough RJ, Snetselaar L, Thomson C, Tinker L, Vitolins M, Prentice R. Low-fat dietary pattern and weight change over 7 years: the Women's Health Initiative Dietary Modification Trial. JAMA. 2006 Jan 4;295(1):39-49. PMID: 16391215
5. Pachucki MA. Food pattern analysis over time: unhealthful eating trajectories predict obesity. Int J Obes (Lond). 2011 Jul 26. doi: 10.1038/ijo.2011.133. [Epub ahead of print] PMID: 21792169
6. Romaguera D, Ängquist L, Du H, Jakobsen MU, Forouhi NG, Halkjær J, Feskens EJ, van der A DL, Masala G, Steffen A, Palli D, Wareham NJ, Overvad K, Tjønneland A, Boeing H, Riboli E, Sørensen TI. Food composition of the diet in relation to changes in waist circumference adjusted for body mass index. PLoS One. 2011;6(8):e23384. Epub 2011 Aug 17. PMID: 21858094
7. Rosell M, Appleby P, Spencer E, Key T. Weight gain over five years in 21, 966 meat-eating, fish-eating, vegetarian and vegan men and women in EPIC-Oxford. *Int J Obes* (Lond). 2006 Sep; 30 (9): 1, 389-1, 396. Epub 2006 Mar 14. PMID: 16534521

EXCLUDED ARTICLES (656)

#	Citation	Rationale for Exclusion
1.	Abdulla M, Andersson I, Asp NG, Berthelsen K, Birkhed D, Dencker I, Johansson CG, Jägerstad M, Kolar K, Nair BM, Nilsson-Ehle P, Nordén A, Rassner S, Akesson B, Ockerman PA. Nutrient intake and health status of vegans. Chemical analyses of diets using the duplicate portion sampling technique. Am J Clin Nutr. 1981 Nov;34(11):2464-77. PMID: 6272567	Insufficient sample size <30; (n=6)
2.	Abidoye RO, Madueke LA, Abidoye GO. The relationship between dietary habits and body-mass index using the Federal Airport Authority of Nigeria as the sample. Nutr Health. 2002;16(3):215-27. PMID: 12418805	Nigeria classified as “low” on Human Development Index (HDI)
3.	Adami GF, Cordera R. Association of body mass index, physical activity and eating pattern in adult men. Nutrition Research. 2003;23(5):579-83	Cross-sectional
4.	Afrasiabi A, Hassanzadeh S, Sattarivand R, Nouri M, Mahbood S. Effects of low fat and low calorie diet on plasma lipid levels in the fasting month of Ramadan. Saudi Med J. 2003 Feb;24(2):184-8. PMID: 12682685	Insufficient sample size <30; (n=28, 10 per study arm)
5.	Aggarwal B, Liao M, Allegrante JP, Mosca L. Low social support level is associated with non-adherence to diet at 1 year in the Family Intervention Trial for Heart Health (FIT Heart). J Nutr Educ Behav. 2010 Nov-Dec;42(6):380-8. Epub 2010 Aug 8. PMID: 20696617	Adherence to diet is the dependent variable in the analyses
6.	Aggarwal T, Singh D, Bhatia RC, Sobti PC. Dietary habits of adolescents in public schools of Ludhiana, Punjab, India. Rivista Italiana di Medicina dell'Adolescenza. 2006;4(1):35-42	India is classified as “medium” on Human Development Index (HDI)

7.	Agudo A, Pera G. Vegetable and fruit consumption associated with anthropometric, dietary and lifestyle factors in Spain. EPIC Group of Spain. European Prospective Investigation into Cancer. Public Health Nutr. 1999 Sep;2(3):263-71. PMID: 10512560	Cross-sectional
8.	Agyemang C, van Valkengoed I, van den Born BJ, Stronks K. Prevalence and determinants of prehypertension among African Surinamese, Hindustani Surinamese, and White Dutch in Amsterdam, the Netherlands: the SUNSET study. Eur J Cardiovasc Prev Rehabil. 2007 Dec;14(6):775-81. PMID: 18043298	Study did not examine relationship between dietary patterns and body weight measure
9.	Ahmed F, Zareen M, Khan MR, Banu CP, Haq MN, Jackson AA. Dietary pattern, nutrient intake and growth of adolescent school girls in urban Bangladesh. Public Health Nutr. 1998 Jun;1(2):83-92. PMID: 10933404	Bangladesh classified as “low” on Human Development Index (HDI)
10.	Ainsworth BE, Blank HM, Galuska DA, Gillespie C, Khan LK, Serdula MK. Use of low-carbohydrate, high-protein diets among Americans: Correlates, duration, and weight loss. MedGenMed Medscape General Medicine. 2006;8(2)	Cross-sectional
11.	Akbaraly TN, Singh-Manoux A, Tabak AG, Jokela M, Virtanen M, Ferrie JE, Marmot MG, Shipley MJ, Kivimaki M. Overall diet history and reversibility of the metabolic syndrome over 5 years: the Whitehall II prospective cohort study. Diabetes Care. 2010 Nov;33(11):2339-41. Epub 2010 Jul 29. PMID: 20671094	Dependent variable was reversion to MetS
12.	Akman M, Akan H, Izbirak G, Tanriöver Ö, Tilev SM, Yildiz A, Tektaş S, Vitrinel A, Hayran O. Eating patterns of Turkish adolescents: a cross-sectional survey. Nutr J. 2010 Dec 19;9:67. PMID: 21167070	Cross-sectional
13.	Al Sabbah H, Vereecken C, Abdeen Z, Kelly C, Ojala K, Németh A, Ahluwalia N, Maes L. Weight control behaviors among overweight, normal weight and underweight adolescents in Palestine: findings from the national study of Palestinian schoolchildren (HBSC-WBG2004). Int J Eat Disord. 2010 May;43(4):326-36. PMID: 19437462	Does not assess dietary patterns as defined by this project. Study outcomes focus on eating disorders.
14.	Al-Assaf AH, Al-Numair KS. Body Mass Index and dietary intake of Saudi adult males in the Riyadh region-Saudi Arabia. Pakistan Journal of Nutrition. 2007;6(5):414-8	Cross-sectional
15.	Alcácera MA, Marques-Lopes I, Fajó-Pascual M, Foncillas JP, Carmona-Torre F, Martínez-González MA. Alcoholic beverage preference and dietary pattern in Spanish university graduates: the SUN cohort study. Eur J Clin Nutr. 2008 Oct;62(10):1178-86. Epub 2007 Jul 4. PMID: 17609695	Study did not examine relationship between dietary patterns and body weight measure
16.	Alexander MA, Blank JJ. Factors related to obesity in Mexican-American preschool children. Image J Nurs Sch. 1988 Summer;20(2):79-82. No abstract available. PMID: 3378822	Trend study
17.	Alexy U, Libuda L, Mersmann S, Kersting M. Convenience foods in children's diet and association with dietary quality and body weight status. Eur J Clin Nutr. 2011 Feb;65(2):160-6. Epub 2010 Dec 8. PMID: 21139631	Does not assess dietary patterns as defined by this project
18.	Al-Hazzaa HM, Abahussain NA, Al-Sobayel HI, Qahwaji DM, Musaiger AO. Physical activity, sedentary behaviors and dietary habits among Saudi adolescents relative to age, gender and region. International Journal of Behavioral Nutrition and Physical Activity. 2011;8	Cross-sectional
19.	Allen NE, Appleby PN, Davey GK, Kaaks R, Rinaldi S, Key TJ. The associations of diet with serum insulin-like growth factor I and its main binding proteins in 292 women meat-eaters, vegetarians, and vegans. Cancer Epidemiol Biomarkers Prev. 2002 Nov;11(11):1441-8. PMID: 12433724	Study did not examine relationship between dietary patterns and body weight measure

20.	Al-Rethaiaa AS, Fahmy AE, Al-Shwaiyat NM. Obesity and eating habits among college students in Saudi Arabia: a cross sectional study. Nutr J. 2010 Sep 19;9:39. PMID: 20849655	Cross-sectional
21.	Al-Sarraj T, Saadi H, Volek JS, Fernandez ML. Metabolic syndrome prevalence, dietary intake, and cardiovascular risk profile among overweight and obese adults 18-50 years old from the United Arab Emirates. Metab Syndr Relat Disord. 2010 Feb;8(1):39-46. PMID: 19929603	Study did not examine relationship between dietary patterns and body weight measure
22.	Altieri P, Cavazza C, Pasqui F, Morselli AM, Gambineri A, Pasquali R. Dietary habits and their relationship with hormones and metabolism in overweight and obese women with polycystic ovary syndrome. Clin Endocrinol (Oxf). 2012 Jan 30. doi: 10.1111/j.1365-2265.2012.04355.x. [Epub ahead of print] PMID: 22288821	Case-control
23.	Alvarez León EE, Henríquez P, Serra-Majem L. Mediterranean diet and metabolic syndrome: a cross-sectional study in the Canary Islands. Public Health Nutr. 2006 Dec;9(8A):1089-98. PMID: 17378946	Cross-sectional
24.	Amini M, Shafaeizadeh S, Zare M, Khosravi Boroujeni H, Esmaillzadeh A. A cross-sectional study on food patterns and adiposity among individuals with abnormal glucose homeostasis. Arch Iran Med. 2012 Mar;15(3):131-5. PMID: 22369299	Cross-sectional
25.	Anderson AL, Harris TB, Tylavsky FA, Perry SE, Houston DK, Hue TF, Strotmeyer ES, Sahyoun NR; Health ABC Study. Dietary patterns and survival of older adults. J Am Diet Assoc. 2011 Jan;111(1):84-91. PMID: 21185969	Study considered in systematic review question on cluster anlaysis
26.	Andersson I, Rössner S. Meal patterns in obese and normal weight men: the 'Gustaf' study. Eur J Clin Nutr. 1996 Oct;50(10):639-46. PMID: 8909929	Cross-sectional
27.	Appel LJ, Hebert PR, Cohen JD, Obarzanek E, Yamamoto M, Buring J, Stevens V, Kirchner K, Borhani NO. Baseline characteristics of participants in phase II of the Trials of Hypertension Prevention (TOHP II). Trials of Hypertension Prevention (TOHP) Collaborative Research Group. Ann Epidemiol. 1995 Mar;5(2):149-55. PMID: 7795833	Study outcome of interest is blood pressure
28.	Appel LJ, Moore TJ, Obarzanek E, Vollmer WM, Svetkey LP, Sacks FM, Bray GA, Vogt TM, Cutler JA, Windhauser MM, Lin PH, Karanja N. A clinical trial of the effects of dietary patterns on blood pressure. DASH Collaborative Research Group. N Engl J Med. 1997 Apr 17;336(16):1117-24. PMID: 9099655	Study did not examine relationship between dietary patterns and body weight measure
29.	Appel LJ, Sacks FM, Carey VJ, Obarzanek E, Swain JF, Miller ER 3rd, Conlin PR, Erlinger TP, Rosner BA, Laranjo NM, Charleston J, McCarron P, Bishop LM; OmniHeart Collaborative Research Group. Effects of protein, monounsaturated fat, and carbohydrate intake on blood pressure and serum lipids: results of the OmniHeart randomized trial. JAMA. 2005 Nov 16;294(19):2455-64. PMID: 16287956	Study did not examine relationship between dietary patterns and body weight measure
30.	Arabshahi S, van der Pols JC, Williams GM, Marks GC, Lahmann PH. Diet quality and change in anthropometric measures: 15-year longitudinal study in Australian adults. Br J Nutr. 2011 Aug 26:1-10. [Epub ahead of print] PMID: 21867579	Study considered in systematic review question on index/score
31.	Arikan I, Aksu AE, Metintas S, Kalyoncu C. The adaptation of the adolescent food habit checklist to the Turkish adolescents. TAF Preventive Medicine Bulletin. 2012;11(1):45-52	Independent variable is the instrument used to measure eating behaviors
32.	Arnold MS, Funnell MM, Herman WH, Brown MB, Merritt JH, Fogler JM, Halter JB. Discrepancies between perceived dietary changes and 4-day food records in older adults with diabetes. J Am Diet Assoc. 1996 Jul;96(7):705-7. No abstract available. PMID: 8675914	Study did not examine relationship between dietary patterns and body weight measure

33.	Arredondo EM, Elder JP, Ayala GX, Slymen D, Campbell NR. Association of a traditional vs shared meal decision-making and preparation style with eating behavior of Hispanic women in San Diego County. J Am Diet Assoc. 2006 Jan;106(1):38-45. PMID: 16390665	Study did not examine relationship between dietary patterns and body weight measure
34.	Ask AS, Hernes S, Aarek I, Johannessen G, Haugen M. Changes in dietary pattern in 15 year old adolescents following a 4 month dietary intervention with school breakfast--a pilot study. Nutr J. 2006 Dec 7;5:33. PMID: 17150115	Study did not examine relationship between dietary patterns and body weight measure
35.	Athyros VG, Bouloukos VI, Pehlivanidis AN, Papageorgiou AA, Dionysopoulou SG, Symeonidis AN, Petridis DI, Kapousouzi MI, Satsoglou EA, Mikhailidis DP; MetS-Greece Collaborative Group. The prevalence of the metabolic syndrome in Greece: the MetS-Greece Multicentre Study. Diabetes Obes Metab. 2005 Jul;7(4):397-405. PMID: 15955126	Cross-sectional
36.	Auslander W, Haire-Joshu D, Houston C, Rhee CW, Williams JH. A controlled evaluation of staging dietary patterns to reduce the risk of diabetes in African-American women. Diabetes Care. 2002 May;25(5):809-14. PMID: 11978673	Dietary pattern is the dependent variable
37.	Ayala GX, Elder JP, Campbell NR, Slymen DJ, Roy N, Engelberg M, Ganiats T. Correlates of body mass index and waist-to-hip ratio among Mexican women in the United States: implications for intervention development. Womens Health Issues. 2004 Sep-Oct;14(5):155-64. PMID: 15482966	Cross-sectional
38.	Ayranci U, Erenoglu N, Son O. Eating habits, lifestyle factors, and body weight status among Turkish private educational institution students. Nutrition. 2010 Jul-Aug;26(7-8):772-8. Epub 2009 Nov 14. PMID: 19914799	Cross-sectional
39.	Azadbakht L, Esmaillzadeh A. Dietary diversity score is related to obesity and abdominal adiposity among Iranian female youth. Public Health Nutr. 2011 Jan;14(1):62-9. Epub 2010 Mar 31. PMID: 20353617	Cross-sectional
40.	Azadbakht L, Fard NR, Karimi M, Baghaei MH, Surkan PJ, Rahimi M, Esmaillzadeh A, Willett WC. Effects of the Dietary Approaches to Stop Hypertension (DASH) eating plan on cardiovascular risks among type 2 diabetic patients: a randomized crossover clinical trial. Diabetes Care. 2011 Jan;34(1):55-7. Epub 2010 Sep 15. PMID: 20843978	All subjects diagnosed with type 2 diabetes
41.	Azadbakht L, Kimiagar M, Mehrabi Y, Esmaillzadeh A, Hu FB, Willett WC. Dietary soya intake alters plasma antioxidant status and lipid peroxidation in postmenopausal women with the metabolic syndrome. Br J Nutr. 2007 Oct;98(4):807-13. Epub 2007 May 17. PMID: 17506931	Study did not examine relationship between dietary patterns and body weight measure
42.	Azadbakht L, Kimiagar M, Mehrabi Y, Esmaillzadeh A, Hu FB, Willett WC. Soy consumption, markers of inflammation, and endothelial function: a cross-over study in postmenopausal women with the metabolic syndrome. Diabetes Care. 2007 Apr;30(4):967-73. PMID: 17392557	Study did not examine relationship between dietary patterns and body weight measure
43.	Azadbakht L, Mirmiran P, Esmaillzadeh A, Azizi T, Azizi F. Beneficial effects of a Dietary Approaches to Stop Hypertension eating plan on features of the metabolic syndrome. Diabetes Care. 2005 Dec;28(12):2823-31. PMID: 16306540	Intervention was a “weight-reducing diet” that was designed to provide “500 kcal less than their caloric needs according to their weight.”
44.	Aziz S, Umm-e-Rubab, Noorulain W, Majid R, Hosain K, Siddiqui IA, Manzoor S. Dietary pattern, height, weight centile and BMI of affluent school children and adolescents from three major cities of Pakistan. J Coll Physicians Surg Pak. 2010 Jan;20(1):10-6. PMID: 20141686	Cross-sectional

45.	Babio N, Bulló M, Basora J, Martínez-González MA, Fernández-Ballart J, Márquez-Sandoval F, Molina C, Salas-Salvadó J; Nureta-PREDIMED Investigators. Adherence to the Mediterranean diet and risk of metabolic syndrome and its components. Nutr Metab Cardiovasc Dis. 2009 Oct;19(8):563-70. Epub 2009 Jan 26. PMID: 19176282	Cross-sectional
46.	Babio N, Bulló M, Salas-Salvadó J. Mediterranean diet and metabolic syndrome: the evidence. Public Health Nutr. 2009 Sep;12(9A):1607-17. Review. PMID: 19689829	Not original research article
47.	Baines S, Powers J, Brown WJ. How does the health and well-being of young Australian vegetarian and semi-vegetarian women compare with non-vegetarians? Public Health Nutr. 2007 May;10(5):436-42. PMID: 17411462	Cross-sectional
48.	Balcells E, Delgado-Noguera M, Pardo-Lozano R, Roig-González T, Renom A, González-Zobl G, Muñoz-Ortego J, Valiente-Hernández S, Pou-Chaubron M, Schröder H. Soft drinks consumption, diet quality and BMI in a Mediterranean population. Public Health Nutr. 2011 May;14(5):778-84. Epub 2010 Oct 19. PMID: 20955643	Does not examine relationship between dietary patterns and body weight measure
49.	Baldini M, Pasqui F, Bordoni A, Maranesi M. Is the Mediterranean lifestyle still a reality? Evaluation of food consumption and energy expenditure in Italian and Spanish university students. Public Health Nutr. 2009 Feb;12(2):148-55. Epub 2008 May 27. PMID: 18503726	Cross-sectional
50.	Balthazar EA, de Oliveira MR. Differences in dietary pattern between obese and eutrophic children. BMC Res Notes. 2011 Dec 29;4(1):567. [Epub ahead of print] PMID: 22206728	Case control
51.	Barbosa JC, Shultz TD, Filley SJ, Nieman DC. The relationship among adiposity, diet, and hormone concentrations in vegetarian and nonvegetarian postmenopausal women. Am J Clin Nutr. 1990 May;51(5):798-803. PMID: 2159209	Cross-sectional
52.	Barnard ND, Cohen J, Jenkins DJ, Turner-McGrievy G, Gloede L, Green A, Ferdowsian H. A low-fat vegan diet and a conventional diabetes diet in the treatment of type 2 diabetes: a randomized, controlled, 74-wk clinical trial. Am J Clin Nutr. 2009 May;89(5):1588S-1596S. Epub 2009 Apr 1. PMID: 19339401	All subjects diagnosed with type 2 diabetes
53.	Barnard ND, Scialli AR, Bertron P, Hurlock D, Edmonds K, Talev L. Effectiveness of a low-fat vegetarian diet in altering serum lipids in healthy premenopausal women. Am J Cardiol. 2000 Apr 15;85(8):969-72. PMID: 10760336	Does not examine relationship between dietary patterns and body weight measure
54.	Barnard ND, Scialli AR, Turner-McGrievy G, Lanou AJ, Glass J. The effects of a low-fat, plant-based dietary intervention on body weight, metabolism, and insulin sensitivity. Am J Med. 2005 Sep;118(9):991-7. PMID: 16164885	Insufficient sample size <30; (n=29)
55.	Barr SI, Janelle KC, Prior JC. Vegetarian vs nonvegetarian diets, dietary restraint, and subclinical ovulatory disturbances: prospective 6-mo study. Am J Clin Nutr. 1994 Dec;60(6):887-94. PMID: 7985629	Insufficient sample size <30; (n=23, 20 per study arm)
56.	Bashour HN. Survey of dietary habits of in-school adolescents in Damascus, Syrian Arab Republic. East Mediterr Health J. 2004 Nov;10(6):853-62. PMID: 16335773	Syria is classified as "medium" on Human Development Index (HDI)
57.	Bassett MN, Romaguera D, Samman N. Nutritional status and dietary habits of the population of the Calchaqui Valleys of Tucuman, Argentina. Nutrition. 2011 Nov-Dec;27(11-12):1130-5. Epub 2011 Sep 3. PMID: 21890324	Cross-sectional
58.	Bazzano LA, Song Y, Bubes V, Good CK, Manson JE, Liu S. Dietary intake of whole and refined grain breakfast cereals and weight gain in men. Obes Res. 2005 Nov;13(11):1952-60. PMID: 16339127	Does not examine relationship between dietary patterns and body weight measure

59.	Becquey E, Savy M, Danel P, Dabire HB, Tapsoba S, Martin-Prevel Y. Dietary patterns of adults living in Ouagadougou and their association with overweight. Nutrition Journal. 2010;9(1)	Burkina Faso classified as “low” on Human Development Index (HDI)
60.	Bédard A, Goulet J, Riverin M, Lamarche B, Lemieux S. Effects of a dietary intervention promoting the adoption of a Mediterranean food pattern on fast-food consumption among healthy French-Canadian women. Br J Nutr. 2010 Dec;104(11):1662-5. Epub 2010 Aug 9. PMID: 20691126	Before and after study
61.	Bedford JL, Barr SI. Diets and selected lifestyle practices of self-defined adult vegetarians from a population-based sample suggest they are more 'health conscious'. International Journal of Behavioral Nutrition and Physical Activity. 2005;2	Cross-sectional
62.	Beilin LJ, Armstrong BK, Margetts BM, Rouse IL, Vandongen R. Vegetarian diet and blood pressure. Nephron. 1987;47 Suppl 1:37-41. PMID: 3696348	Does not examine relationship between dietary patterns and body weight measure
63.	Bemelmans WJ, Broer J, de Vries JH, Hulshof KF, May JF, Meyboom-De Jong B. Impact of Mediterranean diet education versus posted leaflet on dietary habits and serum cholesterol in a high risk population for cardiovascular disease. Public Health Nutr. 2000 Sep;3(3):273-83. PMID: 10979147	Controlled comparison study
64.	Bermejo LM, Aparicio A, Andrés P, López-Sobaler AM, Ortega RM. The influence of fruit and vegetable intake on the nutritional status and plasma homocysteine levels of institutionalised elderly people. Public Health Nutr. 2007 Mar;10(3):266-72. PMID: 17288624	Cross-sectional
65.	Bermudez OI, Tucker KL. Trends in dietary patterns of Latin American populations. Cad Saude Publica. 2003;19 Suppl 1:S87-99. Epub 2003 Jul 21. PMID: 12886439	Not original research article
66.	Bersamin A, Luick BR, King IB, Stern JS, Zidenberg-Cherr S. Westernizing diets influence fat intake, red blood cell fatty acid composition, and health in remote Alaskan Native communities in the center for Alaska Native health study. J Am Diet Assoc. 2008 Feb;108(2):266-73. PMID: 18237575	Does not examine relationship between dietary patterns and body weight measure
67.	Bertéus Forslund H, Lindroos AK, Sjöström L, Lissner L. Meal patterns and obesity in Swedish women-a simple instrument describing usual meal types, frequency and temporal distribution. Eur J Clin Nutr. 2002 Aug;56(8):740-7. PMID: 12122550	Cross-sectional
68.	Bertheke Post G, de Vente W, Kemper HC, Twisk JW. Longitudinal trends in and tracking of energy and nutrient intake over 20 years in a Dutch cohort of men and women between 13 and 33 years of age: The Amsterdam growth and health longitudinal study. Br J Nutr. 2001 Mar;85(3):375-85. PMID: 11299083	Does not examine relationship between dietary patterns and body weight measure
69.	Bes-Rastrollo M, Basterra-Gortari FJ, Sánchez-Villegas A, Marti A, Martínez JA, Martínez-González MA. A prospective study of eating away-from-home meals and weight gain in a Mediterranean population: the SUN (Seguimiento Universidad de Navarra) cohort. Public Health Nutr. 2010 Sep;13(9):1356-63. Epub 2009 Dec 3. PMID: 19954575	Independent variable is eating out
70.	Bes-Rastrollo M, Martínez-González MA, Sánchez-Villegas A, de la Fuente Arrillaga C, Martínez JA. Association of fiber intake and fruit/vegetable consumption with weight gain in a Mediterranean population. Nutrition. 2006 May;22(5):504-11. Epub 2006 Feb 24. PMID: 16500082	Cross-sectional
71.	Bes-Rastrollo M, Sabaté J, Gómez-Gracia E, Alonso A, Martínez JA, Martínez-González MA. Nut consumption and weight gain in a Mediterranean cohort: The SUN study. Obesity (Silver Spring). 2007 Jan;15(1):107-16. PMID: 17228038	Does not examine relationship between dietary patterns and body weight measure

72.	Bibiloni Mdel M, Martínez E, Llull R, Pons A, Tur JA. Western and Mediterranean dietary patterns among Balearic Islands' adolescents: socio-economic and lifestyle determinants. Public Health Nutr. 2012 Apr;15(4):683-92. Epub 2011 Sep 8. PMID: 21899802	Cross-sectional
73.	Biltoft-Jensen A, Groth MV, Matthiessen J, Wachmann H, Christensen T, Fagt S. Diet quality: associations with health messages included in the Danish Dietary Guidelines 2005, personal attitudes and social factors. Public Health Nutr. 2009 Aug;12(8):1165-73. Epub 2008 Sep 15. PMID: 18789168	Cross-sectional
74.	bin Zaal AA, Musaiger AO, D'Souza R. Dietary habits associated with obesity among adolescents in Dubai, United Arab Emirates. Nutr Hosp. 2009 Jul-Aug;24(4):437-44. PMID: 19721923	Cross-sectional
75.	Biró G, Antal M, Zajkás G. Nutrition survey of the Hungarian population in a randomized trial between 1992-1994. Eur J Clin Nutr. 1996 Apr;50(4):201-8. PMID: 8730605	Cross-sectional
76.	Blair SN, Blair A, Pate RR, Howe HG, Rosenberg M, Parker GM. Interactions among dietary pattern, physical activity and skinfold thickness. Res Q Exerc Sport. 1981 Dec;52(4):505-11. No abstract available. PMID: 7330444	Cross-sectional
77.	Blumenthal JA, Babyak MA, Hinderliter A, Watkins LL, Craighead L, Lin PH, Caccia C, Johnson J, Waugh R, Sherwood A. Effects of the DASH diet alone and in combination with exercise and weight loss on blood pressure and cardiovascular biomarkers in men and women with high blood pressure: the ENCORE study. Arch Intern Med. 2010 Jan 25;170(2):126-35. PMID: 20101007	Does not examine relationship between dietary patterns and body weight measure
78.	Boden-Albala B, Elkind MS, White H, Szumski A, Paik MC, Sacco RL. Dietary total fat intake and ischemic stroke risk: the Northern Manhattan Study. Neuroepidemiology. 2009;32(4):296-301. Epub 2009 Feb 27. PMID: 19246935	Does not examine relationship between dietary patterns and body weight measure
79.	Boeckner LS, Pullen CH, Walker SN, Hageman PA. Differences in eating and activity behaviors, health history, and biomarkers among normal-weight, overweight, and obese rural midwestern hispanic women. J Am Diet Assoc. 2006 Nov;106(11):1870-4. PMID: 17081840	Does not examine relationship between dietary patterns and body weight measure
80.	Boggs DA, Palmer JR, Spiegelman D, Stampfer MJ, Adams-Campbell LL, Rosenberg L. Dietary patterns and 14-y weight gain in African American women. Am J Clin Nutr. 2011 Jul;94(1):86-94. Epub 2011 May 18. PMID: 21593501	Study considered in systematic review question on factor analysis
81.	Bonaccio M, Iacoviello L, de Gaetano G, Moli-Sani Investigators. The Mediterranean diet: the reasons for a success. Thromb Res. 2012 Mar;129(3):401-4. Epub 2011 Nov 17. PMID: 22100317	Not original research article
82.	Booth AO, Nowsen CA, Worsley T, Margerison C, Jorna MK. Dietary approaches for weight loss with increased fruit, vegetables and dairy. Asia Pac J Clin Nutr. 2003;12 Suppl:S10. PMID: 15023596	Does not examine relationship between dietary patterns and body weight measure
83.	Booth DA, Blair AJ, Lewis VJ, Baek SH. Patterns of eating and movement that best maintain reduction in overweight. Appetite. 2004 Dec;43(3):277-83. PMID: 15527930	Dietary behaviors are independent variable
84.	Booth DA. Evidence-based reduction of obesity: identification of a subculture's least fattening eating patterns. Appetite. 1999 Feb;32(1):80-5. PMID: 9989917	Not an original research article
85.	Bouchard-Mercier A, Paradis AM, Godin G, Lamarche B, Pérusse L, Vohl MC. Associations between dietary patterns and LDL peak particle diameter: a cross-sectional study. J Am Coll Nutr. 2010 Dec;29(6):630-7. PMID: 21677127	Cross-sectional

86.	Bowen DJ, Beresford SA, Vu T, Feng Z, Tinker L, Hart A Jr, Christensen CL, McLerran D, Satia-Abouta J, Campbell M. Baseline data and design for a randomized intervention study of dietary change in religious organizations. Prev Med. 2004 Sep;39(3):602-11. PMID: 15313101	Does not examine relationship between dietary patterns and body weight measure
87.	Boynton A, Neuhouser ML, Wener MH, Wood B, Sorensen B, Chen-Levy Z, Kirk EA, Yasui Y, Lacroix K, McTiernan A, Ulrich CM. Associations between healthy eating patterns and immune function or inflammation in overweight or obese postmenopausal women. Am J Clin Nutr. 2007 Nov;86(5):1445-55. PMID: 17991658	Does not include body weight measure as an outcome
88.	Brandaõ MP, Pimentel FL, Silva CC, Cardoso MF. Risk factors for cardiovascular disease in a Portuguese university population. Rev Port Cardiol. 2008 Jan;27(1):7-25. English, Portuguese. PMID: 18447034	Cross-sectional
89.	Brandhagen M, Forslund HB, Lissner L, Winkvist A, Lindroos AK, Carlsson LMS, et al. Alcohol and macronutrient intake patterns are related to general and central adiposity. Eur J Clin Nutr. 2012 Mar;66(3):305-13. doi: 10.1038/ejcn.2011.189. Epub 2011 Nov 16. PMID: 22085868	Cross-sectional
90.	Brathwaite N, Fraser HS, Modeste N, Broome H, King R. Obesity, diabetes, hypertension, and vegetarian status among Seventh-Day Adventists in Barbados: preliminary results. Ethn Dis. 2003 Winter;13(1):34-9. PMID: 12723010	Cross-sectional
91.	Brenner DR, Boucher BA, Kreiger N, Jenkins D, El-Sohemy A. Dietary patterns in an ethnoculturally diverse population of young Canadian adults. Can J Diet Pract Res. 2011 Fall;72(3):e161-8. PMID: 21896249	Cross-sectional
92.	Briefel RR, Wilson A, Gleason PM. Consumption of low-nutrient, energy-dense foods and beverages at school, home, and other locations among school lunch participants and nonparticipants. J Am Diet Assoc. 2009 Feb;109(2 Suppl):S79-90. PMID: 19166676	Cross-sectional
93.	Brinkworth GD, Noakes M, Keogh JB, Luscombe ND, Wittert GA, Clifton PM. Long-term effects of a high-protein, low-carbohydrate diet on weight control and cardiovascular risk markers in obese hyperinsulinemic subjects. Int J Obes Relat Metab Disord. 2004 May;28(5):661-70. Erratum in: Int J Obes Relat Metab Disord. 2004 Sep;28(9):1187. PMID: 15007396	Drop out rate $\geq$ 20%
94.	Brinkworth GD, Noakes M, Parker B, Foster P, Clifton PM. Long-term effects of advice to consume a high-protein, low-fat diet, rather than a conventional weight-loss diet, in obese adults with type 2 diabetes: one-year follow-up of a randomised trial. Diabetologia. 2004 Oct;47(10):1677-86. Epub 2004 Oct 6. PMID: 15480538	Drop out rate $\geq$ 20%
95.	Brownlee IA, Moore C, Chatfield M, Richardson DP, Ashby P, Kuznesof SA, Jebb SA, Seal CJ. Markers of cardiovascular risk are not changed by increased whole-grain intake: the WHOLEheart study, a randomised, controlled dietary intervention. Br J Nutr. 2010 Jul;104(1):125-34. Epub 2010 Mar 23. PMID: 20307353	Does not examine relationship between dietary patterns and body weight measure
96.	Brustad M, Parr CL, Melhus M, Lund E. Childhood diet in relation to Sámi and Norwegian ethnicity in northern and mid-Norway--the SAMINOR study. Public Health Nutr. 2008 Feb;11(2):168-75. Epub 2007 Jul 5. PMID: 17610754	Cross-sectional
97.	Bryden KS, Neil A, Mayou RA, Peveler RC, Fairburn CG, Dunger DB. Eating habits, body weight, and insulin misuse. A longitudinal study of teenagers and young adults with type 1 diabetes. Diabetes Care. 1999 Dec;22(12):1956-60. PMID: 10587825	Does not examine relationship between dietary patterns and body weight measure

98.	Buckland G, González CA, Agudo A, Vilardell M, Berenguer A, Amiano P, Ardanaz E, Arriola L, Barricarte A, Basterretxea M, Chirlaque MD, Cirera L, Dorronsoro M, Egües N, Huerta JM, Larrañaga N, Marin P, Martínez C, Molina E, Navarro C, Quirós JR, Rodriguez L, Sanchez MJ, Tormo MJ, Moreno-Iribas C. Adherence to the Mediterranean diet and risk of coronary heart disease in the Spanish EPIC Cohort Study. Am J Epidemiol. 2009 Dec 15;170(12):1518-29. Epub 2009 Nov 10. PMID: 19903723	Cross-sectional
99.	Buckland GG, Salas-Salvadó J, Serra-Majem L, Castell C, Cabré J, Salleras-Sanmartí L. Increase in metabolic syndrome as defined by ATPIII from 1992-1993 to 2002-2003 in a Mediterranean population. Nutr Rev. 2009 May;67 Suppl 1:S117-25. PMID: 19453664	Does not examine relationship between dietary patterns and body weight measure
100.	Bulló M, Garcia-Aloy M, Martínez-González MA, Corella D, Fernández-Ballart JD, Fiol M, Gómez-Gracia E, Estruch R, Ortega-Calvo M, Francisco S, Flores-Mateo G, Serra-Majem L, Pintó X, Covas MI, Ros E, Lamuela-Raventós R, Salas-Salvadó J. Association between a healthy lifestyle and general obesity and abdominal obesity in an elderly population at high cardiovascular risk. Prev Med. 2011 Sep 1;53(3):155-61. Epub 2011 Jun 25. PMID: 21708186	Cross-sectional
101.	Burke GL, Savage PJ, Manolio TA, Sprafka JM, Wagenknecht LE, Sidney S, Perkins LL, Liu K, Jacobs DR Jr. Correlates of obesity in young black and white women: the CARDIA Study. Am J Public Health. 1992 Dec;82(12):1621-5. PMID: 1456336	Does not examine relationship between dietary patterns and body weight measure
102.	Burke LE, Hudson AG, Warziski MT, Styn MA, Music E, Elci OU, Sereika SM. Effects of a vegetarian diet and treatment preference on biochemical and dietary variables in overweight and obese adults: a randomized clinical trial. Am J Clin Nutr. 2007 Sep;86(3):588-96. PMID: 17823421	Drop out rate ≥ 20%
103.	Burke LE, Styn MA, Steenkiste AR, Music E, Warziski M, Choo J. A randomized clinical trial testing treatment preference and two dietary options in behavioral weight management: preliminary results of the impact of diet at 6 months--PREFER study. Obesity (Silver Spring). 2006 Nov;14(11):2007-17. PMID: 17135618	All subjects were instructed to restrict consumption of kcal (1200 to 1500 for women and 1500-1800 for men)
104.	Cacavas K, Mavoa H, Kremer P, Malakellis M, Fotu K, Swinburn B, de Silva-Sanigorski A. Tongan adolescents' eating patterns: opportunities for intervention. Asia Pac J Public Health. 2011 Jan;23(1):24-33. PMID: 21169597	Did not assess dietary patterns as defined for this project
105.	Cade JE, Taylor EF, Burley VJ, Greenwood DC. Does the Mediterranean dietary pattern or the Healthy Diet Index influence the risk of breast cancer in a large British cohort of women? Eur J Clin Nutr. 2011 Aug;65(8):920-8. doi: 10.1038/ejcn.2011.69. Epub 2011 May 18. PMID: 21587285	Cross-sectional
106.	Cakiroglu FP, Malek M. Eating habits of 7-12 year-old children in Tabriz, Iran. Pakistan Journal of Nutrition. 2007;6(5):430-5	Does not examine relationship between dietary patterns and body weight measure
107.	Campbell WW, Barton ML Jr, Cyr-Campbell D, Davey SL, Beard JL, Parise G, Evans WJ. Effects of an omnivorous diet compared with a lactoovovegetarian diet on resistance-training-induced changes in body composition and skeletal muscle in older men. Am J Clin Nutr. 1999 Dec;70(6):1032-9. PMID: 10584048	Insufficient sample size <30 (n=19)
108.	Cao YT, Svensson V, Marcus C, Zhang J, Zhang JD, Sobko T. Eating behaviour patterns in Chinese children aged 12-18 months and association with relative weight - factorial validation of the Children's Eating Behaviour Questionnaire. International Journal of Behavioral Nutrition and Physical Activity. 2012;9.	Study considered in systematic review question on factor analysis, principal component analysis

109.	Caperle M, Maiani G, Azzini E, Conti EM, Raguzzini A, Ramazzotti V, Crespi M. Dietary profiles and anti-oxidants in a rural population of central Italy with a low frequency of cancer. Eur J Cancer Prev. 1996 Jun;5(3):197-206. PMID: 8818609	Cross-sectional
110.	Cardomone Cusatis D, Chinchilli VM, Johnson-Rollings N, Kieselhorst K, Stallings VA, Lloyd T. Longitudinal nutrient intake patterns of U.S. adolescent women: The Penn State Young Women's Health Study. Journal of Adolescent Health. 2000;26(7):194-204	Does not examine relationship between dietary patterns and body weight measure
111.	Carranza-Madrigal J, Herrera-Abarca JE, Alvizouri-Muñoz M, Alvarado-Jimenez MR, Chavez-Carbajal F. Effects of a vegetarian diet vs. a vegetarian diet enriched with avocado in hypercholesterolemic patients. Arch Med Res. 1997 Winter;28(4):537-41. PMID: 9428580	Insufficent sample size <30 (n=13)
112.	Carson V, Janssen I. The mediating effects of dietary habits on the relationship between television viewing and body mass index among youth. Pediatr Obes. 2012 Mar 28. doi: 10.1111/j.2047-6310.2012.00049.x. [Epub ahead of print] PMID: 22461393	Cross-sectional
113.	Carter JP, Bonney G, Molnar IG, Garces N, Lulseged S, Habte D, Ryan J, Allen D. Clinical studies of a vegetarian food diet mixture. J Natl Med Assoc. 1989 May;81(5):557-63. PMID: 2746679	Not an original research article
114.	Casazza K, Cardel M, Dulin-Keita A, Hanks LJ, Gower BA, Newton AL, et al. Reduced carbohydrate diet to improve metabolic outcomes and decrease adiposity in obese peripubertal African American girls. J Pediatr Gastroenterol Nutr. 2012 Mar;54(3):336-42. PMID: 22067112	Insufficient sample size <30 (n=26)
115.	Casazza K, Dulin-Keita A, Gower BA, Fernandez JR. Differential influence of diet and physical activity on components of metabolic syndrome in a multiethnic sample of children. J Am Diet Assoc. 2009 Feb;109(2):236-44. PMID: 19167950	Cross-sectional
116.	Caudwell P, Hopkins M, King NA, Stubbs RJ, Blundell JE. Exercise alone is not enough: weight loss also needs a healthy (Mediterranean) diet? Public Health Nutr. 2009 Sep;12(9A):1663-6. PMID: 19689837	Does not examine relationship between dietary patterns and body weight measure
117.	Chatzi L, Mendez M, Garcia R, Roumeliotaki T, Ibarluzea J, Tardón A, Amiano P, Lertxundi A, Iñiguez C, Vioque J, Kogevinas M, Sunyer J; INMA and RHEA study groups. Mediterranean diet adherence during pregnancy and fetal growth: INMA (Spain) and RHEA (Greece) mother-child cohort studies. Br J Nutr. 2012 Jan;107(1):135-45. Epub 2011 Jun 29. PMID: 21733314	Subjects are pregnant
118.	Chen JL, Weiss S, Heyman MB, Lustig RH. Efficacy of a child-centred and family-based program in promoting healthy weight and healthy behaviors in Chinese American children: a randomized controlled study. J Public Health (Oxf). 2010 Jun;32(2):219-29. Epub 2009 Nov 15. PMID: 19933120	Does not examine relationship between dietary patterns and body weight measure
119.	Chen ST, Maruthur NM, Appel LJ. The effect of dietary patterns on estimated coronary heart disease risk: results from the Dietary Approaches to Stop Hypertension (DASH) trial. Circ Cardiovasc Qual Outcomes. 2010 Sep;3(5):484-9. Epub 2010 Aug 31. PMID: 20807884	Does not examine relationship between dietary patterns and body weight measure
120.	Cheng G, Gerlach S, Libuda L, Kranz S, Günther AL, Karaolis-Danckert N, Kroke A, Buyken AE. Diet quality in childhood is prospectively associated with the timing of puberty but not with body composition at puberty onset. J Nutr. 2010 Jan;140(1):95-102. Epub 2009 Nov 18. PMID: 19923386	Study considered in systematic review question on index/score

121.	Chermont Prochnik Estima C, da Costa RS, Sichieri R, Pereira RA, da Veiga GV. Meal consumption patterns and anthropometric measurements in adolescents from a low socioeconomic neighborhood in the metropolitan area of Rio de Janeiro, Brazil. Appetite. 2009 Jun;52(3):735-9. Epub 2009 Apr 5. PMID: 19501773	Cross-sectional
122.	Chiplonkar SA, Tupe R. Development of a diet quality index with special reference to micronutrient adequacy for adolescent girls consuming a lacto-vegetarian diet. J Am Diet Assoc. 2010 Jun;110(6):926-31. Erratum in: J Am Diet Assoc. 2010 Aug;110(8):1256. PMID: 20497784	India is classified as "medium" on Human Development Index (HDI)
123.	Cho YA, Shin A, Kim J. Dietary patterns are associated with body mass index in a Korean population. J Am Diet Assoc. 2011 Aug;111(8):1182-6. PMID: 21802564	Cross-sectional
124.	Choi J, Se-Young O, Lee D, Tak S, Hong M, Park SM, Cho B, Park M. Characteristics of diet patterns in metabolically obese, normal weight adults (Korean National Health and Nutrition Examination Survey III, 2005). Nutr Metab Cardiovasc Dis. 2010 Dec 24. [Epub ahead of print] PMID: 21186103	Study looks at snacking and not entire diet
125.	Chourdakis M, Tzellos T, Pourzitaki C, Toulis KA, Papazisis G, Kouvelas D. Evaluation of dietary habits and assessment of cardiovascular disease risk factors among Greek university students. Appetite. 2011 Oct;57(2):377-83. Epub 2011 May 27. PMID: 21651931	Cross-sectional
126.	Cohen DA, Sturm R, Scott M, Farley TA, Bluthenthal R. Not enough fruit and vegetables or too many cookies, candies, salty snacks, and soft drinks? Public Health Rep. 2010 Jan-Feb;125(1):88-95. PMID: 20402200	Cross-sectional
127.	Colic Baric I, Satalic Z. Eating patterns and fat intake in school children in Croatia. Nutrition Research. 2002;22(5):539-51.	Cross-sectional
128.	Conlin PR, Chow D, Miller ER 3rd, Svetkey LP, Lin PH, Harsha DW, Moore TJ, Sacks FM, Appel LJ. The effect of dietary patterns on blood pressure control in hypertensive patients: results from the Dietary Approaches to Stop Hypertension (DASH) trial. Am J Hypertens. 2000 Sep;13(9):949-55. PMID: 10981543	Does not examine relationship between dietary patterns and body weight measure
129.	Couch SC, Saelens BE, Levin L, Dart K, Falciglia G, Daniels SR. The efficacy of a clinic-based behavioral nutrition intervention emphasizing a DASH-type diet for adolescents with elevated blood pressure. J Pediatr. 2008 Apr;152(4):494-501. Epub 2007 Nov 5. PMID: 18346503	Does not examine relationship between dietary patterns and body weight measure
130.	Craig LC, McNeill G, Macdiarmid JI, Masson LF, Holmes BA. Dietary patterns of school-age children in Scotland: association with socio-economic indicators, physical activity and obesity. Br J Nutr. 2010 Feb;103(3):319-34. Epub 2009 Oct 16. PMID: 19835641	Cross-sectional
131.	Crowe FL, Appleby PN, Allen NE, Key TJ. Diet and risk of diverticular disease in Oxford cohort of European Prospective Investigation into Cancer and Nutrition (EPIC): prospective study of British vegetarians and non-vegetarians. BMJ. 2011 Jul 19;343:d4131. doi: 10.1136/bmj.d4131. PMID: 21771850	Does not examine relationship between dietary patterns and body weight measure
132.	Cullen KW, Himes JH, Baranowski T, Pettit J, Stevens M, Slawson DL, Obarzanek E, Murtaugh M, Matheson D, Sun W, Rochon J. Validity and reliability of a behavior-based food coding system for measuring fruit, 100% fruit juice, vegetable, and sweetened beverage consumption: results from the Girls Health Enrichment Multisite Studies. Prev Med. 2004 May;38 Suppl:S24-33. PMID: 15072856	Does not assess dietary patterns as defined for this project
133.	Cutler GJ, Flood A, Hannan PJ, Slavin JL, Neumark-Sztainer D. Association between major patterns of dietary intake and weight status in adolescents. Br J Nutr. 2011 Oct 13:1-8. [Epub ahead of print] PMID: 22017879	Cross-sectional

134.	Daly AM, Parsons JE, Wood NA, Gill TK, Taylor AW. Food consumption habits in two states of Australia, as measured by a Food Frequency Questionnaire. BMC Res Notes. 2011 Nov 23;4:507. PMID: 22112372	Cross-sectional
135.	Daniel CR, Prabhakaran D, Kapur K, Graubard BI, Devasenapathy N, Ramakrishnan L, George PS, Shetty H, Ferrucci LM, Yurgalevitch S, Chatterjee N, Reddy KS, Rastogi T, Gupta PC, Mathew A, Sinha R. A cross-sectional investigation of regional patterns of diet and cardio-metabolic risk in India. Nutr J. 2011 Jan 28;10:12. PMID: 21276235	Cross-sectional
136.	Daniel-Gentry J, Dolecek TA, Caggiula AW, Van Horn LV, Epley L, Randall BL. Increasing the use of meatless meals: a nutrition intervention substudy in the Multiple Risk Factor Intervention Trial (MRFIT). J Am Diet Assoc. 1986 Jun;86(6):778-81. PMID: 3519738	Does not assess dietary patterns as defined for this project
137.	Dapi LN, Nouedoui C, Janlert U, Haglin L. Adolescents' food habits and nutritional status in urban and rural areas in Cameroon, Africa'. Scandinavian Journal of Nutrition/Naringsforskning. 2005;49(4):151-8	Cross-sectional
138.	Davey G, Allen N, Appleby P, Spencer E, Verkasalo P, Knox K, Postans J, Tipper S, Hobson C, Key T. Dietary and lifestyle characteristics of meat-eaters, fish-eaters, vegetarians and vegans. IARC Sci Publ. 2002;156:113-4. No abstract available. PMID: 12484139	Not an original research article
139.	Davey GK, Spencer EA, Appleby PN, Allen NE, Knox KH, Key TJ. EPIC-Oxford: lifestyle characteristics and nutrient intakes in a cohort of 33 883 meat-eaters and 31 546 non meat-eaters in the UK. Public Health Nutr. 2003 May;6(3):259-69. PMID: 12740075	Does not examine relationship between dietary patterns and body weight measure
140.	Davis EM, Cullen KW, Watson KB, Konarik M, Radcliffe J. A Fresh Fruit and Vegetable Program improves high school students' consumption of fresh produce. J Am Diet Assoc. 2009 Jul;109(7):1227-31. PMID: 19559140	Does not examine relationship between dietary patterns and body weight measure
141.	Davis JN, Kelly LA, Lane CJ, Ventura EE, Byrd-Williams CE, Alexandar KA, Azen SP, Chou CP, Spruijt-Metz D, Weigensberg MJ, Berhane K, Goran MI. Randomized control trial to improve adiposity and insulin resistance in overweight Latino adolescents. Obesity (Silver Spring). 2009 Aug;17(8):1542-8. Epub 2009 Feb 26. PMID: 19247280	Does not assess dietary patterns as defined for this project
142.	Davis L, Stonehouse W, Loots du T, Mukuddem-Petersen J, van der Westhuizen FH, Hanekom SM, Jerling JC. The effects of high walnut and cashew nut diets on the antioxidant status of subjects with metabolic syndrome. Eur J Nutr. 2007 Apr;46(3):155-64. Epub 2007 Mar 21. PMID: 17377830	Does not examine relationship between dietary patterns and body weight measure
143.	Davy BM, Harrell K, Stewart J, King DS. Body weight status, dietary habits, and physical activity levels of middle school-aged children in rural Mississippi. South Med J. 2004 Jun;97(6):571-7. PMID: 15255424	Cross-sectional
144.	De Biase SG, Fernandes SF, Gianini RJ, Duarte JL. Vegetarian diet and cholesterol and triglycerides levels. Arq Bras Cardiol. 2007 Jan;88(1):35-9. English, Portuguese. PMID: 17364116	Cross-sectional
145.	De Lorenzo A, Alberti A, Andreoli A, Iacopino L, Serranò P, Perriello G. Food habits in a southern Italian town (Nicotera) in 1960 and 1996: still a reference Italian Mediterranean diet? Diabetes Nutr Metab. 2001 Jun;14(3):121-5. PMID: 11476358	Cross-sectional
146.	De Lorenzo A, Noce A, Bigioni M, Calabrese V, Della Rocca DG, Di Daniele N, Tozzo C, Di Renzo L. The effects of Italian Mediterranean organic diet (IMOD) on health status. Curr Pharm Des. 2010;16(7):814-24. PMID: 20388092	Does not assess dietary patterns as defined for this project

147.	Dedoussis GV, Kanoni S, Mariani E, Cattini L, Herbein G, Fulop T, Varin A, Rink L, Jajte J, Monti D, Marcellini F, Malavolta M, Mocchegiani E. Mediterranean diet and plasma concentration of inflammatory markers in old and very old subjects in the ZINCAGE population study. Clin Chem Lab Med. 2008;46(7):990-6. PMID: 18605965	Cross-sectional
148.	Dedoussis GV, Panagiotakos DB, Chrysohoou C, Pitsavos C, Zampelas A, Choumerianou D, Stefanadis C. Effect of interaction between adherence to a Mediterranean diet and the methylenetetrahydrofolate reductase 677C-->T mutation on homocysteine concentrations in healthy adults: the ATTICA Study. Am J Clin Nutr. 2004 Oct;80(4):849-54. PMID: 15447889	Study considered in systematic review question on index/score
149.	DeLellis Henderson K, Rinaldi S, Kaaks R, Kolonel L, Henderson B, Le Marchand L. Lifestyle and dietary correlates of plasma insulin-like growth factor binding protein-1 (IGFBP-1), leptin, and C-peptide: the Multiethnic Cohort. Nutr Cancer. 2007;58(2):136-45. PMID: 17640159	Cross-sectional
150.	Delisle HF, Vioque J, Gil A. Dietary patterns and quality in West-African immigrants in Madrid. Nutrition Journal. 2009;8(1)	Cross-sectional
151.	Demory-Luce DK, Morales M, Nicklas T. Acculturation, weight status, and eating habits among Chinese-American preschool children and their primary caregivers: A pilot study. Nutrition Research. 2005;25(3):213-24	Cross-sectional
152.	Dewailly E, Blanchet C, Gingras S, Lemieux S, Holub BJ. Fish consumption and blood lipids in three ethnic groups of Québec (Canada). Lipids. 2003 Apr;38(4):359-65. PMID: 12848280	Cross-sectional
153.	di Giuseppe R, Bonanni A, Olivieri M, Di Castelnuovo A, Donati MB, de Gaetano G, Cerletti C, Iacoviello L. Adherence to Mediterranean diet and anthropometric and metabolic parameters in an observational study in the 'Alto Molise' region: the MOLI-SAL project. Nutr Metab Cardiovasc Dis. 2008 Jul;18(6):415-21. Epub 2007 Oct 22. PMID: 17936603	Cross-sectional
154.	DiBello JR, McGarvey ST, Kraft P, Goldberg R, Campos H, Quested C, Laumoli TS, Baylin A. Dietary patterns are associated with metabolic syndrome in adult Samoans. J Nutr. 2009 Oct;139(10):1933-43. Epub 2009 Aug 26. PMID: 19710163	Cross-sectional
155.	Djuric Z, Poore KM, Depper JB, Uhley VE, Lababidi S, Covington C, Klurfeld DM, Simon MS, Kucuk O, Heilbrun LK. Methods to increase fruit and vegetable intake with and without a decrease in fat intake: compliance and effects on body weight in the nutrition and breast health study. Nutr Cancer. 2002;43(2):141-51. PMID: 12588694	Study looks at fruit and vegetable intake and not total diet
156.	Doak C, Adair L, Bentley M, Fengying Z, Popkin B. The underweight/overweight household: an exploration of household sociodemographic and dietary factors in China. Public Health Nutr. 2002 Feb;5(1A):215-21. PMID: 12027287	Cross-sectional
157.	Donin AS, Nightingale CM, Owen CG, Rudnicka AR, McNamara MC, Prynne CJ, Stephen AM, Cook DG, Whincup PH. Ethnic differences in blood lipids and dietary intake between UK children of black African, black Caribbean, South Asian, and white European origin: the Child Heart and Health Study in England (CHASE). Am J Clin Nutr. 2010 Oct;92(4):776-83. Epub 2010 Aug 25. PMID: 20739425	Cross-sectional
158.	Donin AS, Nightingale CM, Owen CG, Rudnicka AR, McNamara MC, Prynne CJ, Stephen AM, Cook DG, Whincup PH. Nutritional composition of the diets of South Asian, black African-Caribbean and white European children in the United Kingdom: the Child Heart and Health Study in England (CHASE). Br J Nutr. 2010 Jul;104(2):276-85. Epub 2010 Mar 16. PMID: 20230652	Cross-sectional

159.	Dorgan JF, Liu L, Barton BA, Deshmukh S, Snetselaar LG, Van Horn L, Stevens VJ, Robson AM, Lasser NL, Himes JH, Shepherd JA, Pourfarzib R, Pettee Gabriel K, Kriska A, Kwiterovich PO Jr. Adolescent diet and metabolic syndrome in young women: results of the Dietary Intervention Study in Children (DISC) follow-up study. J Clin Endocrinol Metab. 2011 Dec;96(12):E1999-2008. Epub 2011 Oct 12. PMID: 21994964	Does not examine relationship between dietary patterns and body weight measure
160.	Doupis J, Dimosthenopoulos C, Diamanti K, Perrea D, Katsilambros N, Makrilakis K. Metabolic syndrome and Mediterranean dietary pattern in a sample of young, male, Greek navy recruits. Nutr Metab Cardiovasc Dis. 2009 Jul;19(6):e7-8. Epub 2009 May 27. No abstract available. PMID: 19477625	Cross-sectional
161.	Drapeau V, Després JP, Bouchard C, Allard L, Fournier G, Leblanc C, Tremblay A. Modifications in food-group consumption are related to long-term body-weight changes. Am J Clin Nutr. 2004 Jul;80(1):29-37. PMID: 15213024	Does not assess dietary patterns as defined for this project
162.	Drent ML, Koppeschaar HP. Eating habits of obese patients in The Netherlands: a comparison between various subgroups and the general Dutch population. Metabolism. 1995 Feb;44(2 Suppl 2):46-9. PMID: 7869938	Does not assess dietary patterns as defined for this project
163.	Drewnowski A, Eichelsdoerfer P. The Mediterranean diet: does it have to cost more? Public Health Nutr. 2009 Sep;12(9A):1621-8. PMID: 19689831	Does not examine relationship between dietary patterns and body weight measure
164.	Dubois L, Carter MA, Farmer A, Girard M, Burnier D, Tatone-Tokuda F, Porcherie M. Higher intakes of energy and grain products at 4 years of age are associated with being overweight at 6 years of age. J Nutr. 2011 Nov;141(11):2024-9. Epub 2011 Sep 14. PMID: 21918058	Does not assess dietary patterns as defined for this project
165.	Dubois L, Girard M, Potvin Kent M, Farmer A, Tatone-Tokuda F. Breakfast skipping is associated with differences in meal patterns, macronutrient intakes and overweight among pre-school children. Public Health Nutr. 2009 Jan;12(1):19-28. Epub 2008 Mar 18. PMID: 18346309	Cross-sectional
166.	Duc Son le NT, Hanh TT, Kusama K, Kunii D, Sakai T, Hung NT, Yamamoto S. Anthropometric characteristics, dietary patterns and risk of type 2 diabetes mellitus in Vietnam. J Am Coll Nutr. 2005 Aug;24(4):229-34. PMID: 16093399	Vietnam is classified as “medium” on Human Development Index (HDI)
167.	Duffey KJ, Steffen LM, Van Horn L, Jacobs DR Jr, Popkin BM. Dietary patterns matter: diet beverages and cardiometabolic risks in the longitudinal Coronary Artery Risk Development in Young Adults (CARDIA) Study. Am J Clin Nutr. 2012 Apr;95(4):909-15. Epub 2012 Feb 29. PMID: 22378729	Study considered in systematic review question on cluster analysis
168.	Dugdale AE, Lovell S. Food habits and nutritional status of Brisbane schoolchildren. Med J Aust. 1981 Oct 17;2(8):407-9. PMID: 7321972	Cross-sectional
169.	Duncan JS, Duncan EK, Schofield G. Associations between weight perceptions, weight control and body fatness in a multiethnic sample of adolescent girls. Public Health Nutr. 2011 Jan;14(1):93-100. Epub 2010 Mar 1. PMID: 20188006	Cross-sectional
170.	Dwyer JT, Dietz WH Jr, Andrews EM, Suskind RM. Nutritional status of vegetarian children. Am J Clin Nutr. 1982 Feb;35(2):204-16. PMID: 7064883	Insufficient sample size <30 (n=27, 12 per study arm)
171.	Earland J, Campbell J, Srivastava A. Dietary habits and health status of African-Caribbean adults. J Hum Nutr Diet. 2010 Jun;23(3):264-71. Epub 2010 Mar 23. PMID: 20337851	Cross-sectional

172.	Eguchi E, Iso H, Tanabe N, Wada Y, Yatsuya H, Kikuchi S, et al. Healthy lifestyle behaviours and cardiovascular mortality among Japanese men and women: The Japan collaborative cohort study. European Heart Journal. 2012;33(4):467-77	Does not examine relationship between dietary patterns and body weight measure
173.	Eichholzer M, Bisig B. Daily consumption of (red) meat or meat products in Switzerland: results of the 1992/93 Swiss Health Survey. Eur J Clin Nutr. 2000 Feb;54(2):136-42. PMID: 10694784	Cross-sectional
174.	Elhayany A, Lustman A, Abel R, Attal-Singer J, Vinker S. A low carbohydrate Mediterranean diet improves cardiovascular risk factors and diabetes control among overweight patients with type 2 diabetes mellitus: a 1-year prospective randomized intervention study. Diabetes Obes Metab. 2010 Mar;12(3):204-9. PMID: 20151996	Study subjects diagnosed with diabetes and undergoing treatment study
175.	Elias MC, Mattos Bolivar MS, Helfenstein Fonseca FA, Da Rocha Martinez TL, Angelini J, Ferreira C, et al. Comparison of the Lipid Profile, Blood Pressure, and Dietary Habits of Adolescents and Children Descended from Hypertensive and Normotensive Individuals. Arquivos Brasileiros de Cardiologia. 2004;82(2):139-46.	Insufficient sample size <30 (n=20, 23 per study arm)
176.	Elkan AC, Sjöberg B, Kolsrud B, Ringertz B, Hafström I, Frostegård J. Gluten-free vegan diet induces decreased LDL and oxidized LDL levels and raised atheroprotective natural antibodies against phosphorylcholine in patients with rheumatoid arthritis: a randomized study. Arthritis Res Ther. 2008;10(2):R34. Epub 2008 Mar 18. PMID: 18348715	Insufficient sample size <30 (n=28)
177.	Elmståhl S, Järnblad G, Stavenow L, Jerntorp P, Pessah-Rasmussen H, Galvard H, Nilsson-Ehle P. Body composition and dietary habits in 80-year-old smoking men without cardiovascular disease. Aging (Milano). 1991 Sep;3(3):269-77. PMID: 1764495	Independent variable is smoking
178.	el-Sahn F. Dietary patterns and nutritional assessment of working children at Abou El-Dardar industrial area in Alexandria City. J Egypt Public Health Assoc. 1992;67(1-2):119-45. PMID: 1295941	Egypt is classified as “medium” on Human Development Index (HDI)
179.	Eng S, Wagstaff DA, Kranz S. Eating late in the evening is associated with childhood obesity in some age groups but not in all children: The relationship between time of consumption and body weight status in U.S. children. International Journal of Behavioral Nutrition and Physical Activity. 2009;6	Does not examine relationship between dietary patterns and body weight measure
180.	Esmaillzadeh A, Kimiagar M, Mehrabi Y, Azadbakht L, Hu FB, Willett WC. Fruit and vegetable intakes, C-reactive protein, and the metabolic syndrome. American journal of clinical nutrition. 2006;84(6):1489-97	Cross-sectional
181.	Esposito K, Ciotola M, Giugliano F, De Sio M, Giugliano G, D'armiento M, Giugliano D. Mediterranean diet improves erectile function in subjects with the metabolic syndrome. Int J Impot Res. 2006 Jul-Aug;18(4):405-10. Epub 2006 Jan 5. PMID: 16395320	Does not examine relationship between dietary patterns and body weight measure
182.	Esposito K, Di Palo C, Maiorino MI, Petrizzo M, Bellastella G, Siniscalchi I, Giugliano D. Long-term effect of mediterranean-style diet and calorie restriction on biomarkers of longevity and oxidative stress in overweight men. Cardiol Res Pract. 2010 Dec 20;2011:293916. PMID: 21197397	Study includes same data set at Esposito et al 2004 which is included
183.	Esposito K, Maiorino MI, Di Palo C, Giugliano D; Campanian Postprandial Hyperglycemia Study Group. Adherence to a Mediterranean diet and glycaemic control in Type 2 diabetes mellitus. Diabet Med. 2009 Sep;26(9):900-7. PMID: 19719711	Cross-sectional
184.	Estaquio C, Castetbon K, Kesse-Guyot E, Bertrais S, Deschamps V, Dauchet L, Péneau S, Galan P, Hercberg S. The French National Nutrition and Health Program score is associated with nutritional status and risk of major chronic diseases. J Nutr. 2008 May;138(5):946-53. PMID: 18424606	Does not examine relationship between dietary patterns and body weight measure

185.	Estruch R, Martinez-Gonzalez MA, Corella D, Salas-Salvado J, Ruiz-Gutierrez V, Covas MI, et al. Effects of a Mediterranean-Style Diet on Cardiovascular Risk Factors a Randomized Trial. Annals of Internal Medicine. 2006;145(1):1-11	Study considered in systematic review question on index/score
186.	Evans EW, Must A, Anderson SE, Curtin C, Scampini R, Maslin M, et al. Dietary patterns and body mass index in children with autism and typically developing children. Research in Autism Spectrum Disorders. 2012;6(1):399-405	Not a dietary pattern as defined by the project.
187.	Fargnoli JL, Fung TT, Olenczuk DM, Chamberland JP, Hu FB, Mantzoros CS. Adherence to healthy eating patterns is associated with higher circulating total and high-molecular-weight adiponectin and lower resistin concentrations in women from the Nurses' Health Study. Am J Clin Nutr. 2008 Nov;88(5):1213-24. PMID: 18996855	Does not include body weight as an outcome
188.	Farmer B, Larson BT, Fulgoni VL 3rd, Rainville AJ, Liepa GU. A vegetarian dietary pattern as a nutrient-dense approach to weight management: an analysis of the national health and nutrition examination survey 1999-2004. J Am Diet Assoc. 2011 Jun;111(6):819-27. PMID: 21616194	Cross-sectional
189.	Feeley A, Musenge E, Pettifor JM, Norris SA. Changes in dietary habits and eating practices in adolescents living in urban South Africa: The birth to twenty cohort. Nutrition. 2012	South Africa is classified as “medium” on Human Development Index (HDI)
190.	Feeley A, Pettifor JM, Norris SA. Fast-food consumption among 17-year-olds in the birth to twenty cohort. South African Journal of Clinical Nutrition. 2009;22(3):118-23	Cross-sectional
191.	Fernández-Aranda F, Krug I, Granero R, Ramón JM, Badia A, Giménez L, Solano R, Collier D, Karwautz A, Treasure J. Individual and family eating patterns during childhood and early adolescence: an analysis of associated eating disorder factors. Appetite. 2007 Sep;49(2):476-85. Epub 2007 Mar 19. PMID: 17467116	Subjects diagnosed with an eating disorder
192.	Fialkowski MK, McCrory MA, Roberts SM, Tracy JK, Grattan LM, Boushey CJ. Dietary patterns are associated with dietary recommendations but have limited relationship to BMI in the Communities Advancing the Studies of Tribal Nations Across the Lifespan (CoASTAL) cohort. Public Health Nutr. 2012 Feb 21:1-11. [Epub ahead of print] PMID: 22348238	Cross-sectional
193.	Filippidis FT, Tzavara Ch, Dimitrakaki C, Tountas Y. Compliance with a healthy lifestyle in a representative sample of the Greek population: preliminary results of the Hellas Health I study. Public Health. 2011 Jul;125(7):436-41. Epub 2011 Jul 1. PMID: 21723571	Cross-sectional
194.	Fitzgerald KC, Chiuve SE, Buring JE, Ridker PM, Glynn RJ. Comparison of associations of adherence to a Dietary Approaches to Stop Hypertension (DASH)-style diet with risks of cardiovascular disease and venous thromboembolism. J Thromb Haemost. 2012 Feb;10(2):189-98. doi: 10.1111/j.1538-7836.2011.04588.x. PMID: 22151600	Does not include body weight as an outcome
195.	Fogli-Cawley JJ, Dwyer JT, Saltzman E, McCullough ML, Troy LM, Meigs JB, Jacques PF. The 2005 Dietary Guidelines for Americans and risk of the metabolic syndrome. Am J Clin Nutr. 2007 Oct;86(4):1193-201. PMID: 17921402	Cross-sectional
196.	Fogli-Cawley JJ, Dwyer JT, Saltzman E, McCullough ML, Troy LM, Meigs JB, Jacques PF. The 2005 Dietary Guidelines for Americans and insulin resistance in the Framingham Offspring Cohort. Diabetes Care. 2007 Apr;30(4):817-22. Epub 2007 Jan 26. PMID: 17259479	Cross-sectional

197.	Fontana L, Meyer TE, Klein S, Holloszy JO. Long-term low-calorie low-protein vegan diet and endurance exercise are associated with low cardiometabolic risk. Rejuvenation Res. 2007 Jun;10(2):225-34. PMID: 17518696	Cross-sectional
198.	Forbes LE, Storey KE, Fraser SN, Spence JC, Plotnikoff RC, Raine KD, Hanning RM, McCargar LJ. Dietary patterns associated with glycemic index and glycemic load among Alberta adolescents. Appl Physiol Nutr Metab. 2009 Aug;34(4):648-58. PMID: 19767800	Cross-sectional
199.	Fragopoulou E, Panagiotakos DB, Pitsavos C, Tampourlou M, Chrysohoou C, Nomikos T, Antonopoulou S, Stefanadis C. The association between adherence to the Mediterranean diet and adiponectin levels among healthy adults: the ATTICA study. J Nutr Biochem. 2010 Apr;21(4):285-9. Epub 2009 Apr 14. PMID: 19369051	Does not include body weight measure as an outcome
200.	Frape DL, Williams NR, Scriven AJ, Palmer CR, O'Sullivan K, Fletcher RJ. Effects of high- and low-fat meals on the diurnal response of plasma lipid metabolite concentrations in healthy middle-aged volunteers. British Journal of Nutrition. 1997;77(3):375-90	Insufficient sample size <30 (n=12, 8, and 12 subjects in each study arm)
201.	Fraser A, Abel R, Lawlor DA, Fraser D, Elhayany A. A modified Mediterranean diet is associated with the greatest reduction in alanine aminotransferase levels in obese type 2 diabetes patients: results of a quasi-randomised controlled trial. Diabetologia. 2008 Sep;51(9):1616-22. Epub 2008 Jul 3. PMID: 18597068	Does not examine relationship between dietary patterns and body weight measure
202.	Friedenberg FK, Tang DM, Vanar V, Mendonca T. Predictive value of body mass index at age 18 on adulthood obesity: results of a prospective survey of an urban population. Am J Med Sci. 2011 Nov;342(5):371-82. PMID: 21629040	Cross-sectional
203.	Fuller NR, Lau NS, Denyer G, Simpson AE, Gerofi J, Wu M, et al. A 12-week, randomised, controlled trial to examine the acceptability of the Korean diet and its effectiveness on weight and metabolic parameters in an Australian overweight and obese population. Obesity Research and Clinical Practice. 2012;6(1):e71-e83	Insufficient sample size <30 (n=25 subjects in one study arm)
204.	Furtado JD, Campos H, Sumner AE, Appel LJ, Carey VJ, Sacks FM. Dietary interventions that lower lipoproteins containing apolipoprotein C-III are more effective in whites than in blacks: results of the OmniHeart trial. Am J Clin Nutr. 2010 Oct;92(4):714-22. Epub 2010 Sep 8. PMID: 20826623	Does not examine relationship between dietary patterns and body weight measure
205.	Gallaway MS, Jago R, Baranowski T, Baranowski JC, Diamond PM. Psychosocial and demographic predictors of fruit, juice and vegetable consumption among 11-14-year-old Boy Scouts. Public Health Nutr. 2007 Dec;10(12):1508-14. Epub 2007 Aug 9. PMID: 17686203	Does not examine relationship between dietary patterns and body weight measure
206.	Gammon CS, von Hurst PR, Coad J, Kruger R, Stonehouse W. Vegetarianism, vitamin B12 status, and insulin resistance in a group of predominantly overweight/obese South Asian women. Nutrition. 2012;28(1):20-4	Cross-sectional
207.	Ganguli D, Das N, Saha I, Biswas P, Datta S, Mukhopadhyay B, Chaudhuri D, Ghosh S, Dey S. Major dietary patterns and their associations with cardiovascular risk factors among women in West Bengal, India. Br J Nutr. 2011 May;105(10):1520-9. Epub 2011 Jan 28. PMID: 21272403	India is classified as "medium" on Human Development Index (HDI)
208.	García-Prieto MD, Tébar FJ, Nicolás F, Larqué E, Zamora S, Garaulet M. Cortisol secretary pattern and glucocorticoid feedback sensitivity in women from a Mediterranean area: relationship with anthropometric characteristics, dietary intake and plasma fatty acid profile. Clin Endocrinol (Oxf). 2007 Feb;66(2):185-91. PMID: 17223986	Does not examine relationship between dietary patterns and body weight measure

209.	Garry PJ, Rhyne RL, Halioua L, Nicholson C. Changes in dietary patterns over a 6-year period in an elderly population. Ann N Y Acad Sci. 1989;561:104-12. PMID: 2735669	Did not assess dietary patterns as defined for this project
210.	Gary TL, Baptiste-Roberts K, Gregg EW, Williams DE, Beckles GL, Miller EJ 3rd, Engelgau MM. Fruit, vegetable and fat intake in a population-based sample of African Americans. J Natl Med Assoc. 2004 Dec;96(12):1599-605. PMID: 15622690	Cross-sectional
211.	Gavrila D, Salmerón D, Egea-Caparrós JM, Huerta JM, Pérez-Martínez A, Navarro C, Tormo MJ. Prevalence of metabolic syndrome in Murcia Region, a southern European Mediterranean area with low cardiovascular risk and high obesity. BMC Public Health. 2011 Jul 14;11:562. PMID: 21752307	Cross-sectional analysis
212.	Ghosh A, Dutta R. Food habits and body composition in children and adolescents of Asian Indian origin. Nutr Metab Cardiovasc Dis. 2010 Feb;20(2):e1. Epub 2009 Aug 15. No abstract available. PMID: 19683906	India is classified as “medium” on Human Development Index (HDI)
213.	Ghosh A. Anthropometric, metabolic and dietary fatty acids profiles in lean and obese diabetic Asian Indian subjects. Asia Pac J Clin Nutr. 2006;15(2):189-95. PMID: 16672202	India is classified as “medium” on Human Development Index (HDI)
214.	Ghosh A. Anthropometric, metabolic, and dietary fatty acids characteristics in lean and obese dyslipidemic Asian Indian women in Calcutta. Food Nutr Bull. 2007 Dec;28(4):399-405. PMID: 18274166	India is classified as “medium” on Human Development Index (HDI)
215.	Gilbody SM, Kirk SF, Hill AJ. Vegetarianism in young women: another means of weight control? Int J Eat Disord. 1999 Jul;26(1):87-90. PMID: 10349588	Cross-sectional
216.	Goff LM, Bell JD, So PW, Dornhorst A, Frost GS. Veganism and its relationship with insulin resistance and intramyocellular lipid. Eur J Clin Nutr. 2005 Feb;59(2):291-8. PMID: 15523486	Case-control
217.	Golding C, Cadea J, Kirk S, Lawton C, Greenwood D. Comparison of low and high fat consumers in the UK Women's Cohort Study. Nutrition Research. 2003;23(3):377-88	Cross-sectional
218.	Golley RK, Magarey AM, Daniels LA. Children's food and activity patterns following a six-month child weight management program. Int J Pediatr Obes. 2011 Oct;6(5-6):409-14. Epub 2011 Aug 12. PMID: 21838569	Does not examine relationship between dietary patterns and body weight measure
219.	Gómez-Aracena J, Bogers R, Van't Veer P, Gómez-Gracia E, García-Rodríguez A, Wedel H, Fernández-Crehuet Navajas J. Vegetable consumption and carotenoids in plasma and adipose tissue in Malaga, Spain. Int J Vitam Nutr Res. 2003 Feb;73(1):24-31. PMID: 12690908	Cross-sectional
220.	Gómez-Martínez S, Martínez-Gómez D, Perez de Heredia F, Romeo J, Cuenca-Garcia M, Martín-Matillas M, Castillo M, Rey-López JP, Vicente-Rodriguez G, Moreno L, Marcos A. Eating habits and total and abdominal fat in spanish adolescents: influence of physical activity. The Avena study. J Adolesc Health. 2012 Apr;50(4):403-9. Epub 2011 Oct 28. PMID: 22443846	Cross-sectional
221.	Gorbach SL, Morrill-LaBrode A, Woods MN, Dwyer JT, Selles WD, Henderson M, Insull W Jr, Goldman S, Thompson D, Clifford C, et al. Changes in food patterns during a low-fat dietary intervention in women. J Am Diet Assoc. 1990 Jun;90(6):802-9. PMID: 2345252	Does not examine relationship between dietary patterns and body weight measure
222.	Goulet J, Lamarche B, Charest A, Nadeau G, Lapointe A, Desroches S, Lemieux S. Effect of a nutritional intervention promoting the Mediterranean food pattern on electrophoretic characteristics of low-density lipoprotein particles in healthy women from the Québec City metropolitan area. Br J Nutr. 2004 Aug;92(2):285-93. PMID: 15333160	Does not examine relationship between dietary patterns and body weight measure

223.	Gouveri ET, Tzavara C, Drakopanagiotakis F, Tsaoussoglou M, Marakomichelakis GE, Tountas Y, Diamantopoulos EJ. Mediterranean diet and metabolic syndrome in an urban population: the Athens Study. Nutr Clin Pract. 2011 Oct;26(5):598-606. PMID: 21947643	Cross-sectional
224.	Grammatikopoulou MG, Daskalou E, Hatzopoulou M, Sourtzinou L, Tsigga M. Comparing diet composition and growth of children living in two limitary Greek islands (Samos and Corfu). Public Health Nutr. 2009 Aug;12(8):1284-9. Epub 2008 Nov 6. PMID: 18986593	Cross-sectional
225.	Gray-Donald K, Jacobs-Starkey L, Johnson-Down L. Food habits of Canadians: reduction in fat intake over a generation. Can J Public Health. 2000 Sep-Oct;91(5):381-5. PMID: 11089294	Cross-sectional
226.	Gregory CO, McCullough ML, Ramirez-Zea M, Stein AD. Diet scores and cardio-metabolic risk factors among Guatemalan young adults. Br J Nutr. 2009 Jun;101(12):1805-11. Epub 2008 Nov 24. PMID: 19025721	Guatamala is classified as "low" on Human Development Index (HDI)
227.	Guevara-Cruz M, Tovar AR, Aguilar-Salinas CA, Medina-Vera I, Gil-Zenteno L, Hernández-Viveros I, López-Romero P, Ordaz-Nava G, Canizales-Quinteros S, Guillen Pineda LE, Torres N. A dietary pattern including nopal, chia seed, soy protein, and oat reduces serum triglycerides and glucose intolerance in patients with metabolic syndrome. J Nutr. 2012 Jan;142(1):64-9. Epub 2011 Nov 16. PMID: 22090467	Did not assess dietary patterns as defined for this project
228.	Gustafsson K, Sidenvall B. Food-related health perceptions and food habits among older women. J Adv Nurs. 2002 Jul;39(2):164-73. PMID: 12100660	Insufficient sample size <30 (n=18)
229.	Hackett AF, Kirby S, Howie M. A national survey of the diet of children aged 13-14 years living in urban areas of the United Kingdom. Journal of Human Nutrition and Dietetics. 1997;10(1):37-51.	Does not examine relationship between dietary patterns and body weight measure
230.	Haerens L, Vereecken C, Maes L, De Bourdeaudhuij I. Relationship of physical activity and dietary habits with body mass index in the transition from childhood to adolescence: a 4-year longitudinal study. Public Health Nutr. 2010 Oct;13(10A):1722-8. PMID: 20883572	Did not assess dietary patterns as defined for this project
231.	Hagman U, Bruce A, Persson LA, Samuelson G, Sjölin S. Food habits and nutrient intake in childhood in relation to health and socio-economic conditions. A Swedish Multicentre Study 1980-81. Acta Paediatr Scand Suppl. 1986;328:1-56. PMID: 3471046	Cross-sectional
232.	Hakala P, Karvetti RL. Weight reduction on lactovegetarian and mixed diets. Changes in weight, nutrient intake, skinfold thicknesses and blood pressure. Eur J Clin Nutr. 1989 Jun;43(6):421-30. PMID: 2743965	One group had 1,200 kcal diet (1,600/2,000 kcal minimum for women/men)
233.	Hall WD, Feng Z, George VA, Lewis CE, Oberman A, Huber M, Fouad M, Cutler JA; Women's Health Trial: Feasibility Study in Minority Populations. Low-fat diet: effect on anthropometrics, blood pressure, glucose, and insulin in older women. Ethn Dis. 2003 Summer;13(3):337-43. PMID: 12894958	Did not assess dietary patterns as defined for this project
234.	Hankey CR, Eley S, Leslie WS, Hunter CM, Lean ME. Eating habits, beliefs, attitudes and knowledge among health professionals regarding the links between obesity, nutrition and health. Public Health Nutr. 2004 Apr;7(2):337-43. PMID: 15003142	Cross-sectional
235.	Hankin JH, Nomura A, Rhoads GG. Dietary patterns among men of Japanese ancestry in Hawaii. Cancer Res. 1975 Nov;35(11 Pt. 2):3259-64. PMID: 1192401	Did not assess dietary patterns as defined for this project
236.	Hänninen O, Nenonen M, Ling WH, Li DS, Sihvonen L. Effects of eating an uncooked vegetable diet for 1 week. Appetite. 1992 Dec;19(3):243-54. PMID: 1482162	Does not examine relationship between dietary patterns and body weight measure

237.	Hansen AW, Christensen DL, Larsson MW, Eis J, Christensen T, Friis H, Mwaniki DL, Kilonzo B, Boit MK, Borch-Johnsen K, Tetens I. Dietary patterns, food and macronutrient intakes among adults in three ethnic groups in rural Kenya. Public Health Nutr. 2011 Sep;14(9):1671-9. Epub 2011 Feb 7. PMID: 21299918	Kenya is classified as "low" on Human Development Index (HDI)
238.	Hare-Bruun H, Nielsen BM, Kristensen PL, Møller NC, Togo P, Heitmann BL. Television viewing, food preferences, and food habits among children: a prospective epidemiological study. BMC Public Health. 2011 May 13;11:311. PMID: 21569476	Did not assess dietary patterns as defined for this project
239.	Harsha DW, Lin PH, Obarzanek E, Karanja NM, Moore TJ, Caballero B. Dietary Approaches to Stop Hypertension: a summary of study results. DASH Collaborative Research Group. J Am Diet Assoc. 1999 Aug;99(8 Suppl):S35-9. PMID: 10450292	Does not examine relationship between dietary patterns and body weight measure
240.	Hart CN, Jelalian E, Raynor HA, Mehlenbeck R, Lloyd-Richardson EE, Kaplan J, Flynn-O'Brien K, Wing RR. Early patterns of food intake in an adolescent weight loss trial as predictors of BMI change. Eat Behav. 2010 Dec;11(4):217-22. Epub 2010 May 26. PMID: 20850055	Did not assess dietary patterns as defined for this project
241.	Hart CN, Raynor HA, Osterholt KM, Jelalian E, Wing RR. Eating and activity habits of overweight children on weekdays and weekends. Int J Pediatr Obes. 2011 Oct;6(5-6):467-72. Epub 2011 Jul 20. PMID: 21774578	Does not examine relationship between dietary patterns and body weight measure
242.	Hausman DB, Johnson MA, Davey A, Poon LW. Body mass index is associated with dietary patterns and health conditions in georgia centenarians. J Aging Res. 2011;2011:138015. Epub 2011 May 30. PMID: 21748003	Cross-sectional
243.	Heinemann L, Grabauskas V, Nikitin YP, Rywik S, Sznajd J. Comparative data on diet and risk factors from five Eastern European communities. Rev Epidemiol Sante Publique. 1990;38(5-6):525-30. PMID: 2082461	Does not examine relationship between dietary patterns and body weight measure
244.	Henriquez Sanchez P, Ruano C, De Irala J, Ruiz-Canela M, Martinez-Gonzalez MA, Sanchez-Villegas A. Adherence to the Mediterranean diet and quality of life in the SUN Project. European Journal of Clinical Nutrition. 2012;66(3):360-8.	Does not examine relationship between dietary patterns and body weight measure
245.	Hermsdorff HH, Zulet MÁ, Abete I, Martínez JA. Discriminated benefits of a Mediterranean dietary pattern within a hypocaloric diet program on plasma RBP4 concentrations and other inflammatory markers in obese subjects. Endocrine. 2009 Dec;36(3):445-51. PMID: 19816812	Before and after study
246.	Hernández-Valero MA, Thomson CA, Hernández M, Tran T, Detry MA, Theriault RL, Hajek RA, Pierce JP, Flatt SW, Caan BJ, Jones LA. Comparison of baseline dietary intake of Hispanic and matched non-Hispanic white breast cancer survivors enrolled in the Women's Healthy Eating and Living study. J Am Diet Assoc. 2008 Aug;108(8):1323-9. PMID: 18656572	Case control
247.	Hjartåker A, Lund E. Relationship between dietary habits, age, lifestyle, and socio-economic status among adult Norwegian women. The Norwegian Women and Cancer Study. Eur J Clin Nutr. 1998 Aug;52(8):565-72. PMID: 9725656	Cross-sectional
248.	Hodson L, Harnden KE, Roberts R, Dennis AL, Frayn KN. Does the DASH diet lower blood pressure by altering peripheral vascular function? J Hum Hypertens. 2010 May;24(5):312-9. Epub 2009 Aug 6. PMID: 19657359	Insufficient sample size <30 (n=27)
249.	Holt EM, Steffen LM, Moran A, Basu S, Steinberger J, Ross JA, Hong CP, Sinaiko AR. Fruit and vegetable consumption and its relation to markers of inflammation and oxidative stress in adolescents. J Am Diet Assoc. 2009 Mar;109(3):414-21. PMID: 19248856	Does not examine relationship between dietary patterns and body weight measure

250.	Hong S, Song Y, Lee KH, Lee HS, Lee M, Jee SH, Joung H. A fruit and dairy dietary pattern is associated with a reduced risk of metabolic syndrome. Metabolism. 2011 Dec 28. [Epub ahead of print] PMID: 22209672	Cross-sectional
251.	Ho-Pham LT, Vu BQ, Lai TQ, Nguyen ND, Nguyen TV. Vegetarianism, bone loss, fracture and vitamin D: A longitudinal study in Asian vegans and non-vegans. European Journal of Clinical Nutrition. 2012;66(1):75-82	Does not examine relationship between dietary patterns and body weight measure
252.	Hopkins S, Burrows E, Bowen DJ, Tinker LF. Differences in eating pattern labels between maintainers and nonmaintainers in the Women's Health Initiative. J Nutr Educ. 2001 Sep-Oct;33(5):278-83. PMID: 12031178	Does not examine relationship between dietary patterns and body weight measure
253.	Hosseini-Esfahani F, Djazaieri SA, Mirmiran P, Mehrabi Y, Azizi F. Which Food Patterns Are Predictors of Obesity in Tehranian Adults? J Nutr Educ Behav. 2011 Jun 7. [Epub ahead of print] PMID: 21652267	Study considered in systematic review question on factor analysis
254.	Hosseini-Esfahani F, Jessri M, Mirmiran P, Sadeghi M, Azizi F. Does the diet of Tehranian adults ensure compliance with nutritional targets? Observations from the Tehran Lipid and Glucose Study. Public Health Nutr. 2011 Sep;14(9):1539-48. Epub 2011 Apr 19. PMID: 21557877	Cross-sectional
255.	Howarth NC, Huang TT, Roberts SB, Lin BH, McCrory MA. Eating patterns and dietary composition in relation to BMI in younger and older adults. Int J Obes (Lond). 2007 Apr;31(4):675-84. Epub 2006 Sep 5. PMID: 16953255	Cross-sectional
256.	Howie BJ, Shultz TD. Dietary and hormonal interrelationships among vegetarian Seventh-Day Adventists and nonvegetarian men. Am J Clin Nutr. 1985 Jul;42(1):127-34. PMID: 4014062	Insufficient sample size <30 (n=12, 10, and 8 per study arm)
257.	Hu D, Taylor T, Blow J, Cooper TV. Multiple health behaviors: patterns and correlates of diet and exercise in a Hispanic college sample. Eat Behav. 2011 Dec;12(4):296-301. Epub 2011 Jul 24. PMID: 22051363	Cross-sectional
258.	Huh J, Riggs NR, Spruijt-Metz D, Chou CP, Huang Z, Pentz M. Identifying patterns of eating and physical activity in children: a latent class analysis of obesity risk. Obesity (Silver Spring). 2011 Mar;19(3):652-8. Epub 2010 Oct 7. PMID: 20930718	Cross-sectional
259.	Hung CJ, Huang PC, Li YH, Lu SC, Ho LT, Chou HF. Taiwanese vegetarians have higher insulin sensitivity than omnivores. Br J Nutr. 2006 Jan;95(1):129-35. PMID: 16441925	Cross-sectional
260.	Hung CT. The eating habits, hypercholesterolemia, nutrition status of children and adolescents in two Northern Taipei communities. Journal of the Chinese Nutrition Society. 1994;19(2):201-20	Taiwan/China is classified as “medium” on Human Development Index (HDI)
261.	Hung KC, Pei D, Kuo HJ, Chen TH, Lin CH, Wu CZ, et al. The comparison of the metabolic syndrome between Chinese vegetarians and omnivores. Diabetes and Metabolic Syndrome: Clinical Research and Reviews. 2008;2(2):99-104	Taiwan/China is classified as “medium” on Human Development Index (HDI)
262.	Hurley KM, Oberlander SE, Merry BC, Wrobleski MM, Klassen AC, Black MM. The healthy eating index and youth healthy eating index are unique, nonredundant measures of diet quality among low-income, African American adolescents. J Nutr. 2009 Feb;139(2):359-64. Epub 2008 Dec 11. PMID: 19074210	Cross-sectional
263.	Inelmen EM, Toffanello ED, Enzi G, Sergi G, Coin A, Busetto L, Manzato E. Differences in dietary patterns between older and younger obese and overweight outpatients. J Nutr Health Aging. 2008 Jan;12(1):3-8. PMID: 18165838	Cross-sectional

264.	Isacco L, Lazaar N, Ratel S, Thivel D, Aucouturier J, Doré E, Meyer M, Duché P. The impact of eating habits on anthropometric characteristics in French primary school children. Child Care Health Dev. 2010 Nov;36(6):835-42. doi: 10.1111/j.1365-2214.2010.01113.x. PMID: 20645994	Cross-sectional
265.	Issa C, Darmon N, Salameh P, Maillot M, Batal M, Lairon D. A Mediterranean diet pattern with low consumption of liquid sweets and refined cereals is negatively associated with adiposity in adults from rural Lebanon. Int J Obes (Lond). 2011 Feb;35(2):251-8. Epub 2010 Jul 6. PMID: 20603626	Independent variables are sweets and cereals
266.	Itsiopoulos C, Brazionis L, Kaimakamis M, Cameron M, Best JD, O'Dea K, Rowley K. Can the Mediterranean diet lower HbA1c in type 2 diabetes? Results from a randomized cross-over study. Nutr Metab Cardiovasc Dis. 2011 Sep;21(9):740-7. Epub 2010 Jul 31. PMID: 20674309	Insufficient sample size <30 (n=27)
267.	Jacobs DR Jr, Sluik D, Rokling-Andersen MH, Anderssen SA, Drevon CA. Association of 1-y changes in diet pattern with cardiovascular disease risk factors and adipokines: results from the 1-y randomized Oslo Diet and Exercise Study. Am J Clin Nutr. 2009 Feb;89(2):509-17. Epub 2008 Dec 30. PMID: 19116328	Study included in index/score question
268.	Jacobs N, De Bourdeaudhuij I, Thijs H, Dendale P, Claes N. Effect of a cardiovascular prevention program on health behavior and BMI in highly educated adults: a randomized controlled trial. Patient Educ Couns. 2011 Oct;85(1):122-6. doi: 10.1016/j.pec.2010.08.024. Epub 2010 Oct 2. PMID: 20888728	Does not examine relationship between dietary patterns and body weight measure
269.	Jago R, Baranowski T, Buse J, Edelstein S, Galassetti P, Harrell J, Kaufman F, Linder B, Pham T, Kaufman FR, Baranowski T, Baranowski J, Canada A, Cullen K, Jago R, Missaghian M, Thompson D, Thompson V, Walker B, Cooper DM, Bassin S, Blackler K, Culler F, Ford D, Galassetti P, Harrell J, McMurray RG, Buse J, Morris MA, Kirby K, Hirst K, Edelstein S, El ghormli L, Grau S, Pham T, Pyle L, Linder B, Goran M, Resnicow K. Studies to Treat or Prevent Pediatric Type 2 Diabetes Prevention Study Group. Prevalence of the metabolic syndrome among a racially/ethnically diverse group of U.S. eighth-grade adolescents and associations with fasting insulin and homeostasis model assessment of insulin resistance levels. Diabetes Care. 2008 Oct;31(10):2020-5. Epub 2008 Jun 30. PMID: 18591405	Cross-sectional
270.	Janssen I, Katzmarzyk PT, Boyce WF, Vereecken C, Mulvihill C, Roberts C, Currie C, Pickett W; Health Behaviour in School-Aged Children Obesity Working Group. Comparison of overweight and obesity prevalence in school-aged youth from 34 countries and their relationships with physical activity and dietary patterns. Obes Rev. 2005 May;6(2):123-32. Review. PMID: 15836463	Systematic review
271.	Jarvandi S, Gougeon R, Bader A, Dasgupta K. Differences in food intake among obese and nonobese women and men with type 2 diabetes. J Am Coll Nutr. 2011 Aug;30(4):225-32. PMID: 21917702	Did not assess dietary patterns as defined for this project
272.	Jasti S, Lee CH, Doak C. Gender, acculturation, food patterns, and overweight in Korean immigrants. Am J Health Behav. 2011 Nov;35(6):734-45. PMID: 22251764	Cross-sectional
273.	Jenkins DJ, Kendall CW, Faulkner DA, Kemp T, Marchie A, Nguyen TH, Wong JM, de Souza R, Emam A, Vidgen E, Trautwein EA, Lapsley KG, Josse RG, Leiter LA, Singer W. Long-term effects of a plant-based dietary portfolio of cholesterol-lowering foods on blood pressure. Eur J Clin Nutr. 2008 Jun;62(6):781-8. Epub 2007 Apr 25. PMID: 17457340	Drop out rate ≥ 20%

274.	Jenkins DJ, Wong JM, Kendall CW, Esfahani A, Ng VW, Leong TC, Faulkner DA, Vidgen E, Greaves KA, Paul G, Singer W. The effect of a plant-based low-carbohydrate ("Eco-Atkins") diet on body weight and blood lipid concentrations in hyperlipidemic subjects. Arch Intern Med. 2009 Jun 8;169(11):1046-54. Erratum in: Arch Intern Med. 2009 Sep 14;169(16):1490. PMID: 19506174	Insufficient sample size <30 (n=22 per study arm)
275.	Jennings A, Cassidy A, van Sluijs EM, Griffin SJ, Welch AA. Associations Between Eating Frequency, Adiposity, Diet, and Activity in 9-10 years old Healthy-Weight and Centrally Obese Children. Obesity (Silver Spring). 2012 Mar 22. Doi: 10.1038/oby.2012.72. [Epub ahead of print] PMID: 22436840	Cross-sectional
276.	Johansen KS, Bjørge B, Hjellset VT, Holmboe-Ottesen G, Råberg M, Wandel M. Changes in food habits and motivation for healthy eating among Pakistani women living in Norway: results from the InnvaDiab-DEPLAN study. Public Health Nutr. 2010 Jun;13(6):858-67. Epub 2009 Nov 27. PMID: 19941691	Does not examine relationship between dietary patterns and body weight measure
277.	Johansson G, Holmén A, Persson L, Högstedt R, Wassén C, Ottova L, Gustafsson JA. The effect of a shift from a mixed diet to a lacto-vegetarian diet on human urinary and fecal mutagenic activity. Carcinogenesis. 1992 Feb;13(2):153-7. PMID: 1310903	Insufficient sample size <30 (n=20)
278.	Johnson JS, Nobmann ED, Asay E, Lanier AP. Dietary intake of Alaska Native people in two regions and implications for health: the Alaska Native Dietary and Subsistence Food Assessment Project. Int J Circumpolar Health. 2009 Apr;68(2):109-22. PMID: 19517871	Cross-sectional
279.	Johnston CA, Tyler C, Fullerton G, McFarlin BK, Poston WS, Haddock CK, Reeves RS, Foreyt JP. Effects of a school-based weight maintenance program for Mexican-American children: results at 2 years. Obesity (Silver Spring). 2010 Mar;18(3):542-7. Epub 2009 Aug 6. Erratum in: Obesity (Silver Spring). 2010 Mar;18(3):647. Fullerton, Ginny [added]. PMID: 19661957	Did not assess dietary patterns as defined for this project
280.	Jones JL, Fernandez ML, McIntosh MS, Najm W, Calle MC, Kalynych C, Vukich C, Barona J, Ackermann D, Kim JE, Kumar V, Lott M, Volek JS, Lerman RH. A Mediterranean-style low-glycemic-load diet improves variables of metabolic syndrome in women, and addition of a phytochemical-rich medical food enhances benefits on lipoprotein metabolism. J Clin Lipidol. 2011 May-Jun;5(3):188-96. Epub 2011 Mar 11. PMID: 21600524	Dependent variable is cardiometabolic risk variables
281.	Jones JL, Park Y, Lee J, Lerman RH, Fernandez ML. A Mediterranean-style, low-glycemic-load diet reduces the expression of 3-hydroxy-3-methylglutaryl-coenzyme A reductase in mononuclear cells and plasma insulin in women with metabolic syndrome. Nutr Res. 2011 Sep;31(9):659-64. PMID: 22024489	Insufficient sample size <30 (n=25)
282.	Jonsson T, Granfeldt Y, Erlanson-Albertsson C, Ahren B, Lindeberg S. A paleolithic diet is more satiating per calorie than a mediterranean-like diet in individuals with ischemic heart disease. Nutrition and Metabolism. 2010;7	Insufficent sample size <30; (n=29); subjects diagnosed with ischemic heart disease
283.	Juhaeri, Steven J, Chambless LE, Tyroler HA, Harp J, Jones D, Arnett D. Weight change among self-reported dieters and non-dieters in white and African American men and women. Eur J Epidemiol. 2001;17(10):917-23. PMID: 12188010	Does not examine relationship between dietary patterns and body weight measure
284.	Jung HJ, Han SN, Song S, Paik HY, Baik HW, Joung H. Association between adherence to the Korean Food Guidance System and the risk of metabolic abnormalities in Koreans. Nutr Res Pract. 2011 Dec;5(6):560-8. Epub 2011 Dec 31. PMID: 22259682	Cross-sectional

285.	Kabir Y, Shahjalal HM, Saleh F, Obaid W. Dietary pattern, nutritional status, anaemia and anaemia-related knowledge in urban adolescent college girls of Bangladesh. J Pak Med Assoc. 2010 Aug;60(8):633-8. PMID: 20726192	Cross-sectional; Bangladesh classified as "low" on Human Dvelopment Index (HDI)
286.	Kagan A, Rhoads GG, Zeegen PD, Nichaman MZ. Coronary heart disease among men of Japanese ancestry in Hawaii. The Honolulu Heart study. Isr J Med Sci. 1971 Dec;7(12):1573-7. No abstract available. PMID: 5144601	Does not examine relationship between dietary patterns and body weight measure
287.	Kahleova H, Matoulek M, Malinska H, Oliyarnik O, Kazdova L, Neskudla T, Skoch A, Hajek M, Hill M, Kahle M, Pelikanova T. Vegetarian diet improves insulin resistance and oxidative stress markers more than conventional diet in subjects with Type 2 diabetes. Diabet Med. 2011 May;28(5):549-59. doi: 10.1111/j.1464-5491.2010.03209.x. PMID: 21480966	Subjects with type 2 diabetes – treatment study
288.	Kant AK, Graubard BI. 20-Year trends in dietary and meal behaviors were similar in U.S. children and adolescents of different race/ethnicity. J Nutr. 2011 Oct;141(10):1880-8. Epub 2011 Aug 24. PMID: 21865567	Trend study; did not assess dietary patterns as defined for this project
289.	Kant AK, Graubard BI. A comparison of three dietary pattern indexes for predicting biomarkers of diet and disease. J Am Coll Nutr. 2005 Aug;24(4):294-303. PMID: 16093407	Cross-sectional
290.	Karanja NM, Obarzanek E, Lin PH, McCullough ML, Phillips KM, Swain JF, Champagne CM, Hoben KP. Descriptive characteristics of the dietary patterns used in the Dietary Approaches to Stop Hypertension Trial. DASH Collaborative Research Group. J Am Diet Assoc. 1999 Aug;99(8 Suppl):S19-27. PMID: 10450290	Body weight kept constant
291.	Karantonis HC, Fragopoulou E, Antonopoulou S, Rementzis J, Phenekos C, Demopoulos CA. Effect of fast-food Mediterranean-type diet on type 2 diabetics and healthy human subjects' platelet aggregation. Diabetes Res Clin Pract. 2006 Apr;72(1):33-41. Epub 2005 Oct 19. PMID: 16236380	Independent variable is foods that antagonize platelet activating factor
292.	Kark JD, Kaufmann NA, Binka F, Goldberger N, Berry EM. Adipose tissue n-6 fatty acids and acute myocardial infarction in a population consuming a diet high in polyunsaturated fatty acids. Am J Clin Nutr. 2003 Apr;77(4):796-802. PMID: 12663274	Independent variable is n-6 fatty acids.
293.	Kastorini CM, Milionis HJ, Esposito K, Giugliano D, Goudevenos JA, Panagiotakos DB. The effect of Mediterranean diet on metabolic syndrome and its components: a meta-analysis of 50 studies and 534,906 individuals. J Am Coll Cardiol. 2011 Mar 15;57(11):1299-313. PMID: 21392646	Study design is meta-analysis; waist circumference is one outcome of interest
294.	Keding GB, Msuya JM, Maass BL, Krawinkel MB. Dietary patterns and nutritional health of women: the nutrition transition in rural Tanzania. Food Nutr Bull. 2011 Sep;32(3):218-26. PMID: 22073796	Tanzania is categorized as "low" on Human Development Index (HDI)
295.	Kelley C, Krummel D, Gonzales EN, Neal WA, Fitch CW. Dietary intake of children at high risk for cardiovascular disease. J Am Diet Assoc. 2004 Feb;104(2):222-5. PMID: 14760570	Cross-sectional
296.	Kent LM, Worsley A. Does the prescriptive lifestyle of Seventh-day Adventists provide 'immunity' from the secular effects of changes in BMI? Public Health Nutr. 2009 Apr;12(4):472-80. Epub 2008 May 6. PMID: 18457602	Trend study
297.	Kerr MA, Rennie KL, McCaffrey TA, Wallace JM, Hannon-Fletcher MP, Livingstone MB. Snacking patterns among adolescents: a comparison of type, frequency and portion size between Britain in 1997 and Northern Ireland in 2005. Br J Nutr. 2009 Jan;101(1):122-31. Epub 2008 Jun 5. Erratum in: Br J Nutr. 2009 Mar;101(6):929. PMID: 18533071	Cross-sectional; independent variable was snacking

298.	Kersting M, Alexy U. Dietary Habits in Preschool Children: Preventive Guidelines and Dietary Practice. Austrian Journal of Clinical Endocrinology and Metabolism. 2011;4(2):11-5	Does not examine relationship between dietary patterns and body weight measure
299.	Keski-Rahkonen A, Bulik CM, Pietiläinen KH, Rose RJ, Kaprio J, Rissanen A. Eating styles, overweight and obesity in young adult twins. Eur J Clin Nutr. 2007 Jul;61(7):822-9. Epub 2007 Jan 24. PMID: 17251930	Cross-sectional; independent variables was eating style - restrictive or overeating
300.	Key T, Davey G. Prevalence of obesity is low in people who do not eat meat. BMJ. 1996 Sep 28;313(7060):816-7. No abstract available. PMID: 8842088	Cross-sectional; letter to editor
301.	Key TJ, Thorogood M, Appleby PN, Burr ML. Dietary habits and mortality in 11,000 vegetarians and health conscious people: results of a 17 year follow up. BMJ. 1996 Sep 28;313(7060):775-9. PMID: 8842068	Dependent variables were total mortality and ischemic heart disease
302.	Khalil CB, Johnson-Down L, Egeland GM. Emerging obesity and dietary habits among James Bay Cree youth. Public Health Nutr. 2010 Nov;13(11):1829-37. Epub 2010 Apr 15. PMID: 20392310	Cross-sectional
303.	Kim J, Jo I. Grains, vegetables, and fish dietary pattern is inversely associated with the risk of metabolic syndrome in South korean adults. J Am Diet Assoc. 2011 Aug;111(8):1141-9. PMID: 21802559	Cross-sectional
304.	Kim JA, Kim SM, Lee JS, Oh HJ, Han JH, Song Y, Joung H, Park HS. Dietary patterns and the metabolic syndrome in Korean adolescents: 2001 Korean National Health and Nutrition Survey. Diabetes Care. 2007 Jul;30(7):1904-5. Epub 2007 Apr 6. No abstract available. PMID: 17416789	Cross-sectional
305.	Kim SH, Hwang JY, Kim MK, Chung HW, Nguyet TT, Kim WY. Dietary factors related to body weight in adult Vietnamese in the rural area of Haiphong, Vietnam: the Korean Genome and Epidemiology Study (KoGES). Nutr Res Pract. 2010 Jun;4(3):235-42. Epub 2010 Jun 29. PMID: 20607070	Cross-sectional
306.	Klassen AC, Garrett-Mayer E, Houts PS, Shankar S, Torio CM. The relationship of body size to participation and success in a fruits and vegetables intervention among low-income women. J Community Health. 2008 Apr;33(2):78-89. PMID: 18074208	Dietary pattern is the dependent variable
307.	Klipstein-Grobusch K, Witteman JCM, Den Breeijen JH, Goldbohm RA, Hofman A, De Jong PTVM, et al. Dietary assessment in the elderly: Application of a two-step semiquantitative food frequency questionnaire for epidemiological studies. Journal of Human Nutrition and Dietetics. 1999;12(5):361-73	Does not examine relationship between dietary patterns and body weight measure
308.	Klurfeld DM, Kritchevsky D. The Western diet: an examination of its relationship with chronic disease. J Am Coll Nutr. 1986;5(5):477-85. PMID: 3023470	Editorial
309.	Ko MS. The comparison in daily intake of nutrients, dietary habits and body composition of female college students by body mass index. Nutr Res Pract. 2007 Summer;1(2):131-42. Epub 2007 Jun 30. PMID: 20535399	Cross-sectional
310.	Kobayashi T, Umemura U, Iso H, Ishimori M, Tamura Y, Iida M, Shimamoto T. Differences in dietary habits, serum fatty acid compositions and other coronary risk characteristics between freshmen and fourth-year male university students. Environ Health Prev Med. 2001 Oct;6(3):143-8. PMID: 21432252	Cross-sectional

311.	Koebnick C, Garcia AL, Dagnelie PC, Strassner C, Lindemans J, Katz N, Leitzmann C, Hoffmann I. Long-term consumption of a raw food diet is associated with favorable serum LDL cholesterol and triglycerides but also with elevated plasma homocysteine and low serum HDL cholesterol in humans. J Nutr. 2005 Oct;135(10):2372-8. PMID: 16177198	Cross-sectional
312.	Kolodinsky JM, Goldstein AB. Time use and food pattern influences on obesity. Obesity (Silver Spring). 2011 Dec;19(12):2327-35. doi: 10.1038/oby.2011.130. Epub 2011 May 26. PMID: 21617636	Cluster analysis
313.	Komatsu F, Kagawa Y, Kawabata T, Kaneko Y, Purvee B, Otgon J, Chimedregzen U. Dietary habits of Mongolian people, and their influence on lifestyle-related diseases and early aging. Curr Aging Sci. 2008 Jul;1(2):84-100. PMID: 20021377	Cross-sectional
314.	Komatsu F, Kagawa Y, Sakuma M, Kawabata T, Kaneko Y, Otgontuya D, Chimedregzen U, Narantuya L, Purvee B. Investigation of oxidative stress and dietary habits in Mongolian people, compared to Japanese people. Nutr Metab (Lond). 2006 Jun 7;3:21. PMID: 16759377	Cross-sectional
315.	Konstantinova SV, Tell GS, Vollset SE, Ulvik A, Drevon CA, Ueland PM. Dietary patterns, food groups, and nutrients as predictors of plasma choline and betaine in middle-aged and elderly men and women. Am J Clin Nutr. 2008 Dec;88(6):1663-9. PMID: 19064529	Dependent variables were plasma choline and betaine
316.	Kontogianni MD, Liatis S, Grammatikou S, Perrea D, Katsilambros N, Makrilakis K. Changes in dietary habits and their association with metabolic markers after a non-intensive, community-based lifestyle intervention to prevent type 2 diabetes, in Greece. The DEPLAN study. Diabetes Research and Clinical Practice. 2012;95(2):207-14	Drop out rate ≥ 20%
317.	Kontogianni MD, Vidra N, Farmaki AE, Koinaki S, Belogianni K, Sofrona S, Magkanari F, Yannakoulia M. Adherence rates to the Mediterranean diet are low in a representative sample of Greek children and adolescents. J Nutr. 2008 Oct;138(10):1951-6. PMID: 18806106	Cross-sectional
318.	Koochek A, Mirmiran P, Sundquist K, Hosseini F, Azizi T, Moeini AS, Johansson SE, Karlström B, Azizi F, Sundquist J. Dietary differences between elderly Iranians living in Sweden and Iran a cross-sectional comparative study. BMC Public Health. 2011 May 31;11:411. PMID: 21627780	Cross-sectional
319.	Koui E, Jago R. Associations between self-reported fruit and vegetable consumption and home availability of fruit and vegetables among Greek primary-school children. Public Health Nutr. 2008 Nov;11(11):1142-8. Epub 2008 Jan 2. PMID: 18167168	Cross-sectional
320.	Krajcovicová-Kudlácková M, Simoncic R, Béderová A, Klvanová J, Brtková A, Grancicová E. Lipid and antioxidant blood levels in vegetarians. Nahrung. 1996 Feb;40(1):17-20. PMID: 8975140	Cross-sectional
321.	Kranz S, Findeis JL, Shrestha SS. Use of the Revised Children's Diet Quality Index to assess preschooler's diet quality, its sociodemographic predictors, and its association with body weight status. J Pediatr (Rio J). 2008 Jan-Feb;84(1):26-34. PMID: 18264615	Cross-sectional
322.	Kranz S, Mahood LJ, Wagstaff DA. Diagnostic criteria patterns of U.S. children with Metabolic Syndrome: NHANES 1999-2002. Nutr J. 2007 Nov 6;6:38. PMID: 17986354	Cross-sectional
323.	Kranz S, Mitchell DC, Smiciklas-Wright H, Huang SH, Kumanyika SK, Stettler N. Consumption of recommended food groups among children from medically underserved communities. J Am Diet Assoc. 2009 Apr;109(4):702-7. PMID: 19328266	Cross-sectioanl

324.	Kukulu K, Sarvan S, Muslu L, Yirmibesoglu SG. Dietary habits, economic status, academic performance and body mass index in school children: a comparative study. J Child Health Care. 2010 Dec;14(4):355-66. Epub 2010 Nov 15. PMID: 21078697	Cross-sectional
325.	Kumanyika S, Tell GS, Shemanski L, Polak J, Savage PJ. Eating patterns of community-dwelling older adults: the Cardiovascular Health Study. Ann Epidemiol. 1994 Sep;4(5):404-15. PMID: 7981849	Cross-sectional
326.	Kwan ML, Weltzien E, Kushi LH, Castillo A, Slattery ML, Caan BJ. Dietary patterns and breast cancer recurrence and survival among women with early-stage breast cancer. J Clin Oncol. 2009 Feb 20;27(6):919-26. Epub 2008 Dec 29. PMID: 19114692	Dependent variable was breast cancer
327.	Lako JV, Nguyen VC. Dietary patterns and risk factors of diabetes mellitus among urban indigenous women in Fiji. Asia Pac J Clin Nutr. 2001;10(3):188-93. PMID: 11708306	Cross-sectional
328.	Lambert EV, Goedecke JH, Zyle C, Murphy K, Hawley JA, Dennis SC, Noakes TD. High-fat diet versus habitual diet prior to carbohydrate loading: effects of exercise metabolism and cycling performance. Int J Sport Nutr Exerc Metab. 2001 Jun;11(2):209-25. PMID: 11402254	Independent variables were high fat vs. habitual diet with carbohydrate loading; insufficient sample size <30 (n=5)
329.	Lancaster KJ, Watts SO, Dixon LB. Dietary intake and risk of coronary heart disease differ among ethnic subgroups of black Americans. J Nutr. 2006 Feb;136(2):446-51. PMID: 16424126	Cross-sectional
330.	Lanfer A, Knof K, Barba G, Veidebaum T, Papoutsou S, de Henauw S, Soós T, Moreno LA, Ahrens W, Lissner L. Taste preferences in association with dietary habits and weight status in European children: results from the IDEFICS study. Int J Obes (Lond). 2012 Jan;36(1):27-34. doi: 10.1038/ijo.2011.164. Epub 2011 Aug 16. PMID: 21844876	Independent variable was fat or sweet taste preference
331.	Langsetmo L, Poliquin S, Hanley DA, Prior JC, Barr S, Anastassiades T, et al. Dietary patterns in Canadian men and women ages 25 and older: Relationship to demographics, body mass index, and bone mineral density. BMC Musculoskeletal Disorders. 2010;11.	Study considered in systematic review question on factor analysis
332.	Lapointe A, Provencher V, Weisnagel SJ, Bégin C, Blanchet R, Dufour-Bouchard AA, Trudeau C, Lemieux S. Dietary intervention promoting high intakes of fruits and vegetables: short-term effects on eating behaviors in overweight-obese postmenopausal women. Eat Behav. 2010 Dec;11(4):305-8. Epub 2010 Aug 7. PMID: 20850069	Independent variables were education messages to increase fruit and vegetable vs. lower fat
333.	Lapointe A, Weisnagel SJ, Provencher V, Bégin C, Dufour-Bouchard AA, Trudeau C, Lemieux S. Comparison of a dietary intervention promoting high intakes of fruits and vegetables with a low-fat approach: long-term effects on dietary intakes, eating behaviours and body weight in postmenopausal women. Br J Nutr. 2010 Oct;104(7):1080-90. Epub 2010 May 19. PMID: 20482930	Independent variables were education messages to increase fruit and vegetable vs. lower fat
334.	Larsen TM, Dalskov S, van Baak M, Jebb S, Kafatos A, Pfeiffer A, Martinez JA, Handjieva-Darlenska T, Kunesová M, Holst C, Saris WH, Astrup A. The Diet, Obesity and Genes (Diogenes) Dietary Study in eight European countries - a comprehensive design for long-term intervention. Obes Rev. 2010 Jan;11(1):76-91. Epub 2009 May 28. PMID: 19470086	Cross-sectional
335.	Larsson CL, Johansson GK. Dietary intake and nutritional status of young vegans and omnivores in Sweden. Am J Clin Nutr. 2002 Jul;76(1):100-6. PMID: 12081822	Dependent variables were nutrient intakes
336.	Laska MN, Graham DJ, Moe SG, Van Riper D. Young adult eating and food-purchasing patterns food store location and residential proximity. Am J Prev Med. 2010 Nov;39(5):464-7. PMID: 20965385	Indepent variables were eating location and food purchasing patterns

337.	Laska MN, Murray DM, Lytle LA, Harnack LJ. Longitudinal associations between key dietary behaviors and weight gain over time: Transitions through the adolescent years. Obesity. 2012;20(1):118-25	Cross-sectional
338.	Lassale C, Fezeu L, Andreeva VA, Hercberg S, Kengne AP, Czernichow S, Kesse-Guyot E. Association between dietary scores and 13-year weight change and obesity risk in a French prospective cohort. Int J Obes (Lond). 2012 Jan 17. Doi: 10.1038/ijo.2011.264. [Epub ahead of print] PMID: 22249228	Study considered in systematic review question on index/score
339.	Lauque S, Nourashémi F, Soleilhavoup C, Guyonnet S, Bertiere MC, Sachet P, Vellas B, Albarede JL. A prospective study of changes on nutritional patterns 6 months before and 18 months after retirement. J Nutr Health Aging. 1998;2(2):88-91. PMID: 10993572	Dependent variable is nutrition pattern
340.	Lazarou C, Karaolis M, Matalas AL, Panagiotakos DB. Dietary patterns analysis using data mining method. An application to data from the CYKIDS study. Comput Methods Programs Biomed. 2012 Jan 30. [Epub ahead of print] PMID: 22296977	Cross-sectional
341.	Lazarou C, Newby PK. Use of dietary indexes among children in developed countries. Adv Nutr. 2011 Jul;2(4):295-303. doi: 10.3945/ an.110.000166. Epub 2011 Jun 28. PMID: 22332071	Systematic review
342.	Leblanc V, Provencher V, Bégin C, Gagnon-Girouard MP, Corneau L, Tremblay A, Lemieux S. Associations between eating patterns, dietary intakes and eating behaviors in premenopausal overweight women. Eat Behav. 2012 Apr;13(2):162-5. Epub 2012 Jan 9. PMID: 22365804	Independent variables are dietary restraint, disinhibition, and hunger
343.	Lee JW, Hwang J, Cho HS. Dietary patterns of children and adolescents analyzed from 2001 Korea National Health and Nutrition Survey. Nutr Res Pract. 2007 Summer;1(2):84-8. Epub 2007 Jun 30. PMID: 20535391	Cross-sectional
344.	Lee MM, Wu-Williams A, Whittemore AS, Zheng S, Gallagher R, Teh CZ, Zhou L, Wang X, Chen K, Ling C, et al. Comparison of dietary habits, physical activity and body size among Chinese in North America and China. Int J Epidemiol. 1994 Oct;23(5):984-90. PMID: 7860179	Cross-sectional
345.	Lee Y, Mitchell DC, Smiciklas-Wright H, Birch LL. Diet quality, nutrient intake, weight status, and feeding environments of girls meeting or exceeding recommendations for total dietary fat of the American Academy of Pediatrics. Pediatrics. 2001 Jun;107(6):E95. PMID: 11389293	Independent variable is percent energy as dietary fat
346.	Leighton F, Polic G, Strobel P, Pérez D, Martínez C, Vásquez L, Castillo O, Villarroel L, Echeverría G, Urquiaga I, Mezzano D, Rozowski J. Health impact of Mediterranean diets in food at work. Public Health Nutr. 2009 Sep;12(9A):1635-43. PMID: 19689833	Intervention; dropout rate >20%
347.	Lerman RH, Minich DM, Darland G, Lamb JJ, Schiltz B, Babish JG, Bland JS, Tripp ML. Enhancement of a modified Mediterranean-style, low glycemic load diet with specific phytochemicals improves cardiometabolic risk factors in subjects with metabolic syndrome and hypercholesterolemia in a randomized trial. Nutr Metab (Lond). 2008 Nov 4;5:29. PMID: 18983673	RCT – MED and low glycemic; insufficient sample size <30 per study arm
348.	Levin N, Rattan J, Gilat T. Energy intake and body weight in ovo-lacto vegetarians. J Clin Gastroenterol. 1986 Aug;8(4):451-3. PMID: 3760524	Cross-sectional
349.	Liao D, Asberry PJ, Shofer JB, Callahan H, Matthys C, Boyko EJ, Leonetti D, Kahn SE, Austin M, Newell L, Schwartz RS, Fujimoto WY. Improvement of BMI, body composition, and body fat distribution with lifestyle modification in Japanese Americans with impaired glucose tolerance. Diabetes Care. 2002 Sep;25(9):1504-10. PMID: 12196418	Independent variables are AHA Step 1 and 2 diet

350.	Lidfeldt J, Nyberg P, Nerbrand C, Samsioe G, Scherstén B, Agardh CD. Socio-demographic and psychosocial factors are associated with features of the metabolic syndrome. The Women's Health in the Lund Area (WHILA) study. Diabetes Obes Metab. 2003 Mar;5(2):106-12. PMID: 12630935	Cross-sectional
351.	Liebman M, Pelican S, Moore SA, Holmes B, Wardlaw MK, Melcher LM, et al. Dietary intake-, eating behavior-, and physical activity-related determinants of high body mass index in the 2003 Wellness IN the Rockies cross-sectional study. Nutrition Research. 2006;26(3):111-7	Cross-sectional
352.	Lien LF, Brown AJ, Ard JD, Loria C, Erlinger TP, Feldstein AC, Lin PH, Champagne CM, King AC, McGuire HL, Stevens VJ, Brantley PJ, Harsha DW, McBurnie MA, Appel LJ, Svetkey LP. Effects of PREMIER lifestyle modifications on participants with and without the metabolic syndrome. Hypertension. 2007 Oct;50(4):609-16. Epub 2007 Aug 13. PMID: 17698724	Dependent variables are blood pressure, blood lipids, and insulin resistance
353.	Lien N, Bjelland M, Bergh IH, Grydeland M, Anderssen SA, Ommundsen Y, Andersen LF, Henriksen HB, Randby JS, Klepp KI. Design of a 20-month comprehensive, multicomponent school-based randomised trial to promote healthy weight development among 11-13 year olds: The HEalth In Adolescents study. Scand J Public Health. 2010 Nov;38(5 Suppl):38-51. PMID: 21062838	Independent variables were fruit/vegetable and sugar-sweetened beverage intake, also physical activity
354.	Linardakis M, Bertsias G, Sarri K, Papadaki A, Kafatos A. Metabolic syndrome in children and adolescents in Crete, Greece, and association with diet quality and physical fitness. Journal of Public Health. 2008;16(6):421-8.	Cross-sectional
355.	Lingor RJ, Olson A. Fluid and diet patterns associated with weight cycling and changes in body composition assessed by continuous monitoring throughout a college wrestling season. J Strength Cond Res. 2010 Jul;24(7):1763-72. PMID: 20555285	Sample size n=9 (minimum is 30)
356.	Liu L, Nettleton JA, Bertoni AG, Bluemke DA, Lima JA, Szklo M. Dietary pattern, the metabolic syndrome, and left ventricular mass and systolic function: the Multi-Ethnic Study of Atherosclerosis. Am J Clin Nutr. 2009 Aug;90(2):362-8. Epub 2009 Jun 10. PMID: 19515735	Cross-sectional
357.	Liu L, Núñez AE. Cardiometabolic syndrome and its association with education, smoking, diet, physical activity, and social support: findings from the Pennsylvania 2007 BRFSS Survey. J Clin Hypertens (Greenwich). 2010 Jul 1;12(7):556-64. PMID: 20629821	Cross-sectional
358.	Liu S, Lee IM, Ajani U, Cole SR, Buring JE, Manson JE; Physicians' Health Study. Intake of vegetables rich in carotenoids and risk of coronary heart disease in men: The Physicians' Health Study. Int J Epidemiol. 2001 Feb;30(1):130-5. PMID: 11171873	Independent variable was vegetable intake
359.	Liu S, Manson JE, Lee IM, Cole SR, Hennekens CH, Willett WC, Buring JE. Fruit and vegetable intake and risk of cardiovascular disease: the Women's Health Study. Am J Clin Nutr. 2000 Oct;72(4):922-8. PMID: 11010932	Independent variables were fruit and vegetable intake
360.	Llaneza P, Gonzalez C, Fernandez-Iñarrea J, Alonso A, Diaz-Fernandez MJ, Arnott I, Ferrer-Barriendos J. Soy isoflavones, Mediterranean diet, and physical exercise in postmenopausal women with insulin resistance. Menopause. 2010 Mar;17(2):372-8. PMID: 20216276	Dependent variable was insulin resistance
361.	Llargues E, Franco R, Recasens A, Nadal A, Vila M, Pérez MJ, Manresa JM, Recasens I, Salvador G, Serra J, Roure E, Castells C. Assessment of a school-based intervention in eating habits and physical activity in school children: the AVall study. J Epidemiol Community Health. 2011 Oct;65(10):896-901. Epub 2011 Mar 12. PMID: 21398682	Intervention was school-based education program on eating habits and physical activity

362.	Lopes HF, Martin KL, Nashar K, Morrow JD, Goodfriend TL, Egan BM. DASH diet lowers blood pressure and lipid-induced oxidative stress in obesity. Hypertension. 2003 Mar;41(3):422-30. Epub 2003 Feb 3. PMID: 12623938	Insufficient sample size <30; (n=24, 12 per study arm)
363.	Lorber R, Gidding SS, Daviglus ML, Colangelo LA, Liu K, Gardin JM. Influence of systolic blood pressure and body mass index on left ventricular structure in healthy African-American and white young adults: the CARDIA study. J Am Coll Cardiol. 2003 Mar 19;41(6):955-60. PMID: 12651040	Cross-sectional
364.	Löwik MR, Schrijver J, Odink J, van den Berg H, Wedel M. Long-term effects of a vegetarian diet on the nutritional status of elderly people (Dutch Nutrition Surveillance System). J Am Coll Nutr. 1990 Dec;9(6):600-9. PMID: 2273194	Dependent variable was biochemical indices
365.	Lubans DR, Morgan PJ, Dewar D, Collins CE, Plotnikoff RC, Okely AD, Batterham MJ, Finn T, Callister R. The Nutrition and Enjoyable Activity for Teen Girls (NEAT girls) randomized controlled trial for adolescent girls from disadvantaged secondary schools: rationale, study protocol, and baseline results. BMC Public Health. 2010 Oct 28;10:652. PMID: 21029467	RCT of school-based intervention to promote behavior change – healthy eating and physical activity
366.	Lutsey PL, Steffen LM, Stevens J. Dietary intake and the development of the metabolic syndrome: the Atherosclerosis Risk in Communities study. Circulation. 2008 Feb 12;117(6):754-61. Epub 2008 Jan 22. PMID: 18212291	Principle component analysis of Western vs. prudent diet and metabolic syndrome
367.	Magbuhat RM, Borazon EQ, Villarino BJ. Food preferences and dietary intakes of Filipino adolescents in metro Manila, the Philippines. Malays J Nutr. 2011 Apr;17(1):31-41. PMID: 22135863	Philippines is classified as “medium” on Human Development Index (HDI)
368.	Mai V, McCrary QM, Sinha R, Glei M. Associations between dietary habits and body mass index with gut microbiota composition and fecal water genotoxicity: An observational study in African American and Caucasian American volunteers. Nutrition Journal. 2009;8(1)	Does not examine relationship between dietary patterns and body weight measure
369.	Malhotra A, Passi SJ. Diet quality and nutritional status of rural adolescent girl beneficiaries of ICDS in north India. Asia Pac J Clin Nutr. 2007;16 Suppl 1:8-16. PMID: 17392069	Cross-sectional
370.	Malik VS, Fung TT, Van Dam RM, Rimm EB, Rosner B, Hu FB. Dietary patterns during adolescence and risk of type 2 diabetes in middle-aged women. Diabetes Care. 2012;35(1):12-8	Study considered in systematic review question on factor analysis
371.	Mandal S, Das S, Mohanty BK, Sahu CS. Effects of ethnic origin, dietary and life-style habits on plasma lipid profiles - A study of three population groups. Journal of Nutritional Medicine. 1994;4(2):141-8	India is classified as “medium” on Human Development Index (HDI)
372.	Manios Y, Kourlaba G, Kondaki K, Grammatikaki E, Birbilis M, Oikonomou E, Roma-Giannikou E. Diet quality of preschoolers in Greece based on the Healthy Eating Index: the GENESIS study. J Am Diet Assoc. 2009 Apr;109(4):616-23. PMID: 19328256	Cross-sectional
373.	Mansfield E, McPherson R, Koski KG. Diet and waist-to-hip ratio: important predictors of lipoprotein levels in sedentary and active young men with no evidence of cardiovascular disease. J Am Diet Assoc. 1999 Nov;99(11):1373-9. PMID: 10570674	Cross-sectional
374.	Margetts BM, Beilin LJ, Armstrong BK, Vandongen R. A randomized control trial of a vegetarian diet in the treatment of mild hypertension. Clin Exp Pharmacol Physiol. 1985 May-Jun;12(3):263-6. PMID: 3896594	Insufficient sample size <30
375.	Margetts BM, Beilin LJ, Armstrong BK, Vandongen R. Vegetarian diet in the treatment of mild hypertension: a randomized controlled trial. J Hypertens Suppl. 1985 Dec;3(3):S429-31. PMID: 2856757	Insufficient sample size <30

376.	Margetts BM, Beilin LJ, Vandongen R, Armstrong BK. Vegetarian diet in mild hypertension: a randomised controlled trial. Br Med J (Clin Res Ed). 1986 Dec 6;293(6560):1468-71. PMID: 3026552	Insufficient sample size <30
377.	Marisca-Arcas M, Caballero-Plasencia ML, Monteagudo C, Hamdan M, Pardo-Vasquez MI, Olea-Serrano F. Validation of questionnaires to estimate adherence to the Mediterranean diet and life habits in older individuals in Southern Spain. J Nutr Health Aging. 2011 Nov;15(9):739-43. PMID: 22089221	Cross-sectional
378.	Marniemi J, Seppänen A, Hakala P. Long-term effects on lipid metabolism of weight reduction on lactovegetarian and mixed diet. Int J Obes. 1990 Feb;14(2):113-25. PMID: 2111292	Dependent variables were changes in lipid metabolism following weight reduction
379.	Martinez-Gonzalez MA, Perez-Gutierrez R, Martinez-Gonzalez J, Garcia-Martin M, Bueno-Cavanillas A. Dietary intake of some food items in smokers and non-smokers in a Mediterranean population. European Journal of Public Health. 1997;7(1):40-4	Cross-sectional
380.	Masala G, Assedi M, Saieva C, Salvini S, Cordopatri G, Ermini I, Martinez Mdel C, Tanzini D, Zacchi S, Ceroti M, Palli D. The Florence city sample: dietary and life-style habits of a representative sample of adult residents. a comparison with the EPIC-Florence volunteers. Tumori. 2003 Nov-Dec;89(6):636-45. PMID: 14870828	Cross-sectional
381.	Maskarinec G, Takata Y, Pagano I, Carlin L, Goodman MT, Le Marchand L, Nomura AM, Wilkens LR, Kolonel LN. Trends and dietary determinants of overweight and obesity in a multiethnic population. Obesity (Silver Spring). 2006 Apr;14(4):717-26. PMID: 16741275	Did not assess dietary patterns as defined for this project
382.	Matheson EM, King DE, Everett CJ. Healthy lifestyle habits and mortality in overweight and obese individuals. Journal of the American Board of Family Medicine. 2012;25(1):9-15	Not a dietary pattern as defined by the project
383.	Mattei J, Noel SE, Tucker KL. A meat, processed meat, and French fries dietary pattern is associated with high allostatic load in Puerto Rican older adults. J Am Diet Assoc. 2011 Oct;111(10):1498-506. PMID: 21963016	Cross-sectional
384.	Matteucci E, Passerai S, Mariotti M, Fagnani F, Evangelista I, Rossi L, Giampietro O. Dietary habits and nutritional biomarkers in Italian type 1 diabetes families: evidence of unhealthy diet and combined-vitamin-deficient intakes. Eur J Clin Nutr. 2005 Jan;59(1):114-22. PMID: 15340368	Cross-sectional
385.	Mazaraki A, Tsioufis C, Dimitriadis K, Tsiachris D, Stefanadi E, Zampelas A, Richter D, Mariolis A, Panagiotakos D, Tousoulis D, Stefanadis C. Adherence to the Mediterranean diet and albuminuria levels in Greek adolescents: data from the Leontio Lyceum ALbuminuria (3L study). Eur J Clin Nutr. 2011 Feb;65(2):219-25. Epub 2010 Nov 10. PMID: 21063428	Cross-sectional
386.	Mazur A, Derkacz M, Chmiel-Perzynska I, Kowal AS. Eating habits of women benefiting from fitness classes. Family Medicine and Primary Care Review. 2010;12(3):726-9.	Cross-sectional
387.	McCabe-Sellers BJ, Bowman S, Stuff JE, Champagne CM, Simpson PM, Bogle ML. Assessment of the diet quality of US adults in the Lower Mississippi Delta. Am J Clin Nutr. 2007 Sep;86(3):697-706. PMID: 17823435	Cross-sectional; dependent variable is diet quality
388.	McCullough ML, Feskanich D, Rimm EB, Giovannucci EL, Ascherio A, Variyam JN, Spiegelman D, Stampfer MJ, Willett WC. Adherence to the Dietary Guidelines for Americans and risk of major chronic disease in men. Am J Clin Nutr. 2000 Nov;72(5):1223-31. PMID: 11063453	Did not include body weight measure as a dependent variable

389.	McCullough ML, Feskanich D, Stampfer MJ, Rosner BA, Hu FB, Hunter DJ, Variyam JN, Colditz GA, Willett WC. Adherence to the Dietary Guidelines for Americans and risk of major chronic disease in women. Am J Clin Nutr. 2000 Nov;72(5):1214-22. PMID: 11063452	Did not include body weight measure as a dependent variable
390.	McDonald CM, Baylin A, Arsenault JE, Mora-Plazas M, Villamor E. Overweight is more prevalent than stunting and is associated with socioeconomic status, maternal obesity, and a snacking dietary pattern in school children from Bogota, Colombia. J Nutr. 2009 Feb;139(2):370-6. Epub 2008 Dec 23. PMID: 19106320	Cross-sectional
391.	McNaughton SA, Dunstan DW, Ball K, Shaw J, Crawford D. Dietary quality is associated with diabetes and cardio-metabolic risk factors. J Nutr. 2009 Apr;139(4):734-42. Epub 2009 Feb 11. PMID: 19211825	Cross-sectional
392.	McNeill AM, Katz R, Girman CJ, Rosamond WD, Wagenknecht LE, Barzilay JI, Tracy RP, Savage PJ, Jackson SA. Metabolic syndrome and cardiovascular disease in older people: The cardiovascular health study. J Am Geriatr Soc. 2006 Sep;54(9):1317-24. PMID: 16970637	Did not include body weight measure as a dependent variable
393.	Meier M, Berchtold A, Akré C, Michaud PA, Surís JC. Who eats healthily? A population-based study among young Swiss residents. Public Health Nutr. 2010 Dec;13(12):2068-75. Epub 2010 May 4. PMID: 20441665	Cross-sectional
394.	Meirelles CDM, Veiga GVD, Soares EDA. Nutritional status of vegetarian and omnivorous adolescent girls. Nutrition Research. 2001;21(5):689-702	Insufficient sample size <30; (n=24)
395.	Méjean C, Traissac P, Eymard-Duvernay S, El Ati J, Delpeuch F, Maire B. Diet quality of North African migrants in France partly explains their lower prevalence of diet-related chronic conditions relative to their native French peers. J Nutr. 2007 Sep;137(9):2106-13. PMID: 17709450	Cross-sectional
396.	Mekki N, Dubois C, Charbonnier M, Cara L, Senft M, Pauli AM, Portugal H, Gassin AL, Lafont H, Lairon D. Effects of lowering fat and increasing dietary fiber on fasting and postprandial plasma lipids in hypercholesterolemic subjects consuming a mixed Mediterranean-Western diet. Am J Clin Nutr. 1997 Dec;66(6):1443-51. PMID: 9394698	Interventions were low fat and high or low fibers; dependent variables were fasting and postprandial lipids
397.	Melby CL, Goldflies DG, Hyner GC, Lyle RM. Relation between vegetarian/nonvegetarian diets and blood pressure in black and white adults. Am J Public Health. 1989 Sep;79(9):1283-8. PMID: 2764208	Cross-sectional
398.	Melby CL, Goldflies DG, Toohey ML. Blood pressure differences in older black and white long-term vegetarians and nonvegetarians. J Am Coll Nutr. 1993 Jun;12(3):262-9. Erratum in: J Am Coll Nutr 1993 Dec;12(6):followi. PMID: 8409080	Cross-sectional
399.	Mellen PB, Liese AD, Tooze JA, Vitolins MZ, Wagenknecht LE, Herrington DM. Whole-grain intake and carotid artery atherosclerosis in a multiethnic cohort: the Insulin Resistance Atherosclerosis Study. Am J Clin Nutr. 2007 Jun;85(6):1495-502. PMID: 17556684	Independent variable was whole-grain intake
400.	Mellin AE, Neumark-Sztainer D, Patterson J, Sockalosky J. Unhealthy weight management behavior among adolescent girls with type 1 diabetes mellitus: the role of familial eating patterns and weight-related concerns. J Adolesc Health. 2004 Oct;35(4):278-89. PMID: 15450541	Subjects diagnosed with type 1 diabetes
401.	Mendez MA, Popkin BM, Jakszyn P, Berenguer A, Tormo MJ, Sanchéz MJ, Quirós JR, Pera G, Navarro C, Martinez C, Larrañaga N, Dorronsoro M, Chirlaque MD, Barricarte A, Ardanaz E, Amiano P, Agudo A, González CA. Adherence to a Mediterranean diet is associated with reduced 3-year incidence of obesity. J Nutr. 2006 Nov;136(11):2934-8. PMID: 17056825	Index/score methodology

402.	Mesías M, Seiquer I, Muñoz-Hoyos A, Galdó G, Navarro MP. The beneficial effect of Mediterranean dietary patterns on dietary iron utilization in male adolescents aged 11-14 years. Int J Food Sci Nutr. 2009;60 Suppl 7:355-68. PMID: 19763992	Dependent variable was iron utilization; insufficient sample size <30
403.	Michalsen A, Lehmann N, Pithan C, Knoblauch NT, Moebus S, Kannenberg F, Binder L, Budde T, Dobos GJ. Mediterranean diet has no effect on markers of inflammation and metabolic risk factors in patients with coronary artery disease. Eur J Clin Nutr. 2006 Apr;60(4):478-85. PMID: 16306923	Dependent variables were inflammatory markers and metabolic risk
404.	Mikkilä V, Räsänen L, Raitakari OT, Marniemi J, Pietinen P, Rönnemaa T, Viikari J. Major dietary patterns and cardiovascular risk factors from childhood to adulthood. The Cardiovascular Risk in Young Finns Study. Br J Nutr. 2007 Jul;98(1):218-25. Epub 2007 Mar 19. PMID: 17367571	Cross-sectional
405.	Milias GA, Panagiotakos DB, Pitsavos C, Xenaki D, Panagopoulos G, Stefanadis C. Prevalence of self-reported hypercholesterolaemia and its relation to dietary habits, in Greek adults; a national nutrition & health survey. Lipids Health Dis. 2006 Mar 12;5:5. PMID: 16529663	Cross-sectional
406.	Mirmiran P, Hosseini-Esfahanil F, Jessri M, Mahan LK, Shiva N, Azizis F. Does dietary intake by Tehranian adults align with the 2005 dietary guidelines for Americans? Observations from the Tehran lipid and glucose study. J Health Popul Nutr. 2011 Feb;29(1):39-52. PMID: 21528789	Cross-sectional
407.	Mirmiran P, Noori N, Azizi F. A prospective study of determinants of the metabolic syndrome in adults. Nutr Metab Cardiovasc Dis. 2008 Oct;18(8):567-73. Epub 2008 Feb 20. PMID: 18068961	Independent variables were carbohydrate and fat intake
408.	Miura K, Nakagawa H, Ueshima H, Okayama A, Saitoh S, Curb JD, Rodriguez BL, Sakata K, Okuda N, Yoshita K, Stamler J; INTERMAP Research Group; INTERLIPID Research Group. Dietary factors related to higher plasma fibrinogen levels of Japanese-americans in hawaii compared with Japanese in Japan. Arterioscler Thromb Vasc Biol. 2006 Jul;26(7):1674-9. Epub 2006 May 4. PMID: 16675719	Dependent variable was plasma fibrinogen
409.	Molenaar EA, Massaro JM, Jacques PF, Pou KM, Ellison RC, Hoffmann U, Pencina K, Shadwick SD, Vasan RS, O'Donnell CJ, Fox CS. Association of lifestyle factors with abdominal subcutaneous and visceral adiposity: the Framingham Heart Study. Diabetes Care. 2009 Mar;32(3):505-10. Epub 2008 Dec 15. PMID: 19074991	Cross-sectional
410.	Moore LL, Singer MR, Bradlee ML, Djoussé L, Proctor MH, Cupples LA, Ellison RC. Intake of fruits, vegetables, and dairy products in early childhood and subsequent blood pressure change. Epidemiology. 2005 Jan;16(1):4-11. PMID: 15613939	Dependent variable was blood pressure
411.	Morenga LT, Williams S, Brown R, Mann J. Effect of a relatively high-protein, high-fiber diet on body composition and metabolic risk factors in overweight women. Eur J Clin Nutr. 2010 Nov;64(11):1323-31. Epub 2010 Sep 15. PMID: 20842168	Independent variable was high pro high fiber diet
412.	Moreno LA, González-Gross M, Kersting M, Molnár D, de Henauw S, Beghin L, Sjöström M, Hagströmer M, Manios Y, Gilbert CC, Ortega FB, Dallongeville J, Arcella D, Wärnberg J, Hallberg M, Fredriksson H, Maes L, Widhalm K, Kafatos AG, Marcos A; HELENA Study Group. Assessing, understanding and modifying nutritional status, eating habits and physical activity in European adolescents: the HELENA (Healthy Lifestyle in Europe by Nutrition in Adolescence) Study. Public Health Nutr. 2008 Mar;11(3):288-99. Epub 2007 Jul 6. PMID: 17617932	Narrative review of eating behaviors and physical activity

413.	Morey MC, Snyder DC, Sloane R, Cohen HJ, Peterson B, Hartman TJ, Miller P, Mitchell DC, Demark-Wahnefried W. Effects of home-based diet and exercise on functional outcomes among older, overweight long-term cancer survivors: RENEW: a randomized controlled trial. JAMA. 2009 May 13;301(18):1883-91. PMID: 19436015	Indepent variable was an education program
414.	Moriguchi EH, Moriguchi Y, Yamori Y. Impact of diet on the cardiovascular risk profile of Japanese immigrants living in Brazil: contributions of World Health Organization CARDIAC and MONALISA studies. Clin Exp Pharmacol Physiol. 2004 Dec;31 Suppl 2:S5-7. PMID: 18254187	Cross-sectional
415.	Mulasi-Pokhriyal U, Smith C, Franzen-Castle L. Investigating dietary acculturation and intake among US-born and Thailand/Laos-born Hmong-American children aged 9-18 years. Public Health Nutr. 2011 Aug 2:1-10. [Epub ahead of print] PMID: 21806862	Cross-sectional
416.	Munn MA, Stavro GM, Klump KL. Lack of seasonal variation in eating attitudes and behaviours among female college students. European Eating Disorders Review. 2005;13(2):101-5	Does not examine relationship between dietary patterns and body weight measure
417.	Musingo MN, Wang L. Analysis of eating habits according to socio-demographic characteristics of college students. Pakistan Journal of Nutrition. 2009;8(10):1575-80	Cross-sectional
418.	Musso G, Gambino R, De Michieli F, Cassader M, Rizzetto M, Durazzo M, Fagà E, Silli B, Pagano G. Dietary habits and their relations to insulin resistance and postprandial lipemia in nonalcoholic steatohepatitis. Hepatology. 2003 Apr;37(4):909-16. PMID: 12668986	Subjects had NASH (non-alcoholic steatohepatitis)
419.	Nafar M, Noori N, Jalali-Farahani S, Hosseinpanah F, Poorrezagholi F, Ahmadpoor P, Samadian F, Firouzan A, Einollahi B. Mediterranean diets are associated with a lower incidence of metabolic syndrome one year following renal transplantation. Kidney Int. 2009 Dec;76(11):1199-206. Epub 2009 Sep 9. PMID: 19741589	Subjects were renal transplant patients
420.	Naja F, Nasreddine L, Itani L, Adra N, Sibai AM, Hwalla N. Association between dietary patterns and the risk of metabolic syndrome among Lebanese adults. Eur J Nutr. 2011 Dec 23. [Epub ahead of print] PMID: 22193708	Cross-sectional
421.	Naja F, Nasreddine L, Itani L, Chamieh MC, Adra N, Sibai AM, Hwalla N. Dietary patterns and their association with obesity and sociodemographic factors in a national sample of Lebanese adults. Public Health Nutr. 2011 Sep;14(9):1570-8. Epub 2011 May 4. PMID: 21557871	Cross-sectional
422.	Nakade M, Lee JS, Kawakubo K, Kondo K, Mori K, Akabayashi A. Changes in food intake patterns associated with body weight loss during a 12-week health promotion program and a 9-month follow-up period in a Japanese population. Obesity Research and Clinical Practice. 2009;3(2):85-98	Study considered in systematic review question on clusuter analysis
423.	Nakamura Y, Ueshima H, Okuda N, Higashiyama A, Kita Y, Kadowaki T, Okamura T, Murakami Y, Okayama A, Choudhury SR, Rodriguez B, Curb JD, Stamler J; INTERLIPID Research Group. Relation of dietary and other lifestyle traits to difference in serum adiponectin concentration of Japanese in Japan and Hawaii: the INTERLIPID Study. Am J Clin Nutr. 2008 Aug;88(2):424-30. PMID: 18689379	Cross-sectional
424.	Nanri H, Nakamura K, Hara M, Higaki Y, Imaizumi T, Taguchi N, Sakamoto T, Horita M, Shinchi K, Tanaka K. Association between dietary pattern and serum C-reactive protein in Japanese men and women. J Epidemiol. 2011 Mar 5;21(2):122-31. Epub 2011 Feb 12. PMID: 21325731	Cross-sectional

425.	Nasreddine L, Hwalla N, Sibai A, Hamzé M, Parent-Massin D. Food consumption patterns in an adult urban population in Beirut, Lebanon. Public Health Nutr. 2006 Apr;9(2):194-203. PMID: 16571173	Cross-sectional
426.	Nathan I, Hackett AF, Kirby S. A longitudinal study of the growth of matched pairs of vegetarian and omnivorous children, aged 7-11 years, in the north-west of England. Eur J Clin Nutr. 1997 Jan;51(1):20-5. PMID: 9023462	Cross-sectional
427.	Nelson MC, Lust K, Story M, Ehlinger E. Alcohol use, eating patterns, and weight behaviors in a university population. Am J Health Behav. 2009 May-Jun;33(3):227-37. PMID: 19063644	Cross-sectional
428.	Neslişah R, Emine AY. Energy and nutrient intake and food patterns among Turkish university students. Nutr Res Pract. 2011 Apr;5(2):117-23. Epub 2011 Apr 23. PMID: 21556225	Independent variables are nutritional values of each meal and snack
429.	Nicklas TA, Demory-Luce D, Yang SJ, Baranowski T, Zakeri I, Berenson G. Children's food consumption patterns have changed over two decades (1973-1994): The Bogalusa heart study. J Am Diet Assoc. 2004 Jul;104(7):1127-40. PMID: 15215772	Cross-sectional
430.	Nicklas TA, O'Neil CE. Dietary Intake of Children over Two Decades in a Community and an Approach for Modification. Evolution of cardio-metabolic risk from birth to middle age: the bogalusa heart study. 2011. doi: 10.1007/978-94-007-1451-9_12	Not an original research article
431.	Nicklas TA, Yang SJ, Baranowski T, Zakeri I, Berenson G. Eating patterns and obesity in children. The Bogalusa Heart Study. Am J Prev Med. 2003 Jul;25(1):9-16. PMID: 12818304	Cross-sectional
432.	Nisar N, Qadri MH, Fatima K, Perveen S. Dietary habits and life style among the students of a private medical university Karachi. J Pak Med Assoc. 2009 Feb;59(2):98-101. PMID: 19260574	Pakistan classified as “low” on Human Development Index (HDI)
433.	Nisar N, Qadri MH, Fatima K, Perveen S. Dietary habits and life style among the students of a private medical university Karachi. J Pak Med Assoc. 2008 Dec;58(12):687-90. PMID: 19157323	Pakistan classified as “low” on Human Development Index (HDI)
434.	Nishizawa Y, Kida K, Nishizawa K, Saito K, Mita R. Eating patterns, weight status and egogram characteristics among Japanese pupils. Environ Health Prev Med. 1998 Jul;3(2):96-101. PMID: 21432517	Cross-sectional
435.	Noh HY, Song YJ, Lee JE, Joung H, Park MK, Li SJ, Paik HY. Dietary patterns are associated with physical growth among school girls aged 9-11 years. Nutr Res Pract. 2011 Dec;5(6):569-77. Epub 2011 Dec 31. PMID: 22259683	Study included in systematic review on reduced rank regression
436.	Nordmann AJ, Suter-Zimmermann K, Bucher HC, Shai I, Tuttle KR, Estruch R, Briel M. Meta-analysis comparing Mediterranean to low-fat diets for modification of cardiovascular risk factors. Am J Med. 2011 Sep;124(9):841-51.e2. PMID: 21854893	Meta-analysis
437.	Noto D, Barbagallo CM, Cefalù AB, Falletta A, Sapienza M, Cavera G, Amato S, Pagano M, Maggiore M, Carroccio A, Notarbartolo A, Averna MR. The metabolic syndrome predicts cardiovascular events in subjects with normal fasting glucose: results of a 15 years follow-up in a Mediterranean population. Atherosclerosis. 2008 Mar;197(1):147-53. Epub 2007 Apr 26. PMID: 17466306	Dependent variable was CVD events
438.	Nova E, Varela P, López-Vidriero I, Toro O, Ceñal MJ, Casas J, Marcos A. A one-year follow-up study in anorexia nervosa. Dietary pattern and anthropometrical evolution. Eur J Clin Nutr. 2001 Jul;55(7):547-54. PMID: 11464228	Subjects had anorexia nervosa
439.	O'Connell JM, Dibley MJ, Sierra J, Wallace B, Marks JS, Yip R. Growth of vegetarian children: The Farm Study. Pediatrics. 1989 Sep;84(3):475-81. PMID: 2771551	Cross-sectional

440.	Oellingrath IM, Svendsen MV, Brantsaeter AL. Tracking of eating patterns and overweight - a follow-up study of Norwegian schoolchildren from middle childhood to early adolescence. Nutr J. 2011 Oct 6;10:106. PMID: 21978299	Cross-sectional
441.	O'Keefe SJ, Ndaba N, Woodward A. Relationship between nutritional status, dietary intake patterns and plasma lipoprotein concentrations in rural black South Africans. Hum Nutr Clin Nutr. 1985 Sep;39(5):335-41. PMID: 4055424	Dependent variables were plasma lipoprotein concentrations
442.	Oladapo OO, Salako L, Sodiq O, Shoyinka K, Adedapo K, Falase AO. A prevalence of cardiometabolic risk factors among a rural Yoruba south-western Nigerian population: a population-based survey. Cardiovasc J Afr. 2010 Jan-Feb;21(1):26-31. PMID: 20224842	Nigeria classified as "low" on Human Development Index (HDI)
443.	Olinto MT, Gigante DP, Horta B, Silveira V, Oliveira I, Willett W. Major dietary patterns and cardiovascular risk factors among young Brazilian adults. Eur J Nutr. 2012 Apr;51(3):281-91. Epub 2011 Jun 17. PMID: 21681439	Cross-sectional
444.	Ortega RM, Rodríguez-Rodríguez E, Aparicio A, Marín-Arias LI, López-Sobaler AM. Responses to two weight-loss programs based on approximating the diet to the ideal: differences associated with increased cereal or vegetable consumption. Int J Vitam Nutr Res. 2006 Nov;76(6):367-76. PMID: 17607956	Insufficient sample size <30
445.	Overby NC, Flaaten V, Veierød MB, Bergstad I, Margeirsdottir HD, Dahl-Jørgensen K, Andersen LF. Children and adolescents with type 1 diabetes eat a more atherosclerosis-prone diet than healthy control subjects. Diabetologia. 2007 Feb;50(2):307-16. Epub 2006 Nov 29. PMID: 17136391	Cross-sectional, subjects with type 1 diabetes
446.	Overby NC, Margeirsdottir HD, Brunborg C, Andersen LF, Dahl-Jørgensen K. The influence of dietary intake and meal pattern on blood glucose control in children and adolescents using intensive insulin treatment. Diabetologia. 2007 Oct;50(10):2044-51. Epub 2007 Aug 9. PMID: 17687538	Cross-sectional, subjects with type 1 diabetes
447.	Panagiotakos D, Bountziouka V, Zeimbekis A, Vlachou I, Polychronopoulos E. Food pattern analysis and prevalence of cardiovascular disease risk factors among elderly people from Mediterranean islands. J Med Food. 2007 Dec;10(4):615-21. PMID: 18158831	Cross-sectional
448.	Panagiotakos DB, Chrysohoou C, Pitsavos C, Stefanadis C. Association between the prevalence of obesity and adherence to the Mediterranean diet: the ATTICA study. Nutrition. 2006 May;22(5):449-56. Epub 2006 Feb 2. PMID: 16457990	Cross-sectional
449.	Panagiotakos DB, Pitsavos C, Chrysohoou C, Vlismas K, Skoumas Y, Palliou K, Stefanadis C. Dietary habits mediate the relationship between socio-economic status and CVD factors among healthy adults: the ATTICA study. Public Health Nutr. 2008 Dec;11(12):1342-9. Epub 2008 Jul 11. PMID: 18616850	Does not examine the relationship between dietary patterns and measures of body weight
450.	Panagiotakos DB, Polystipioti A, Papairakleous N, Polychronopoulos E. Long-term adoption of a Mediterranean diet is associated with a better health status in elderly people; a cross-sectional survey in Cyprus. Asia Pac J Clin Nutr. 2007;16(2):331-7. PMID: 17468091	Cross-sectional
451.	Panagiotakos DB, Rallidis LS, Katsiotis E, Pitsavos C, Stefanadis C, Kremastinos DT. Background dietary habits are strongly associated with the development of myocardial infarction at young ages: A case-control study. e-SPEN. 2008;3(6):e328-e34	Dependent variable is myocardial infarction

452.	Panagiotakos DB, Tzima N, Pitsavos C, Chrysohoou C, Zampelas A, Toussoulis D, Stefanadis C. The association between adherence to the Mediterranean diet and fasting indices of glucose homoeostasis: the ATTICA Study. J Am Coll Nutr. 2007 Feb;26(1):32-8. PMID: 17353581	Dependent variable is glucose homeostasis
453.	Panagiotakos DB, Zeimbekis A, Boutziouka V, Economou M, Kourlaba G, Toutouzas P, Polychronopoulos E. Long-term fish intake is associated with better lipid profile, arterial blood pressure, and blood glucose levels in elderly people from Mediterranean islands (MEDIS epidemiological study). Med Sci Monit. 2007 Jul;13(7):CR307-12. PMID: 17599024	Independent variable was fish consumption
454.	Paniagua JA, Gallego de la Sacristana A, Romero I, Vidal-Puig A, Latre JM, Sanchez E, Perez-Martinez P, Lopez-Miranda J, Perez-Jimenez F. Monounsaturated fat-rich diet prevents central body fat distribution and decreases postprandial adiponectin expression induced by a carbohydrate-rich diet in insulin-resistant subjects. Diabetes Care. 2007 Jul;30(7):1717-23. Epub 2007 Mar 23. PMID: 17384344	Insufficient sample size <30; (n=11)
455.	Panunzio MF, Caporizzi R, Antoniciello A, Cela EP, Ferguson LR, D'Ambrosio P. Randomized, controlled nutrition education trial promotes a Mediterranean diet and improves anthropometric, dietary, and metabolic parameters in adults. Ann Ig. 2011 Jan-Feb;23(1):13-25. PMID: 21736003	Examined Mediteranean Adherence Index; exluded from index/score question (attrition > 20%; Mediteranean diet was dependent, not independent variable)
456.	Papandreou C, Schiza SE, Bouloukaki I, Hatzis CM, Kafatos AG, Siafakas NM, Tzanakis NE. Effect of mediterranean diet vs prudent diet combined with physical activity on OSAS: a randomised trial. Eur Respir J. 2011 Oct 27. [Epub ahead of print] PMID: 22034645	Insufficient sample size <30; (n=20 per group)
457.	Papas MA, Hurley KM, Quigg AM, Oberlander SE, Black MM. Low-income, African American adolescent mothers and their toddlers exhibit similar dietary variety patterns. J Nutr Educ Behav. 2009 Mar-Apr;41(2):87-94. PMID: 19304253	Compared mother toddler dietary variety
458.	Paradis AM, Pérusse L, Vohl MC. Dietary patterns and associated lifestyles in individuals with and without familial history of obesity: a cross-sectional study. Int J Behav Nutr Phys Act. 2006 Oct 31;3:38. PMID: 17076904	Cross-sectional
459.	Park HS, Yim KS, Cho SI. Gender differences in familial aggregation of obesity-related phenotypes and dietary intake patterns in Korean families. Ann Epidemiol. 2004 Aug;14(7):486-91. PMID: 15301785	Cross-sectional
460.	Park SY, Murphy SP, Sharma S, Kolonel LN. Dietary intakes and health-related behaviours of Korean American women born in the USA and Korea: the Multiethnic Cohort Study. Public Health Nutr. 2005 Oct;8(7):904-11. PMID: 16277807	Cross-sectional
461.	Pawlak R, Sovyanhadi M. Prevalence of overweight and obesity among Seventh-day Adventist African American and Caucasian college students. Ethn Dis. 2009 Spring;19(2):111-4. PMID: 19537219	Cross-sectional
462.	Peltzer K. Healthy dietary practices among black and white South Africans. Ethn Dis. 2002 Summer;12(3):336-41. PMID: 12148704	Cross-sectional
463.	Pereira MA, Kartashov AI, Ebbeling CB, Van Horn L, Slattery ML, Jacobs DR Jr, Ludwig DS. Fast-food habits, weight gain, and insulin resistance (the CARDIA study): 15-year prospective analysis. Lancet. 2005 Jan 1-7;365(9453):36-42. Erratum in: Lancet. 2005 Mar 16;365(9464):1030. PMID: 15639678	Independent variable was visits to fast food restaurants

464.	Pérez-Guisado J, Muñoz-Serrano A. A pilot study of the Spanish Ketogenic Mediterranean Diet: an effective therapy for the metabolic syndrome. J Med Food. 2011 Jul-Aug;14(7-8):681-7. Epub 2011 May 25. PMID: 21612461	Intervention was ketogenic diet
465.	Perry CL, Mcguire MT, Neumark-Sztainer D, Story M. Characteristics of vegetarian adolescents in a multiethnic urban population. J Adolesc Health. 2001 Dec;29(6):406-16. PMID: 11728890	Cross-sectional
466.	Pérusse-Lachance E, Tremblay A, Drapeau V. Lifestyle factors and other health measures in a Canadian university community. Appl Physiol Nutr Metab. 2010 Aug;35(4):498-506. PMID: 20725116	Cross-sectional
467.	Pettinger C, Holdsworth M, Gerber M. Meal patterns and cooking practices in Southern France and Central England. Public Health Nutr. 2006 Dec;9(8):1020-6. PMID: 17125566	Cross-sectional
468.	Pham TM, Fujino Y, Tokui N, Ide R, Kubo T, Shirane K, Mizoue T, Ogimoto I, Yoshimura T. Mortality and risk factors for stroke and its subtypes in a cohort study in Japan. Prev Med. 2007 Jun;44(6):526-30. Epub 2007 Feb 23. PMID: 17376522	Examined stroke and mortality risk, not dietary patterns
469.	Phillips S, Jacobs Starkey L, Gray-Donald K. Food habits of Canadians: food sources of nutrients for the adolescent sample. Can J Diet Pract Res. 2004 Summer;65(2):81-4. PMID: 15217526	Cross-sectional
470.	Pino-Ortega J, De la Cruz-Sánchez E, Martínez-Santos R. Health-related fitness in school children: compliance with physical activity recommendations and its relationship with body mass index and diet quality. Arch Latinoam Nutr. 2010 Dec;60(4):374-9. PMID: 21866688	Does not examine relationship between dietary patterns and body weight measure
471.	Pitsavos C, Panagiotakos DB, Chrysohoou C, Papaioannou I, Papadimitriou L, Tousoulis D, Stefanadis C, Toutouzas P. The adoption of Mediterranean diet attenuates the development of acute coronary syndromes in people with the metabolic syndrome. Nutr J. 2003 Mar 19;2:1. PMID: 12740043	Case control study; dependent variable was coronary risk
472.	Polidori MC, Pratico D, Mangialasche F, Mariani E, Aust O, Anlasik T, et al. Hiigh fruit and vegetable intake is positively correlated with antioxidant status and cognitive performance in healthy subjects. Journal of Alzheimer's Disease. 2009;17(4):921-7	Does not examine relationship between dietary patterns and body weight measure
473.	Posner BM, Franz MM, Quatromoni PA, Gagnon DR, Sytkowski PA, D'Agostino RB, Cupples LA. Secular trends in diet and risk factors for cardiovascular disease: the Framingham Study. J Am Diet Assoc. 1995 Feb;95(2):171-9. PMID: 7852683	Cross-sectional
474.	Pounis GD, Tyrovolas S, Antonopoulou M, Zeimbekis A, Anastasiou F, Bountziouka V, Metallinos G, Gotsis E, Lioliou E, Polychronopoulos E, Lionis C, Panagiotakos DB. Long-term animal-protein consumption is associated with an increased prevalence of diabetes among the elderly: the Mediterranean Islands (MEDIS) study. Diabetes Metab. 2010 Dec;36(6 Pt 1):484-90. PMID: 20888279	Cross-sectional
475.	Provencher V, Drapeau V, Tremblay A, Després JP, Bouchard C, Lemieux S; Québec Family Study. Eating behaviours, dietary profile and body composition according to dieting history in men and women of the Québec Family Study. Br J Nutr. 2004 Jun;91(6):997-1004. PMID: 15182403	Cross-sectional
476.	Provencher V, Drapeau V, Tremblay A, Després JP, Lemieux S. Eating behaviors and indexes of body composition in men and women from the Québec family study. Obes Res. 2003 Jun;11(6):783-92. PMID: 12805400	Dependent variables are behavioral
477.	Qotba H, Al-Isa AN. Anthropometric measurements and dietary habits of schoolchildren in Qatar. Int J Food Sci Nutr. 2007 Feb;58(1):1-5. PMID: 17415951	Cross-sectional

478.	Qotba H, Al-Isa AN. Anthropometric measuremnets and dietary habits of schoolchildren in Qatar. International Journal of Food Sciences and Nutrition. 2007;58(1):1-5	Cross-sectional
479.	Quatromoni PA, Pencina M, Cobain MR, Jacques PF, D'Agostino RB. Dietary quality predicts adult weight gain: findings from the Framingham Offspring Study. Obesity (Silver Spring). 2006 Aug;14(8):1383-91. PMID: 16988081	Does not examine relationship between dietary patterns and body weight measure
480.	Råberg Kjøllesdal MK, Hjellset VT, Bjørge B, Holmboe-Ottesen G, Wandel M. Intention to change dietary habits, and weight loss among Norwegian-Pakistani women participating in a culturally adapted intervention. J Immigr Minor Health. 2011 Dec;13(6):1150-8. PMID: 21082252	Intervention was education program; independent variable was Stage of Change
481.	Radhika G, Sudha V, Mohan Sathya R, Ganesan A, Mohan V. Association of fruit and vegetable intake with cardiovascular risk factors in urban south Indians. Br J Nutr. 2008 Feb;99(2):398-405. Epub 2007 Aug 3. PMID: 17678569	Cross-sectional
482.	Rankins J, Wortham J, Brown LL. Modifying soul food for the Dietary Approaches to Stop Hypertension diet (DASH) plan: implications for metabolic syndrome (DASH of Soul). Ethn Dis. 2007 Summer;17(3 Suppl 4):S4-7-12. PMID: 17987695	Examined soul-food modifications of DASH diet
483.	Razquin C, Martinez JA, Martinez-Gonzalez MA, Bes-Rastrollo M, Fernández-Crehuet J, Marti A. A 3-year intervention with a Mediterranean diet modified the association between the rs9939609 gene variant in FTO and body weight changes. Int J Obes (Lond). 2010 Feb;34(2):266-72. Epub 2009 Nov 17. PMID: 19918250	Focus was influence of genetic variation on weight change on response to Mediteranean diet
484.	Razquin C, Martinez JA, Martinez-Gonzalez MA, Fernández-Crehuet J, Santos JM, Marti A. A Mediterranean diet rich in virgin olive oil may reverse the effects of the -174G/C IL6 gene variant on 3-year body weight change. Mol Nutr Food Res. 2010 May;54 Suppl 1:S75-82. PMID: 20352618	Focus was influence of genetic variation on weight change response to Mediteranean diet
485.	Razquin C, Martinez JA, Martinez-Gonzalez MA, Mitjavila MT, Estruch R, Marti A. A 3 years follow-up of a Mediterranean diet rich in virgin olive oil is associated with high plasma antioxidant capacity and reduced body weight gain. Eur J Clin Nutr. 2009 Dec;63(12):1387-93. Epub 2009 Aug 26. PMID: 19707219	Focus was influence of genetic variation on weight gain and plasma antioxidant capacity to Mediteranean diet
486.	Reinehr T, Schaefer A, Winkel K, Finne E, Toschke AM, Kolip P. An effective lifestyle intervention in overweight children: findings from a randomized controlled trial on "Obeldicks light". Clin Nutr. 2010 Jun;29(3):331-6. Epub 2010 Jan 27. PMID: 20106567	Intervention was physical activity, nutrition education, and counseling
487.	Riccardi G, Rivellese AA. Dietary treatment of the metabolic syndrome - the optimal diet. British journal of nutrition. 2000;83(Supplement 1)	Not an original research article
488.	Richard C, Couture P, Desroches S, Benjannet S, Seidah NG, Lichtenstein AH, Lamarche B. Effect of the Mediterranean diet with and without weight loss on surrogate markers of cholesterol homeostasis in men with the metabolic syndrome. Br J Nutr. 2012 Mar;107(5):705-11. Epub 2011 Jul 26. PMID: 21787450	Outcomes were surrogate markers of cholesterol metabolism
489.	Richards L. Vegetarian diet and type 2 diabetes. Nature Reviews Endocrinology. 2009;5(9):468	Dependent variable is type 2 diabetes
490.	Richter A, Heidemann C, Schulze MB, Roosen J, Thiele S, Mensink GB. Dietary patterns of adolescents in Germany - Associations with nutrient intake and other health related lifestyle characteristics. BMC Pediatr. 2012 Mar 22;12(1):35. [Epub ahead of print] PMID: 22439777	Cross-sectional

491.	Riebe D, Greene GW, Ruggiero L, Stillwell KM, Blissmer B, Nigg CR, Caldwell M. Evaluation of a healthy-lifestyle approach to weight management. Prev Med. 2003 Jan;36(1):45-54. PMID: 12473424	Does not examine relationship between dietary patterns and body weight measure
492.	Riediger ND, Shooshtari S, Moghadasian MH. The influence of sociodemographic factors on patterns of fruit and vegetable consumption in Canadian adolescents. J Am Diet Assoc. 2007 Sep;107(9):1511-8. PMID: 17761228	Cross-sectional
493.	Rimm EB, Ascherio A, Giovannucci E, Spiegelman D, Stampfer MJ, Willett WC. Vegetable, fruit, and cereal fiber intake and risk of coronary heart disease among men. JAMA. 1996 Feb 14;275(6):447-51. PMID: 8627965	Independent variable was fiber intake; dependent variable was CVD risk
494.	Ritchie LD. Less frequent eating predicts greater BMI and waist circumference in female adolescents. Am J Clin Nutr. 2012 Feb;95(2):290-6. Epub 2012 Jan 4. PMID: 22218154	Independent variables were meal and snack frequency
495.	Rizzo NS, Sabaté J, Jaceldo-Siegl K, Fraser GE. Vegetarian dietary patterns are associated with a lower risk of metabolic syndrome: the adventist health study 2. Diabetes Care. 2011 May;34(5):1225-7. Epub 2011 Mar 16. PMID: 21411506	Cross-sectional
496.	Roberts SB, Hajduk CL, Howarth NC, Russell R, McCrory MA. Dietary variety predicts low body mass index and inadequate macronutrient and micronutrient intakes in community-dwelling older adults. J Gerontol A Biol Sci Med Sci. 2005 May;60(5):613-21. PMID: 15972614	Cross-sectional
497.	Robinson-O'Brien R, Perry CL, Wall MM, Story M, Neumark-Sztainer D. Adolescent and young adult vegetarianism: better dietary intake and weight outcomes but increased risk of disordered eating behaviors. J Am Diet Assoc. 2009 Apr;109(4):648-55. PMID: 19328260	Cross-sectional
498.	Rodríguez-Artalejo F, Garcés C, Gorgojo L, López García E, Martín-Moreno JM, Benavente M, del Barrio JL, Rubio R, Ortega H, Fernández O, de Oya M; Investigators of the Four Provinces Study. Dietary patterns among children aged 6-7 y in four Spanish cities with widely differing cardiovascular mortality. Eur J Clin Nutr. 2002 Feb;56(2):141-8. PMID: 11857047	Cross-sectional
499.	Roh Ryu H, Lyle RM, McCabe GP. Factors associated with weight concerns and unhealthy eating patterns among young Korean females. Eating Disorders. 2003;11(2):129-41	Cross-sectional
500.	Romaguera D, Norat T, Vergnaud AC, Mouw T, May AM, Agudo A, Buckland G, Slimani N, Rinaldi S, Couto E, Clavel-Chapelon F, Boutron-Ruault MC, Cottet V, Rohrmann S, Teucher B, Bergmann M, Boeing H, Tjønneland A, Halkjaer J, Jakobsen MU, Dahm CC, Travier N, Rodriguez L, Sanchez MJ, Amiano P, Barricarte A, Huerta JM, Luan J, Wareham N, Key TJ, Spencer EA, Orfanos P, Naska A, Trichopoulou A, Palli D, Agnoli C, Mattiello A, Tumino R, Vineis P, Bueno-de-Mesquita HB, Büchner FL, Manjer J, Wirfält E, Johansson I, Hellstrom V, Lund E, Braaten T, Engeset D, Odysseos A, Riboli E, Peeters PH. Mediterranean dietary patterns and prospective weight change in participants of the EPIC-PANACEA project. Am J Clin Nutr. 2010 Oct;92(4):912-21. Epub 2010 Sep 1. PMID: 20810975	Included in index/score question
501.	Romaguera D, Samman N, Rossi A, Miranda C, Pons A, Tur JA. Dietary patterns of the Andean population of Puna and Quebrada of Humahuaca, Jujuy, Argentina. Br J Nutr. 2008 Feb;99(2):390-7. Epub 2007 Aug 13. PMID: 17697401	Cross-sectional

502.	Romanzini M, Pelegrini A, Petroski EL. Prevalence of abdominal obesity and associated factors in adolescents. Revista Paulista de Pediatria. 2011;29(4):546-52	Cross-sectional
503.	Romieu I, Escamilla-Núñez MC, Sánchez-Zamorano LM, Lopez-Ridaura R, Torres-Mejía G, Yunes EM, Lajous M, Rivera-Dommarco JA, Lazcano-Ponce E. The association between body shape silhouette and dietary pattern among Mexican women. Public Health Nutr. 2011 Aug 30:1-10. [Epub ahead of print] PMID: 21875454	Cross-sectional
504.	Rouse IL, Beilin LJ, Mahoney DP, Margetts BM, Armstrong BK, Record SJ, Vandongen R, Barden A. Nutrient intake, blood pressure, serum and urinary prostaglandins and serum thromboxane B2 in a controlled trial with a lacto-ovo-vegetarian diet. J Hypertens. 1986 Apr;4(2):241-50. PMID: 3011891	Did not include body weight measure as a dependent variable
505.	Ruidavets JB, Bongard V, Dallongeville J, Arveiler D, Ducimetière P, Perret B, Simon C, Amouyel P, Ferrières J. High consumptions of grain, fish, dairy products and combinations of these are associated with a low prevalence of metabolic syndrome. J Epidemiol Community Health. 2007 Sep;61(9):810-7. PMID: 17699537	Cross-sectional, independent variables are food groups; dependent variable is insulin resistance syndrome
506.	Sabaté J, Lindsted KD, Harris RD, Sanchez A. Attained height of lacto-ovo vegetarian children and adolescents. Eur J Clin Nutr. 1991 Jan;45(1):51-8. PMID: 1855500	Cross-sectional
507.	Sabaté J, Wien M. Vegetarian diets and childhood obesity prevention. Am J Clin Nutr. 2010 May;91(5):1525S-1529S. Epub 2010 Mar 17. PMID: 20237136	Narrative review
508.	Sacks FM, Appel LJ, Moore TJ, Obarzanek E, Vollmer WM, Svetkey LP, Bray GA, Vogt TM, Cutler JA, Windhauser MM, Lin PH, Karanja N. A dietary approach to prevent hypertension: a review of the Dietary Approaches to Stop Hypertension (DASH) Study. Clin Cardiol. 1999 Jul;22(7 Suppl):III6-10. PMID: 10410299	Dependent variable was blood pressure
509.	Salas-Salvadó J, Fernández-Ballart J, Ros E, Martínez-González MA, Fitó M, Estruch R, Corella D, Fiol M, Gómez-Gracia E, Arós F, Flores G, Lapetra J, Lamuela-Raventós R, Ruiz-Gutiérrez V, Bulló M, Basora J, Covas MI; PREDIMED Study Investigators. Effect of a Mediterranean diet supplemented with nuts on metabolic syndrome status: one-year results of the PREDIMED randomized trial. Arch Intern Med. 2008 Dec 8;168(22):2449-58. PMID: 19064829	Dependent variable was metabolic syndrome
510.	Salehi L, Mohammad K, Montazeri A. Fruit and vegetables intake among elderly Iranians: a theory-based interventional study using the five-a-day program. Nutr J. 2011 Nov 14;10:123. PMID: 22078240	Intervention was education program to increase fruit/vegetable intake
511.	Samuelson G, Bratteby LE, Enghardt H, Hedgren M. Food habits and energy and nutrient intake in Swedish adolescents approaching the year 2000. Acta Paediatr Suppl. 1996 Sep;415:1-19. Erratum in: Acta Paediatr Suppl 1996 Nov;85(11):1392. PMID: 8955480	Cross-sectional
512.	Sánchez-Taínta A, Estruch R, Bulló M, Corella D, Gómez-Gracia E, Fiol M, Algorta J, Covas MI, Lapetra J, Zazpe I, Ruiz-Gutiérrez V, Ros E, Martínez-González MA; PREDIMED group. Adherence to a Mediterranean-type diet and reduced prevalence of clustered cardiovascular risk factors in a cohort of 3,204 high-risk patients. Eur J Cardiovasc Prev Rehabil. 2008 Oct;15(5):589-93. PMID: 18830087	Cross-sectional
513.	Sánchez-Villegas A, Bes-Rastrollo M, Martínez-González MA, Serra-Majem L. Adherence to a Mediterranean dietary pattern and weight gain in a follow-up study: the SUN cohort. Int J Obes (Lond). 2006 Feb;30(2):350-8. PMID: 16231028	Examined Mediteranean Diet Index

514.	Sanders TA, Purves R. An anthropometric and dietary assessment of the nutritional status of vegan preschool children. J Hum Nutr. 1981 Oct;35(5):349-57. PMID: 7288184	Cross-sectional
515.	Sandström B, Marckmann P, Bindslev N. An eight-month controlled study of a low-fat high-fibre diet: effects on blood lipids and blood pressure in healthy young subjects. Eur J Clin Nutr. 1992 Feb;46(2):95-109. PMID: 1313761	Intervention was a low-fat, high fiber diet; dependent variables were blood lipids and blood pressure
516.	Sanlier N, Unusan N. Dietary habits and body composition of Turkish university students. Pakistan Journal of Nutrition. 2007;6(4):332-8	Cross-sectional
517.	Sarri K, Linardakis M, Codrington C, Kafatos A. Does the periodic vegetarianism of Greek Orthodox Christians benefit blood pressure? Prev Med. 2007 Apr;44(4):341-8. Epub 2006 Dec 19. PMID: 17184829	Dependent variable was blood pressure
518.	Satalić Z, Barić IC, Keser I, Marić B. Evaluation of diet quality with the mediterranean dietary quality index in university students. Int J Food Sci Nutr. 2004 Dec;55(8):589-97. PMID: 16019303	Cross-sectional
519.	Savoye M, Shaw M, Dziura J, Tamborlane WV, Rose P, Guandalini C, Goldberg-Gell R, Burgert TS, Cali AM, Weiss R, Caprio S. Effects of a weight management program on body composition and metabolic parameters in overweight children: a randomized controlled trial. JAMA. 2007 Jun 27;297(24):2697-704. PMID: 17595270	Intervention was a weight management program
520.	Schröder H, Fïto M, Covas MI; REGICOR investigators. Association of fast food consumption with energy intake, diet quality, body mass index and the risk of obesity in a representative Mediterranean population. Br J Nutr. 2007 Dec;98(6):1274-80. Epub 2007 Jul 12. PMID: 17625027	Cross-sectional, Does not examine relationship between dietary patterns and measures of body weight
521.	Schröder H, Marrugat J, Covas MI. High monetary costs of dietary patterns associated with lower body mass index: a population-based study. Int J Obes (Lond). 2006 Oct;30(10):1574-9. Epub 2006 Mar 21. PMID: 16552405	Cross-sectional
522.	Schröder H, Marrugat J, Vila J, Covas MI, Elosua R. Adherence to the traditional mediterranean diet is inversely associated with body mass index and obesity in a spanish population. J Nutr. 2004 Dec;134(12):3355-61. PMID: 15570037	Cross-sectional
523.	Schusdziarra V, Hausmann M, Wiedemann C, Hess J, Barth C, Wagenpfeil S, Erdmann J. Successful weight loss and maintenance in everyday clinical practice with an individually tailored change of eating habits on the basis of food energy density. Eur J Nutr. 2011 Aug;50(5):351-61. Epub 2010 Dec 1. PMID: 21120658	Independent variable was energy density
524.	Schwingel A, Nakata Y, Ito LS, Chodzko-Zajko WJ, Erb CT, Shigematsu R, Oba-Shinjo SM, Matsuo T, Shinjo SK, Uno M, Marie SK, Tanaka K. Central obesity and health-related factors among middle-aged men: a comparison among native Japanese and Japanese-Brazilians residing in Brazil and Japan. J Physiol Anthropol. 2007 May;26(3):339-47. PMID: 17641453	Cross-sectional
525.	Sechena R, Liao S, Lorenzana R, Nakano C, Polissar N, Fenske R. Asian American and Pacific Islander seafood consumption -- a community-based study in King County, Washington. J Expo Anal Environ Epidemiol. 2003 Jul;13(4):256-66. PMID: 12923552	Cross-sectional
526.	Seguí-Gómez M, de la Fuente C, Vázquez Z, de Irala J, Martínez-González MA. Cohort profile: the 'Seguimiento Universidad de Navarra' (SUN) study. Int J Epidemiol. 2006 Dec;35(6):1417-22. Epub 2006 Oct 22. No abstract available. PMID: 17060332	Cross-sectional

527.	Sepulveda A, Carrobles JA, Gandarillas AM. Associated factors of unhealthy eating patterns among Spanish university students by gender. Span J Psychol. 2010 May;13(1):364-75. PMID: 20480703	Cross-sectional
528.	Serra-Majem L, García-Closas R, Ribas L, Pérez-Rodrigo C, Aranceta J. Food patterns of Spanish schoolchildren and adolescents: The enKid Study. Public Health Nutr. 2001 Dec;4(6A):1433-8. PMID: 11918496	Cross-sectional
529.	Shah M, Adams-Huet B, Garg A. Effect of high-carbohydrate or high-cis-monounsaturated fat diets on blood pressure: a meta-analysis of intervention trials. Am J Clin Nutr. 2007 May;85(5):1251-6. PMID: 17490960	Meta-analysis of high carb vs. high mufa interventions
530.	Shai I, Schwarzfuchs D, Henkin Y, Shahar DR, Witkow S, Greenberg I, et al. Weight loss with a low-carbohydrate, Mediterranean, or low-fat diet. New England Journal of Medicine. 2008;359(3):229-41	Kcal level of Mediterranean diet group was at 1,500 (minimum is 1,600 for woman and 2,000 for men)
531.	Shang P, Shu Z, Wang Y, Li N, Du S, Sun F, Xia Y, Zhan S. Veganism does not reduce the risk of the metabolic syndrome in a Taiwanese cohort. Asia Pac J Clin Nutr. 2011;20(3):404-10. PMID: 21859659	Dependent variables were lipids and fasting glucose; body weight measure not mentioned in abstract
532.	Sheikh N, Egeland GM, Johnson-Down L, Kuhnlein HV. Changing dietary patterns and body mass index over time in Canadian Inuit communities. Int J Circumpolar Health. 2011;70(5):511-9. Epub 2011 Dec 2. PMID: 22152598	Cross-sectional
533.	Sheldon M, Gans KM, Tai R, George T, Lawson E, Pearlman DN. Availability, affordability, and accessibility of a healthful diet in a low-income community, Central Falls, Rhode Island, 2007-2008. Prev Chronic Dis. 2010 Mar;7(2):A43. Epub 2010 Feb 15. PMID: 20158971	Examined food cost and availability in a low-income Rhode Island community
534.	Shenoy SF, Poston WS, Reeves RS, Kazaks AG, Holt RR, Keen CL, Chen HJ, Haddock CK, Winters BL, Khoo CS, Foreyt JP. Weight loss in individuals with metabolic syndrome given DASH diet counseling when provided a low sodium vegetable juice: a randomized controlled trial. Nutr J. 2010 Feb 23;9:8. PMID: 20178625	Independent variable was low sodium veg juice; all subjects were on DASH diet
535.	Shi Z, Taylor AW, Hu G, Gill T, Wittert GA. Rice intake, weight change and risk of the metabolic syndrome development among Chinese adults: the Jiangsu Nutrition Study (JIN). Asia Pac J Clin Nutr. 2012;21(1):35-43. PMID: 22374558	Independent variable was rice intake
536.	Shikany JM, Barash J, Redden DT, Westfall AO, Heimburger DC, Henson CS, et al. Divergence in popular diets relative to diets consumed by Americans, and implications for diet selection. MedGenMed Medscape General Medicine. 2007;9(3)	Did not include a measure of body weight in analyses
537.	Shin A, Lim SY, Sung J, Shin HR, Kim J. Dietary intake, eating habits, and metabolic syndrome in Korean men. J Am Diet Assoc. 2009 Apr;109(4):633-40. PMID: 19328258	Cross-sectional
538.	Shrewsbury VA, O'Connor J, Steinbeck KS, Stevenson K, Lee A, Hill AJ, et al. A randomised controlled trial of a community-based healthy lifestyle program for overweight and obese adolescents: The Loozit(registered trademark) study protocol. BMC Public Health. 2009;9	Independent variable is weight management
539.	Shultz TD, Leklem JE. Dietary status of Seventh-day Adventists and nonvegetarians. J Am Diet Assoc. 1983 Jul;83(1):27-33. PMID: 6863780	Cross-sectional
540.	Sieri S, Krogh V, Pala V, Muti P, Micheli A, Evangelista A, Tagliabue G, Berrino F. Dietary patterns and risk of breast cancer in the ORDET cohort. Cancer Epidemiol Biomarkers Prev. 2004 Apr;13(4):567-72. PMID: 15066921	Dependent variable was breast cancer risk

541.	Silva KF, Prata A, Cunha DF. Frequency of metabolic syndrome and the food intake patterns in adults living in a rural area of Brazil. Rev Soc Bras Med Trop. 2011 Jul-Aug;44(4):425-9. PMID: 21860887	Cross-sectional
542.	Singh RB, Niaz MA, Ghosh S. Effect on central obesity and associated disturbances of low-energy, fruit- and vegetable-enriched prudent diet in north Indians. Postgrad Med J. 1994 Dec;70(830):895-900. PMID: 7870637	Independent variables were fruit, vegetable, and legume intake; India is medium HDI country
543.	Sit C, Yeung DL, He M, Anderson GH. The growth and feeding patterns of 9 to 12 month old Chinese Canadian infants. Nutrition Research. 2001;21(3):505-16	Cross-sectional
544.	Skouteris H, McCabe M, Swinburn B, Hill B. Healthy eating and obesity prevention for preschoolers: a randomised controlled trial. BMC Public Health. 2010 Apr 28;10:220. PMID: 20426840	Description of planned RCT
545.	Slattery ML, Schumacher MC, Hunt SC, Williams RR. The associations between family history of coronary heart disease, physical activity, dietary intake and body size. Int J Sports Med. 1993 Feb;14(2):93-9. PMID: 8463031	Independent variables are positive family hisotry of coronary heart disease and physical activity
546.	Sobko T, Svensson V, Ek A, Ekstedt M, Karlsson H, Johansson E, Cao Y, Hagströmer M, Marcus C. A randomised controlled trial for overweight and obese parents to prevent childhood obesity--Early STOPP (STockholm Obesity Prevention Program). BMC Public Health. 2011 May 18;11:336. PMID: 21592388	Multifaceted long-term targeted health program; dietary pattern was not an independent variable
547.	Soltero SM, Palacios C. Association between dietary patterns and body composition in a group or Puerto Rican obese adults: a pilot study. P R Health Sci J. 2011 Mar;30(1):22-7. PMID: 21449494	Cross-sectional
548.	Song Y, Joung H. A traditional Korean dietary pattern and metabolic syndrome abnormalities. Nutr Metab Cardiovasc Dis. 2011 Jan 5. [Epub ahead of print] PMID: 21215606	Cross-sectional
549.	Sontrop JM, Campbell MK, Evers SE, Speechley KN, Avison WR. Fish consumption among pregnant women in London, Ontario: associations with socio-demographic and health and lifestyle factors. Can J Public Health. 2007 Sep-Oct;98(5):389-94. PMID: 17985681	Cross-sectional
550.	Soo KL, Wan AM, Abdul MH, Lee YY. Dietary practices among overweight and obese Chinese children in Kota Bharu, Kelantan. Malays J Nutr. 2011 Apr;17(1):87-95. PMID: 22135868	Cross-sectional
551.	Spiller GA, Miller A, Olivera K, Reynolds J, Miller B, Morse SJ, Dewell A, Farquhar JW. Effects of plant-based diets high in raw or roasted almonds, or roasted almond butter on serum lipoproteins in humans. J Am Coll Nutr. 2003 Jun;22(3):195-200. PMID: 12805245	Independent variables were three forms of almonds
552.	Srikumar TS, Källgård B, Ockerman PA, Akesson B. The effects of a 2-year switch from a mixed to a lactovegetarian diet on trace element status in hypertensive subjects. Eur J Clin Nutr. 1992 Sep;46(9):661-9. PMID: 1396483	Insufficient sample size <30; dependent variables were mineral and trace mineral status
553.	St John M, Durant M, Campagna PD, Rehman LA, Thompson AM, Wadsworth LA, Murphy RJ. Overweight Nova Scotia children and youth: the roles of household income and adherence to Canada's Food Guide to Healthy Eating. Can J Public Health. 2008 Jul-Aug;99(4):301-6. PMID: 18767276	Cross-sectional
554.	Stamler J, Dolecek TA, Grandits GA. Chapter 13. Relation of food and nutrient intakes to body mass in the special intervention and usual care groups in the Multiple Risk Factor Intervention Trial. American Journal of Clinical Nutrition. 1997;65(1 SUPPL.):366S-73S	Not an original research article
555.	Steffes MW, Gross MD, Schreiner PJ, Yu X, Hilner JE, Gingerich R, Jacobs DR Jr. Serum adiponectin in young adults--interactions with central adiposity, circulating levels of glucose, and insulin resistance:	Examined influences effecting serum adiponectin levels

	the CARDIA study. Ann Epidemiol. 2004 Aug;14(7):492-8. PMID: 15301786	
556.	Stock J. Mediterranean diet for combating the metabolic syndrome. Atherosclerosis. 2011 Oct;218(2):290-3. Epub 2011 Jun 16. No abstract available. PMID: 21788020	Commentary
557.	Stone MA, Bankart J, Sinfield P, Talbot D, Farooqi A, Davies MJ, Khunti K. Dietary habits of young people attending secondary schools serving a multiethnic, inner-city community in the UK. Postgrad Med J. 2007 Feb;83(976):115-9. PMID: 17308215	Cross-sectional
558.	Strazzullo P, Ferro-Luzzi A, Siani A, Scaccini C, Sette S, Catasta G, Mancini M. Changing the Mediterranean diet: effects on blood pressure. J Hypertens. 1986 Aug;4(4):407-12. PMID: 3534087	Examined effect of fatty acid variations on blood pressure
559.	Suleiman AA, Alboqai OK, Kofahi S, Aughsteen AA, El Masri K. Vegetarianism among Jordan University students. Journal of Biological Sciences. 2009;9(3):237-42	Cross-sectional
560.	Swaminathan S, Thomas T, Kurpad AV, Vaz M. Dietary patterns in urban school children in South India. Indian Pediatr. 2007 Aug;44(8):593-6. PMID: 17827629	India is classified as "medium" on Human Development Index (HDI)
561.	Tapsell LC, Hokman A, Sebastiao A, Denmeade S, Martin G, Calvert GD, Jenkins AB. The impact of usual dietary patterns, selection of significant foods and cuisine choices on changing dietary fat under 'free living' conditions. Asia Pac J Clin Nutr. 2004;13(1):86-91. PMID: 15003920	Examined changes in food choices to achieve dietary fat targets; all subjects had type 2 diabetes
562.	Tardivo AP, Nahas-Neto J, Nahas EA, Maesta N, Rodrigues MA, Orsatti FL. Associations between healthy eating patterns and indicators of metabolic risk in postmenopausal women. Nutr J. 2010 Dec 8;9:64. PMID: 21143838	Cross-sectional
563.	Terry K, Beck S. Eating style and food storage habits in the home. Assessment of obese and nonobese families. Behav Modif. 1985 Apr;9(2):242-61. No abstract available. PMID: 4004733	Cross-sectional
564.	Thanopoulou A, Karamanos B, Angelico F, Assaad-Khalil S, Barbato A, Del Ben M, Djordjevic P, Dimitrijevic-Sreckovic V, Gallotti C, Katsilambros N, Migdalis I, Mrabet M, Petkova M, Roussi D, Tenconi MT; Multi-Centre Study of the Mediterranean Group for the Study of Diabetes (MGSD). Nutritional habits of subjects with Type 2 diabetes mellitus in the Mediterranean Basin: comparison with the non-diabetic population and the dietary recommendations. Multi-Centre Study of the Mediterranean Group for the Study of Diabetes (MGSD). Diabetologia. 2004 Mar;47(3):367-76. Epub 2004 Jan 17. PMID: 14730377	Cross-sectional
565.	Theodore RF, Thompson JMD, Wall CR, Becroft DMO, Robinson E, Clark PM, et al. Dietary patterns of New Zealand European preschool children. New Zealand Medical Journal. 2006;119(1235)	Cross-sectional
566.	Thompson HJ, Sedlacek SM, Paul D, Wolfe P, McGinley JN, Playdon MC, Daeninck EA, Bartels SN, Wisthoff MR. Effect of dietary patterns differing in carbohydrate and fat content on blood lipid and glucose profiles based on weight-loss success of breast-cancer survivors. Breast Cancer Res. 2012 Jan 6;14(1):R1. [Epub ahead of print] PMID: 22225711	Interventions were high fat low carb vs. low fat high carb diets for weight loss
567.	Thompson OM, Ballew C, Resnicow K, Gillespie C, Must A, Bandini LG, Cyr H, Dietz WH. Dietary pattern as a predictor of change in BMI z-score among girls. Int J Obes (Lond). 2006 Jan;30(1):176-82. PMID: 16158084	Independent variables are meal frequency, time of day, and total energy
568.	Thomson CA, Rock CL, Giuliano AR, Newton TR, Cui H, Reid PM, Green TL, Alberts DS; Women's Healthy Eating & Living Study Group. Longitudinal changes in body weight and body composition among	Independent variable is treatment with individual foods and nutrients (fruit

	women previously treated for breast cancer consuming a high-vegetable, fruit and fiber, low-fat diet. Eur J Nutr. 2005 Feb;44(1):18-25. Epub 2004 Mar 5. PMID: 15309460	and vegetables, fiber, fat)
569.	Tillotson JL, Bartsch GE, Gorder D, Grandits GA, Stamler J. Food group and nutrient intakes at baseline in the Multiple Risk Factor Intervention Trial. Am J Clin Nutr. 1997 Jan;65(1 Suppl):228S-257S. PMID: 8988940	Not an original research article
570.	Tognon G, Rothenberg E, Eiben G, Sundh V, Winkvist A, Lissner L. Does the Mediterranean diet predict longevity in the elderly? A Swedish perspective. Age (Dordr). 2011 Sep;33(3):439-50. Epub 2010 Nov 26. PMID: 21110231	Dependent variable is mortality
571.	Tonstad S, Butler T, Yan R, Fraser GE. Type of vegetarian diet, body weight, and prevalence of type 2 diabetes. Diabetes Care. 2009 May;32(5):791-6. Epub 2009 Apr 7. PMID: 19351712	Cross-sectional
572.	Torres-Schow RM, Suen S, Yeh IL, Tam CF. A comparison of atherogenic potential of diets between Asian and Hispanic college students and their parents. Nutrition Research. 1999;19(4):555-68	Cross-sectional
573.	Tortosa A, Bes-Rastrollo M, Sanchez-Villegas A, Basterra-Gortari FJ, Nuñez-Cordoba JM, Martinez-Gonzalez MA. Mediterranean diet inversely associated with the incidence of metabolic syndrome: the SUN prospective cohort. Diabetes Care. 2007 Nov;30(11):2957-9. Epub 2007 Aug 21. No abstract available. PMID: 17712023	Included in index/score question
574.	Triantafillidis JK, Papadopoulou A, Stamatopoulou E, Delicha EM, Gikas A, Froudakis P, et al. Dietary habits in Greek middle school students according to gender. Annals of Gastroenterology. 2006;19(2):130-4	Cross-sectional
575.	Tsartsali PK, Thompson JL, Jago R. Increased knowledge predicts greater adherence to the Mediterranean diet in Greek adolescents. Public Health Nutr. 2009 Feb;12(2):208-13. Epub 2008 Aug 1. PMID: 18671892	Cross-sectional
576.	Tucak-Zorić S, Curcić IB, Mihalj H, Dumancić I, Zelić Z, Cetina NM, Smolić R, Volarević M, Missoni S, Tomljenović A, Szirovicza L, Duraković Z, Xi H, Chakraborty R, Deka R, Tucak A, Rudan P. Prevalence of metabolic syndrome in the interior of Croatia: the Baranja region. Coll Antropol. 2008 Sep;32(3):659-65. PMID: 18982734	Cross-sectional
577.	Tur JA, Romaguera D, Pons A. Food consumption patterns in a mediterranean region: does the mediterranean diet still exist? Ann Nutr Metab. 2004;48(3):193-201. Epub 2004 Jul 12. PMID: 15256802	Cross-sectional
578.	Turner-McGrievy GM, Barnard ND, Cohen J, Jenkins DJ, Gloede L, Green AA. Changes in nutrient intake and dietary quality among participants with type 2 diabetes following a low-fat vegan diet or a conventional diabetes diet for 22 weeks. J Am Diet Assoc. 2008 Oct;108(10):1636-45. PMID: 18926128	Included in index/score question
579.	Turner-McGrievy GM, Barnard ND, Scialli AR, Lanou AJ. Effects of a low-fat vegan diet and a Step II diet on macro- and micronutrient intakes in overweight postmenopausal women. Nutrition. 2004 Sep;20(9):738-46. PMID: 15325679	Dependent variables were nutrient intake levels
580.	Turner-McGrievy GM, Barnard ND, Scialli AR. A two-year randomized weight loss trial comparing a vegan diet to a more moderate low-fat diet. Obesity (Silver Spring). 2007 Sep;15(9):2276-81. PMID: 17890496	Insufficient sample size <30; (n=28, 34 per study arm)
581.	Turunen AW, Verkasalo PK, Kiviranta H, Pukkala E, Jula A, Männistö S, Räsänen R, Marniemi J, Vartiainen T. Mortality in a cohort with high fish consumption. Int J Epidemiol. 2008 Oct;37(5):1008-17. Epub 2008 Jun 25. PMID: 18579573	Dependent variable was mortality

582.	Tyrovolas S, Bountziouka V, Papairakleous N, Zeimbekis A, Anastassiou F, Gotsis E, Metallinos G, Polychronopoulos E, Lionis C, Panagiotakos D. Adherence to the Mediterranean diet is associated with lower prevalence of obesity among elderly people living in Mediterranean islands: the MEDIS study. Int J Food Sci Nutr. 2009 Aug 11:1-14. [Epub ahead of print] PMID: 19672745	Cross-sectional
583.	Tzima N, Pitsavos C, Panagiotakos DB, Chrysohoou C, Polychronopoulos E, Skoumas J, Stefanadis C. Adherence to the Mediterranean diet moderates the association of aminotransferases with the prevalence of the metabolic syndrome; the ATTICA study. Nutr Metab (Lond). 2009 Jul 30;6:30. PMID: 19642977	Dependent variables are amino-transferases and metabolic syndrome
584.	Tzima N, Pitsavos C, Panagiotakos DB, Skoumas J, Zampelas A, Chrysohoou C, et al. Mediterranean diet and insulin sensitivity, lipid profile and blood pressure levels, in overweight and obese people; The Attica study. Lipids in Health and Disease. 2007;6	Dependent variables are insulin level, lipid profile, and blood pressure level
585.	Uddenfeldt M, Janson C, Lampa E, Leander M, Norbäck D, Larsson L, Rask-Andersen A. High BMI is related to higher incidence of asthma, while a fish and fruit diet is related to a lower- Results from a long-term follow-up study of three age groups in Sweden. Respir Med. 2010 Jul;104(7):972-80. Epub 2010 Feb 18. PMID: 20171076	Dependent variable was incidence of adult onset asthma
586.	Uglem S, Stea TH, Frølich W, Wandel M. Body weight, weight perceptions and food intake patterns. A cross-sectional study among male recruits in the Norwegian National Guard. BMC Public Health. 2011 May 19;11:343. PMID: 21595899	Cross-sectional
587.	Uhernik AI, Erceg M, Milanović SM. Association of BMI and nutritional habits with hypertension in the adult population of Croatia. Public Health Nutr. 2009 Jan;12(1):97-104. Epub 2008 Apr 15. Erratum in: Public Health Nutr. 2011 Jan;14(1):187. PMID: 18410702	Cross-sectional
588.	Ursoniu S, Vernic C, Vlaicu B, Petrescu C, Fira-Mladinescu C, Putnoky S, Suciu O, Fira-Mladinescu O, Vlaicu S. Eating habits in an adolescent population from Timiş county. Rev Med Chir Soc Med Nat Iasi. 2010 Oct-Dec;114(4):1155-61. PMID: 21495459	Cross-sectional
589.	Vågstrand K, Barkeling B, Forslund HB, Elfhag K, Linné Y, Rössner S, Lindroos AK. Eating habits in relation to body fatness and gender in adolescents--results from the 'SWEDES' study. Eur J Clin Nutr. 2007 Apr;61(4):517-25. Epub 2006 Sep 27. PMID: 17006444	Cross-sectional
590.	van den Berg L, Henneman P, Willems van Dijk K, Delemarre-van de Waal HA, Oostra BA, van Duijn CM, et al. Heritability of dietary food intake patterns. Acta Diabetologica. 2012:1-6	Study considered in systematic review question on principal component analsysis
591.	Van Diepen S, Scholten AM, Korobili C, Kyrli D, Tsigga M, Van Dieijen T, Kotzamanidis C, Grammatikopoulou MG. Greater Mediterranean diet adherence is observed in Dutch compared with Greek university students. Nutr Metab Cardiovasc Dis. 2011 Jul;21(7):534-40. Epub 2010 Feb 20. PMID: 20171853	Dependent variable is adherence, not a measure of body weight
592.	Van Staveren WA, Deurenberg P, Burema J, De Groot LC, Hautvast JG. Seasonal variation in food intake, pattern of physical activity and change in body weight in a group of young adult Dutch women consuming self-selected diets. Int J Obes. 1986;10(2):133-45. PMID: 3013791	Independent variables were seasonal food intake and physical activities
593.	van Woudenbergh GJ, van Ballegooijen AJ, Kuijsten A, Sijbrands EJ, van Rooij FJ, Geleijnse JM, Hofman A, Witteman JC, Feskens EJ. Eating fish and risk of type 2 diabetes: A population-based, prospective follow-up study. Diabetes Care. 2009 Nov;32(11):2021-6. Epub 2009 Aug 12. PMID: 19675200	Independent variables were fish intake, type of fish, EPA, DHA; dependent variable was risk of type 2 diabetes

594.	Vandevijvere S, De Vriese S, Huybrechts I, Moreau M, Temme E, De Henauw S, De Backer G, Kornitzer M, Leveque A, Van Oyen H. The gap between food-based dietary guidelines and usual food consumption in Belgium, 2004. Public Health Nutr. 2009 Mar;12(3):423-31. Epub 2008 Apr 22. PMID: 18426635	Cross-sectional
595.	Vang A, Singh PN, Lee JW, Haddad EH, Brinegar CH. Meats, processed meats, obesity, weight gain and occurrence of diabetes among adults: findings from Adventist Health Studies. Ann Nutr Metab. 2008;52(2):96-104. Epub 2008 Mar 18. Erratum in: Ann Nutr Metab. 2010;56(3):232. PMID: 18349528	Independent variables were meat and processed meat intake
596.	Vansant G, Hulens M. The assessment of dietary habits in obese women: influence of eating behavior patterns. Eat Disord. 2006 Mar-Apr;14(2):121-9. PMID: 16777809	Dependent variable is eating behavior
597.	Vaughan C, Kilkkinen A, Heistaro S, Laatikainen T, Dunbar J. The dietary, physical activity and sedentary behaviours of Victorian regional secondary school students. Australian Journal of Primary Health. 2007;13(1):81-8	Cross-sectional
598.	Vergara-Castañeda A, Castillo-Martínez L, Colín-Ramírez E, Orea-Tejeda A. Overweight, obesity, high blood pressure and lifestyle factors among Mexican children and their parents. Environ Health Prev Med. 2010 Nov;15(6):358-66. Epub 2010 May 15. PMID: 21432567	Cross-sectional
599.	Vergnaud AC, Norat T, Romaguera D, Mouw T, May AM, Romieu I, Freisling H, Slimani N, Boutron-Ruault MC, Clavel-Chapelon F, Morois S, Kaaks R, Teucher B, Boeing H, Buijsse B, Tjønneland A, Halkjaer J, Overvad K, Jakobsen MU, Rodríguez L, Agudo A, Sánchez MJ, Amiano P, Huerta JM, Gurrea AB, Wareham N, Khaw KT, Crowe F, Orfanos P, Naska A, Trichopoulou A, Masala G, Pala V, Tumino R, Sacerdote C, Mattiello A, Bueno-de-Mesquita HB, van Duijnhoven FJ, Drake I, Wirfält E, Johansson I, Hallmans G, Engeset D, Braaten T, Parr CL, Odysseos A, Riboli E, Peeters PH. Fruit and vegetable consumption and prospective weight change in participants of the European Prospective Investigation into Cancer and Nutrition-Physical Activity, Nutrition, Alcohol, Cessation of Smoking, Eating Out of Home, and Obesity study. Am J Clin Nutr. 2012 Jan;95(1):184-93. Epub 2011 Dec 14. PMID: 22170373	Independent variable was fruit and vegetable consumption
600.	Villa I, Yngve A, Poortvliet E, Grjibovski A, Liiv K, Sjöström M, Harro M. Dietary intake among under-, normal- and overweight 9- and 15-year-old Estonian and Swedish schoolchildren. Public Health Nutr. 2007 Mar;10(3):311-22. PMID: 17288630	Cross-sectional
601.	Vincent S, Gerber M, Bernard MC, Defoort C, Loundou A, Portugal H, Planells R, Juhan-Vague I, Charpiot P, Grolier P, Amiot-Carlin MJ, Vague P, Lairon D. The Medi-RIVAGE study (Mediterranean Diet, Cardiovascular Risks and Gene Polymorphisms): rationale, recruitment, design, dietary intervention and baseline characteristics of participants. Public Health Nutr. 2004 Jun;7(4):531-42. PMID: 15153259	Cross-sectional
602.	Vincent-Baudry S, Defoort C, Gerber M, Bernard MC, Verger P, Helal O, Portugal H, Planells R, Grolier P, Amiot-Carlin MJ, Vague P, Lairon D. The Medi-RIVAGE study: reduction of cardiovascular disease risk factors after a 3-mo intervention with a Mediterranean-type diet or a low-fat diet. Am J Clin Nutr. 2005 Nov;82(5):964-71. PMID: 16280426	Drop out rate 21% (exceeds 20% minimum)
603.	Von Post-Skagegård M, Samuelson G, Karlström B, Mohsen R, Berglund L, Bratteby LE. Changes in food habits in healthy Swedish adolescents during the transition from adolescence to adulthood. Eur J Clin Nutr. 2002 Jun;56(6):532-8. PMID: 12032653	Dependent variable was changes in food habits

604.	von Ruesten A, Illner AK, Buijsse B, Heidemann C, Boeing H. Adherence to recommendations of the German food pyramid and risk of chronic diseases: results from the EPIC-Potsdam study. Eur J Clin Nutr. 2010 Nov;64(11):1251-9. Epub 2010 Aug 18. PMID: 20717136	Dependent variables are CVD, type 2 diabetes, and cancer
605.	Wada T, Fukumoto T, Ito K, Hasegawa Y, Osaki T, Ban H. Of the three classifications of healthy lifestyle habits, which one is the most closely associated with the prevention of metabolic syndrome in Japanese? Intern Med. 2009;48(9):647-55. Epub 2009 May 1. PMID: 19420809	Dependent variable was metabolic syndrome
606.	Wahlqvist ML, Kouris-blazos A, Wattanapenpaiboon N. The significance of eating patterns: an elderly Greek case study. Appetite. 1999 Feb;32(1):23-32. PMID: 9989910	Cross-sectional
607.	Waldmann A, Koschizke JW, Leitzmann C, Hahn A. Dietary intakes and lifestyle factors of a vegan population in Germany: results from the German Vegan Study. Eur J Clin Nutr. 2003 Aug;57(8):947-55. PMID: 12879089	Cross-sectional
608.	Waldron I, Nowotarski M, Freimer M, Henry JP, Post N, Witten C. Cross-cultural variation in blood pressure: a quantitative analysis of the relationships of blood pressure to cultural characteristics, salt consumption and body weight. Soc Sci Med. 1982;16(4):419-30. PMID: 7079796	Cross-sectional
609.	Waling M, Lind T, Hernell O, Larsson C. A one-year intervention has modest effects on energy and macronutrient intakes of overweight and obese Swedish children. J Nutr. 2010 Oct;140(10):1793-8. Epub 2010 Aug 25. PMID: 20739446	Independent variables were energy, macronutrient, and fiber intakes
610.	Walls HL, Magliano DJ, McNeil JJ, Stevenson C, Ademi Z, Shaw J, Peeters A. Predictors of increasing waist circumference in an Australian population. Public Health Nutr. 2011 May;14(5):870-81. Epub 2010 Oct 29. PMID: 21029505	Cross-sectional
611.	Wallstrom P, Sonestedt E, Hlebowicz J, Ericson U, Drake I, Persson M, et al. Dietary fiber and saturated fat intake associations with cardiovascular disease differ by sex in the Malmo diet and cancer cohort: A prospective study. PLoS ONE. 2012;7(2)	Drop out rate $\geq$ 20%
612.	Wan CJ, Lin LY, Yu TH, Sheu WHH. Metabolic syndrome associated with habitual indulgence and dietary behavior in middle-aged health-care professionals. Journal of Diabetes Investigation. 2010;1(6):259-65	Does not examine relationship between dietary patterns and body weight measure
613.	Wang L, Manson JE, Gaziano JM, Buring JE, Sesso HD. Fruit and vegetable intake and the risk of hypertension in middle-aged and older women. Am J Hypertens. 2012 Feb;25(2):180-9. doi: 10.1038/ajh.2011.186. Epub 2011 Oct 13. PMID: 21993367	Independent variables were fruit and vegetable intake; dependent variable was incident HTN
614.	Wang Y, Jahns L, Tussing-Humphreys L, Xie B, Rockett H, Liang H, Johnson L. Dietary intake patterns of low-income urban african-american adolescents. J Am Diet Assoc. 2010 Sep;110(9):1340-5. PMID: 20800126	Cross-sectional
615.	Wang Y, Popkin B, Zhai F. The nutritional status and dietary pattern of Chinese adolescents, 1991 and 1993. Eur J Clin Nutr. 1998 Dec;52(12):908-16. PMID: 9881886	Cross-sectional
616.	Warwick PM. Dietary intake of healthy subjects before and one year after dietary advice. Eur J Clin Nutr. 1988 May;42(5):437-44. PMID: 3396530	Insufficient sample size <30 ; (n=21)
617.	Washi SA, Ageib MB. Poor diet quality and food habits are related to impaired nutritional status in 13- to 18-year-old adolescents in Jeddah. Nutr Res. 2010 Aug;30(8):527-34. PMID: 20851306	Cross-sectional

618.	Wells AM, Haub MD, Fluckey J, Williams DK, Chernoff R, Campbell WW. Comparisons of vegetarian and beef-containing diets on hematological indexes and iron stores during a period of resistive training in older men. J Am Diet Assoc. 2003 May;103(5):594-601. PMID: 12728219	Dependent variables were biomarkers of iron status
619.	Williams DE, Knowler WC, Smith CJ, Hanson RL, Roumain J, Saremi A, Kriska AM, Bennett PH, Nelson RG. The effect of Indian or Anglo dietary preference on the incidence of diabetes in Pima Indians. Diabetes Care. 2001 May;24(5):811-6. PMID: 11347735	Independent variables were macronutrients and fiber; dependent variable was incidence of type 2 diabetes
620.	Williams DE, Prevost AT, Whichelow MJ, Cox BD, Day NE, Wareham NJ. A cross-sectional study of dietary patterns with glucose intolerance and other features of the metabolic syndrome. British journal of nutrition. 2000;83(3):257-66. PMID: 10884714	Cross-sectional
621.	Williams PT. Interactive effects of exercise, alcohol, and vegetarian diet on coronary artery disease risk factors in 9242 runners: the National Runners' Health Study. Am J Clin Nutr. 1997 Nov;66(5):1197-206. PMID: 9356539	Cross-sectional
622.	Wilson TA, Adolph AL, Butte NF. Nutrient adequacy and diet quality in non-overweight and overweight Hispanic children of low socioeconomic status: the Viva la Familia Study. J Am Diet Assoc. 2009 Jun;109(6):1012-21. PMID: 19465183	Cross-sectional
623.	Windhauser MM, Evans MA, McCullough ML, Swain JF, Lin PH, Hoben KP, Plaisted CS, Karanja NM, Vollmer WM. Dietary adherence in the Dietary Approaches to Stop Hypertension trial. DASH Collaborative Research Group. J Am Diet Assoc. 1999 Aug;99(8 Suppl):S76-83. PMID: 10450298	Descriptive study of subjects' adherence to DASH feeding protocal
624.	Winkvist A, Hörnell A, Hallmans G, Lindahl B, Weinehall L, Johansson I. More distinct food intake patterns among women than men in northern Sweden: a population-based survey. Nutr J. 2009 Feb 19;8:12. PMID: 19228378	Cluster analysis
625.	Winnicki M, Somers VK, Accurso V, Phillips BG, Puato M, Palatini P, Pauletto P. Fish-rich diet, leptin, and body mass. Circulation. 2002 Jul 16;106(3):289-91. PMID: 12119240	Tanzania is classified as a "Low" Human Development Index (HDI)
626.	Wirfält E, Mattisson I, Gullberg B, Berglund G. Food patterns defined by cluster analysis and their utility as dietary exposure variables: a report from the Malmö Diet and Cancer Study. Public Health Nutr. 2000 Jun;3(2):159-73. PMID: 10948383	Study examined utility of cluster analysis for complex dietary exposures
627.	Wojcicki JM, Schwartz N, Jiménez-Cruz A, Bacardi-Gascon M, Heyman MB. Acculturation, Dietary Practices and Risk for Childhood Obesity in an Ethnically Heterogeneous Population of Latino School Children in the San Francisco Bay Area. J Immigr Minor Health. 2011 Nov 19. [Epub ahead of print] PMID: 22101726	Cross-sectional
628.	Wolongevicz DM, Zhu L, Pencina MJ, Kimokoti RW, Newby PK, D'Agostino RB, Millen BE. Diet quality and obesity in women: the Framingham Nutrition Studies. Br J Nutr. 2010 Apr;103(8):1223-9. Epub 2009 Nov 24. PMID: 19930766	Independent variables were scored nutrient intakes
629.	Woodruff SJ, Hanning RM, McGoldrick K, Brown KS. Healthy eating index-C is positively associated with family dinner frequency among students in grades 6-8 from Southern Ontario, Canada. Eur J Clin Nutr. 2010 May;64(5):454-60. Epub 2010 Mar 3. PMID: 20197788	Cross-sectional
630.	Worsley A, Wang WC, Hunter W. The relationships between eating habits, smoking and alcohol consumption, and body mass index among baby boomers. Appetite. 2012;58(1):74-80. Epub 2011 Sep 29. PMID: 21986185	Cross-sectional

631.	Wu XY, Ohinmaa A, Veugelers PJ. Diet quality, physical activity, body weight and health-related quality of life among grade 5 students in Canada. Public Health Nutr. 2011 Oct 4:1-7. [Epub ahead of print] PMID: 22014537	Cross-sectional
632.	Wyatt CJ, Velazquez C, Grijalva I, Valencia ME. Dietary intake of sodium, potassium and blood pressure in lacto-ovo- vegetarians. Nutrition Research. 1995;15(6):819-30	Dependent variable is blood pressure
633.	Xu F, Yin XM, Tong SL. Association between excess bodyweight and intake of red meat and vegetables among urban and rural adult Chinese in Nanjing, China. Asia Pac J Public Health. 2007;19(3):3-9. PMID: 18330398	Cross-sectional
634.	Yahia N, Achkar A, Abdallah A, Rizk S. Eating habits and obesity among Lebanese university students. Nutr J. 2008 Oct 30;7:32. PMID: 18973661	Cross-sectional
635.	Yamada T, Strong JP, Ishii T, Ueno T, Koyama M, Wagayama H, Shimizu A, Sakai T, Malcom GT, Guzman MA. Atherosclerosis and omega-3 fatty acids in the populations of a fishing village and a farming village in Japan. Atherosclerosis. 2000 Dec;153(2):469-81. PMID: 11164437	Dependent variables were measures of atherosclerosis
636.	Yaman C. The effects of the diet and diet+exercise on changes in weight during adolescence. Turkish Journal of Medical Sciences. 2009;39(2):273-9	Study looks at diet and physical activity not dietary patterns
637.	Yamaoka K, Watanabe M, Hida E, Tango T. Impact of group-based dietary education on the dietary habits of female adolescents: a cluster randomized trial. Public Health Nutr. 2011 Apr;14(4):702-8. Epub 2010 Sep 15. PMID: 20843402	Intervention was group-based dietary education program
638.	Yamashita T, Sasahara T, Pomeroy SE, Collier G, Nestel PJ. Arterial compliance, blood pressure, plasma leptin, and plasma lipids in women are improved with weight reduction equally with a meat-based diet and a plant-based diet. Metabolism. 1998 Nov;47(11):1308-14. PMID: 9826205	Insufficient sample size <30
639.	Yang EJ, Chung HK, Kim WY, Kerver JM, Song WO. Carbohydrate intake is associated with diet quality and risk factors for cardiovascular disease in U.S. adults: NHANES III. J Am Coll Nutr. 2003 Feb;22(1):71-9. PMID: 12569117	Cross-sectional
640.	Yannakoulia M, Brussee SE, Drichoutis AC, Kalea AZ, Yiannakouris N, Matalas AL, Klimis-Zacas D. Food Consumption Patterns in Mediterranean Adolescents: Are There Differences between Overweight and Normal-Weight Adolescents? J Nutr Educ Behav. 2011 Feb 4. [Epub ahead of print] PMID: 21296024	Cross-sectional
641.	Yannakoulia M, Ntalla I, Papoutsakis C, Farmaki AE, Dedoussis GV. Consumption of vegetables, cooked meals, and eating dinner is negatively associated with overweight status in children. J Pediatr. 2010 Nov;157(5):815-20. Epub 2010 Jun 17. PMID: 20955852	Cross-sectional
642.	Yannakoulia M, Yiannakouris N, Melistas L, Kontogianni MD, Malagaris I, Mantzoros CS. A dietary pattern characterized by high consumption of whole-grain cereals and low-fat dairy products and low consumption of refined cereals is positively associated with plasma adiponectin levels in healthy women. Metabolism. 2008 Jun;57(6):824-30. PMID: 18502266	Cross-sectional
643.	Yeh CJ, Chang HY, Pan WH. Time trend of obesity, the metabolic syndrome and related dietary pattern in Taiwan: from NAHSIT 1993-1996 to NAHSIT 2005-2008. Asia Pac J Clin Nutr. 2011;20(2):292-300. PMID: 21669598	Cross-sectional; trend study

644.	Yeung EH, Appel LJ, Miller ER 3rd, Kao WH. The effects of macronutrient intake on total and high-molecular weight adiponectin: results from the OMNI-Heart trial. Obesity (Silver Spring). 2010 Aug;18(8):1632-7. Epub 2009 Oct 29. PMID: 19876001	Does not examine relationship between dietary patterns and body weight measure
645.	Yildiz EA, Demirduzen S, Dogan VB, Duman S, Turkmen N, Yildiz AN. Evaluation of the dietary habits, body images and BMI of Turkish university students who live in dormitory. Pakistan Journal of Medical Sciences. 2011;27(1):85-9	Cross-sectional
646.	Yoo S, Nicklas T, Baranowski T, Zakeri IF, Yang SJ, Srinivasan SR, Berenson GS. Comparison of dietary intakes associated with metabolic syndrome risk factors in young adults: the Bogalusa Heart Study. Am J Clin Nutr. 2004 Oct;80(4):841-8. PMID: 15447888	Cross-sectional
647.	Yoon JS, Lee NJ. Dietary patterns of obese high school girls: snack consumption and energy intake. Nutr Res Pract. 2010 Oct;4(5):433-7. Epub 2010 Oct 26. PMID: 21103091	Did not assess dietary patterns as defined for the project
648.	Yu R, Woo J, Chan R, Sham A, Ho S, Tso A, Cheung B, Lam TH, Lam K. Relationship between dietary intake and the development of type 2 diabetes in a Chinese population: the Hong Kong Dietary Survey. Public Health Nutr. 2011 Jul;14(7):1133-41. Epub 2011 Apr 5. PMID: 21466742	Dependent variable is development of type 2 diabetes
649.	Yuasa K, Sei M, Takeda E, Ewis AA, Munakata H, Onishi C, Nakahori Y. Effects of lifestyle habits and eating meals together with the family on the prevalence of obesity among school children in Tokushima, Japan: a cross-sectional questionnaire-based survey. J Med Invest. 2008 Feb;55(1-2):71-7. PMID: 18319548	Cross-sectional
650.	Yubero-Serrano EM, Gonzalez-Guardia L, Rangel-Zuñiga O, Delgado-Lista J, Gutierrez-Mariscal FM, Perez-Martinez P, Delgado-Casado N, Cruz-Teno C, Tinahones FJ, Villalba JM, Perez-Jimenez F, Lopez-Miranda J. Mediterranean diet supplemented with coenzyme Q10 modifies the expression of proinflammatory and endoplasmic reticulum stress-related genes in elderly men and women. J Gerontol A Biol Sci Med Sci. 2012 Jan;67(1):3-10. Epub 2011 Oct 20. PMID: 22016358	Insufficient sample size <30 ; (n= 20)
651.	Zamora D, Gordon-Larsen P, He K, Jacobs DR Jr, Shikany JM, Popkin BM. Are the 2005 Dietary Guidelines for Americans Associated With reduced risk of type 2 diabetes and cardiometabolic risk factors? Twenty-year findings from the CARDIA study. Diabetes Care. 2011 May;34(5):1183-5. Epub 2011 Apr 8. PMID: 21478463	Study considered in systematic review question on index/score
652.	Zamora D, Gordon-Larsen P, Jacobs DR Jr, Popkin BM. Diet quality and weight gain among black and white young adults: the Coronary Artery Risk Development in Young Adults (CARDIA) Study (1985-2005). Am J Clin Nutr. 2010 Oct;92(4):784-93. Epub 2010 Aug 4. PMID: 20685947	Study considered in systematic review question on index/score
653.	Zazpe I, Bes-Rastrollo M, Ruiz-Canela M, Sánchez-Villegas A, Serrano-Martínez M, Martínez-González MA. A brief assessment of eating habits and weight gain in a Mediterranean cohort. Br J Nutr. 2011 Mar;105(5):765-75. Epub 2010 Dec 8. PMID: 21138604	Does not assess dietary patterns as defined for this project
654.	Zhang M, Binns CW, Lee AH. Dietary patterns and nutrient intake of adult women in south-east China: a nutrition study in Zhejiang province. Asia Pac J Clin Nutr. 2002;11(1):13-21. PMID: 11890633	Cross-sectional
655.	Zhang Y, Tan H, Dai X, Huang H, He G. Dietary patterns are associated with weight gain in newlyweds: findings from a cross-sectional study in Shanghai, China. Public Health Nutr. 2012 May;15(5):876-84. Epub 2011 Oct 18. PMID: 22005131	Cross-sectional

656.	Ziemer DC, Berkowitz KJ, Panayioto RM, El-Kebbi IM, Musey VC, Anderson LA, Wanko NS, Fowke ML, Brazier CW, Dunbar VG, Slocum W, Bacha GM, Gallina DL, Cook CB, Phillips LS. A simple meal plan emphasizing healthy food choices is as effective as an exchange-based meal plan for urban African Americans with type 2 diabetes. Diabetes Care. 2003 Jun;26(6):1719-24. PMID: 12766100	Study subjects diagnosed with type 2 diabetes-treatment

Appendix G: Literature Search Results – Cardiovascular Disease

Systematic Review Questions:

- What is the relationship between adherence to dietary guidelines/ recommendations or specific dietary patterns and cardiovascular disease?
    - *a priori* index (I/S)
- Are prevailing patterns of diet behavior in a population related to risk of cardiovascular disease?
    - factor analysis, principal component analysis; cluster analysis (FA)
- What combinations of food intake explain the most variation in risk of cardiovascular disease?
    - reduced rank regression; discriminant analysis (RRR)
- What is the relationship between adherence to dietary guidelines/ recommendations or specific dietary patterns and cardiovascular disease?
    - studies that do not use methodologies included above (Other Methods)

Search Results:

Total Hits: 7,652
Total Selected: 1,020
Total Included: 101

Other Methods update (08/2013):
Total Hits: 1,521
Total Selected: 78
Total Included: 3

Databases Searched:

A. PubMed:

Search date: 09/2012; updated through 01/2013
Date range: No limit
Search Terms:
("Mortality"[Mesh] OR mortality[tiab] OR "blood pressure"[tiab] OR "blood pressure"[mesh] OR "cardiovascular diseases"[mh:noexp] OR cardiovascular disease*[tiab] OR "cholesterol/blood"[mh] OR "Cholesterol, HDL"[Mesh] OR cholesterol[tiab] OR "Cholesterol, Dietary"[Mesh] OR triglyceride* OR stroke[tiab] OR "stroke"[Mesh] OR "Lipids/blood"[Mesh] OR hypertension[tiab] OR "Myocardial Infarction"[Mesh] OR "Myocardial Infarction"[tiab] OR "Heart Failure"[Mesh] OR "Heart Arrest"[Mesh] OR "Myocardial Ischemia"[Mesh] OR "heart failure"[tiab] OR "heart arrest"[tiab] OR "Myocardial Ischemia"[tiab]) AND (#1 OR #2 OR #3 OR #4)

("diet quality" OR dietary pattern* OR diet pattern* OR eating pattern* OR food pattern* OR eating habit* OR dietary habit* OR food habit* OR dietary profile* OR food profile* OR diet profile* OR eating profile* OR dietary guideline* OR dietary recommendation* OR food intake pattern* OR dietary intake pattern* OR diet pattern*) OR (DASH OR (dietary approaches to stop hypertension) OR "Diet, Mediterranean"[Mesh] OR vegan* OR vegetarian* OR "Diet, Vegetarian"[Mesh] OR “prudent diet” OR “western diet” OR omniheart OR OR "Optimal Macronutrient Intake Trial to Prevent Heart Disease" OR ((Okinawa* OR "Ethnic Groups"[Mesh] OR “plant based” OR omni[tiab] OR Mediterranean[tiab]) AND (diet[mh] OR diet[tiab] OR food[mh])))

("Guideline Adherence"[Mesh] AND (diet OR food OR eating OR eat OR dietary OR feeding OR nutrition OR nutrient*)) OR adherence AND (nutrient* OR nutrition OR diet OR dietary OR food OR eat OR eating) AND (guideline* OR guidance OR recommendation*)

(index*[ti] OR score*[tiab] OR indexes[tiab] OR indices[tiab] OR scoring[tiab]) AND (dietary score* OR adequacy index* OR kidmed OR Diet Quality Index* OR Food Score* OR Diet Score* OR MedDietScore OR Dietary Pattern Score* OR “healthy eating index”) (“clinical trial”[ptyp] OR "Epidemiologic Studies"[Mesh] OR "Support of Research"[ptyp] OR "Study Characteristics" [Publication Type])

(“diet quality” OR dietary[tiab] OR nutrient* OR eating[tiab] OR food[tiab] OR diet[tiab] OR diet[mh]) AND (pattern* OR habit* OR profile* OR recommendation* OR guideline*) AND (“Principal component analysis”[tiab] OR “Factor analysis”[tiab] OR “Cluster analysis”[tiab] OR “rank regression”[tiab] OR “Discriminant analysis”[tiab] OR "Cluster Analysis"[Mesh] OR "Factor Analysis, Statistical"[Mesh] OR "Principal Component Analysis"[Mesh] OR "Discriminant Analysis"[Mesh] OR "Regression Analysis"[Mesh])

limiters: Eng/hum; “clinical trial”[ptyp] OR "Epidemiologic Studies"[Mesh] OR "Support of Research"[ptyp] OR "Study Characteristics" [Publication Type]) NOT (editorial[ptyp] OR comment[ptyp] OR news[ptyp];

B. Embase search strategies:

Search date: 09/2012; updated through 01/2013
Date range: No limit
Search Terms:
'cardiovascular disease'/de OR 'hypertension'/de AND 'blood pressure'/de OR 'mortality'/de OR 'triacylglycerol'/exp OR triglyceride*:ab,ti OR cholesterol NEAR/2 (hdl OR ldl) OR 'low density lipoprotein'/de OR 'high density lipoprotein cholesterol'/de OR 'cholesterol intake'/exp OR 'stroke'/exp OR 'heart failure'/exp OR 'heart infarction'/exp OR 'heart disease'/de AND [humans]/lim AND [english]/lim AND [embase]/lim NOT [medline]/lim AND
'diet quality' OR 'eating habit'/exp OR 'mediterranean diet'/exp OR dash:ab,ti OR 'dietary approaches to stop hypertension':ab,ti OR vegan*:ab,ti OR vegetarian*:ab,ti OR 'vegetarian diet'/exp OR 'vegetarian'/exp OR 'prudent diet':ab,ti OR 'western diet':ab,ti OR omniheart:ab,ti OR omni:ti OR 'plant based diet' OR (dietary OR eating OR food OR diet) NEAR/2 (pattern? OR habit? OR profile?) OR ('ethnic, racial and religious groups'/exp AND ('diet'/exp OR 'eating'/exp OR 'food intake'/exp)) AND [humans]/lim AND [english]/lim AND [embase]/lim NOT [medline]/lim
OR
adherence AND (nutrient* OR nutrition OR diet OR dietary OR food OR eat OR eating) NEAR/2 (guideline* OR guidance OR recommendation*) AND [embase]/lim

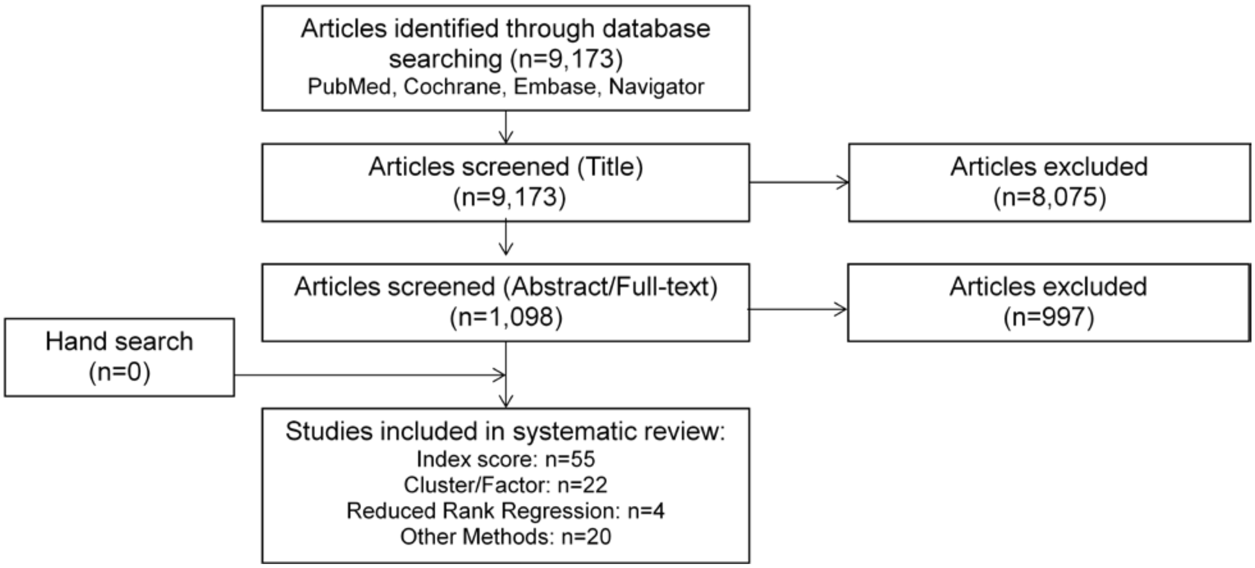
OR
(“Diet Quality Index” OR “Eating Plan Score” OR “Diet Score” OR MedDietScore OR “Dietary Pattern Score” OR dietary score* OR adequacy index* OR kidmed OR Diet Quality Index* OR Food Score* OR Diet Score* OR “healthy eating index”) AND [humans]/lim AND [english]/lim AND [embase]/lim
OR
(index* OR score* OR indices OR scoring) NEAR/2 ('diet quality' OR dietary OR nutrient* OR eating OR food OR diet)
AND
('article in press'/it OR 'review'/it) AND ('clinical article'/de OR 'clinical trial'/de OR 'cohort analysis'/de OR 'comparative study'/de OR 'control group'/de OR 'controlled clinical trial'/de OR 'controlled study'/de OR 'double blind procedure'/de OR 'human experiment'/de OR 'intervention study'/de OR 'major clinical study'/de OR 'meta analysis'/de OR 'model'/de OR 'normal human'/de OR 'prospective study'/de OR 'questionnaire'/de OR 'randomized controlled trial'/de OR 'systematic review'/de)

C. Navigator (FSTA/CAB Abstracts/BIOSIS) search strategies:

Search date: 09/2012; updated through 01/2013
Date range: No limit
Search Terms:
(title:mortality OR abstract:mortality OR “blood pressure” OR “cardiovascular diseases” OR ((blood OR dietary OR “high density” OR “low density” OR hdl OR ldl) near/2 cholesterol) OR title:cholesterol OR abstract:cholesterol OR title:triglyceride* OR abstract:triglyceride* OR title:stroke OR abstract:stroke OR (blood near/2 lipid*) OR title:hypertension OR abstract:hypertension OR "Myocardial Infarction” OR "Heart Failure" OR "Heart Arrest" OR "Myocardial Ischemia") AND

((((dietary approaches to stop hypertension) or vegan* or vegetarian* or “prudent diet” or “western diet” or omniheart or "Optimal Macronutrient Intake Trial to Prevent Heart Disease" or ((Okinawa* or asia* or Chinese or japan* or Hispanic* or ethnic or “plant based” or title:omni or title:Mediterranean or DASH) near/3 (title:diet* or abstract:diet*)))) or (((Diet or dietary or eating or food) near/2 (pattern* or profile* or habit* or guideline* or recommendation*) or “diet quality”))) doc-type:Articles language:English database:fsta -database:medline (database:cab or database:biosis) -keyword-exact:animals

Figure G.1. Flow chart of literature search results for studies examining the relationship between dietary patterns and risk of cardiovascular disease



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Index/Score:

1. Agnoli C, Krogh V, Grioni S, Sieri S, Palli D, Masala G, Sacerdote C, Vineis P, Tumino R, Frasca G, Pala V, Berrino F, Chiodini P, Mattiello A, Panico S. A priori-defined dietary patterns are associated with reduced risk of stroke in a large Italian cohort. J Nutr. 2011 Aug;141(8):1552-8. Epub 2011 May 31. PubMed PMID: 21628636.
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4. Buckland G, Agudo A, Travier N, Huerta JM, Cirera L, Tormo MJ, Navarro C, Chirlaque MD, Moreno-Iribas C, Ardanaz E, Barricarte A, Etxeberria J, Marin P, Quirós JR, Redondo ML, Larrañaga N, Amiano P, Dorronsoro M, Arriola L, Basterretxea M, Sanchez MJ, Molina E, González CA. Adherence to the Mediterranean diet reduces mortality in the Spanish cohort of the European Prospective Investigation into Cancer and Nutrition (EPIC-Spain). Br J Nutr. 2011 Nov;106(10):1581-91. Epub 2011 May 17. PubMed PMID: 21736834.
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in a population-based cohort of Swedish men and women. Public Health Nutr. 2012 May 29:1-11. [Epub ahead of print] PubMed PMID: 22643161.
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Other Methods:

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EXCLUDED ARTICLES

#	Citation	Rationale for Exclusion
1.	Abidoye RO, Madueke LA, Abidoye GO. The relationship between dietary habits and body-mass index using the Federal Airport Authority of Nigeria as the sample. Nutr Health. 2002;16(3):215-27. PubMed PMID: 12418805.	Nigeria is classified as "low" on the Human Development Index (HDI)
2.	Acar Tek N, Yildiran H, Akbulut G, Bilici S, Koksal E, Gezmen Karadag M, Sanlıer N. Evaluation of dietary quality of adolescents using Healthy Eating Index. Nutr Res Pract. 2011 Aug;5(4):322-8. Epub 2011 Aug 31. PubMed PMID: 21994527; PubMed Central PMCID: PMC3180683.	Cross-sectional
3.	Adamsson V, Reumark A, Cederholm T, Vessby B, Risérus U, Johansson G. What is a healthy Nordic diet? Foods and nutrients in the NORDIET study. Food Nutr Res. 2012;56. doi: 10.3402/fnr.v56i0.18189. Epub 2012 Jun 27. PubMed PMID: 22761599; PubMed Central PMCID: PMC3386552.	Cross-sectional
4.	Afrasiabi A, Hassanzadeh S, Sattarivand R, Mahboob S. Effects of Ramadan fasting on serum lipid profiles on 2 hyperlipidemic groups with or without diet pattern. Saudi Med J. 2003 Jan;24(1):23-6. PubMed PMID: 12590268.	Insufficient sample size (n=22, 16)
5.	Agyemang C, van Valkengoed I, van den Born BJ, Stronks K. Prevalence and determinants of prehypertension among African Surinamese, Hindustani Surinamese, and White Dutch in Amsterdam, the Netherlands: the SUNSET study. Eur J Cardiovasc Prev Rehabil. 2007 Dec;14(6):775-81. PubMed PMID: 18043298.	Cross-sectional
6.	Akbaraly TN, Singh-Manoux A, Tabak AG, Jokela M, Virtanen M, Ferrie JE, Marmot MG, Shipley MJ, Kivimaki M. Overall diet history and reversibility of the metabolic syndrome over 5 years: the Whitehall II prospective cohort study. Diabetes Care. 2010 Nov;33(11):2339-41. Epub 2010 Jul 29. PubMed PMID: 20671094; PubMed Central PMCID: PMC2963491.	Dependent variable was 5-yr reversion of MetS (individual components not analyzed separately)
7.	Akita S, Sacks FM, Svetkey LP, Conlin PR, Kimura G; DASH-Sodium Trial Collaborative Research Group. Effects of the Dietary Approaches to Stop Hypertension (DASH) diet on the pressure-natriuresis relationship. Hypertension. 2003 Jul;42(1):8-13. Epub 2003 May 19. PubMed PMID: 12756219.	Dependent variable pressure-natriuesis relationship
8.	Akki A, Seymour AM. Western diet impairs metabolic remodelling and contractile efficiency in cardiac hypertrophy. Cardiovasc Res. 2009 Feb 15;81(3):610-7. Epub 2008 Nov 21. PubMed PMID: 19028723.	Study conducted with rats
9.	Alberti-Fidanza A, Fidanza F, Chiuchiù MP, Verducci G, Fruttini D. Dietary studies on two rural italian population groups of the Seven Countries Study. 3. Trend Of food and nutrient intake from 1960 to 1991. Eur J Clin Nutr. 1999 Nov;53(11):854-60. PubMed PMID: 10556997.	Does not examine the relationship between dietary patterns and CVD measures
10.	Alissa EM, Bahijri SM, Ferns GA. Dietary macronutrient intake of Saudi males and its relationship to classical coronary risk factors. Saudi Med J. 2005 Feb;26(2):201-7. PubMed PMID: 15770291.	Cross-sectional
11.	Alonso A, Beunza JJ, Bes-Rastrollo M, Pajares RM, Martínez-González MA. Vegetable protein and fiber from cereal are inversely associated with the risk of hypertension in a Spanish cohort. Arch Med Res. 2006 Aug;37(6):778-86. PubMed PMID: 16824939.	Did not assess dietary patterns as defined for this project
12.	Alonso A, de la Fuente C, Martín-Arnau AM, de Irala J, Martínez JA, Martínez-González MA. Fruit and vegetable consumption is inversely associated with blood pressure in a Mediterranean population with a high vegetable-fat intake: the Seguimiento Universidad de Navarra (SUN) Study. Br J Nutr. 2004 Aug;92(2):311-9. PubMed PMID: 15333163.	Cross-sectional
13.	al-Roomi KA, Musaiger AO, al-Awadi AH. Lifestyle and the risk of acute myocardial infarction in a Gulf Arab population. Int J Epidemiol. 1994 Oct;23(5):931-9. PubMed PMID: 7860173.	Case-control study

14.	Al-Solaiman Y, Jesri A, Mountford WK, Lackland DT, Zhao Y, Egan BM. DASH lowers blood pressure in obese hypertensives beyond potassium, magnesium and fibre. J Hum Hypertens. 2010 Apr;24(4):237-46. Epub 2009 Jul 23. PubMed PMID: 19626043; PubMed Central PMCID: PMC2841705.	Insufficient sample size (n=15)
15.	Al-Solaiman Y, Jesri A, Zhao Y, Morrow JD, Egan BM. Low-Sodium DASH reduces oxidative stress and improves vascular function in salt-sensitive humans. J Hum Hypertens. 2009 Dec;23(12):826-35. Epub 2009 Apr 30. PubMed PMID: 19404315; PubMed Central PMCID: PMC2783838.	Size of study group < 30 (n=19)
16.	Amarasingham R. Dietary patterns and coronary heart disease in New Zealand. N Z Med J. 1982 Feb 10;95(701):79-82. PubMed PMID: 6952110.	Did not assess dietary patterns as defined for this project (examined food components)
17.	Ambring A, Friberg P, Axelsen M, Laffrenzen M, Taskinen MR, Basu S, Johansson M. Effects of a Mediterranean-inspired diet on blood lipids, vascular function and oxidative stress in healthy subjects. Clin Sci (Lond). 2004 May;106(5):519-25. PubMed PMID: 14683522.	Size of study group < 30 (n=22)
18.	Ambring A, Johansson M, Axelsen M, Gan L, Strandvik B, Friberg P. Mediterranean-inspired diet lowers the ratio of serum phospholipid n-6 to n-3 fatty acids, the number of leukocytes and platelets, and vascular endothelial growth factor in healthy subjects. Am J Clin Nutr. 2006 Mar;83(3):575-81. PubMed PMID: 16522903.	Insufficient sample (n=22)
19.	Ambrosini GL, Huang RC, Mori TA, Hands BP, O'Sullivan TA, de Klerk NH, Beilin LJ, Oddy WH. Dietary patterns and markers for the metabolic syndrome in Australian adolescents. Nutr Metab Cardiovasc Dis. 2010 May;20(4):274-83. Epub 2009 Sep 12. PubMed PMID: 19748245.	Cross-sectional
20.	Amini M, Esmaillzadeh A, Shafaeizadeh S, Behrooz J, Zare M. Relationship between major dietary patterns and metabolic syndrome among individuals with impaired glucose tolerance. Nutrition. 2010 Oct;26(10):986-92. Epub 2010 Jul 10. PubMed PMID: 20624672.	Cross-sectional
21.	Andersen JR, Søgnen E, Natvig GK. Diet quality in 116 Norwegian men and women with coronary heart disease. Eur J Cardiovasc Nurs. 2006 Sep;5(3):244-50. Epub 2005 Dec 22. PubMed PMID: 16376153.	Cross-sectional
22.	Anderson AL, Harris TB, Tylavsky FA, Perry SE, Houston DK, Hue TF, Strotmeyer ES, Sahyoun NR; Health ABC Study. Dietary patterns and survival of older adults. J Am Diet Assoc. 2011 Jan;111(1):84-91. PubMed PMID: 21185969.	Does not examine the relationship between dietary patterns and CVD measures
23.	Anderson JT, Jacobs DR Jr, Foster N, Hall Y, Moss D, Mojonnier L, Blackburn H. Scoring systems for evaluating dietary pattern effect on serum cholesterol. Prev Med. 1979 Sep;8(5):525-37. PubMed PMID: 504076.	Does not examine dietary patterns as defined for this project
24.	Andreoli A, Lauro S, Di Daniele N, Sorge R, Celi M, Volpe SL. Effect of a moderately hypoenergetic Mediterranean diet and exercise program on body cell mass and cardiovascular risk factors in obese women. Eur J Clin Nutr. 2008 Jul;62(7):892-7. Epub 2007 May 16. PMID: 17522604.	Hypocaloric Med diet; diet and exercise program were not assessed independently
25.	Apekey TA, Morris AJ, Fagbemi S, Griffiths GJ. Effects of low-fat and low-GI diets on health. Nutrition and Food Science. 2009;39(6):663-675.	Insufficient sample size (n=18)
26.	Appel LJ, Champagne CM, Harsha DW, Cooper LS, Obarzanek E, Elmer PJ, Stevens VJ, Vollmer WM, Lin PH, Svetkey LP, Stedman SW, Young DR; Writing Group of the PREMIER Collaborative Research Group. Effects of comprehensive lifestyle modification on blood pressure control: main results of the PREMIER clinical trial. JAMA. 2003 Apr 23-30;289(16):2083-93. PubMed PMID: 12709466.	Two of three groups involve weight loss intervention
27.	Appel LJ, Vollmer WM, Obarzanek E, Aicher KM, Conlin PR, Kennedy BM, Charleston JB, Reams PM. Recruitment and baseline characteristics of participants in the Dietary Approaches to Stop Hypertension trial. DASH Collaborative Research Group. J Am Diet Assoc. 1999 Aug;99(8 Suppl):S69-75. PubMed PMID: 10450297.	Does not examine the relationship between dietary patterns and CVD measures

28.	Appleby PN, Davey GK, Key TJ. Hypertension and blood pressure among meat eaters, fish eaters, vegetarians and vegans in EPIC-Oxford. Public Health Nutr. 2002 Oct;5(5):645-54. PubMed PMID: 12372158.	Cross-sectional
29.	Appleby PN, Thorogood M, Mann JI, Key TJ. The Oxford Vegetarian Study: an overview. Am J Clin Nutr. 1999 Sep;70(3 Suppl):525S-531S. PMID: 10479226.	Review of PCS
30.	Archer SL, Greenlund KJ, Valdez R, Casper ML, Rith-Najarian S, Croft JB. Differences in food habits and cardiovascular disease risk factors among Native Americans with and without diabetes: the Inter-Tribal Heart Project. Public Health Nutr. 2004 Dec;7(8):1025-32. PubMed PMID: 15548340.	Cross-sectional
31.	Ard JD, Coffman CJ, Lin PH, Svetkey LP. One-year follow-up study of blood pressure and dietary patterns in dietary approaches to stop hypertension (DASH)-sodium participants. Am J Hypertens. 2004 Dec;17(12 Pt 1):1156-62. PubMed PMID: 15607623.	Insufficient sample size (n<30) Sample size per group was n = 29 and 27
32.	Ard JD, Grambow SC, Liu D, Slentz CA, Kraus WE, Svetkey LP; PREMIER study. The effect of the PREMIER interventions on insulin sensitivity. Diabetes Care. 2004 Feb;27(2):340-7. PubMed PMID: 14747211.	Dependent variable is insulin sensitivity
33.	Arefhosseini SR, Edwards CA, Malkova D, Higgins S. Effect of advice to increase carbohydrate and reduce fat intake on dietary profile and plasma lipid concentrations in healthy postmenopausal women. Ann Nutr Metab. 2009;54(2):138-44. Epub 2009 Apr 1. PMID: 19339775.	Insufficient sample size (n=12)
34.	Armstrong B, van Merwyk AJ, Coates H. Blood pressure in Seventh-day Adventist vegetarians. Am J Epidemiol. 1977 May;105(5):444-9. PubMed PMID: 871119.	Case-control study
35.	Arntzenius AC, Kromhout D, Barth JD, Reiber JH, Bruschke AV, Buis B, van Gent CM, Kempen-Voogd N, Strikwerda S, van der Velde EA. Diet, lipoproteins, and the progression of coronary atherosclerosis. The Leiden Intervention Trial. N Engl J Med. 1985 Mar 28;312(13):805-11. PubMed PMID: 3974662.	Subjects had stable angina pectoris
36.	Aronis P, Antonopoulou S, Karantonis HC, Phenekos C, Tsoukatos DC. Effect of fast-food Mediterranean-type diet on human plasma oxidation. J Med Food. 2007 Sep;10(3):511-20. PubMed PMID: 17887946.	Insufficient sample size (N=18, 10, 17)
37.	Artinian NT, Schim SM, Vander Wal JS, Nies MA. Eating patterns and cardiovascular disease risk in a Detroit Mexican American population. Public Health Nurs. 2004 Sep-Oct;21(5):425-34. PubMed PMID: 15363023.	Cross-sectional
38.	Arvaniti F, Panagiotakos DB. Healthy indexes in public health practice and research: a review. Crit Rev Food Sci Nutr. 2008 Apr;48(4):317-27. Review. PubMed PMID: 18409114.	Narrative review
39.	Avellone G, Di Garbo V, Panno AV, Cordova R, Abruzzese G, Rotolo G, Raneli G, De Simone R, Strano A. Cardiovascular risk factors and dietary habits in secondary school children in southern Italy. Int Angiol. 1994 Jun;13(2):148-53. PubMed PMID: 7963874.	Cross-sectional
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41.	Azadbakht L, Mirmiran P, Esmaillzadeh A, Azizi T, Azizi F. Beneficial effects of a Dietary Approaches to Stop Hypertension eating plan on features of the metabolic syndrome. Diabetes Care. 2005 Dec;28(12):2823-31. PubMed PMID: 16306540.	Weight-reducing and DASH diets both had 500 kcal less than caloric needs
42.	Azadbakht L, Surkan PJ, Esmaillzadeh A, Willett WC. The Dietary Approaches to Stop Hypertension eating plan affects C-reactive protein, coagulation abnormalities, and hepatic function tests among type 2 diabetic patients. J Nutr. 2011 Jun;141(6):1083-8. Epub 2011 Apr 27. PubMed PMID: 21525259; PubMed Central PMCID: PMC3137257.	Subjects diagnosed with Type 2 diabetes
43.	Azevedo Ade C. Prevention of acute coronary events through the Mediterranean diet. Arq Bras Cardiol. 1999 Nov;73(5):451-4. English, Portuguese. PubMed PMID: 10887366.	Not an original research study (editorial)

44.	Azzini E, Polito A, Fumagalli A, Intorre F, Venneria E, Durazzo A, Zaccaria M, Ciarapica D, Foddai MS, Mauro B, Raguzzini A, Palomba L, Maiani G. Mediterranean Diet Effect: an Italian picture. Nutr J. 2011 Nov 16;10:125. PubMed PMID: 22087545; PubMed Central PMCID: PMC3252250.	Cross-sectional
45.	Babio N, Bulló M, Basora J, Martínez-González MA, Fernández-Ballart J, Márquez-Sandoval F, Molina C, Salas-Salvadó J; Nureta-PREDIMED Investigators. Adherence to the Mediterranean diet and risk of metabolic syndrome and its components. Nutr Metab Cardiovasc Dis. 2009 Oct;19(8):563-70. Epub 2009 Jan 26. PubMed PMID: 19176282.	Cross-sectional
46.	Babio N, Bulló M, Salas-Salvadó J. Mediterranean diet and metabolic syndrome: the evidence. Public Health Nutr. 2009 Sep;12(9A):1607-17. Review. PMID: 19689829.	Review
47.	Babio N, Sorlí M, Bulló M, Basora J, Ibarrola-Jurado N, Fernández-Ballart J, Martínez-González MA, Serra-Majem L, González-Pérez R, Salas-Salvadó J; Nureta-PREDIMED Investigators. Association between red meat consumption and metabolic syndrome in a Mediterranean population at high cardiovascular risk: cross-sectional and 1-year follow-up assessment. Nutr Metab Cardiovasc Dis. 2012 Mar;22(3):200-7. Epub 2010 Sep 28. PubMed PMID: 20875949.	Did not examine dietary patterns; examined red meat intake
48.	Bach A, Serra-Majem L, Carrasco JL, Roman B, Ngo J, Bertomeu I, Obrador B. The use of indexes evaluating the adherence to the Mediterranean diet in epidemiological studies: a review. Public Health Nutr. 2006 Feb;9(1A):132-46. Review. PubMed PMID: 16512961.	Review article
49.	Ball KP. Is diet an essential risk factor for coronary heart disease? Postgrad Med J. 1980 Aug;56(658):585-92. PubMed PMID: 7465463; PubMed Central PMCID: PMC2425958.	Narrative review
50.	Ballesteros-Pomar MD, Rubio-Herrera MA, Gutiérrez-Fuentes JA, Gómez-Gerique JA, Gómez-de-la-Cámara A, Pascual O, Gárate I, Montero R, Campiña S. Dietary habits and cardiovascular risk in the Spanish population: the DRECE study (I). Diet and Cardiovascular Events Risk in Spain. Ann Nutr Metab. 2000;44(3):108-14. PubMed PMID: 11053896.	Cross-sectional
51.	Ballesteros-Pomar MD, Rubio-Herrera MA, Gutiérrez-Fuentes JA, Gómez-Gerique JA, Gómez-de-la-Cámara A, Pascual O, Gárate I, Montero R, Campiña S. Dietary habits and cardiovascular risk in the Spanish population: the DRECE study (II) micronutrient intake. Dieta y Riesgo de Enfermedades Cardiovasculares en España. Ann Nutr Metab. 2000;44(4):177-82. PubMed PMID: 11111133.	Cross-sectional
52.	Bamia C, Trichopoulos D, Ferrari P, Overvad K, Bjerregaard L, Tjønneland A, Halkjaer J, Clavel-Chapelon F, Kesse E, Boutron-Ruault MC, Boffetta P, Nagel G, Linseisen J, Boeing H, Hoffmann K, Kasapa C, Orfanou A, Travezea C, Slimani N, Norat T, Palli D, Pala V, Panico S, Tumino R, Sacerdote C, Bueno-de-Mesquita HB, Waijers PM, Peeters PH, van der Schouw YT, Berenguer A, Martinez-Garcia C, Navarro C, Barricarte A, Dorronsoro M, Berglund G, Wirfält E, Johansson I, Johansson G, Bingham S, Khaw KT, Spencer EA, Key T, Riboli E, Trichopoulou A. Dietary patterns and survival of older Europeans: the EPIC-Elderly Study (European Prospective Investigation into Cancer and Nutrition). Public Health Nutr. 2007 Jun;10(6):590-8. Epub 2007 Mar 5. PubMed PMID: 17381929.	Examined over all mortality, not CVD mortality
53.	Barbagallo CM, Cefalù AB, Gallo S, Rizzo M, Noto D, Cavera G, Rao Camemi A, Marino G, Caldarella R, Notarbartolo A, Averna MR. Effects of Mediterranean diet on lipid levels and cardiovascular risk in renal transplant recipients. Nephron. 1999;82(3):199-204. PubMed PMID: 10395991.	Subjects were all renal transplant recipients
54.	Barceló F, Perona JS, Prades J, Funari SS, Gomez-Gracia E, Conde M, Estruch R, Ruiz-Gutiérrez V. Mediterranean-style diet effect on the structural properties of the erythrocyte cell membrane of hypertensive patients: the Prevencion con Dieta Mediterranea Study. Hypertension. 2009 Nov;54(5):1143-50. Epub 2009 Oct 5. PubMed PMID: 19805640.	Subjects diagnosed with hypertension
55.	Barnard ND, Cohen J, Jenkins DJ, Turner-McGrievy G, Gloede L, Green A, Ferdowsian H. A low-fat vegan diet and a conventional diabetes diet in the treatment of type 2 diabetes: a randomized, controlled, 74-wk clinical trial. Am J Clin Nutr. 2009 May;89(5):1588S-1596S. Epub 2009 Apr 1. PubMed PMID: 19339401; PubMed Central PMCID: PMC2677007.	Subjects diagnosed with Type 2 diabetes

56.	Barnard ND, Cohen J, Jenkins DJ, Turner-McGrievy G, Gloede L, Jaster B, Seidl K, Green AA, Talpers S. A low-fat vegan diet improves glycemic control and cardiovascular risk factors in a randomized clinical trial in individuals with type 2 diabetes. Diabetes Care. 2006 Aug;29(8):1777-83. PubMed PMID: 16873779.	Subjects diagnosed with Type 2 diabetes
57.	Barnard ND, Scialli AR, Bertron P, Hurlock D, Edmonds K, Talev L. Effectiveness of a low-fat vegetarian diet in altering serum lipids in healthy premenopausal women. Am J Cardiol. 2000 Apr 15;85(8):969-72. PubMed PMID: 10760336.	Drop out rate greater than 20% (33%)
58.	Barona J, Jones JJ, Kopec RE, Comperatore M, Andersen C, Schwartz SJ, Lerman RH, Fernandez ML. A Mediterranean-style low-glycemic-load diet increases plasma carotenoids and decreases LDL oxidation in women with metabolic syndrome. J Nutr Biochem. 2012 Jun;23(6):609-15. Epub 2011 Jul 19. PubMed PMID: 21775117.	Dependent variables were carotenoids and LDL oxidation
59.	Barzi F, Woodward M, Marfisi RM, Tavazzi L, Valagussa F, Marchioli R; GISSI-Prevenzione Investigators. Mediterranean diet and all-causes mortality after myocardial infarction: results from the GISSI-Prevenzione trial. Eur J Clin Nutr. 2003 Apr;57(4):604-11. Erratum in: Eur J Clin Nutr. 2003 Aug;57(8):1034. PubMed PMID: 12700623.	All subjects diagnosed with myocardial infarction
60.	Barzi F, Woodward M, Marfisi RM, Tognoni G, Marchioli R; GISSI-Prevenzione Investigators. Analysis of the benefits of a Mediterranean diet in the GISSI-Prevenzione study: a case study in imputation of missing values from repeated measurements. Eur J Epidemiol. 2006;21(1):15-24. PubMed PMID: 16450202.	Does not examine the relationship between dietary patterns and CVD measures
61.	Bassett DR, Abel M, Moellering RC Jr, Rosenblatt G, Stokes J 3rd. Coronary heart disease in Hawaii: dietary intake, depot fat, "stress", smoking, and energy balance in Hawaiian and Japanese men. Am J Clin Nutr. 1969 Nov;22(11):1483-503. PubMed PMID: 5356513.	All subjects diagnosed with myocardial infarction
62.	Bautista MC, Engler MM. The Mediterranean diet: is it cardioprotective? Prog Cardiovasc Nurs. 2005 Spring;20(2):70-6. Review. PubMed PMID: 15886550.	Narrative review
63.	Beaglehole R, LaRosa JC, Heiss G, Davis CE, Williams OD, Tyroler HA, Rifkind BM. Serum cholesterol, diet, and the decline in coronary heart disease mortality. Prev Med. 1979 Sep;8(5):538-47. PubMed PMID: 504077.	Does not examine dietary patterns as defined for this project (examines dietary fat intake)
64.	Beard TC, Blizzard L, O'Brien DJ, Dwyer T. Association between blood pressure and dietary factors in the dietary and nutritional survey of British adults. Arch Intern Med. 1997 Jan 27;157(2):234-8. PubMed PMID: 9009983.	Cross-sectional; did not examine dietary patterns as defined for this project
65.	Beilin LJ, Armstrong BK, Margetts BM, Rouse IL, Vandongen R. Vegetarian diet and blood pressure. Nephron. 1987;47 Suppl 1:37-41. PubMed PMID: 3696348.	Narrative review
66.	Beilin LJ. Vegetarian approach to hypertension. Can J Physiol Pharmacol. 1986 Jun;64(6):852-5. PubMed PMID: 3756642.	Narrative review
67.	Belahsen R, Rguibi M. Population health and Mediterranean diet in southern Mediterranean countries. Public Health Nutr. 2006 Dec;9(8A):1130-5. PMID: 17378952	Description of survey data
68.	Bemelmans WJ, Broer J, Feskens EJ, Smit AJ, Muskiet FA, Lefrandt JD, Bom VJ, May JF, Meyboom-de Jong B. Effect of an increased intake of alpha-linolenic acid and group nutritional education on cardiovascular risk factors: the Mediterranean Alpha-linolenic Enriched Groningen Dietary Intervention (MARGARIN) study. Am J Clin Nutr. 2002 Feb;75(2):221-7. PubMed PMID: 11815311.	Independent variable was fatty acid modified margarine.
69.	Bendinelli B, Masala G, Saieva C, Salvini S, Calonico C, Sacerdote C, Agnoli C, Grioni S, Frasca G, Mattiello A, Chiodini P, Tumino R, Vineis P, Palli D, Panico S. Fruit, vegetables, and olive oil and risk of coronary heart disease in Italian women: the EPICOR Study. Am J Clin Nutr. 2011 Feb;93(2):275-83. Epub 2010 Dec 22. PubMed PMID: 21177799.	Did not assess dietary patterns as defined for this project
70.	Bernstein AM, Sun Q, Hu FB, Stampfer MJ, Manson JE, Willett WC. Major dietary protein sources and risk of coronary heart disease in women. Circulation. 2010 Aug 31;122(9):876-83. Epub 2010 Aug 16. PubMed PMID: 20713902; PubMed Central PMCID: PMC2946797.	Did not assess dietary patterns as defined for this project

71.	Bernstein MA, Tucker KL, Ryan ND, O'Neill EF, Clements KM, Nelson ME, Evans WJ, Fiatarone Singh MA. Higher dietary variety is associated with better nutritional status in frail elderly people. J Am Diet Assoc. 2002 Aug;102(8):1096-104. PubMed PMID: 12171454.	Cross-sectional
72.	Bersamin A, Luick BR, King IB, Stern JS, Zidenberg-Cherr S. Westernizing diets influence fat intake, red blood cell fatty acid composition, and health in remote Alaskan Native communities in the center for Alaska Native health study. J Am Diet Assoc. 2008 Feb;108(2):266-73. PubMed PMID: 18237575.	Cross-sectional
73.	Berz JP, Singer MR, Guo X, Daniels SR, Moore LL. Use of a DASH food group score to predict excess weight gain in adolescent girls in the National Growth and Health Study. Arch Pediatr Adolesc Med. 2011 Jun;165(6):540-6. PubMed PMID: 21646587.	Independent variable is not of interest - BMI
74.	Bhagat M, Ghosh A. Obesity measures, metabolic profiles, blood pressure and intake of dietary fatty acids in rural women of Asian Indian origin: Santiniketan women study. J Cardiovasc Dis Res. 2011 Jan;2(1):61-7. PubMed PMID: 21716755; PubMed Central PMCID: PMC3120275.	Subjects from India (medium human development country)
75.	Bissoli L, Di Francesco V, Ballarin A, Mandragona R, Trespidi R, Brocco G, Caruso B, Bosello O, Zamboni M. Effect of vegetarian diet on homocysteine levels. Ann Nutr Metab. 2002;46(2):73-9. PubMed PMID: 12011576.	Cross-sectional
76.	Bjerregaard P, Pedersen HS, Mulvad G. The associations of a marine diet with plasma lipids, blood glucose, blood pressure and obesity among the inuit in Greenland. Eur J Clin Nutr. 2000 Sep;54(9):732-7. PubMed PMID: 11002386.	Cross-sectional
77.	Blackburn GL. Functional foods in the prevention and treatment of disease: significance of the Dietary Approaches to Stop Hypertension Study. Am J Clin Nutr. 1997 Nov;66(5):1067-71. PMID: 9356522.	Review article
78.	Blecker D. The Dietary Approaches to Stop Hypertension diet lowered systolic blood pressure in stage-1 isolated systolic hypertension. ACP J Club. 2002 Mar-Apr;136(2):48. PubMed PMID: 11874273.	Not an original research article (abstract of Moore TJ, 2001)
79.	Bloemberg BP, Kromhout D, Goddijn HE, Jansen A, Obermann-de Boer GL. The impact of the Guidelines for a Healthy Diet of The Netherlands Nutrition Council on total and high density lipoprotein cholesterol in hypercholesterolemic free-living men. Am J Epidemiol. 1991 Jul 1;134(1):39-48. PubMed PMID: 1853859.	Insufficient information provided about the dietary pattern consumed
80.	Bloomer RJ, Kabir MM, Canale RE, Trepanowski JF, Marshall KE, Farney TM, Hammond KG. Effect of a 21 day Daniel Fast on metabolic and cardiovascular disease risk factors in men and women. Lipids Health Dis. 2010 Sep 3;9:94. PubMed PMID: 20815907; PubMed Central PMCID: PMC2941756.	Before and after study
81.	Bondia-Pons I, Schröder H, Covas MI, Castellote AI, Kaikkonen J, Poulsen HE, Gaddi AV, Machowetz A, Kiesewetter H, López-Sabater MC. Moderate consumption of olive oil by healthy European men reduces systolic blood pressure in non-Mediterranean participants. J Nutr. 2007 Jan;137(1):84-7. PubMed PMID: 17182805.	Did not assess dietary patterns as defined for this project
82.	Boone-Heinonen J, Gordon-Larsen P, Kiefe CI, Shikany JM, Lewis CE, Popkin BM. Fast food restaurants and food stores: longitudinal associations with diet in young to middle-aged adults: the CARDIA study. Arch Intern Med. 2011 Jul 11;171(13):1162-70. PubMed PMID: 21747011; PubMed Central PMCID: PMC3178268.	Did not assess dietary patterns as defined for this project
83.	Bos MB, de Vries JH, Feskens EJ, van Dijk SJ, Hoelen DW, Siebelink E, Heijligenberg R, de Groot LC. Effect of a high monounsaturated fatty acids diet and a Mediterranean diet on serum lipids and insulin sensitivity in adults with mild abdominal obesity. Nutr Metab Cardiovasc Dis. 2010 Oct;20(8):591-8. Epub 2009 Aug 18. PubMed PMID: 19692213.	Insufficient sample size (n per group = 19, 18, 20)
84.	Boyd NF, Martin LJ, Beaton M, Cousins M, Kriukov V. Long-term effects of participation in a randomized trial of a low-fat, high-carbohydrate diet. Cancer Epidemiol Biomarkers Prev. 1996 Mar;5(3):217-22. PubMed PMID: 8833622.	Did not assess dietary patterns as defined for this project

85.	Boylan S, Welch A, Pikhart H, Malyutina S, Pajak A, Kubinova R, Bragina O, Simonova G, Stepaniak U, Gilis-Januszewska A, Milla L, Peasey A, Marmot M, Bobak M. Dietary habits in three Central and Eastern European countries: the HAPIEE study. BMC Public Health. 2009 Dec 1;9:439. PubMed PMID: 19951409; PubMed Central PMCID: PMC2791768.	Did not assess dietary patterns as defined for this project
86.	Brathwaite N, Fraser HS, Modeste N, Broome H, King R. Obesity, diabetes, hypertension, and vegetarian status among Seventh-Day Adventists in Barbados: preliminary results. Ethn Dis. 2003 Winter;13(1):34-9. PubMed PMID: 12723010.	Cross-sectional
87.	Bray GA, Vollmer WM, Sacks FM, Obarzanek E, Svetkey LP, Appel LJ; DASH Collaborative Research Group. A further subgroup analysis of the effects of the DASH diet and three dietary sodium levels on blood pressure: results of the DASH-Sodium Trial. Am J Cardiol. 2004 Jul 15;94(2):222-7. Erratum in: Am J Cardiol. 2010 Feb 15;105(4):579. PMID: 15246908.	No control group
88.	Brazionis L, Golley RK, Mittinty MN, Smithers LG, Emmett P, Northstone K, Lynch JW. Characterization of transition diets spanning infancy and toddlerhood: a novel, multiple-time-point application of principal components analysis. Am J Clin Nutr. 2012 May;95(5):1200-8. Epub 2012 Mar 21. PubMed PMID: 22440852.	Dependent variable was variation in transition from infant to toddler diet
89.	Brevik A, Gaivão I, Medin T, Jørgenesen A, Piasek A, Elilasson J, Karlsen A, Blomhoff R, Veggan T, Duttaroy AK, Collins AR. Supplementation of a western diet with golden kiwifruits (Actinidia chinensis var.'Hort 16A':) effects on biomarkers of oxidation damage and antioxidant protection. Nutr J. 2011 May 18;10:54. PubMed PMID: 21586177; PubMed Central PMCID: PMC3118331.	Did not assess dietary patterns as defined for this project
90.	Brinkworth GD, Noakes M, Keogh JB, Luscombe ND, Wittert GA, Clifton PM. Long-term effects of a high-protein, low-carbohydrate diet on weight control and cardiovascular risk markers in obese hyperinsulinemic subjects. Int J Obes Relat Metab Disord. 2004 May;28(5):661-70. Erratum in: Int J Obes Relat Metab Disord. 2004 Sep;28(9):1187. PubMed PMID: 15007396.	Insufficient sample size (43 subjects in two groups)
91.	BROWN HB, PAGE IH. Lowering blood lipid levels by changing food patterns. J Am Med Assoc. 1958 Dec 13;168(15):1989-95. PubMed PMID: 13598636.	Narrative review
92.	Brown HB. Food patterns that lower blood lipids in man. J Am Diet Assoc. 1971 Apr;58(4):303-11. PubMed PMID: 5550054.	Narrative review
93.	Brown SC, Geiselman PJ, Broussard T. Cardiovascular risk in African American women attending historically Black colleges and universities: the role of dietary patterns and food preferences. J Health Care Poor Underserved. 2010 Nov;21(4):1184-93. PubMed PMID: 21099070.	Did not assess dietary patterns as defined for this project
94.	Brown WV, Karmally W. Coronary heart disease and the consumption of diets high in wheat and other grains. Am J Clin Nutr. 1985 May;41(5 Suppl):1163-71. PubMed PMID: 3993622.	Narrative review
95.	Brown WV. Dietary recommendations to prevent coronary heart disease. Ann N Y Acad Sci. 1990;598:376-88. PMID: 2174214.	Narrative review
96.	Brownlee IA, Moore C, Chatfield M, Richardson DP, Ashby P, Kuznesof SA, Jebb SA, Seal CJ. Markers of cardiovascular risk are not changed by increased whole-grain intake: the WHOLEheart study, a randomised, controlled dietary intervention. Br J Nutr. 2010 Jul;104(1):125-34. Epub 2010 Mar 23. PubMed PMID: 20307353.	Did not assess dietary patterns as defined for this project
97.	Brox J, Bjørnstad E, Olaussen K, Østerud B, Almdahl S, Løchen ML. Blood lipids, fatty acids, diet and lifestyle parameters in adolescents from a region in northern Norway with a high mortality from coronary heart disease. Eur J Clin Nutr. 2002 Jul;56(7):694-700. PubMed PMID: 12080412.	Did not assess dietary patterns as defined for this project
98.	Buckley D, Muensch J, Hamilton A, Pejic RN. Clinical inquiries. How effective are dietary interventions in lowering lipids for adults with dyslipidemia? J Fam Pract. 2007 Jan;56(1):46-8. Review. PubMed PMID: 17217898.	Not an original research article
99.	Burke LE, Hudson AG, Warziski MT, Styn MA, Music E, Elci OU, Sereika SM. Effects of a vegetarian diet and treatment preference on biochemical and dietary variables in overweight and obese adults: a randomized clinical trial. Am J Clin Nutr. 2007 Sep;86(3):588-96. PubMed PMID: 17823421.	Drop out rate >20%

100.	Burke LE, Warziski M, Styn MA, Music E, Hudson AG, Sereika SM. A randomized clinical trial of a standard versus vegetarian diet for weight loss: the impact of treatment preference. Int J Obes (Lond). 2008 Jan;32(1):166-76. Epub 2007 Aug 14. PMID: 17726311.	Drop out rate >20% (25%)
101.	Burr M. Vegetarianism and health. Practitioner. 1990 Jan 15;234(1481):62-4. PubMed PMID: 2320550.	Commentary
102.	Burr ML, Sweetnam PM. Vegetarianism, dietary fiber, and mortality. Am J Clin Nutr. 1982 Nov;36(5):873-7. PubMed PMID: 6291372.	Same cohort at Burr 1988 which provides update
103.	Burslem J, Schonfeld G, Howald MA, Weidman SW, Miller JP. Plasma apoprotein and lipoprotein lipid levels in vegetarians. Metabolism. 1978 Jun;27(6):711-9. PubMed PMID: 206801.	Cross-sectional
104.	Cai H, Shu XO, Gao YT, Li H, Yang G, Zheng W. A prospective study of dietary patterns and mortality in Chinese women. Epidemiology. 2007 May;18(3):393-401. PubMed PMID: 17435450.	China is "medium" on Human Development Index (HDI)
105.	Carlsson AC, Wändell PE, Journath G, de Faire U, Hellénius ML. Factors associated with uncontrolled hypertension and cardiovascular risk in hypertensive 60-year-old men and women--a population-based study. Hypertens Res. 2009 Sep;32(9):780-5. Epub 2009 Jun 26. PubMed PMID: 19557006.	Cross-sectional
106.	Carranza-Madrigal J, Herrera-Abarca JE, Alvizouri-Muñoz M, Alvarado-Jimenez MR, Chavez-Carbajal F. Effects of a vegetarian diet vs. a vegetarian diet enriched with avocado in hypercholesterolemic patients. Arch Med Res. 1997 Winter;28(4):537-41. PubMed PMID: 9428580.	Insufficient sample size (n=13)
107.	Carty CL, Kooperberg C, Neuhouser ML, Tinker L, Howard B, Wactawski-Wende J, Beresford SA, Snetselaar L, Vitolins M, Allison M, Budrys N, Prentice R, Peters U. Low-fat dietary pattern and change in body-composition traits in the Women's Health Initiative Dietary Modification Trial. Am J Clin Nutr. 2011 Mar;93(3):516-24. Epub 2010 Dec 22. PubMed PMID: 21177798; PubMed Central PMCID: PMC3041598.	Did not assess dietary patterns as defined for this project
108.	Chainani-Wu N, Weidner G, Purnell DM, Frenda S, Merritt-Worden T, Pischke C, Campo R, Kemp C, Kersh ES, Ornish D. Changes in emerging cardiac biomarkers after an intensive lifestyle intervention. Am J Cardiol. 2011 Aug 15;108(4):498-507. Epub 2011 May 31. PubMed PMID: 21624543.	Before and after study
109.	Charlton KE, Steyn K, Levitt NS, Zulu JV, Jonathan D, Veldman FJ, Nel JH. Diet and blood pressure in South Africa: Intake of foods containing sodium, potassium, calcium, and magnesium in three ethnic groups. Nutrition. 2005 Jan;21(1):39-50. PubMed PMID: 15661477.	South Africa "medium" on the Human Development Index (HDI)
110.	Chen CW, Lin CT, Lin YL, Lin TK, Lin CL. Taiwanese female vegetarians have lower lipoprotein-associated phospholipase A2 compared with omnivores. Yonsei Med J. 2011 Jan;52(1):13-9. PMID: 21155029.	Cross-sectional
111.	Chen CW, Lin YL, Lin TK, Lin CT, Chen BC, Lin CL. Total cardiovascular risk profile of Taiwanese vegetarians. Eur J Clin Nutr. 2008 Jan;62(1):138-44. Epub 2007 Mar 14. PubMed PMID: 17356561.	Taiwan/China is "medium" on HDI
112.	Chen Q, Turban S, Miller ER, Appel LJ. The effects of dietary patterns on plasma renin activity: results from the Dietary Approaches to Stop Hypertension trial. J Hum Hypertens. 2011 Nov 3. doi: 10.1038/jhh.2011.87. [Epub ahead of print] PubMed PMID: 22048714.	Assessed the relationship between dietary patterns and plasma renin activity
113.	Chen ST, Maruthur NM, Appel LJ. The effect of dietary patterns on estimated coronary heart disease risk: results from the Dietary Approaches to Stop Hypertension (DASH) trial. Circ Cardiovasc Qual Outcomes. 2010 Sep;3(5):484-9. Epub 2010 Aug 31. PubMed PMID: 20807884; PubMed Central PMCID: PMC3005367.	Dependent variable was the 10-yr risk of developing CHD using Framingham risk equations
114.	Chen Y, McClintock TR, Segers S, Parvez F, Islam T, Ahmed A, Rakibuz-Zaman M, Hasan R, Sarwar G, Ahsan H. Prospective investigation of major dietary patterns and risk of cardiovascular mortality in Bangladesh. Int J Cardiol. 2012 May 3. [Epub ahead of print] PubMed PMID: 22560940.	Bangladesh is a low HDI country

115.	Chetty N, Bradlow BA. The effects of a vegetarian diet on platelet function and fatty acids. Thromb Res. 1983 Jun 15;30(6):619-24. PubMed PMID: 6612688.	Size of study group < 30 (n=9)
116.	Chong MF, George TW, Alimbetov D, Jin Y, Weech M, Macready AL, Spencer JP, Kennedy OB, Minihane AM, Gordon MH, Lovegrove JA. Impact of the quantity and flavonoid content of fruits and vegetables on markers of intake in adults with an increased risk of cardiovascular disease: the FLAVURS trial. Eur J Nutr. 2012 Apr 3. [Epub ahead of print] PubMed PMID: 22476876.	Does not examine the relationship between dietary patterns and CVD measures
117.	Chourdakis M, Tzellos T, Pourzitaki C, Toulis KA, Papazisis G, Kouvelas D. Evaluation of dietary habits and assessment of cardiovascular disease risk factors among Greek university students. Appetite. 2011 Oct;57(2):377-83. Epub 2011 May 27. PubMed PMID: 21651931.	Cross-sectional
118.	Chow CK, Jolly S, Rao-Melacini P, Fox KA, Anand SS, Yusuf S. Association of diet, exercise, and smoking modification with risk of early cardiovascular events after acute coronary syndromes. Circulation. 2010 Feb 16;121(6):750-8. Epub 2010 Feb 1. PubMed PMID: 20124123.	Does not examine the relationship between dietary patterns and CVD measures
119.	Chrysohoou C, Galiatsatos N, Mylonakis C, Katte K, Vogiatzoglou S, Zoulia V, Pitsavos C, Stefanadis C. Close adherence to the Mediterranean diet in combination with statin treatment can substantially decrease lipids levels in elderly individuals. IKARIA study. European Journal of Cardiovascular Prevention and Rehabilitation. 2011;18(1):S39.	Cross-sectional
120.	Chrysohoou C, Liontou C, Aggelopoulos P, Kastorini CM, Panagiotakos D, Aggelis A, Tsiamis E, Vavouranakis M, Pitsavos C, Tousoulis D, Stefanadis C. Mediterranean diet mediates the adverse effect of depressive symptomatology on short-term outcome in elderly survivors from an acute coronary event. Cardiol Res Pract. 2011;2011:429487. Epub 2011 May 9. PubMed PMID: 21629796; PubMed Central PMCID: PMC3099201.	Subjects diagnosed with CVD
121.	Chrysohoou C, Panagiotakos DB, Aggelopoulos P, Kastorini CM, Kehagia I, Pitsavos C, Stefanadis C. The Mediterranean diet contributes to the preservation of left ventricular systolic function and to the long-term favorable prognosis of patients who have had an acute coronary event. Am J Clin Nutr. 2010 Jul;92(1):47-54. Epub 2010 May 19. PubMed PMID: 20484450.	All subjects diagnosed with acute coronary syndrome
122.	Chrysohoou C, Panagiotakos DB, Pitsavos C, Das UN, Stefanadis C. Adherence to the Mediterranean diet attenuates inflammation and coagulation process in healthy adults: The ATTICA Study. J Am Coll Cardiol. 2004 Jul 7;44(1):152-8. PubMed PMID: 15234425.	Did not include CVD outcomes of interest (looks at CRP, WBC counts, IL-6, TNF-alpha, amyloid A, fibrinogen, and homocysteine)
123.	Chrysohoou C, Panagiotakos DB, Pitsavos C, Metallinos G, Kotroyiannis I, Brili S, Antoniou C, Tsitsinakis G, Tsantilas A, Stefanadis C. Dietary habits in relation to biventricular systolic function, among chronic heart failure patients. Journal of Cardiac Failure. 2010;16(8):S78-S79.	Participants diagnosed with heart failure
124.	Chrysohoou C, Pitsavos C, Metallinos G, Antoniou C, Oikonomou E, Kotroyiannis I, Tsantilas A, Tsitsinakis G, Tousoulis D, Panagiotakos DB, Stefanadis C. Cross-sectional relationship of a Mediterranean type diet to diastolic heart function in chronic heart failure patients. Heart Vessels. 2011 Sep 27. [Epub ahead of print] PubMed PMID: 21947607.	Cross-sectional
125.	Chrysohoou C, Roussos D, Lagoudakou S, Patialakas A, Zaromitidou M, Vogiatzi G, Pitsavos C, Stefanadis C. Mediterranean diet mediates the effect of diabetes mellitus on aortic distensibility in elderly individuals. IKARIA study. European Journal of Cardiovascular Prevention and Rehabilitation. 2011;18(1):S23.	Cross-sectional
126.	Chrysohoou C, Skoumas J, Metaxa V, Siasos G, Zisimos C, Mylonakis C, Galiatsatos N, Valatsou A, Pitsavos C, Stefanadis C. Long-term adherence to the mediterranean diet seems to confer to a lower risk of hyperuricaemia in elderly individuals. the ikaria study. European Heart Journal. 2011;32:721-722.	Cross-sectional
127.	Ciccarone E, Di Castelnuovo A, Salcuni M, Siani A, Giacco A, Donati MB, De Gaetano G, Capani F, Iacoviello L; Gendiabe Investigators. A high-score Mediterranean dietary pattern is associated with a reduced risk of peripheral arterial disease in Italian patients with Type 2 diabetes. J Thromb Haemost. 2003 Aug;1(8):1744-52. PubMed PMID: 12911588.	All subjects diagnosed with Type 2 diabetes

128.	Cimadon HM, Geremia R, Pellanda LC. Dietary habits and risk factors for atherosclerosis in students from Bento Gonçalves (state of Rio Grande do Sul). Arq Bras Cardiol. 2010 Aug;95(2):166-72. Epub 2010 Jul 9. English, Portuguese. PubMed PMID: 20602005.	Cross-sectional
129.	Clarke RP, Schlenker ED, Merrow SB. Nutrient intake, adiposity, plasma total cholesterol, and blood pressure of rural participants in the (Vermont) Nutrition Program for Older Americans (Title III). Am J Clin Nutr. 1981 Sep;34(9):1743-51. PubMed PMID: 7282602.	Does not examine the relationship between dietary patterns and CVD measures
130.	Cole JA, Smith SM, Hart N, Cupples ME. Systematic review of the effect of diet and exercise lifestyle interventions in the secondary prevention of coronary heart disease. Cardiol Res Pract. 2010 Dec 19;2011:232351. PubMed PMID: 21197445; PubMed Central PMCID: PMC3010651.	Systematic review
131.	Colombo C, Muti P, Pala V, Cavalleri A, Venturelli E, Locardi M, Berrino F, Secreto G. Plant-based diet, serum fatty acid profile, and free radicals in postmenopausal women: the diet and androgens (DIANA) randomized trial. Int J Biol Markers. 2005 Jul-Sep;20(3):169-76. PubMed PMID: 16240844.	Did not assess dietary patterns as defined for this project
132.	Conlin PR, Erlinger TP, Bohannon A, Miller ER 3rd, Appel LJ, Svetkey LP, Moore TJ. The DASH diet enhances the blood pressure response to losartan in hypertensive patients. Am J Hypertens. 2003 May;16(5 Pt 1):337-42. PubMed PMID: 12745193.	Insufficient sample size (n per group = 27 and 28)
133.	Conlin PR. The dietary approaches to stop hypertension (DASH) clinical trial: implications for lifestyle modifications in the treatment of hypertensive patients. Cardiol Rev. 1999 Sep-Oct;7(5):284-8. PubMed PMID: 11208239	Summary review
134.	Cooper RS, Goldberg RB, Trevisan M, Tsong Y, Liu K, Stamler J, Rubenstein A, Scanu AM. The selective lipid-lowering effect of vegetarianism on low density lipoproteins in a cross-over experiment. Atherosclerosis. 1982 Sep;44(3):293-305. PubMed PMID: 7150394.	Insufficient sample size (n=15)
135.	Couch SC, Saelens BE, Levin L, Dart K, Falciglia G, Daniels SR. The efficacy of a clinic-based behavioral nutrition intervention emphasizing a DASH-type diet for adolescents with elevated blood pressure. J Pediatr. 2008 Apr;152(4):494-501. Epub 2007 Nov 5. PubMed PMID: 18346503.	Insufficient sample size (n=57) in two groups
136.	Couto E, Boffetta P, Lagiou P, Ferrari P, Buckland G, Overvad K, Dahm CC, Tjønneland A, Olsen A, Clavel-Chapelon F, Boutron-Ruault MC, Cottet V, Trichopoulos D, Naska A, Benetou V, Kaaks R, Rohrmann S, Boeing H, von Ruesten A, Panico S, Pala V, Vineis P, Palli D, Tumino R, May A, Peeters PH, Bueno-de-Mesquita HB, Büchner FL, Lund E, Skeie G, Engeset D, Gonzalez CA, Navarro C, Rodríguez L, Sánchez MJ, Amiano P, Barricarte A, Hallmans G, Johansson I, Manjer J, Wirfärt E, Allen NE, Crowe F, Khaw KT, Wareham N, Moskal A, Slimani N, Jenab M, Romaguera D, Mouw T, Norat T, Riboli E, Trichopoulou A. Mediterranean dietary pattern and cancer risk in the EPIC cohort. Br J Cancer. 2011 Apr 26;104(9):1493-9. Epub 2011 Apr 5. PubMed PMID: 21468044; PubMed Central PMCID: PMC3101925.	Dependent variable is cancer
137.	Covas MI. Benefits of the Mediterranean diet on cardiovascular disease. Future Cardiol. 2007 Nov;3(6):575-8. No abstract available. PMID: 19804275.	Not an original research article (editorial)
138.	Critchley J, Liu J, Zhao D, Wei W, Capewell S. Explaining the increase in coronary heart disease mortality in Beijing between 1984 and 1999. Circulation. 2004 Sep 7;110(10):1236-44. Epub 2004 Aug 30. PMID: 15337690.	Trend study
139.	Dai J, Jones DP, Goldberg J, Ziegler TR, Bostick RM, Wilson PW, Manatunga AK, Shallenberger L, Jones L, Vaccarino V. Association between adherence to the Mediterranean diet and oxidative stress. Am J Clin Nutr. 2008 Nov;88(5):1364-70. PubMed PMID: 18996873; PubMed Central PMCID: PMC3076211.	Outcome is not of interest (oxidative stress)
140.	Dai J, Lampert R, Wilson PW, Goldberg J, Ziegler TR, Vaccarino V. Mediterranean dietary pattern is associated with improved cardiac autonomic function among middle-aged men: a twin study. Circ Cardiovasc Qual Outcomes. 2010 Jul;3(4):366-73. Epub 2010 Jun 15. PubMed PMID: 20551372.	Cross-sectional

141.	Dai J, Miller AH, Bremner JD, Goldberg J, Jones L, Shallenberger L, Buckham R, Murrah NV, Veledar E, Wilson PW, Vaccarino V. Adherence to the mediterranean diet is inversely associated with circulating interleukin-6 among middle-aged men: a twin study. Circulation. 2008 Jan 15;117(2):169-75. Epub 2007 Dec 17. PubMed PMID: 18086924; PubMed Central PMCID: PMC3232063.	Cross-sectional
142.	Daniel-Gentry J, Dolecek TA, Caggiula AW, Van Horn LV, Epley L, Randall BL. Increasing the use of meatless meals: a nutrition intervention substudy in the Multiple Risk Factor Intervention Trial (MRFIT). J Am Diet Assoc. 1986 Jun;86(6):778-81. PubMed PMID: 3519738.	Did not assess dietary patterns as defined for this project
143.	DASH-Sodium Trial Collaborative Research Group. Summaries for patients. Special diets decrease blood pressure. Ann Intern Med. 2001 Dec 18;135(12):S-62. No abstract available. PMID: 11785469.	Review / Summary
144.	Dauchet L, Amouyel P, Dallongeville J. Fruit and vegetable consumption and risk of stroke: a meta-analysis of cohort studies. Neurology. 2005 Oct 25;65(8):1193-7. PubMed PMID: 16247045.	Meta-analysis
145.	Davidi A, Reynolds J, Njike VY, Ma Y, Doughty K, Katz DL. The effect of the addition of daily fruit and nut bars to diet on weight, and cardiac risk profile, in overweight adults. J Hum Nutr Diet. 2011 Dec;24(6):543-51. doi: 10.1111/j.1365-277X.2011.01201.x. Epub 2011 Sep 2. PubMed PMID: 21883530.	Did not assess dietary patterns as defined for this project
146.	Davis EE, Huffman FG. Differences in coronary heart disease risk markers among apparently healthy individuals of African ancestry. J Natl Med Assoc. 2007 Jun;99(6):658-64. PubMed PMID: 17595935; PubMed Central PMCID: PMC2574389.	Cross-sectional
147.	De Backer G, De Craene I, Rosseneu M, Vercaemst R, Kornitzer M. Relationship between serum cholesteryl ester composition, dietary habits and coronary risk factors in middle-aged men. Atherosclerosis. 1989 Aug;78(2-3):237-43. PubMed PMID: 2783205.	Study design is cross-sectional
148.	De Biase SG, Fernandes SF, Gianini RJ, Duarte JL. Vegetarian diet and cholesterol and triglycerides levels. Arq Bras Cardiol. 2007 Jan;88(1):35-9. English, Portuguese. PubMed PMID: 17364116.	Cross-sectional
149.	De Biase SG, Fernandes SFC, et al. Vegetarian diet and cholesterol and triglycerides levels. Arquivos Brasileiros de Cardiologia. 2007;88(1): 32-36.	Cross-sectional
150.	de Koning L, Chiuve SE, Fung TT, Willett WC, Rimm EB, Hu FB. Diet-quality scores and the risk of type 2 diabetes in men. Diabetes Care. 2011 May;34(5):1150-6. Epub 2011 Apr 4. PubMed PMID: 21464460; PubMed Central PMCID: PMC3114491.	Outcome is not of interest (Type 2 diabetes)
151.	de Koning L, Fung TT, Liao X, Chiuve SE, Rimm EB, Willett WC, Spiegelman D, Hu FB. Low-carbohydrate diet scores and risk of type 2 diabetes in men. Am J Clin Nutr. 2011 Apr;93(4):844-50. Epub 2011 Feb 10. PubMed PMID: 21310828; PubMed Central PMCID: PMC3057550.	Outcome is not of interest (Type 2 diabetes)
152.	De Lorenzo A, Noce A, Bigioni M, Calabrese V, Della Rocca DG, Di Daniele N, Tozzo C, Di Renzo L. The effects of Italian Mediterranean organic diet (IMOD) on health status. Curr Pharm Des. 2010;16(7):814-24. PubMed PMID: 20388092.	Did not assess dietary patterns as defined for this project
153.	De Lorenzo A, Petroni ML, De Luca PP, Andreoli A, Morini P, Iacopino L, Innocente I, Perriello G. Use of quality control indices in moderately hypocaloric Mediterranean diet for treatment of obesity. Diabetes Nutr Metab. 2001 Aug;14(4):181-8. PubMed PMID: 11716286.	Small number of subjects; N = 19
154.	de Lorgeril M, Renaud S, Mamelle N, Salen P, Martin JL, Monjaud I, Guidollet J, Touboul P, Delaye J. Mediterranean alpha-linolenic acid-rich diet in secondary prevention of coronary heart disease. Lancet. 1994 Jun 11;343(8911):1454-9. Erratum in: Lancet 1995 Mar 18;345(8951):738. PubMed PMID: 7911176.	All subjects diagnosed with mycardial infarction
155.	De Lorgeril M, Salen P, Martin JL, Mamelle N, Monjaud I, Touboul P, Delaye J. Effect of a mediterranean type of diet on the rate of cardiovascular complications in patients with coronary artery disease. Insights into the cardioprotective effect of certain nutriments. J Am Coll Cardiol. 1996 Nov 1;28(5):1103-8. PubMed PMID: 8890801.	Participants diagnosed with coronary artery disease

156.	de Lorgeril M, Salen P, Martin JL, Monjaud I, Delaye J, Mamelle N. Mediterranean diet, traditional risk factors, and the rate of cardiovascular complications after myocardial infarction: final report of the Lyon Diet Heart Study. Circulation. 1999 Feb 16;99(6):779-85. PubMed PMID: 9989963.	All subjects diagnosed with mycardial infarction
157.	de Lorgeril M, Salen P, Monjaud I, Delaye J. The 'diet heart' hypothesis in secondary prevention of coronary heart disease. Eur Heart J. 1997 Jan;18(1):13-8. PubMed PMID: 9049509.	Review article
158.	de Lorgeril M, Salen P. The Mediterranean diet in secondary prevention of coronary heart disease. Clin Invest Med. 2006 Jun;29(3):154-8. PubMed PMID: 17058434.	Not an original research study
159.	De Natale C, Annuzzi G, Bozzetto L, Mazzarella R, Costabile G, Ciano O, Riccardi G, Rivellese AA. Effects of a plant-based high-carbohydrate/high-fiber diet versus high-monounsaturated fat/low-carbohydrate diet on postprandial lipids in type 2 diabetic patients. Diabetes Care. 2009 Dec;32(12):2168-73. Epub 2009 Sep 9. PubMed PMID: 19741188; PubMed Central PMCID: PMC2782970.	Size of study group < 30 (n=18)
160.	de Oliveira Otto MC, Mozaffarian D, Kromhout D, Bertoni AG, Sibley CT, Jacobs DR Jr, Nettleton JA. Dietary intake of saturated fat by food source and incident cardiovascular disease: the Multi-Ethnic Study of Atherosclerosis. Am J Clin Nutr. 2012 Aug;96(2):397-404. Epub 2012 Jul 3. PubMed PMID: 22760560; PubMed Central PMCID: PMC3396447.	Did not examine dietary patterns; examined saturated fat intake
161.	de Paula TP, Steemburgo T, de Almeida JC, Dall'alba V, Gross JL, de Azevedo MJ. The role of Dietary Approaches to Stop Hypertension (DASH) diet food groups in blood pressure in type 2 diabetes. Br J Nutr. 2011 Dec 6:1-8. [Epub ahead of print] PubMed PMID: 22142820.	Cross-sectional
162.	de Souza RJ, Swain JF, Appel LJ, Sacks FM. Alternatives for macronutrient intake and chronic disease: a comparison of the OmniHeart diets with popular diets and with dietary recommendations. Am J Clin Nutr. 2008 Jul;88(1):1-11. PMID: 18614716.	Did not examine CVD outcomes
163.	De Vriendt T, Clays E, Huybrechts I, De Bourdeaudhuij I, Moreno LA, Patterson E, Molnár D, Mesana MI, Beghin L, Widhalm K, Manios Y, De Henauw S. European adolescents' level of perceived stress is inversely related to their diet quality: the Healthy Lifestyle in Europe by Nutrition in Adolescence study. Br J Nutr. 2011 Nov 4:1-10. [Epub ahead of print] PubMed PMID: 22054044.	Cross-sectional
164.	Dedoussis GV, Kanoni S, Mariani E, Cattini L, Herbein G, Fulop T, Varin A, Rink L, Jajte J, Monti D, Marcellini F, Malavolta M, Mocchegiani E. Mediterranean diet and plasma concentration of inflammatory markers in old and very old subjects in the ZINCAGE population study. Clin Chem Lab Med. 2008;46(7):990-6. PubMed PMID: 18605965.	Cross-sectional
165.	Dedoussis GV, Panagiotakos DB, Chrysohoou C, Pitsavos C, Zampelas A, Choumerianou D, Stefanadis C. Effect of interaction between adherence to a Mediterranean diet and the methylenetetrahydrofolate reductase 677C-->T mutation on homocysteine concentrations in healthy adults: the ATTICA Study. Am J Clin Nutr. 2004 Oct;80(4):849-54. PubMed PMID: 15447889.	Does not examine CVD outcome of interest (examined homocysteine)
166.	Dekker LH, Snijder MB, Beukers MH, de Vries JH, Brants HA, de Boer EJ, van Dam RM, Stronks K, Nicolaou M. A prospective cohort study of dietary patterns of non-western migrants in the Netherlands in relation to risk factors for cardiovascular diseases: HELIUS-Dietary Patterns. BMC Public Health. 2011 Jun 7;11:441. PMID: 21649889.	Describes cohort study design and methodology
167.	deKoning L, Anand SS. Adherence to a Mediterranean diet and survival in a Greek population. Trichopoulou A, Costacou T, Bamia C, Trichopoulos D. N Engl J Med 2003; 348: 2599-608. Vasc Med. 2004 May;9(2):145-6. PubMed PMID: 15521707.	Commentary
168.	Delgado M, Gutiérrez A, Cano MD, Castillo MJ. Elimination of meat, fish, and derived products from the Spanish-Mediterranean diet: effect on the plasma lipid profile. Ann Nutr Metab. 1996;40(4):202-11. PubMed PMID: 8886248.	Insufficient sample size (n = 14)
169.	Delisle HF, Vioque J, Gil A. Dietary patterns and quality in West-African immigrants in Madrid. Nutr J. 2009 Jan 23;8:3. PubMed PMID: 19166606; PubMed Central PMCID: PMC2639619.	Cross-sectional analyses

170.	Demetriou CA, Hadjisavvas A, Loizidou MA, Loucaides G, Neophytou I, Sieri S, Kakouri E, Middleton N, Vineis P, Kyriacou K. The mediterranean dietary pattern and breast cancer risk in Greek-Cypriot women: a case-control study. BMC Cancer. 2012 Mar 23;12:113. PubMed PMID: 22443862; PubMed Central PMCID: PMC3323439.	Outcome was risk of breast cancer
171.	di Giuseppe R, Bonanni A, Olivieri M, Di Castelnuovo A, Donati MB, de Gaetano G, Cerletti C, Iacoviello L. Adherence to Mediterranean diet and anthropometric and metabolic parameters in an observational study in the 'Alto Molise' region: the MOLI-SAL project. Nutr Metab Cardiovasc Dis. 2008 Jul;18(6):415-21. Epub 2007 Oct 22. PubMed PMID: 17936603.	Cross-sectional analyses
172.	DiBello JR, Kraft P, McGarvey ST, Goldberg R, Campos H, Baylin A. Comparison of 3 methods for identifying dietary patterns associated with risk of disease. Am J Epidemiol. 2008 Dec 15;168(12):1433-43. Epub 2008 Oct 22. PubMed PMID: 18945692; PubMed Central PMCID: PMC2727189.	Case-control study
173.	Diehr P, Beresford SA. The relation of dietary patterns to future survival, health, and cardiovascular events in older adults. J Clin Epidemiol. 2003 Dec;56(12):1224-35. PubMed PMID: 14680674.	Did not assess dietary patterns as defined for project; macronutrients
174.	Dixon LB, Subar AF, Peters U, Weissfeld JL, Bresalier RS, Risch A, Schatzkin A, Hayes RB. Adherence to the USDA Food Guide, DASH Eating Plan, and Mediterranean dietary pattern reduces risk of colorectal adenoma. J Nutr. 2007 Nov;137(11):2443-50. PubMed PMID: 17951483.	Outcome was risk of colorectal adenoma
175.	Djuric Z, Ren J, Blythe J, VanLoon G, Sen A. A Mediterranean dietary intervention in healthy American women changes plasma carotenoids and fatty acids in distinct clusters. Nutr Res. 2009 Mar;29(3):156-63. PubMed PMID: 19358929; PubMed Central PMCID: PMC2735788.	Attrition results in insufficient sample size (n = 33 in control group and 27 in intervention group)
176.	Dolecek TA, McCarthy BJ, Joslin CE, Peterson CE, Kim S, Freels SA, Davis FG. Prediagnosis food patterns are associated with length of survival from epithelial ovarian cancer. J Am Diet Assoc. 2010 Mar;110(3):369-82. PubMed PMID: 20184987.	Participants had epithelial ovarian cancer
177.	Dolecek TA, Milas NC, Van Horn LV, Farrand ME, Gorder DD, Duchene AG, Dyer JR, Stone PA, Randall BL. A long-term nutrition intervention experience: lipid responses and dietary adherence patterns in the Multiple Risk Factor Intervention Trial. J Am Diet Assoc. 1986 Jun;86(6):752-8. PubMed PMID: 3519737.	Review of Multiple Risk Factor Intervention Trial
178.	Domínguez LJ, Bes-Rastrollo M, de la Fuente-Arrillaga C, Toledo E, Beunza JJ, Barbagallo M, Martínez-González MA. Similar prediction of decreased total mortality, diabetes incidence or cardiovascular events using relative- and absolute-component Mediterranean diet score: The SUN cohort. Nutr Metab Cardiovasc Dis. 2012 Mar 6. [Epub ahead of print] PubMed PMID: 22402062.	Cross-sectional
179.	Donin AS, Nightingale CM, Owen CG, Rudnicka AR, McNamara MC, Prynne CJ, Stephen AM, Cook DG, Whincup PH. Ethnic differences in blood lipids and dietary intake between UK children of black African, black Caribbean, South Asian, and white European origin: the Child Heart and Health Study in England (CHASE). Am J Clin Nutr. 2010 Oct;92(4):776-83. Epub 2010 Aug 25. PubMed PMID: 20739425.	Cross-sectional analyses
180.	Douglas M. Mediterranean diet for heart disease. J Fam Pract. 1999 May;48(5):333-4. Erratum in: J Fam Pract 1999 Oct;48(10):752. PubMed PMID: 10334604.	Commentary
181.	Drewnowski A, Henderson SA, Driscoll A, Rolls BJ. The Dietary Variety Score: assessing diet quality in healthy young and older adults. J Am Diet Assoc. 1997 Mar;97(3):266-71. PubMed PMID: 9060943.	Cross-sectional analyses; did not include CVD outcome in analyses
182.	Duc Son le NT, Hanh TT, Kusama K, Kunii D, Sakai T, Hung NT, Yamamoto S. Anthropometric characteristics, dietary patterns and risk of type 2 diabetes mellitus in Vietnam. J Am Coll Nutr. 2005 Aug;24(4):229-34. PubMed PMID: 16093399.	Outcome was risk of type 2 diabetes
183.	Dugee O, Khor GL, Lye MS, Luvsannyam L, Janchiv O, Jamyan B, Esa N. Association of major dietary patterns with obesity risk among Mongolian men and women. Asia Pac J Clin Nutr. 2009;18(3):433-40. PubMed PMID: 19786392.	Mongolia classified as "medium" on HDI

184.	Dyerberg J. Coronary heart disease in Greenland Inuit: a paradox. Implications for western diet patterns. Arctic Med Res. 1989 Apr;48(2):47-54. PubMed PMID: 2736000.	Not an original research study (narrative review)
185.	Eilat-Adar S, Mete M, Fretts A, Fabsitz RR, Handeland V, Lee ET, Loria C, Xu J, Yeh J, Howard BV. Dietary patterns and their association with cardiovascular risk factors in a population undergoing lifestyle changes: The Strong Heart Study. Nutr Metab Cardiovasc Dis. 2012 Apr 23. [Epub ahead of print] PubMed PMID: 22534653.	Cross-sectional
186.	Eilat-Adar S, Mete M, Nobmann ED, Xu J, Fabsitz RR, Ebbesson SO, Howard BV. Dietary patterns are linked to cardiovascular risk factors but not to inflammatory markers in Alaska Eskimos. J Nutr. 2009 Dec;139(12):2322-8. Epub 2009 Oct 14. PubMed PMID: 19828690; PubMed Central PMCID: PMC2777478.	Cross-sectional
187.	Elhayany A, Lustman A, Abel R, Attal-Singer J, Vinker S. A low carbohydrate Mediterranean diet improves cardiovascular risk factors and diabetes control among overweight patients with type 2 diabetes mellitus: a 1-year prospective randomized intervention study. Diabetes Obes Metab. 2010 Mar;12(3):204-9. PubMed PMID: 20151996.	Participants diagnosed with type 2 diabetes
188.	Ellingsen I, Hjerkinn EM, Arnesen H, Seljeflot I, Hjermann I, Tonstad S. Follow-up of diet and cardiovascular risk factors 20 years after cessation of intervention in the Oslo Diet and Antismoking Study. Eur J Clin Nutr. 2006 Mar;60(3):378-85. PubMed PMID: 16306931.	Did not directly assess the relationship between dietary patterns and CVD outcomes
189.	Ellingsen I, Hjerkinn EM, Seljeflot I, Arnesen H, Tonstad S. Consumption of fruit and berries is inversely associated with carotid atherosclerosis in elderly men. Br J Nutr. 2008 Mar;99(3):674-81. Epub 2007 Sep 26. Erratum in: Br J Nutr. 2008 Mar;99(3):697. PubMed PMID: 17894919.	Did not assess CVD outcome of interest
190.	Ellis FR, Montegriffo VM. Veganism, clinical findings and investigations. Am J Clin Nutr. 1970 Mar;23(3):249-55. PubMed PMID: 5436632.	Study design was cross-sectional
191.	Ellis FR, Sanders TA. Angina and vegan diet. Am Heart J. 1977 Jun;93(6):803-5. PubMed PMID: 860681.	Dependent variable was angina
192.	Elwood PC, Pickering JE, Fehily AM. Milk and dairy consumption, diabetes and the metabolic syndrome: the Caerphilly prospective study. J Epidemiol Community Health. 2007 Aug;61(8):695-8. PMID: 17630368.	Independent variable was milk and dairy consumption
193.	Engelfriet P, Hoekstra J, Hoogenveen R, Büchner F, van Rossum C, Verschuren M. Food and vessels: the importance of a healthy diet to prevent cardiovascular disease. Eur J Cardiovasc Prev Rehabil. 2010 Feb;17(1):50-5. PMID: 19593150.	Study used computer modeling to simulate results; study not conducted with actual participants
194.	Esposito K, Giugliano F, De Sio M, Carleo D, Di Palo C, D'Armiento M, Giugliano D. Dietary factors in erectile dysfunction. Int J Impot Res. 2006 Jul-Aug;18(4):370-4. Epub 2006 Jan 5. PMID: 16395326.	Study design was case-control; independent variable was erectile dysfunction
195.	Esposito K, Maiorino MI, Ceriello A, Giugliano D. Prevention and control of type 2 diabetes by Mediterranean diet: a systematic review. Diabetes Res Clin Pract. 2010 Aug;89(2):97-102. Epub 2010 May 23. Review. PubMed PMID: 20546959.	Systematic review
196.	Esposito K, Marfella R, Ciotola M, Di Palo C, Giugliano F, Giugliano G, D'Armiento M, D'Andrea F, Giugliano D. Effect of a mediterranean-style diet on endothelial dysfunction and markers of vascular inflammation in the metabolic syndrome: a randomized trial. JAMA. 2004 Sep 22;292(12):1440-6. PubMed PMID: 15383514.	Dependent variables are endothelial function and vascular inflammatory markers; not of interest
197.	Estaquio C, Castetbon K, Kesse-Guyot E, Bertrais S, Deschamps V, Dauchet L, Péneau S, Galan P, Hercberg S. The French National Nutrition and Health Program score is associated with nutritional status and risk of major chronic diseases. J Nutr. 2008 May;138(5):946-53. PubMed PMID: 18424606.	Dependent variable was major chornic diseases (CVD was included, but not analyzed separately)
198.	Estaquio C, Druesne-Pecollo N, Latino-Martel P, Dauchet L, Hercberg S, Bertrais S. Socioeconomic differences in fruit and vegetable consumption among middle-aged French adults: adherence to the 5 A Day recommendation. J Am Diet Assoc. 2008 Dec;108(12):2021-30. PubMed PMID: 19027405.	Did not assess dietary patterns as defined for the project (examined fruit and vegetable intake)

199.	Estruch R. Anti-inflammatory effects of the Mediterranean diet: the experience of the PREDIMED study. Proc Nutr Soc. 2010 Aug;69(3):333-40. Epub 2010 Jun 2. PubMed PMID: 20515519.	Not an original research article
200.	Evans AE, Ruidavets JB, McCrum EE, Cambou JP, McClean R, Douste-Blazy P, McMaster D, Bingham A, Patterson CC, Richard JL, et al. Autres pays, autres coeurs? Dietary patterns, risk factors and ischaemic heart disease in Belfast and Toulouse. QJM. 1995 Jul;88(7):469-77. PubMed PMID: 7633873.	Did not assess dietary patterns as defined for this project (examined macronutrients and individual food groups)
201.	Falkner B, Sherif K, Michel S, Kushner H. Dietary nutrients and blood pressure in urban minority adolescents at risk for hypertension. Arch Pediatr Adolesc Med. 2000 Sep;154(9):918-22. PubMed PMID: 10980796.	Did not assess dietary patterns as defined for the project
202.	Farchi G, Fidanza F, Grossi P, Lancia A, Mariotti S, Menotti A. Relationship between eating patterns meeting recommendations and subsequent mortality in 20 years. Eur J Clin Nutr. 1995 Jun;49(6):408-19. PubMed PMID: 7656884.	Did not assess dietary patterns as defined for this project
203.	Farchi G, Fidanza F, Mariotti S, Menotti A. Is diet an independent risk factor for mortality? 20 year mortality in the Italian rural cohorts of the Seven Countries Study. Eur J Clin Nutr. 1994 Jan;48(1):19-29. PubMed PMID: 8200326.	Did not assess dietary patterns as defined for this project
204.	Fargnoli JL, Fung TT, Olenczuk DM, Chamberland JP, Hu FB, Mantzoros CS. Adherence to healthy eating patterns is associated with higher circulating total and high-molecular-weight adiponectin and lower resistin concentrations in women from the Nurses' Health Study. Am J Clin Nutr. 2008 Nov;88(5):1213-24. PubMed PMID: 18996855.	Did not include CVD outcome of interest for this project (examined biomarkers of CVD)
205.	Feart C, Alles B, Merle B, Samieri C, Barberger-Gateau P. Adherence to a Mediterranean diet and energy, macro-, and micronutrient intakes in older persons. J Physiol Biochem. 2012 Jul 4. [Epub ahead of print] PubMed PMID: 22760695.	Cross-sectional
206.	Féart C, Samieri C, Rondeau V, Amieva H, Portet F, Dartigues JF, Scarmeas N, Barberger-Gateau P. Adherence to a Mediterranean diet, cognitive decline, and risk of dementia. JAMA. 2009 Aug 12;302(6):638-48. Erratum in: JAMA. 2009 Dec 9;302(22):2436. PubMed PMID: 19671905; PubMed Central PMCID: PMC2850376.	Did not include a CVD outcome in analyses (examined cognitive decline and dementia)
207.	Féart C, Torrès MJ, Samieri C, Jutand MA, Peuchant E, Simopoulos AP, Barberger-Gateau P. Adherence to a Mediterranean diet and plasma fatty acids: data from the Bordeaux sample of the Three-City study. Br J Nutr. 2011 Jul;106(1):149-58. Epub 2011 Feb 8. PubMed PMID: 21303575.	Cross-sectional analyses
208.	Fehily AM, Pickering JE, Yarnell JW, Elwood PC. Dietary indices of atherogenicity and thrombogenicity and ischaemic heart disease risk: the Caerphilly Prospective Study. Br J Nutr. 1994 Feb;71(2):249-57. PubMed PMID: 8142336.	Does not assess dietary patterns as defined for this project
209.	Ferdowsian HR, Barnard ND, Hoover VJ, Katcher HI, Levin SM, Green AA, Cohen JL. A multicomponent intervention reduces body weight and cardiovascular risk at a GEICO corporate site. Am J Health Promot. 2010 Jul-Aug;24(6):384-7. PMID: 20594095.	Some subjects diagnosed with T2D
210.	Ferro-Luzzi A, Strazzullo P, Scaccini C, Siani A, Sette S, Mariani MA, Mastranzo P, Dougherty RM, Iacono JM, Mancini M. Changing the Mediterranean diet: effects on blood lipids. Am J Clin Nutr. 1984 Nov;40(5):1027-37. PubMed PMID: 6496382.	Before and after study / non-controlled trial
211.	Fisher M, Levine PH, Weiner B, Ockene IS, Johnson B, Johnson MH, Natale AM, Vaudreuil CH, Hoogasian J. The effect of vegetarian diets on plasma lipid and platelet levels. Arch Intern Med. 1986 Jun;146(6):1193-7. PubMed PMID: 3718107.	Insufficient sample size (n per group = 10, 15, 25)
212.	Fitó M, Guxens M, Corella D, Sáez G, Estruch R, de la Torre R, Francés F, Cabezas C, López-Sabater Mdel C, Marrugat J, García-Arellano A, Arós F, Ruiz-Gutierrez V, Ros E, Salas-Salvadó J, Fiol M, Solá R, Covas MI; for the PREDIMED Study Investigators. Effect of a traditional Mediterranean diet on lipoprotein oxidation: a randomized controlled trial. Arch Intern Med. 2007 Jun 11;167(11):1195-203. PubMed PMID: 17563030.	Dependent variable is vivo lipoprotein oxidation; not of interest
213.	Fleming RM. The effect of high-protein diets on coronary blood flow. Angiology. 2000 Oct;51(10):817-26. PubMed PMID: 11108325.	Insufficient sample size (n = 26)

214.	Fogli-Cawley JJ, Dwyer JT, Saltzman E, McCullough ML, Troy LM, Meigs JB, Jacques PF. The 2005 Dietary Guidelines for Americans and risk of the metabolic syndrome. Am J Clin Nutr. 2007 Oct;86(4):1193-201. PMID: 17921402.	Cross-sectional
215.	Folsom AR, Chambless LE, Duncan BB, Gilbert AC, Pankow JS; Atherosclerosis Risk in Communities Study Investigators. Prediction of coronary heart disease in middle-aged adults with diabetes. Diabetes Care. 2003 Oct;26(10):2777-84. PubMed PMID: 14514579.	Participants diagnosed with type 2 diabetes
216.	Fontana L, Meyer TE, Klein S, Holloszy JO. Long-term low-calorie low-protein vegan diet and endurance exercise are associated with low cardiometabolic risk. Rejuvenation Res. 2007 Jun;10(2):225-34. PubMed PMID: 17518696.	Cross-sectional analyses
217.	Forman JP, Stampfer MJ, Curhan GC. Diet and lifestyle risk factors associated with incident hypertension in women. JAMA. 2009 Jul 22;302(4):401-11. PubMed PMID: 19622819; PubMed Central PMCID: PMC2803081	Did not examine diet separate from lifestyle factors
218.	Frank GC, Farris RP, Cresanta JL, Webber LS, Berenson GS. Dietary trends of 10- and 13-year-old children in a biracial community--the Bogalusa Heart Study. Prev Med. 1985 Jan;14(1):123-39. PubMed PMID: 3875851.	Does not examine CVD outcomes (describes dietary intake)
219.	Franklin TL, Kolasa KM, Griffin K, Mayo C, Badenhop DT. Adherence to very-low-fat diet by a group of cardiac rehabilitation patients in the rural southeastern United States. Arch Fam Med. 1995 Jun;4(6):551-4. PubMed PMID: 7773433.	Insufficient sample size (n=10)
220.	Fraser A, Abel R, Lawlor DA, Fraser D, Elhayany A. A modified Mediterranean diet is associated with the greatest reduction in alanine aminotransferase levels in obese type 2 diabetes patients: results of a quasi-randomised controlled trial. Diabetologia. 2008 Sep;51(9):1616-22. Epub 2008 Jul 3. PubMed PMID: 18597068.	Participants diagnosed with type 2 diabetes
221.	Fraser GE, Babaali H. Determinants of high density lipoprotein cholesterol in middle-aged Seventh-Day Adventist men and their neighbors. Am J Epidemiol. 1989 Nov;130(5):958-65. PubMed PMID: 2816903.	Does not assess dietary patterns as defined for the project (examined fish and alcohol consumption)
222.	Fraser GE, Lindsted KD, Beeson WL. Effect of risk factor values on lifetime risk of and age at first coronary event. The Adventist Health Study. Am J Epidemiol. 1995 Oct 1;142(7):746-58. PubMed PMID: 7572946.	Did not examine CVD outcome included in review (e.g., examined predicted age of onset of first coronary event)
223.	Fraser GE, Shavlik DJ. Risk factors for all-cause and coronary heart disease mortality in the oldest-old. The Adventist Health Study. Arch Intern Med. 1997 Oct 27;157(19):2249-58. PubMed PMID: 9343002.	Study assessed selected foods associated with CVD risk, not a dietary pattern as defined for the project
224.	Fraser GE. Associations between diet and cancer, ischemic heart disease, and all-cause mortality in non-Hispanic white California Seventh-day Adventists. Am J Clin Nutr. 1999 Sep;70(3 Suppl):532S-538S. PubMed PMID: 10479227.	Did not examine relationship between dietary patterns and CVD outcome; examined individual food groups
225.	Frattaroli J, Weidner G, Merritt-Worden TA, Frenda S, Ornish D. Angina pectoris and atherosclerotic risk factors in the multisite cardiac lifestyle intervention program. Am J Cardiol. 2008 Apr 1;101(7):911-8. Epub 2008 Jan 28. PubMed PMID: 18359307.	Participants diagnosed with coronary artery disease
226.	Fredrikson GN, Hedblad B, Nilsson JA, Alm R, Berglund G, Nilsson J. Association between diet, lifestyle, metabolic cardiovascular risk factors, and plasma C-reactive protein levels. Metabolism. 2004 Nov;53(11):1436-42. PubMed PMID: 15536598.	Cross-sectional analyses
227.	Frentzel-Beyme R, Claude J, Eilber U. Mortality among German vegetarians: first results after five years of follow-up. Nutr Cancer. 1988;11(2):117-26. PubMed PMID: 3362722.	Same cohort as Chang-Claude et al, 2005 which was included

228.	Froger-Bompas C, Laviolle B, Guillo P, Letellier C, Ligier K, Daubert JC, Paillard F. Sustained positive impact of a coronary rehabilitation programme on adherence to dietary recommendations. Arch Cardiovasc Dis. 2009 Feb;102(2):97-104. Epub 2009 Jan 29. PubMed PMID: 19303576.	Participants were coronary patients
229.	Fu CH, Yang CC, Lin CL, Kuo TB. Effects of long-term vegetarian diets on cardiovascular autonomic functions in healthy postmenopausal women. Am J Cardiol. 2006 Feb 1;97(3):380-3. PubMed PMID: 16442400.	Cross-sectional analyses (vegetarians vs omnivores)
230.	Fuentes F, López-Miranda J, Pérez-Martínez P, Jiménez Y, Marín C, Gómez P, Fernández JM, Caballero J, Delgado-Lista J, Pérez-Jiménez F. Chronic effects of a high-fat diet enriched with virgin olive oil and a low-fat diet enriched with alpha-linolenic acid on postprandial endothelial function in healthy men. Br J Nutr. 2008 Jul;100(1):159-65. Epub 2008 Feb 14. PubMed PMID: 18275619.	Insufficient sample size (n=20)
231.	Fuentes F, López-Miranda J, Sánchez E, Sánchez F, Paez J, Paz-Rojas E, Marín C, Gómez P, Jimenez-Perepérez J, Ordovás JM, Pérez-Jiménez F. Mediterranean and low-fat diets improve endothelial function in hypercholesterolemic men. Ann Intern Med. 2001 Jun 19;134(12):1115-9. PubMed PMID: 11412051.	Insufficient sample size (n=22)
232.	Fung TT, Hu FB, Hankinson SE, Willett WC, Holmes MD. Low-carbohydrate diets, dietary approaches to stop hypertension-style diets, and the risk of postmenopausal breast cancer. Am J Epidemiol. 2011 Sep 15;174(6):652-60. Epub 2011 Aug 10. PubMed PMID: 21832271; PubMed Central PMCID: PMC3166708.	Did not consider a CVD outcome (examined postmenopausal breast
233.	Fung TT, Hu FB, Schulze M, Pollak M, Wu T, Fuchs CS, Giovannucci E. A dietary pattern that is associated with C-peptide and risk of colorectal cancer in women. Cancer Causes Control. 2012 Jun;23(6):959-65. Epub 2012 Apr 26. PubMed PMID: 22535146.	Dependent variables were colorectal cancer and c-peptide concentration; may be relevant for Cancer Sys Rev
234.	Fung TT, Hu FB, Wu K, Chiuve SE, Fuchs CS, Giovannucci E. The Mediterranean and Dietary Approaches to Stop Hypertension (DASH) diets and colorectal cancer. Am J Clin Nutr. 2010 Dec;92(6):1429-35. PubMed PMID: 21097651; PubMed Central PMCID: PMC2980967.	Did not consider a CVD outcome (examined colorectal cancer)
235.	Fung TT, Malik V, Rexrode KM, Manson JE, Willett WC, Hu FB. Sweetened beverage consumption and risk of coronary heart disease in women. Am J Clin Nutr. 2009 Apr;89(4):1037-42. Epub 2009 Feb 11. PubMed PMID: 19211821; PubMed Central PMCID: PMC2667454.	Did not consider dietary patterns as defined for this project (examined SSB intake)
236.	Fung TT, McCullough ML, Newby PK, Manson JE, Meigs JB, Rifai N, Willett WC, Hu FB. Diet-quality scores and plasma concentrations of markers of inflammation and endothelial dysfunction. Am J Clin Nutr. 2005 Jul;82(1):163-73. PubMed PMID: 16002815.	Did not consider a CVD outcome included in the review (examined markers of inflammation and endothelial dysfunction)
237.	Fung TT, Rimm EB, Spiegelman D, Rifai N, Tofler GH, Willett WC, Hu FB. Association between dietary patterns and plasma biomarkers of obesity and cardiovascular disease risk. Am J Clin Nutr. 2001 Jan;73(1):61-7. PubMed PMID: 11124751.	Cross-sectional analyses of PCS
238.	Fung TT, Schulze M, Manson JE, Willett WC, Hu FB. Dietary patterns, meat intake, and the risk of type 2 diabetes in women. Arch Intern Med. 2004 Nov 8;164(20):2235-40. PubMed PMID: 15534160.	Did not include CVD outcome (examined type 2 diabetes)
239.	Funk KL, Elmer PJ, Stevens VJ, Harsha DW, Craddick SR, Lin PH, Young DR, Champagne CM, Brantley PJ, McCarron PB, Simons-Morton DG, Appel LJ. PREMIER--a trial of lifestyle interventions for blood pressure control: intervention design and rationale. Health Promot Pract. 2008 Jul;9(3):271-80. Epub 2006 Jun 27. PubMed PMID: 16803935.	Did not examine the relationship between dietary patterns and CVD; described the design and rationale for PREMIER

240.	Fusconi E, Pala V, Riboli E, Vineis P, Sacerdote C, Del Pezzo M, Santucci de Magistris M, Palli D, Masala G, Sieri S, Foggetti CE, Giurdanella MC, Tumino R, Krogh V. Relationship between plasma fatty acid composition and diet over previous years in the Italian centers of the European Prospective Investigation into Cancer and Nutrition (EPIC). Tumori. 2003 Nov-Dec;89(6):624-35. PubMed PMID: 14870827.	Did not assess outcome of interest for this project (examined plasma phospholipids)
241.	Gajewska D, Niegowska J, Kucharska A. Compliance to dash diet by patients with essential hypertension. Polish journal of food and nutrition sciences. 2010;60(1):71-76.	All participants were taking multiple antihypertensive drugs
242.	Gallagher A, Henderson W, Abraira C. Dietary patterns and metabolic control in diabetic diets: a prospective study of 51 outpatient men on unmeasured and exchange diets. J Am Coll Nutr. 1987 Dec;6(6):525-32. PubMed PMID: 3693756.	Participants diagnosed with diabetes
243.	Gallus S, Tavani A, La Vecchia C. Pizza and risk of acute myocardial infarction. Eur J Clin Nutr. 2004 Nov;58(11):1543-6. PubMed PMID: 15138460.	Case-control study
244.	Gambera PJ, Schneeman BO, Davis PA. Use of the Food Guide Pyramid and US Dietary Guidelines to improve dietary intake and reduce cardiovascular risk in active-duty Air Force members. J Am Diet Assoc. 1995 Nov;95(11):1268-73. PubMed PMID: 7594122.	Insufficient sample size (n=15 and 17 per group)
245.	Ganguli D, Das N, Saha I, Biswas P, Datta S, Mukhopadhyay B, Chaudhuri D, Ghosh S, Dey S. Major dietary patterns and their associations with cardiovascular risk factors among women in West Bengal, India. Br J Nutr. 2011 May;105(10):1520-9. Epub 2011 Jan 28. PubMed PMID: 21272403.	India defined as “medium” on HDI
246.	Garaulet M, Marín C, Pérez-Llamas F, Canterasl M, Tebar FJ, Zamora S. Adiposity and dietary intake in cardiovascular risk in an obese population from a Mediterranean area. J Physiol Biochem. 2004 Mar;60(1):39-49. PMID: 15352383.	Cross-sectional
247.	García-Closas R, Serra-Majem L, Segura R. Fish consumption, omega-3 fatty acids and the Mediterranean diet. Eur J Clin Nutr. 1993 Sep;47 Suppl 1:S85-90. PubMed PMID: 8269907.	Did not assess dietary patterns as defined for the project (examined fish intake)
248.	García-Ortiz L, Recio-Rodríguez JI, Martín-Cantera C, Cabrejas-Sánchez A, Gómez-Arranz A, González-Viejo N, Iturregui-San Nicolás E, Patino-Alonso MC, Gómez-Marcos MA; EVIDENT Group. Physical exercise, fitness and dietary pattern and their relationship with circadian blood pressure pattern, augmentation index and endothelial dysfunction biological markers: EVIDENT study protocol. BMC Public Health. 2010 May 6;10:233. PubMed PMID: 20459634; PubMed Central PMCID: PMC2881095.	Did not examine the relationship between dietary patterns and CVD; described study protocol
249.	Gaskins AJ, Rovner AJ, Mumford SL, Yeung E, Browne RW, Trevisan M, Perkins NJ, Wactawski-Wende J, Schisterman EF; BioCycle Study Group. Adherence to a Mediterranean diet and plasma concentrations of lipid peroxidation in premenopausal women. Am J Clin Nutr. 2010 Dec;92(6):1461-7. Epub 2010 Oct 13. PubMed PMID: 20943796; PubMed Central PMCID: PMC2980970.	Did not assess a CVD outcome of interest (examined measures of lipid peroxidation)
250.	Gesteiro E, Rodríguez Bernal B, Bastida S, Sánchez-Muniz FJ. Maternal diets with low healthy eating index or mediterranean diet adherence scores are associated with high cord-blood insulin levels and insulin resistance markers at birth. Eur J Clin Nutr. 2012 Jul 25. doi: 10.1038/ejcn.2012.92. [Epub ahead of print] PubMed PMID: 22828732.	Subjects were pregnant women
251.	Getchell WS, Svetkey LP, Appel LJ, Moore TJ, Bray GA, Obarzanek E. Summary of the Dietary Approaches to Stop Hypertension (DASH) Randomized Clinical Trial. Curr Treat Options Cardiovasc Med. 1999 Dec;1(4):295-300. No abstract available. PMID: 11096495.	Review / Summary
252.	Ghosh A, Bose K, Das Chaudhuri AB. Association of food patterns, central obesity measures and metabolic risk factors for coronary heart disease (CHD) in middle aged Bengalee Hindu men, Calcutta, India. Asia Pac J Clin Nutr. 2003;12(2):166-71. PubMed PMID: 12810406.	India classified as “medium” on HDI
253.	Ghosh A. Anthropometric, metabolic, and dietary fatty acids characteristics in lean and obese dyslipidemic Asian Indian women in Calcutta. Food Nutr Bull. 2007 Dec;28(4):399-405. PubMed PMID: 18274166.	India defined as “medium” on HDI

254.	Gillum RF, Mussolino ME, Madans JH. Fish consumption and hypertension incidence in African Americans and whites: the NHANES I Epidemiologic Follow-up Study. J Natl Med Assoc. 2001 Apr;93(4):124-8. PubMed PMID: 12653399; PubMed Central PMCID: PMC2593988.	Did not assess dietary patterns as defined for this project (examined fish intake)
255.	Goff LM, Bell JD, So PW, Dornhorst A, Frost GS. Veganism and its relationship with insulin resistance and intramyocellular lipid. Eur J Clin Nutr. 2005 Feb;59(2):291-8. PubMed PMID: 15523486.	Case-control study
256.	Goldbourt U, Yaari S, Medalie JH. Factors predictive of long-term coronary heart disease mortality among 10,059 male Israeli civil servants and municipal employees. A 23-year mortality follow-up in the Israeli Ischemic Heart Disease Study. Cardiology. 1993;82(2-3):100-21. PMID: 8324774.	Did not examine diet or dietary pattern
257.	Golley RK, Smithers LG, Mittinty MN, Brazionis L, Emmett P, Northstone K, Campbell K, McNaughton SA, Lynch JW. An index measuring adherence to complementary feeding guidelines has convergent validity as a measure of infant diet quality. J Nutr. 2012 May;142(5):901-8. Epub 2012 Mar 28. PubMed PMID: 22457393.	Did not assess CVD outcome in analyses
258.	Gorczyca D, Paściak M, Szponar B, Gamian A, Jankowski A. An impact of the diet on serum fatty acid and lipid profiles in Polish vegetarian children and children with allergy. Eur J Clin Nutr. 2011 Feb;65(2):191-5. Epub 2010 Nov 3. PMID: 21048771.	Insufficient sample size (n = 16, 18, and 24 per group)
259.	Gorder DD, Dolecek TA, Coleman GG, Tillotson JL, Brown HB, Lenz-Litzow K, Bartsch GE, Grandits G. Dietary intake in the Multiple Risk Factor Intervention Trial (MRFIT): nutrient and food group changes over 6 years. J Am Diet Assoc. 1986 Jun;86(6):744-51. PubMed PMID: 3519736.	Dependent variable is dietary intake
260.	Gorst-Rasmussen A, Dahm CC, Dethlefsen C, Scheike T, Overvad K. Exploring dietary patterns by using the treelet transform. Am J Epidemiol. 2011 May 15;173(10):1097-104. Epub 2011 Apr 7. PMID: 21474587.	Dietary patterns methodology
261.	Goulet J, Lamarche B, Nadeau G, Lemieux S. Effect of a nutritional intervention promoting the Mediterranean food pattern on plasma lipids, lipoproteins and body weight in healthy French-Canadian women. Atherosclerosis. 2003 Sep;170(1):115-24. PMID: 12957689.	Before and after study
262.	Goulet J, Lapointe A, Lemieux S, Lamarche B. Mediterranean diet and cardiovascular disease. Current Nutrition and Food Science. 2006;2(3):265-273.	Review
263.	Gramenzi A, Gentile A, Fasoli M, Negri E, Parazzini F, La Vecchia C. Association between certain foods and risk of acute myocardial infarction in women. BMJ. 1990 Mar 24;300(6727):771-3. PubMed PMID: 2322737; PubMed Central PMCID: PMC1662535.	Study design is case control
264.	Grant R, Bilgin A, Zeuschner C, Guy T, Pearce R, Hokin B, Ashton J. The relative impact of a vegetable-rich diet on key markers of health in a cohort of Australian adolescents. Asia Pac J Clin Nutr. 2008;17(1):107-15. PubMed PMID: 18364335.	Cross-sectional analyses
265.	Guallar-Castillón P, Rodríguez-Artalejo F, Lopez-Garcia E, León-Muñoz LM, Amiano P, Ardanaz E, Arriola L, Barricarte A, Buckland G, Chirlaque MD, Dorronsoro M, Huerta JM, Larrañaga N, Marin P, Martínez C, Molina E, Navarro C, Quirós JR, Rodríguez L, Sanchez MJ, González CA, Moreno-Iribas C. Consumption of fried foods and risk of coronary heart disease: Spanish cohort of the European Prospective Investigation into Cancer and Nutrition study. BMJ. 2012 Jan 23;344:e363. doi: 10.1136/bmj.e363. PubMed PMID: 22275385; PubMed Central PMCID: PMC3265571.	Did not examine dietary patterns as defined for this project (examined fried food intake)
266.	Guerra A, Feldl F, Koletzko B. Fatty acid composition of plasma lipids in healthy Portuguese children: is the Mediterranean diet disappearing? Ann Nutr Metab. 2001;45(2):78-81. PubMed PMID: 11359033.	Cross-sectional
267.	Guevara-Cruz M, Tovar AR, Aguilar-Salinas CA, Medina-Vera I, Gil-Zenteno L, Hernández-Viveros I, López-Romero P, Ordaz-Nava G, Canizales-Quinteros S, Guillen Pineda LE, Torres N. A dietary pattern including nopal, chia seed, soy protein, and oat reduces serum triglycerides and glucose intolerance in patients with metabolic syndrome. J Nutr. 2012 Jan;142(1):64-9. Epub 2011 Nov 16. PubMed PMID: 22090467.	Did not assess dietary patterns as defined for the project (supplementary powder formula)

268.	Guitteau M, Rosenberg M. Lifestyle recommendations plus the DASH diet reduced hypertension in patients with above-optimal blood pressure. ACP J Club. 2006 Sep-Oct;145(2):42. No abstract available. PMID: 16944862.	Not an original research study
269.	Guo H, Niu K, Monma H, Kobayashi Y, Guan L, Sato M, Minamishima D, Nagatomi R. Association of Japanese dietary pattern with serum adiponectin concentration in Japanese adult men. Nutr Metab Cardiovasc Dis. 2012 Mar;22(3):277-84. Epub 2010 Sep 28. PubMed PMID: 20880683.	Cross-sectional
270.	Ha AW, Kim JH, Shin DJ, Choi DW, Park SJ, Kang NE, Kim YS. Eating habits, obesity related behaviors, and effects of Danhak exercise in elderly Koreans. Nutr Res Pract. 2010 Aug;4(4):295-302. Epub 2010 Aug 31. PubMed PMID: 20827345; PubMed Central PMCID: PMC2933447.	Dietary patterns were not assessed in this study
271.	Hajna S, Liu J, Leblanc PJ, Faught BE, Merchant AT, Cairney J, Hay J. Association between body composition and conformity to the recommendations of Canada's Food Guide and the Dietary Approaches to Stop Hypertension (DASH) diet in peri-adolescence. Public Health Nutr. 2012 Apr 17:1-7. [Epub ahead of print] PubMed PMID: 22717343.	Cross-sectional
272.	Hakala P, Karvetti RL. Weight reduction on lactovegetarian and mixed diets. Changes in weight, nutrient intake, skinfold thicknesses and blood pressure. Eur J Clin Nutr. 1989 Jun;43(6):421-30. PubMed PMID: 2743965.	The caloric content of the intervention diets was 1200 kcal/d
273.	Hall WD, Feng Z, George VA, Lewis CE, Oberman A, Huber M, Fouad M, Cutler JA; Women's Health Trial: Feasibility Study in Minority Populations. Low-fat diet: effect on anthropometrics, blood pressure, glucose, and insulin in older women. Ethn Dis. 2003 Summer;13(3):337-43. PubMed PMID: 12894958.	Drop out rate =22%
274.	Halton TL, Willett WC, Liu S, Manson JE, Albert CM, Rexrode K, Hu FB. Low-carbohydrate-diet score and the risk of coronary heart disease in women. N Engl J Med. 2006 Nov 9;355(19):1991-2002. PubMed PMID: 17093250.	Did not assess dietary patterns as described for this project (examined percent of energy from CHO, PRO, and fat)
275.	Hamer M, McNaughton SA, Bates CJ, Mishra GD. Dietary patterns, assessed from a weighed food record, and survival among elderly participants from the United Kingdom. Eur J Clin Nutr. 2010 Aug;64(8):853-61. Epub 2010 Jun 2. PubMed PMID: 20517326.	Did not examine CVD outcome of interest (examined total mortality, not CVD-related mortality)
276.	Hansen-Krone IJ, Hansen JB, Enga K, Braekkan S. Impact of dietary patterns on the risk of myocardial infarction and venous thromboembolism. the tromso study 1994-2005. Journal of Thrombosis and Haemostasis. 2011;9:24.	Older report of cohort study, updated report included
277.	Harding S, Maynard MJ, Cruickshank K, Teyhan A. Overweight, obesity and high blood pressure in an ethnically diverse sample of adolescents in Britain: the Medical Research Council DASH study. Int J Obes (Lond). 2008 Jan;32(1):82-90. Epub 2007 Jun 19. PubMed PMID: 17579635.	Cross-sectional analyses
278.	HARDINGE MG, CROOKS H, STARE FJ. Nutritional studies of vegetarians. IV. Dietary fatty acids and serum cholesterol levels. Am J Clin Nutr. 1962 Jun;10:516-24. PubMed PMID: 13904623.	Did not examine the relationship between dietary patterns and CVD
279.	Harman SK, Parnell WR. The nutritional health of New Zealand vegetarian and non-vegetarian Seventh-day Adventists: selected vitamin, mineral and lipid levels. N Z Med J. 1998 Mar 27;111(1062):91-4. PMID: 9577459.	Insufficient sample size (n=23 and 24 per group)
280.	Harnden KE, Frayn KN, Hodson L. Dietary Approaches to Stop Hypertension (DASH) diet: applicability and acceptability to a UK population. J Hum Nutr Diet. 2010 Feb;23(1):3-10. Epub 2009 Oct 15. PubMed PMID: 19843201.	Insufficient sample size (n = 14)
281.	Harsha DW, Lin PH, Obarzanek E, Karanja NM, Moore TJ, Caballero B. Dietary Approaches to Stop Hypertension: a summary of study results. DASH Collaborative Research Group. J Am Diet Assoc. 1999 Aug;99(8 Suppl):S35-9. PubMed PMID: 10450292.	Summary of results of Appel, 1997
282.	Harsha DW, Sacks FM, Obarzanek E, Svetkey LP, Lin PH, Bray GA, Aickin M, Conlin PR, Miller ER 3rd, Appel LJ. Effect of dietary sodium intake on blood lipids: results from the DASH-sodium trial. Hypertension. 2004 Feb;43(2):393-8. Epub 2004 Jan 5. PMID: 14707154.	DASH is presented in Sacks 2001 study

283.	Hausman DB, Johnson MA, Davey A, Poon LW. Body mass index is associated with dietary patterns and health conditions in georgia centenarians. J Aging Res. 2011;2011:138015. Epub 2011 May 30. PubMed PMID: 21748003; PubMed Central PMCID: PMC3124838.	Cross-sectional
284.	Heidemann C, Hoffmann K, Spranger J, Klipstein-Grobusch K, Möhlig M, Pfeiffer AF, Boeing H; European Prospective Investigation into Cancer and Nutrition (EPIC)--Potsdam Study Cohort. A dietary pattern protective against type 2 diabetes in the European Prospective Investigation into Cancer and Nutrition (EPIC)--Potsdam Study cohort. Diabetologia. 2005 Jun;48(6):1126-34. Epub 2005 May 12. PubMed PMID: 15889235.	Did not examine CVD outcome (examined type 2 diabetes)
285.	Henríquez Sánchez P, Ruano C, de Irala J, Ruiz-Canela M, Martínez-González MA, Sánchez-Villegas A. Adherence to the Mediterranean diet and quality of life in the SUN Project.Eur J Clin Nutr. 2012 Mar;66(3):360-8. doi: 10.1038/ejcn.2011.146. Epub 2011 Aug 17. PMID: 21847137.	Dependent variable was health related quality of life
286.	Heo S, Lennie TA, Moser DK, Okoli C. Heart failure patients' perceptions on nutrition and dietary adherence. Eur J Cardiovasc Nurs. 2009 Dec;8(5):323-8. Epub 2009 Jul 8. PubMed PMID: 19589729; PubMed Central PMCID: PMC2787965.	Participants diagnosed with heart failure; insufficient sample size (n=20); cross-sectional
287.	Hermsdorff HH, Zulet MÁ, Abete I, Martínez JA. Discriminated benefits of a Mediterranean dietary pattern within a hypocaloric diet program on plasma RBP4 concentrations and other inflammatory markers in obese subjects. Endocrine. 2009 Dec;36(3):445-51. PubMed PMID: 19816812.	Non-controlled trial; hypocaloric diet
288.	Himeno E, Nishino K, Nanri H, Okazaki T, Komatsu T, Ikeda M. Evaluation of the effects of exercise and a mild hypocaloric diet on cardiovascular risk factors in obese subjects. J UOEH. 2001 Mar 1;23(1):1-12. PubMed PMID: 11279836.	Small number of subjects; N = 23
289.	Hjermann I, Velve Byre K, Holme I, Leren P. Effect of diet and smoking intervention on the incidence of coronary heart disease. Report from the Oslo Study Group of a randomised trial in healthy men. Lancet. 1981 Dec 12;2(8259):1303-10. PubMed PMID: 6118715.	Independent variables were change in diet and smoking cessation
290.	Hjermann I, Velve Byre K, Holme I, Leren P. Effect of diet and smoking intervention on the incidence of coronary heart disease. Report from the Oslo Study Group of a randomised trial in healthy men. Lancet. 1981 Dec 12;2(8259):1303-10. PubMed PMID: 6118715.	Independent variables were change in diet and smoking cessation
291.	Hjermann I. Intervention of smoking and eating habits in healthy men carrying high risk for coronary heart disease. The Oslo Study. Acta Med Scand Suppl. 1981;651:281-4. PubMed PMID: 6948504.	Did not assess dietary patterns as defined for this project
292.	Ho WK, Chan WY. Evaluation of serum lipid and lipoprotein levels in normal Chinese. The influence of dietary habit, body weight, exercise and a familial record of coronary heart disease. Clin Chim Acta. 1975 May 15;61(1):19-25. PubMed PMID: 168005.	China is a medium HDI country
293.	Hodge AM, English DR, Itsiopoulos C, O'Dea K, Giles GG. Does a Mediterranean diet reduce the mortality risk associated with diabetes: evidence from the Melbourne Collaborative Cohort Study. Nutr Metab Cardiovasc Dis. 2011 Sep;21(9):733-9. Epub 2010 Dec 30. PubMed PMID: 21194913.	Dependent variable was diabetes mortality
294.	Hodges RE, Rebello T. Dietary changes and their possible effect on blood pressure. Am J Clin Nutr. 1985 May;41(5 Suppl):1155-62. PubMed PMID: 2986449.	Review article
295.	Hodson L, Harnden KE, Roberts R, Dennis AL, Frayn KN. Does the DASH diet lower blood pressure by altering peripheral vascular function? J Hum Hypertens. 2010 May;24(5):312-9. Epub 2009 Aug 6. PubMed PMID: 19657359.	Insufficient sample size (n = 27)
296.	Hoebeeck LI, Rietzschel ER, Langlois M, De Buyzere M, De Bacquer D, De Backer G, Maes L, Gillebert T, Huybrechts I. The relationship between diet and subclinical atherosclerosis: results from the Asklepios Study. Eur J Clin Nutr. 2011 May;65(5):606-13. Epub 2011 Jan 19. PubMed PMID: 21245883.	Cross-sectional analyses
297.	Hoffmann K, Boeing H, Boffetta P, Nagel G, Orfanos P, Ferrari P, Bamia C. Comparison of two statistical approaches to predict all-cause mortality by dietary patterns in German elderly subjects. Br J Nutr. 2005 May;93(5):709-16. PubMed PMID: 15975171.	Did not examine CVD outcome (examined all-cause mortality)

298.	Hoffmann K, Zyriax BC, Boeing H, Windler E. A dietary pattern derived to explain biomarker variation is strongly associated with the risk of coronary artery disease. Am J Clin Nutr. 2004 Sep;80(3):633-40. PubMed PMID: 15321803.	Case-control study
299.	Holmberg S, Thelin A, Stiernström EL. Food choices and coronary heart disease: a population based cohort study of rural Swedish men with 12 years of follow-up. Int J Environ Res Public Health. 2009 Oct;6(10):2626-38. Epub 2009 Oct 12. PubMed PMID: 20054459; PubMed Central PMCID: PMC2790097.	Did not assess dietary patterns as defined for this project (examined food groups)
300.	Holt EM, Steffen LM, Moran A, Basu S, Steinberger J, Ross JA, Hong CP, Sinaiko AR. Fruit and vegetable consumption and its relation to markers of inflammation and oxidative stress in adolescents. J Am Diet Assoc. 2009 Mar;109(3):414-21. PubMed PMID: 19248856; PubMed Central PMCID: PMC2676354.	Cross-sectional analyses
301.	Horn LV, Tian L, Neuhouser ML, Howard BV, Eaton CB, Snetselaar L, Matthan NR, Lichtenstein AH. Dietary patterns are associated with disease risk among participants in the Women's Health Initiative Observational Study. J Nutr. 2012 Feb;142(2):284-91. Epub 2011 Dec 21. PubMed PMID: 22190026; PubMed Central PMCID: PMC3260060.v	Case-control
302.	Horrobin DF. Low prevalences of coronary heart disease (CHD), psoriasis, asthma and rheumatoid arthritis in Eskimos: are they caused by high dietary intake of eicosapentaenoic acid (EPA), a genetic variation of essential fatty acid (EFA) metabolism or a combination of both? Med Hypotheses. 1987 Apr;22(4):421-8. PubMed PMID: 3035353.	Review
303.	Høstmark AT, Lystad E, Vellar OD, Hovi K, Berg JE. Reduced plasma fibrinogen, serum peroxides, lipids, and apolipoproteins after a 3-week vegetarian diet. Plant Foods Hum Nutr. 1993 Jan;43(1):55-61. PubMed PMID: 8464845.	Insufficient sample size (n=10)
304.	Howard BV, Curb JD, Eaton CB, Kooperberg C, Ockene J, Kostis JB, Pettinger M, Rajkovic A, Robinson JG, Rossouw J, Sarto G, Shikany JM, Van Horn L. Low-fat dietary pattern and lipoprotein risk factors: the Women's Health Initiative Dietary Modification Trial. Am J Clin Nutr. 2010 Apr;91(4):860-74. Epub 2010 Feb 17. PubMed PMID: 20164311; PubMed Central PMCID: PMC2844674.	Primary study is Howard, 2006 which is included
305.	Huang T, Yang B, Zheng J, Li G, Wahlqvist ML, Li D. Cardiovascular Disease Mortality and Cancer Incidence in Vegetarians: A Meta-Analysis and Systematic Review. Ann Nutr Metab. 2012 Jun 1;60(4):233-240. [Epub ahead of print] PubMed PMID: 22677895.	Systematic Review
306.	Huang X, Gong R, Lin J, Li R, Xiao L, Duan W, Fang D. Effects of lipoprotein lipase gene variations, a high-carbohydrate low-fat diet, and gender on serum lipid profiles in healthy Chinese Han youth. Biosci Trends. 2011;5(5):198-204. PubMed PMID: 22101375.	China defined as medium on HDI
307.	Huffman FG, De La Cera M, Vaccaro JA, Zarini GG, Exebio J, Gundupalli D, Shaban L. Healthy Eating Index and Alternate Healthy Eating Index among Haitian Americans and African Americans with and without Type 2 Diabetes. J Nutr Metab. 2011;2011:398324. Epub 2011 Dec 8. PubMed PMID: 22187639; PubMed Central PMCID: PMC3236495.	Cross-sectional
308.	Huffman KM, Hawk VH, Henes ST, Ocampo CI, Orenduff MC, Slentz CA, Johnson JL, Houmard JA, Samsa GP, Kraus WE, Bales CW. Exercise effects on lipids in persons with varying dietary patterns-does diet matter if they exercise? Responses in Studies of a Targeted Risk Reduction Intervention through Defined Exercise I. Am Heart J. 2012 Jul;164(1):117-24. PubMed PMID: 22795291; PubMed Central PMCID: PMC3399760.	Does not assess dietary patterns as defined for this project (score only assessed nutrients)
309.	Huijbregts AW, Van Schaik A, Van Berge-Henegouwen GP, Van der Werf SD. Serum lipids, biliary lipid composition, and bile acid metabolism in vegetarians as compared to normal controls. Eur J Clin Invest. 1980 Dec;10(6):443-9. PubMed PMID: 6788562.	Case-control study
310.	Hung HC, Joshipura KJ, Jiang R, Hu FB, Hunter D, Smith-Warner SA, Colditz GA, Rosner B, Spiegelman D, Willett WC. Fruit and vegetable intake and risk of major chronic disease. J Natl Cancer Inst. 2004 Nov 3;96(21):1577-84. PubMed PMID: 15523086.	Did not assess dietary patterns as defined for this project (examined fruit and vegetable intake)
311.	Hunt JR, Matthys LA, Johnson LK. Zinc absorption, mineral balance, and blood lipids in women consuming controlled lactoovovegetarian and omnivorous diets for 8 wk. Am J Clin Nutr. 1998 Mar;67(3):421-30. PMID: 9497185.	Insufficient sample size (n=21)

312.	Huxley RR, Lean M, Crozier A, John JH, Neil HA; Oxford Fruit and Vegetable Study Group. Effect of dietary advice to increase fruit and vegetable consumption on plasma flavonol concentrations: results from a randomised controlled intervention trial. J Epidemiol Community Health. 2004 Apr;58(4):288-9. PubMed PMID: 15026440; PubMed Central PMCID: PMC1732715.	Did not assess dietary patterns as defined for this project (focused on fruit and vegetable intake)
313.	Hwang YJ, Park BK, Park S, Kim SH. A Comparative Study of Eating Habits and Food Intake in Women with Gestational Diabetes according to Early Postpartum Glucose Tolerance Status. Diabetes Metab J. 2011 Aug;35(4):354-63. Epub 2011 Aug 31. PubMed PMID: 21977455; PubMed Central PMCID: PMC3178696.	Subject had gestational diabetes
314.	Hydrie MZI, Basit A, Shera AS, Hakeem R, Hussain A. Dietary patterns associated with risk for metabolic syndrome in urban community of Karachi defined by cluster analysis. Pakistan Journal of Nutrition. 2010;9(1):93-99.	Pakistan classified as low on HDI
315.	Ibiebele TI, Hughes MC, Whiteman DC, Webb PM. Dietary patterns and risk of oesophageal cancers: a population-based case-control study. Br J Nutr. 2012 Apr;107(8):1207-16. Epub 2011 Sep 7. PubMed PMID: 21899799.	Outcome was risk of oesophageal cancer
316.	Iestra J, Knoops K, Kromhout D, de Groot L, Grobbee D, van Staveren W. Lifestyle, Mediterranean diet and survival in European post-myocardial infarction patients. Eur J Cardiovasc Prev Rehabil. 2006 Dec;13(6):894-900. PubMed PMID: 17143120.	Participants had experienced previous MI
317.	Iimuro S, Yoshimura Y, Umegaki H, Sakurai T, Araki A, Ohashi Y, Iijima K, Ito H; Japanese Elderly Diabetes Intervention Trial Study Group. Dietary pattern and mortality in Japanese elderly patients with type 2 diabetes mellitus: does a vegetable- and fish-rich diet improve mortality? An explanatory study. Geriatr Gerontol Int. 2012 Apr;12 Suppl 1:59-67. doi: 10.1111/j.1447-0594.2011.00813.x. PubMed PMID: 22435941.	Dependent variable was overall mortality
318.	Imamura F, Jacques PF, Herrington DM, Dallal GE, Lichtenstein AH. Adherence to 2005 Dietary Guidelines for Americans is associated with a reduced progression of coronary artery atherosclerosis in women with established coronary artery disease. Am J Clin Nutr. 2009 Jul;90(1):193-201. Epub 2009 May 13. PubMed PMID: 19439455; PubMed Central PMCID: PMC2697001.	Participants had established coronary artery disease
319.	Ingenbleek Y, McCully KS. Vegetarianism produces subclinical malnutrition, hyperhomocysteinemia and atherogenesis. Nutrition. 2012 Feb;28(2):148-53. Epub 2011 Aug 27. PubMed PMID: 21872435.	Insufficient sample size (n=24 and 15)
320.	Iqbal R, Anand S, Ounpuu S, Islam S, Zhang X, Rangarajan S, Chifamba J, Al-Hinai A, Keltai M, Yusuf S; INTERHEART Study Investigators. Dietary patterns and the risk of acute myocardial infarction in 52 countries: results of the INTERHEART study. Circulation. 2008 Nov 4;118(19):1929-37. Epub 2008 Oct 20. PubMed PMID: 18936332.	Case-control
321.	Irwig MS, El-Sohemy A, Baylin A, Rifai N, Campos H. Frequent intake of tropical fruits that are rich in beta-cryptoxanthin is associated with higher plasma beta-cryptoxanthin concentrations in Costa Rican adolescents. J Nutr. 2002 Oct;132(10):3161-7. PubMed PMID: 12368412.	Does not examine the relationship between dietary patterns and CVD outcomes
322.	Iser DJ, Avera K. Has westernization influenced serum cholesterol levels in Bougainvillian males? P N G Med J. 1993 Dec;36(4):311-5. PubMed PMID: 7941761.	Papua New Guinea classified as "low" on HDI
323.	Itsiopoulos C, Brazionis L, Kaimakamis M, Cameron M, Best JD, O'Dea K, Rowley K. Can the Mediterranean diet lower HbA1c in type 2 diabetes? Results from a randomized cross-over study. Nutr Metab Cardiovasc Dis. 2011 Sep;21(9):740-7. Epub 2010 Jul 31. PubMed PMID: 20674309.	Insufficient sample size (n = 27)
324.	Jacobs DR Jr, Gross MD, Steffen L, Steffes MW, Yu X, Svetkey LP, Appel LJ, Vollmer WM, Bray GA, Moore T, Conlin PR, Sacks F. The effects of dietary patterns on urinary albumin excretion: results of the Dietary Approaches to Stop Hypertension (DASH) Trial. Am J Kidney Dis. 2009 Apr;53(4):638-46. Epub 2009 Jan 23. PubMed PMID: 19167797; PubMed Central PMCID: PMC2676223.	Does not examine CVD outcomes of interest
325.	Jacobsen BK, Thelle DS. The Tromsø Heart Study: food habits, serum total cholesterol, HDL cholesterol, and triglycerides. Am J Epidemiol. 1987 Apr;125(4):622-30. PubMed PMID: 3826041.	Did not assess dietary patterns as defined for this project

326.	Jacobsen BK, Trygg K, Hjermann I, Thomassen MS, Real C, Norum KR. Acyl pattern of adipose tissue triglycerides, plasma free fatty acids, and diet of a group of men participating in a primary coronary prevention program (the Oslo Study). Am J Clin Nutr. 1983 Dec;38(6):906-13. PMID: 6650449.	Small number of subjects per study arm; N = 22 and 20
327.	Jakobsen MU, O'Reilly EJ, Heitmann BL, Pereira MA, Bälter K, Fraser GE, Goldbourt U, Hallmans G, Knekt P, Liu S, Pietinen P, Spiegelman D, Stevens J, Virtamo J, Willett WC, Ascherio A. Major types of dietary fat and risk of coronary heart disease: a pooled analysis of 11 cohort studies. Am J Clin Nutr. 2009 May;89(5):1425-32. Epub 2009 Feb 11. PubMed PMID: 19211817; PubMed Central PMCID: PMC2676998.	Did not assess dietary patterns as defined for this project (examined fat type)
328.	Jancso Z, Marton H, Simay A, Ujhelyi I, Ilyes I. The effect of eating habits on cardiovascular risk factors and the assessed cardiovascular risk. Acta alimentaria. 2011;40(2):254-261.	Cross-sectional
329.	Jaross W, Bergmann S, Wahrburg U, Schulte H, Assmann G. Dietary habits in Eastern Germany: changes after reunification and their relation to CHD risk profiles (DRECAN). Rev Environ Health. 1996 Jan-Jun;11(1-2):27-33. PubMed PMID: 8869523.	Did not examine relationship between dietary patterns and CVD
330.	Järvinen R, Knekt P, Rissanen H, Reunanen A. Intake of fish and long-chain n-3 fatty acids and the risk of coronary heart mortality in men and women. Br J Nutr. 2006 Apr;95(4):824-9. PMID: 16571163.	Independent variable was fish and n-3 fatty acids intake
331.	Jenkins DJ, Kendall CW, Faulkner DA, Kemp T, Marchie A, Nguyen TH, Wong JM, de Souza R, Emam A, Vidgen E, Trautwein EA, Lapsley KG, Josse RG, Leiter LA, Singer W. Long-term effects of a plant-based dietary portfolio of cholesterol-lowering foods on blood pressure. Eur J Clin Nutr. 2008 Jun;62(6):781-8. Epub 2007 Apr 25. PubMed PMID: 17457340.	Non-controlled trial
332.	Jenkins DJ, Wong JM, Kendall CW, Esfahani A, Ng VW, Leong TC, Faulkner DA, Vidgen E, Greaves KA, Paul G, Singer W. The effect of a plant-based low-carbohydrate ("Eco-Atkins") diet on body weight and blood lipid concentrations in hyperlipidemic subjects. Arch Intern Med. 2009 Jun 8;169(11):1046-54. Erratum in: Arch Intern Med. 2009 Sep 14;169(16):1490. PubMed PMID: 19506174.	Insufficient sample size (n=47 in two groups)
333.	Jhatakia KU. Profile of coronary artery disease in vegetarian community. Indian Heart J. 1973 Apr;25(2):94-9. PubMed PMID: 4726269.	India classified as “medium” on HDI
334.	Jilcott SB, Keyserling TC, Samuel-Hodge CD, Johnston LF, Gross MD, Ammerman AS. Validation of a brief dietary assessment to guide counseling for cardiovascular disease risk reduction in an underserved population. J Am Diet Assoc. 2007 Feb;107(2):246-55. PubMed PMID: 17258961.	Cross-sectional analyses
335.	Jimenez-Cruz A, Bacardi-Gascon M, Turnbull WH, Rosales-Garay P, Severino-Lugo I. A flexible, low-glycemic index mexican-style diet in overweight and obese subjects with type 2 diabetes improves metabolic parameters during a 6-week treatment period. Diabetes Care. 2003 Jul;26(7):1967-70. PubMed PMID: 12832297.	Participants diagnosed with type 2 diabetes
336.	Johansson J, Viigimaa M, Jensen-Urstad M, Krakau I, Hansson LO. Risk factors for coronary heart disease in 55- and 35-year-old men and women in Sweden and Estonia. J Intern Med. 2002 Dec;252(6):551-60. PubMed PMID: 12472917.	Cross-sectional analyses
337.	Johnston HJ, Jones M, Ridler-Dutton G, Spechler F, Stokes GS, Wyndham LE. Diet modification in lowering plasma cholesterol levels. A randomised trial of three types of intervention. Med J Aust. 1995 May 15;162(10):524-6. PubMed PMID: 7776913.	Drop out rate >20% (27%)
338.	JOLLIFFE N, RINZLER SH, ARCHER M. The anti-coronary club; including a discussion of the effects of a prudent diet on the serum cholesterol level of middleaged men. Am J Clin Nutr. 1959 Jul-Aug;7:451-62. PubMed PMID: 14407615.	Not primary research article
339.	Jones JL, Comperatore M, Barona J, Calle MC, Andersen C, McIntosh M, Najm W, Lerman RH, Fernandez ML. A Mediterranean-style, low-glycemic-load diet decreases atherogenic lipoproteins and reduces lipoprotein (a) and oxidized low-density lipoprotein in women with metabolic syndrome. Metabolism. 2012 Mar;61(3):366-72. Epub 2011 Sep 23. PubMed PMID: 21944261.	Did not assess dietary patterns as defined for this project

340.	Jones JL, Fernandez ML, McIntosh MS, Najm W, Calle MC, Kalynych C, Vukich C, Barona J, Ackermann D, Kim JE, Kumar V, Lott M, Volek JS, Lerman RH. A Mediterranean-style low-glycemic-load diet improves variables of metabolic syndrome in women, and addition of a phytochemical-rich medical food enhances benefits on lipoprotein metabolism. J Clin Lipidol. 2011 May-Jun;5(3):188-96. Epub 2011 Mar 11. PubMed PMID: 21600524.	Did not assess dietary patterns as defined for this project
341.	Jönsson T, Granfeldt Y, Ahrén B, Branell UC, Pålsson G, Hansson A, Söderström M, Lindeberg S. Beneficial effects of a Paleolithic diet on cardiovascular risk factors in type 2 diabetes: a randomized cross-over pilot study. Cardiovasc Diabetol. 2009 Jul 16;8:35. PubMed PMID: 19604407; PubMed Central PMCID: PMC2724493.	Sample size <30 subjects per study arm
342.	Joossens JV, Brems-Heyns E, Claes JH, Graffar M, Kornitzer M, Pannier R, Van Houte O, Vuylsteek K, Carlier J, De Backer G, Kesteloot H, Lequime J, Raes A, Vastesaeger M, Verdonk G. The pattern of food and mortality in Belgium. Lancet. 1977 May 21;1(8021):1069-72. PubMed PMID: 68179.	Not an original research study (review)
343.	Jørgensen ME, Pedersen MB, Siggaard C, Sørensen TB, Mulvad G, Hansen JC, Skjoldborg H, Pedersen EB. Ethnic, geographic and dietary influences upon vasoactive hormones and blood pressure among Greenland Inuit and Danes. Blood Press. 2003;12(5-6):298-306. PubMed PMID: 14763661.	Does not include independent variable (measured levels of vasoactive hormones)
344.	Jost JP, Simon C, Nuttens MC, Bingham A, Ruidavets JB, Cambou JP, Arveiler D, Lecerf JM, Schlienger JL, Douste-Blazy P. Comparison of dietary patterns between population samples in the three French MONICA nutritional surveys. Rev Epidemiol Sante Publique. 1990;38(5-6):517-23. PubMed PMID: 2082460.	Cross-sectional
345.	Joung H, Hong S, Song Y, Ahn BC, Park MJ. Dietary patterns and metabolic syndrome risk factors among adolescents. Korean J Pediatr. 2012 Apr;55(4):128-35. Epub 2012 Apr 30. PMID: 22574073.	Trend study
346.	Kabagambe EK, Baylin A, Campos H. Nonfatal acute myocardial infarction in Costa Rica: modifiable risk factors, population-attributable risks, and adherence to dietary guidelines. Circulation. 2007 Mar 6;115(9):1075-81. PubMed PMID: 17339565.	Dietary intake not sufficiently described
347.	Kagan A, Rhoads GG, Zeegen PD, Nichaman MZ. Coronary heart disease among men of Japanese ancestry in Hawaii. The Honolulu Heart study. Isr J Med Sci. 1971 Dec;7(12):1573-7. PubMed PMID: 5144601.	Did not assess dietary pattern as defined for the project
348.	Kalus U, Pindur G, Jung F, Mayer B, Radtke H, Bachmann K, Mrowietz C, Koscielny J, Kiesewetter H. Influence of the onion as an essential ingredient of the Mediterranean diet on arterial blood pressure and blood fluidity. Arzneimittelforschung. 2000 Sep;50(9):795-801. PMID: 11050695.	Independent variable was an onion-olive-oil maceration capsule
349.	Kamath SK, Ravishanker C, Briones E, Chen EH. Macronutrient intake and blood cholesterol level of a community of Asian Indians living in the United States. J Am Diet Assoc. 1997 Mar;97(3):299-301. PubMed PMID: 9060950.	Abstract not available
350.	Kanerva N, Kaartinen NE, Schwab U, Lahti-Koski M, Männistö S. Adherence to the Baltic Sea diet consumed in the Nordic countries is associated with lower abdominal obesity. Br J Nutr. 2012 May 10:1-9. [Epub ahead of print] PubMed PMID: 22575060.	Cross-sectional
351.	Kant AK, Graubard BI, Schatzkin A. Dietary patterns predict mortality in a national cohort: the National Health Interview Surveys, 1987 and 1992. J Nutr. 2004 Jul;134(7):1793-9. PMID: 15226471.	Trend study
352.	Kant AK, Schatzkin A, Ziegler RG. Dietary diversity and subsequent cause-specific mortality in the NHANES I epidemiologic follow-up study. J Am Coll Nutr. 1995 Jun;14(3):233-8. PubMed PMID: 8586771.	Did not assess dietary pattern as defined for the project
353.	Kant AK. Dietary patterns and health outcomes. J Am Diet Assoc. 2004 Apr;104(4):615-35. Review. PMID: 15054348.	Review article
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355.	Kant AK. Indexes of overall diet quality: a review. J Am Diet Assoc. 1996 Aug;96(8):785-91. Review. PubMed PMID: 8683010.	Narrative review
356.	Karabudak E, Kiziltan G, Cigerim N. A comparison of some of the cardiovascular risk factors in vegetarian and omnivorous Turkish females. J Hum Nutr Diet. 2008 Feb;21(1):13-22. PubMed PMID: 18184390.	Insufficient sample size (N=26 per group)
357.	Karanja NM, Obarzanek E, Lin PH, McCullough ML, Phillips KM, Swain JF, Champagne CM, Hoben KP. Descriptive characteristics of the dietary patterns used in the Dietary Approaches to Stop Hypertension Trial. DASH Collaborative Research Group. J Am Diet Assoc. 1999 Aug;99(8 Suppl):S19-27. PubMed PMID: 10450290.	Does not address outcome of interest
358.	Kark JD, Goldberger N, Fink R, Adler B, Kuulasmaa K, Goldman S. Myocardial infarction occurrence in Jerusalem: a Mediterranean anomaly. Atherosclerosis. 2005 Jan;178(1):129-38. Erratum in: Atherosclerosis. 2005 May;180(1):215. PubMed PMID: 15585210.	Cross-sectional study
359.	Kark JD, Kaufmann NA, Binka F, Goldberger N, Berry EM. Adipose tissue n-6 fatty acids and acute myocardial infarction in a population consuming a diet high in polyunsaturated fatty acids. Am J Clin Nutr. 2003 Apr;77(4):796-802. PubMed PMID: 12663274.	Does not include independent variable (PUFAs)
360.	Kastorini CM, Milionis H, Kalantzi K, Ioannidi A, Georgousopoulou E, Kostapanos M, Vemmos K Nikolaou V, Goudevenos J, Panagiotakos DB. Adherence to the mediterranean diet reduces the likelihood of developing acute coronary syndrome and stroke: A case/case-control study. European Heart Journal. 2011;32:722-723.	Case-control study
361.	Kastorini CM, Milionis HJ, Esposito K, Giugliano D, Goudevenos JA, Panagiotakos DB. The effect of Mediterranean diet on metabolic syndrome and its components: a meta-analysis of 50 studies and 534,906 individuals. J Am Coll Cardiol. 2011 Mar 15;57(11):1299-313. PMID: 21392646.	Meta-analysis
362.	Kastorini CM, Milionis HJ, Goudevenos JA, Panagiotakos DB. Mediterranean diet and coronary heart disease: is obesity a link? - A systematic review. Nutr Metab Cardiovasc Dis. 2010 Sep;20(7):536-51. Review. PubMed PMID: 20708148.	Systematic review
363.	Kastorini CM, Milionis HJ, Goudevenos JA, Panagiotakos DB. Modelling the role of dietary habits and eating behaviours on the development of acute coronary syndrome or stroke: aims, design, and validation properties of a case-control study. Cardiol Res Pract. 2010 Sep 14;2011. pii: 313948. PubMed PMID: 20871842; PubMed Central PMCID: PMC2943081.	Describes the methodology and procedures of a case-control study
364.	Kastorini CM, Milionis HJ, Ioannidi A, Kalantzi K, Nikolaou V, Vemmos KN, Goudevenos JA, Panagiotakos DB. Adherence to the Mediterranean diet in relation to acute coronary syndrome or stroke nonfatal events: a comparative analysis of a case/case-control study. Am Heart J. 2011 Oct;162(4):717-24. Epub 2011 Sep 14. PubMed PMID: 21982665.	Case-control study
365.	Kastorini CM, Milionis HJ, Kantas D, Bika E, Nikolaou V, Vemmos KN, Goudevenos JA, Panagiotakos DB. Adherence to the Mediterranean Diet in Relation to Ischemic Stroke Nonfatal Events in Nonhypercholesterolemic and Hypercholesterolemic Participants: Results of a Case/Case-Control Study. Angiology. 2011 Dec 5. [Epub ahead of print] PubMed PMID: 22144669.	Case-control study
366.	Kelley C, Krummel D, Gonzales EN, Neal WA, Fitch CW. Dietary intake of children at high risk for cardiovascular disease. J Am Diet Assoc. 2004 Feb;104(2):222-5. PubMed PMID: 14760570.	Does not include independent variable (energy intake, fat, fiber, and cholesterol)
367.	Kesse-Guyot E, Ahluwalia N, Lassale C, Hercberg S, Fezeu L, Lairon D. Adherence to Mediterranean diet reduces the risk of metabolic syndrome: A 6-year prospective study. Nutr Metab Cardiovasc Dis. 2012 May 25. [Epub ahead of print] PubMed PMID: 22633793.	Does not include dependent variable (MetS)
368.	Kesse-Guyot E, Fezeu L, Galan P, Hercberg S, Czernichow S, Castetbon K. Adherence to French nutritional guidelines is associated with lower risk of metabolic syndrome. J Nutr. 2011 Jun;141(6):1134-9. Epub 2011 Apr 13. PMID: 21490288.	Dependent variable was incident Metabolic Syndrome
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372.	Key TJ, Fraser GE, Thorogood M, Appleby PN, Beral V, Reeves G, Burr ML, Chang-Claude J, Frentzel-Beyme R, Kuzma JW, Mann J, McPherson K. Mortality in vegetarians and non-vegetarians: a collaborative analysis of 8300 deaths among 76,000 men and women in five prospective studies. Public Health Nutr. 1998 Mar;1(1):33-41. PubMed PMID: 10555529.	Data is represented in Key TJ 1999
373.	Khan MM, Goto R, Kobayashi K, Suzumura S, Nagata Y, Sonoda T, Sakauchi F, Washio M, Mori M. Dietary habits and cancer mortality among middle aged and older Japanese living in hokkaido, Japan by cancer site and sex. Asian Pac J Cancer Prev. 2004 Jan-Mar;5(1):58-65. PubMed PMID: 15075007.	Does not include independent variable (cancer)
374.	Kim MJ, Lee SJ, Ahn YH, Bowen P, Lee H. Dietary acculturation and diet quality of hypertensive Korean Americans. J Adv Nurs. 2007 Jun;58(5):436-45. Epub 2007 Apr 17. PubMed PMID: 17442024.	Descriptive study
375.	Kim MK, Cho SW, Park YK. Long-term vegetarians have low oxidative stress, body fat, and cholesterol levels. Nutr Res Pract. 2012 Apr;6(2):155-61. Epub 2012 Apr 30. PubMed PMID: 22586505; PubMed Central PMCID: PMC3349038.	Cross-sectional
376.	Kimokoti RW, Newby PK, Gona P, Zhu L, Campbell WR, D'Agostino RB, Millen BE. Stability of the Framingham Nutritional Risk Score and its component nutrients over 8 years: the Framingham Nutrition Studies. Eur J Clin Nutr. 2012 Mar;66(3):336-44. doi: 10.1038/ejcn.2011.167. Epub 2011 Oct 5. PubMed PMID: 21970940.	Score assesses nutrients, not foods
377.	Kimura N. Changing patterns of coronary heart disease, stroke, and nutrient intake in Japan. Prev Med. 1983 Jan;12(1):222-7. PubMed PMID: 6844310.	Trend study
378.	King DE, Mainous AG 3rd, Carnemolla M, Everett CJ. Adherence to healthy lifestyle habits in US adults, 1988-2006. Am J Med. 2009 Jun;122(6):528-34. PMID: 19486715.	Trend study
379.	Kirpizidis H, Stavrati A, Geleris P. Assessment of quality of life in a randomized clinical trial of candesartan only or in combination with DASH diet for hypertensive patients. J Cardiol. 2005 Nov;46(5):177-82. PubMed PMID: 16320974.	Does not include independent variable (QOL-score)
380.	Klurfeld DM, Kritchevsky D. The Western diet: an examination of its relationship with chronic disease. J Am Coll Nutr. 1986;5(5):477-85. PubMed PMID: 3023470.	Narrative Review
381.	Knoops KT, Groot de LC, Fidanza F, Alberti-Fidanza A, Kromhout D, van Staveren WA. Comparison of three different dietary scores in relation to 10-year mortality in elderly European subjects: the HALE project. Eur J Clin Nutr. 2006 Jun;60(6):746-55. Epub 2006 Jan 18. PubMed PMID: 16418742.	Does not include dependent variable (all cause mortality)
382.	Knuiman JT, West CE. The concentration of cholesterol in serum and in various serum lipoproteins in macrobiotic, vegetarian and non-vegetarian men and boys. Atherosclerosis. 1982 May;43(1):71-82. PubMed PMID: 7092985.	Cross-sectional
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385.	Kohlmeier M, Stricker G, Schlierf G. Influences of "normal" and "prudent" diets on biliary and serum lipids in healthy women. Am J Clin Nutr. 1985 Dec;42(6):1201-5. PubMed PMID: 4072955.	Insufficient sample size (n=12)

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387.	Kokubo Y, Iso H, Ishihara J, Okada K, Inoue M, Tsugane S; JPHC Study Group. Association of dietary intake of soy, beans, and isoflavones with risk of cerebral and myocardial infarctions in Japanese populations: the Japan Public Health Center-based (JPHC) study cohort I. Circulation. 2007 Nov 27;116(22):2553-62. Epub 2007 Nov 19. PubMed PMID: 18025534.	Does not include independent variable (soy and isoflavone intake)
388.	Kollipara UK, Mo V, Toto KH, Nelson LL, Schneider RA, Neily JB, Drazner MH. High-sodium food choices by southern, urban African Americans with heart failure. J Card Fail. 2006 Mar;12(2):144-8. PubMed PMID: 16520264.	Does not include independent variable (sodium intake)
389.	Komatsu F, Kagawa Y, Kawabata T, Kaneko Y, Purvee B, Otgon J, Chimedregzen U. Dietary habits of Mongolian people, and their influence on lifestyle-related diseases and early aging. Curr Aging Sci. 2008 Jul;1(2):84-100. PubMed PMID: 20021377.	Study was performed in Mongolia which is a medium HDI country
390.	Kondo K, Morino K, Nishio Y, Kondo M, Fuke T, Ugi S, Iwakawa H, Kashiwagi A, Maegawa H. Effects of a fish-based diet on the serum adiponectin concentration in young, non-obese, healthy Japanese subjects. J Atheroscler Thromb. 2010 Jun 30;17(6):628-37. Epub 2010 Mar 18. PubMed PMID: 20299737.	Does not include independent variable (fish consumption)
391.	Konstantinova SV, Tell GS, Vollset SE, Ulvik A, Drevon CA, Ueland PM. Dietary patterns, food groups, and nutrients as predictors of plasma choline and betaine in middle-aged and elderly men and women. Am J Clin Nutr. 2008 Dec;88(6):1663-9. PubMed PMID: 19064529.	Does not include dependent variable (plasma choline and bataine)
392.	Kontogianni M, Chrysohoou C, Panagiotakos D, Tsetsekou E, Zeimbekis A, Pitsavos C, Stefanadis C. Adherence to the Mediterranean diet and serum uric acid: the ATTICA study. Scand J Rheumatol. 2012 Jul 24. [Epub ahead of print] PubMed PMID: 22827465.	Cross-sectional
393.	Kontogianni MD, Panagiotakos DB, Chrysohoou C, Pitsavos C, Zampelas A, Stefanadis C. The impact of olive oil consumption pattern on the risk of acute coronary syndromes: The CARDIO2000 case-control study. Clin Cardiol. 2007 Mar;30(3):125-9. PMID: 17385704.	Study design was case-control
394.	Kontogianni MD, Panagiotakos DB, Pitsavos C, Chrysohoou C, Stefanadis C. Relationship between meat intake and the development of acute coronary syndromes: the CARDIO2000 case-control study. Eur J Clin Nutr. 2008 Feb;62(2):171-7. Epub 2007 Mar 14. PMID: 17356558.	Study design was case control; independent variable was meat intake
395.	Kornitzer M, Bara L. Clinical and anthropometric data, blood chemistry and nutritional patterns in the Belgian population according to age and sex. For the B.I.R.N.H. Study Group. Acta Cardiol. 1989;44(2):101-44. PubMed PMID: 2750414.	Cross-sectional
396.	Kornitzer M, Bara L. Differences between north and south in coronary risk factors, food habits and mortality in Belgium. For the B.I.R.N.H. Study Group. Acta Cardiol. 1989;44(2):145-55. PubMed PMID: 2750415.	Cross-sectional
397.	Korpela R, Seppo L, Laakso J, Lilja J, Karjala K, Lähteenmäki T, Solatunturi E, Vapaatalo H, Tikkanen MJ. Dietary habits affect the susceptibility of low-density lipoprotein to oxidation. Eur J Clin Nutr. 1999 Oct;53(10):802-7. PubMed PMID: 10556987.	Study design is cross-sectional
398.	Kouris-Blazos A, Gnardellis C, Wahlqvist ML, Trichopoulos D, Lukito W, Trichopoulou A. Are the advantages of the Mediterranean diet transferable to other populations? A cohort study in Melbourne, Australia. Br J Nutr. 1999 Jul;82(1):57-61. PubMed PMID: 10655957.	Does not include independent variable (mortality)
399.	Kourlaba G, Polychronopoulos E, Zampelas A, Lionis C, Panagiotakos DB. Development of a diet index for older adults and its relation to cardiovascular disease risk factors: the Elderly Dietary Index. J Am Diet Assoc. 2009 Jun;109(6):1022-30. PubMed PMID: 19465184.	Cross-sectional
400.	Kozan O; RiskMan Study Group. An observational study to evaluate the clinical practice of cardiovascular risk management among hypertensive patients in Turkey. Turk Kardiyol Dern Ars. 2011 Sep;39(6):445-55. doi: 10.5543/tkda.2011.01592. PubMed PMID: 21918313.	Cross-sectional data
401.	Krajcovicová-Kudlácková M, Simoncic R, Béderová A, Grancicová E, Magálová T. Influence of vegetarian and mixed nutrition on selected haematological and biochemical parameters in children. Nahrung. 1997 Oct;41(5):311-4. PMID: 9399258.	Insufficient sample size (n=26 and 32 per group)

402.	Krajcovicová-Kudlácková M, Simoncic R, Béderová A, Klvanová J, Babinska K, Grancicová E. Plasma fatty acid profile and prooxidative-antioxidative parameters in vegetarians. Nahrung. 1995;39(5-6):452-7. PubMed PMID: 8569846.	Insufficient sample size (n=12)
403.	Krauss R. Low-fat dietary pattern and risk of cardiovascular disease in the Women's Health Initiative Randomized Controlled Dietary Modification Trial. Curr Atheroscler Rep. 2007 Dec;9(6):431-3. PubMed PMID: 18377781.	Comment on Howard, 2006 (below)
404.	Kris-Etherton P, Eckel RH, Howard BV, St Jeor S, Bazzarre TL; Nutrition Committee Population Science Committee and Clinical Science Committee of the American Heart Association. AHA Science Advisory: Lyon Diet Heart Study. Benefits of a Mediterranean-style, National Cholesterol Education Program/American Heart Association Step I Dietary Pattern on Cardiovascular Disease. Circulation. 2001 Apr 3;103(13):1823-5. PubMed PMID: 11282918.	Paper is a science advisory
405.	Krishnamoorthy KM. Diet and coronary artery disease. Indian Heart J. 1999 May-Jun;51(3):268-74. PubMed PMID: 10624064.	Review
406.	Kromhout D, Bosschieter EB, de Lezenne Coulander C. The inverse relation between fish consumption and 20-year mortality from coronary heart disease. N Engl J Med. 1985 May 9;312(19):1205-9. PubMed PMID: 3990713.	Does not include independent variable (fish consumption)
407.	Kromhout D. Food consumption patterns in the Seven Countries Study. Seven Countries Study Research Group. Ann Med. 1989 Jun;21(3):237-8. PubMed PMID: 2765266.	Descriptive paper
408.	Kuczmarski RJ, Anderson JJ, Koch GG. Correlates of blood pressure in Seventh-Day Adventist (SDA) and non-SDA adolescents. J Am Coll Nutr. 1994 Apr;13(2):165-73. PubMed PMID: 8006298.	Cross-sectional
409.	Kulesza W, Rywik S, Chwojnowska Z, Radzanowska J, Marczuk A. Changes in the dietary habits of male workers in Warsaw plants over a period of four years. Appetite. 1983 Mar;4(1):31-41. PubMed PMID: 6881959.	Dependent variable is change in dietary habits; did not examine CVD
410.	Kuller LH, Kinzel LS, Pettee KK, Kriska AM, Simkin-Silverman LR, Conroy MB, Averbach F, Pappert WS, Johnson BD. Lifestyle intervention and coronary heart disease risk factor changes over 18 months in postmenopausal women: the Women On the Move through Activity and Nutrition (WOMAN study) clinical trial. J Womens Health (Larchmt). 2006 Oct;15(8):962-74. Erratum in: J Womens Health (Larchmt). 2006 Nov;15(9):1101. PubMed PMID: 17087620.	Does not include independent variable (Lifestyle Change and Health Education)
411.	Kumanyika S, Tell GS, Shemanski L, Polak J, Savage PJ. Eating patterns of community-dwelling older adults: the Cardiovascular Health Study. Ann Epidemiol. 1994 Sep;4(5):404-15. PubMed PMID: 7981849.	Cross-sectional
412.	Kushi LH, Lew RA, Stare FJ, Ellison CR, el Lozy M, Bourke G, Daly L, Graham I, Hickey N, Mulcahy R, et al. Diet and 20-year mortality from coronary heart disease. The Ireland-Boston Diet-Heart Study. N Engl J Med. 1985 Mar 28;312(13):811-8. PubMed PMID: 2983212.	Score assesses nutrients, not foods
413.	Kutryk MJ, Ramjiawan B. Plasmid lipid and lipoprotein pattern in the Inuit of the Keewatin district of the Northwest territories. Mol Cell Biochem. 2003 Apr;246(1-2):121-7. PubMed PMID: 12841353.	Cross-sectional analyses
414.	Kwok TC, Chan TY, Woo J. Relationship of urinary sodium/potassium excretion and calcium intake to blood pressure and prevalence of hypertension among older Chinese vegetarians. Eur J Clin Nutr. 2003 Feb;57(2):299-304. PubMed PMID: 12571663.	Does not include independent variable (dietary sodium and potassium)
415.	Lagiou P, Trichopoulos D, Sandin S, Lagiou A, Mucci L, Wolk A, Weiderpass E, Adami HO. Mediterranean dietary pattern and mortality among young women: a cohort study in Sweden. Br J Nutr. 2006 Aug;96(2):384-92. PubMed PMID: 16923235.	Did not include analysis related to CHD death because there were very few deaths from CHD
416.	Lanas F, Avezum A, Bautista LE, Diaz R, Luna M, Islam S, Yusuf S; INTERHEART Investigators in Latin America. Risk factors for acute myocardial infarction in Latin America: the INTERHEART Latin American study. Circulation. 2007 Mar 6;115(9):1067-74. PubMed PMID: 17339564 .	Does not include independent variable

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418.	Lancaster KJ. Characteristics influencing daily consumption of fruits and vegetables and low-fat dairy products in older adults with hypertension. J Nutr Elder. 2004;23(4):21-33. PubMed PMID: 15233120.	Cross-sectional
419.	Lapidus L, Andersson H, Bengtsson C, Bosaeus I. Dietary habits in relation to incidence of cardiovascular disease and death in women: a 12-year follow-up of participants in the population study of women in Gothenburg, Sweden. Am J Clin Nutr. 1986 Oct;44(4):444-8. PubMed PMID: 3766431.	Does not include independent variable (macronutrients)
420.	Lapointe A, Goulet J, Couillard C, Lamarche B, Lemieux S. A nutritional intervention promoting the Mediterranean food pattern is associated with a decrease in circulating oxidized LDL particles in healthy women from the Québec City metropolitan area. J Nutr. 2005 Mar;135(3):410-5. PubMed PMID: 15735071.	Non-controlled trial
421.	Larrañaga N, Moreno C, Basterretxea M, Marín P, Chirlaque MD, Amiano P, Castilla J, Dorronsoro M, Quirós JR, Sánchez MJ, Ardanaz E, Barricarte A, Navarro C, Tormo MJ, Martínez C, Berenguer T, Agudo A, González CA. Incidence of acute myocardial infarction in the Spanish epic cohort. An Sist Sanit Navar. 2009 Jan-Apr;32(1):51-9. PubMed PMID: 19430511.	Does not include independent variable
422.	Lasheras C, Fernandez S, Patterson AM. Mediterranean diet and age with respect to overall survival in institutionalized, nonsmoking elderly people. Am J Clin Nutr. 2000 Apr;71(4):987-92. PubMed PMID: 10731507.	Subjects were in residential social security institutes; dependent variable was survival
423.	Laurenzi M, Stamler R, Trevisan M, Dyer A, Stamler J. Is Italy losing the "Mediterranean advantage?" Report on the Gubbio population study: cardiovascular risk factors at baseline. Gubbio Collaborative Study Group. Prev Med. 1989 Jan;18(1):35-44. PubMed PMID: 2710761.	Report
424.	Lavoie ME, Faraj M, Strychar I, Doucet E, Brochu M, Lavoie JM, Rabasa-Lhoret R. Synergistic associations of physical activity and diet quality on cardiometabolic risk factors in overweight and obese postmenopausal women. Br J Nutr. 2012 May 9:1-10. [Epub ahead of print] PubMed PMID: 22571776.	Cross-sectional
425.	Leaf DA, Hatcher L. The effect of lean fish consumption on triglyceride levels. Phys Sportsmed. 2009 Apr;37(1):37-43. PubMed PMID: 20048486.	Does not examine dietary patterns as defined for this project (examined fish and beef intake)
426.	Lee HY, Woo J, Chen ZY, Leung SF, Peng XH. Serum fatty acid, lipid profile and dietary intake of Hong Kong Chinese omnivores and vegetarians. Eur J Clin Nutr. 2000 Oct;54(10):768-73. PMID: 11083485.	Cross-sectional
427.	Lee JE, Kim JH, Son SJ, Ahn Y, Lee J, Park C, Lee L, Erickson KL, Jung IK. Dietary pattern classifications with nutrient intake and health-risk factors in Korean men. Nutrition. 2011 Jan;27(1):26-33. Epub 2010 Feb 19. PubMed PMID: 20171845.	Cross-sectional
428.	LEE KT, KIM DN, HAN YS, GOODALE F. Geographic studies of arteriosclerosis, the effect of a strict vegetarian diet on serum lipid and electrocardiographic patterns. Arch Environ Health. 1962 Jan;4:4-10. PubMed PMID: 14463522.	Does not examine dietary patterns as defined for this project
429.	Lee MS, Lai CJ, Yang FY, Su HH, Yu HL, Wahlqvist ML. A global overall dietary index: ODI-R revised to emphasize quality over quantity. Asia Pac J Clin Nutr. 2008;17 Suppl 1:82-6. PubMed PMID: 18296308.	Does not include dependent variable
430.	Lee S, Harnack L, Jacobs DR Jr, Steffen LM, Luepker RV, Arnett DK. Trends in diet quality for coronary heart disease prevention between 1980-1982 and 2000-2002: The Minnesota Heart Survey. J Am Diet Assoc. 2007 Feb;107(2):213-22. PMID: 17258957.	Trend study
431.	Lefebvre RC. Diet, lipids, and coronary heart disease. Am Psychol. 1986 Jan;41(1):96-9. PubMed PMID: 395424	Commentary

432.	Leighton F, Polic G, Strobel P, Pérez D, Martínez C, Vásquez L, Castillo O, Villarroel L, Echeverría G, Urquiaga I, Mezzano D, Rozowski J. Health impact of Mediterranean diets in food at work. Public Health Nutr. 2009 Sep;12(9A):1635-43. PubMed PMID: 19689833.	~30% dropout rate
433.	Lennie TA, Worrall-Carter L, Hammash M, Odom-Forren J, Roser LP, Smith CS, Trupp R, Chung ML, Moser DK. Relationship of heart failure patients' knowledge, perceived barriers, and attitudes regarding low-sodium diet recommendations to adherence. Prog Cardiovasc Nurs. 2008 Winter;23(1):6-11. PubMed PMID: 18326994.	Does not include independent variable (sodium intake)
434.	Leonhäuser IU, Dorandt S, Willmund E, Honsel J. The benefit of the Mediterranean diet--considerations to modify German food patterns. Eur J Nutr. 2004 Mar;43 Suppl 1:I/31-38. PMID: 15052497.	Trend study
435.	León-Muñoz LM, Guallar-Castillón P, Graciani A, López-García E, Mesas AE, Taboada JM, Banegas JR, Rodríguez-Artalejo F. Dietary habits of the hypertensive population of Spain: accordance with the DASH diet and the Mediterranean diet. J Hypertens. 2012 Jul;30(7):1373-82. PubMed PMID: 22525205.	Cross-sectional
436.	Lerman RH, Minich DM, Darland G, Lamb JJ, Schiltz B, Babish JG, Bland JS, Tripp ML. Enhancement of a modified Mediterranean-style, low glycemic load diet with specific phytochemicals improves cardiometabolic risk factors in subjects with metabolic syndrome and hypercholesterolemia in a randomized trial. Nutr Metab (Lond). 2008 Nov 4;5:29. PubMed PMID: 18983673; PubMed Central PMCID: PMC2588603.	Insufficient sample size (n = 23 and 26 per group)
437.	Letsiou S, Nomikos T, Panagiotakos D, Pergantis SA, Fragopoulou E, Antonopoulou S, Pitsavos C, Stefanadis C. Dietary habits of Greek adults and serum total selenium concentration: the ATTICA study. Eur J Nutr. 2010 Dec;49(8):465-72. Epub 2010 Apr 13. PubMed PMID: 20386916.	Related to total selenium intake
438.	Levitan EB, Wolk A, Mittleman MA. Fatty fish, marine omega-3 fatty acids and incidence of heart failure. Eur J Clin Nutr. 2010 Jun;64(6):587-94. Epub 2010 Mar 24. PubMed PMID: 20332801; PubMed Central PMCID: PMC2880209.	Does not include independent variable (marine omega-3 fatty acids intake)
439.	Li D, Sinclair A, Mann N, Turner A, Ball M, Kelly F, Abedin L, Wilson A. The association of diet and thrombotic risk factors in healthy male vegetarians and meat-eaters. Eur J Clin Nutr. 1999 Aug;53(8):612-9. PubMed PMID: 10477247.	Cross-sectional analysis
440.	Li Y, He Y, Lai J, Wang D, Zhang J, Fu P, Yang X, Qi L. Dietary patterns are associated with stroke in Chinese adults. J Nutr. 2011 Oct;141(10):1834-9. Epub 2011 Aug 24. PubMed PMID: 21865562.	Study was performed in China, which is a medium HDI country
441.	Liebman M, Bazzarre TL. Plasma lipids of vegetarian and nonvegetarian males: effects of egg consumption. Am J Clin Nutr. 1983 Oct;38(4):612-9. PubMed PMID: 6624703.	Cross-sectional analysis
442.	Liese AD, Bortsov A, Günther AL, Dabelea D, Reynolds K, Standiford DA, Liu L, Williams DE, Mayer-Davis EJ, D'Agostino RB Jr, Bell R, Marcovina S. Association of DASH diet with cardiovascular risk factors in youth with diabetes mellitus: the SEARCH for Diabetes in Youth study. Circulation. 2011 Apr 5;123(13):1410-7. Epub 2011 Mar 21. PubMed PMID: 21422385.	Subjects are diagnosed with type 1 and type 2 diabetes mellitus
443.	Liese AD, Nichols M, Hodo D, Mellen PB, Schulz M, Goff DC, D'Agostino RB. Food intake patterns associated with carotid artery atherosclerosis in the Insulin Resistance Atherosclerosis Study. Br J Nutr. 2010 May;103(10):1471-9. Epub 2010 Jan 22. PubMed PMID: 20092665.	Dependent variable is carotid atherosclerosis
444.	Liese AD, Nichols M, Sun X, D'Agostino RB Jr, Haffner SM. Adherence to the DASH Diet is inversely associated with incidence of type 2 diabetes: the insulin resistance atherosclerosis study. Diabetes Care. 2009 Aug;32(8):1434-6. Epub 2009 Jun 1. PubMed PMID: 19487638; PubMed Central PMCID: PMC2713612.	Subjects are participants of the Insulin Resistance Atherosclerosis Study (IRAS), which included diabetics
445.	Lim SS, Noakes M, Keogh JB, Clifton PM. Long-term effects of a low carbohydrate, low fat or high unsaturated fat diet compared to a no-intervention control. Nutr Metab Cardiovasc Dis. 2010 Oct;20(8):599-607. Epub 2009 Aug 19. PubMed PMID: 19692216.	Intervention N=30/arm, but control N=23

446.	Lin PH, Allen JD, Li YJ, Yu M, Lien LF, Svetkey LP. Blood Pressure-Lowering Mechanisms of the DASH Dietary Pattern. J Nutr Metab. 2012;2012:472396. Epub 2012 Jan 30. PubMed PMID: 22496969; PubMed Central PMCID: PMC3306995.	Sample size (n=10 per study arm)
447.	Linardakis M, Bertsias G, Sarri K, Papadaki A, Kafatos A. Metabolic syndrome in children and adolescents in Crete, Greece, and association with diet quality and physical fitness. Journal of Public Health. 2008;16(6):421-428.	Cross-sectional
448.	Lindeberg S, Jönsson T, Granfeldt Y, Borgstrand E, Soffman J, Sjöström K, Ahrén B. A Palaeolithic diet improves glucose tolerance more than a Mediterranean-like diet in individuals with ischaemic heart disease. Diabetologia. 2007 Sep;50(9):1795-807. Epub 2007 Jun 22. PubMed PMID: 17583796.	Participants diagnosed with ischemic heart disease
449.	Lindeberg S, Lundh B. Apparent absence of stroke and ischaemic heart disease in a traditional Melanesian island: a clinical study in Kitava. J Intern Med. 1993 Mar;233(3):269-75. PubMed PMID: 8450295.	Papua New Guinea is a low HDI country
450.	Lindeberg S, Nilsson-Ehle P, Terént A, Vessby B, Scherstén B. Cardiovascular risk factors in a Melanesian population apparently free from stroke and ischaemic heart disease: the Kitava study. J Intern Med. 1994 Sep;236(3):331-40. PubMed PMID: 8077891.	Cross-sectional data
451.	Lindsted K, Tonstad S, Kuzma JW. Body mass index and patterns of mortality among Seventh-day Adventist men. Int J Obes. 1991 Jun;15(6):397-406. PubMed PMID: 1885263.	Does not include dietary pattern as independent variable
452.	Lioret S, McNaughton SA, Crawford D, Spence AC, Hesketh K, Campbell KJ. Parents' dietary patterns are significantly correlated: findings from the Melbourne Infant Feeding Activity and Nutrition Trial Program. Br J Nutr. 2011 Nov 1:1-9. [Epub ahead of print] PubMed PMID: 22040598.	Assessed correlation between parental dietary patterns
453.	Lipoeto NI, Agus Z, Oenzil F, Wahlqvist M, Wattanapenpaiboon N. Dietary intake and the risk of coronary heart disease among the coconut-consuming Minangkabau in West Sumatra, Indonesia. Asia Pac J Clin Nutr. 2004;13(4):377-84. PubMed PMID: 15563444.	Case-control
454.	Liu J, Hickson DA, Musani SK, Talegawkar SA, Carithers TC, Tucker KL, Fox CS, Taylor HA. Dietary Patterns, Abdominal Visceral Adipose Tissue and Cardiometabolic Risk Factors in African Americans: the Jackson Heart Study. Obesity (Silver Spring). 2012 Jun 12. doi: 10.1038/oby.2012.145. [Epub ahead of print] PubMed PMID: 22689008.	Cross-sectional
455.	Liu S, Lee IM, Ajani U, Cole SR, Buring JE, Manson JE; Physicians' Health Study. Intake of vegetables rich in carotenoids and risk of coronary heart disease in men: The Physicians' Health Study. Int J Epidemiol. 2001 Feb;30(1):130-5. PubMed PMID: 11171873.	Does not include independent variable (vegetable intake)
456.	Liu S, Manson JE, Lee IM, Cole SR, Hennekens CH, Willett WC, Buring JE. Fruit and vegetable intake and risk of cardiovascular disease: the Women's Health Study. Am J Clin Nutr. 2000 Oct;72(4):922-8. PubMed PMID: 11010932.	Does not include independent variable (fruit and vegetable intake)
457.	Liu S, Stampfer MJ, Hu FB, Giovannucci E, Rimm E, Manson JE, Hennekens CH, Willett WC. Whole-grain consumption and risk of coronary heart disease: results from the Nurses' Health Study. Am J Clin Nutr. 1999 Sep;70(3):412-9. PubMed PMID: 10479204.	Does not include independent variable (whole- grain intake)
458.	Liu K, Daviglus ML, Loria CM, Colangelo LA, Spring B, Moller AC, Lloyd-Jones DM. Healthy lifestyle through young adulthood and the presence of low cardiovascular disease risk profile in middle age: the Coronary Artery Risk Development in (Young) Adults (CARDIA) study. Circulation. 2012 Feb 28;125(8):996-1004. Epub 2012 Jan 30. PubMed PMID: 22291127; PubMed Central PMCID: PMC3353808	Did not examine diet separate from lifestyle factors
459.	Livingston GE. Proceedings: The prudent diet: What? Why? How? Prev Med. 1973 Nov;2(3):321-8. PubMed PMID: 4801212.	Not an original research study
460.	Llorente-Cortés V, Estruch R, Mena MP, Ros E, González MA, Fitó M, Lamuela-Raventós RM, Badimon L. Effect of Mediterranean diet on the expression of pro-atherogenic genes in a population at high cardiovascular risk. Atherosclerosis. 2010 Feb;208(2):442-50. Epub 2009 Aug 8. PubMed PMID: 19712933.	Does not include dependent variable (pro-atherogenic genes)

461.	Lockheart MS, Steffen LM, Rebnord HM, Fimreite RL, Ringstad J, Thelle DS, Pedersen JI, Jacobs DR Jr. Dietary patterns, food groups and myocardial infarction: a case-control study. Br J Nutr. 2007 Aug;98(2):380-7. Epub 2007 Mar 29. PubMed PMID: 17391555.	Case-control
462.	Logan KJ, Woodside JV, Young IS, McKinley MC, Perkins-Porras L, McKeown PP. Adoption and maintenance of a Mediterranean diet in patients with coronary heart disease from a Northern European population: a pilot randomised trial of different methods of delivering Mediterranean diet advice. J Hum Nutr Diet. 2010 Feb;23(1):30-7. Epub 2009 Sep 25. PubMed PMID: 19788708.	Participants were diagnosed with CHD
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464.	Lohse B, Psota T, Estruch R, Zazpe I, Sorli JV, Salas-Salvadó J, Serra M, Krall JS, Márquez F, Ros E; PREDIMED Study Investigators. Eating competence of elderly Spanish adults is associated with a healthy diet and a favorable cardiovascular disease risk profile. J Nutr. 2010 Jul;140(7):1322-7. Epub 2010 May 26. PubMed PMID: 20505016.	Cross-sectional
465.	Lois MTAE, Garcia-Andrade CR, Nunez-Cortes JM. Cardiovascular risk factors and dietary patterns. Current Nutrition and Food Science. 2011;7(2):122-125.	Review summary
466.	Loke AY, Chan KN. Dietary habits of patients with coronary atherosclerosis: case-control study. J Adv Nurs. 2005 Oct;52(2):159-69. PMID: 16164477.	Study design was case-control
467.	Lopes HF, Martin KL, Nashar K, Morrow JD, Goodfriend TL, Egan BM. DASH diet lowers blood pressure and lipid-induced oxidative stress in obesity. Hypertension. 2003 Mar;41(3):422-30. Epub 2003 Feb 3. PubMed PMID: 12623938.	Intervention N<30
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471.	Luepker RV, Perry CL, McKinlay SM, Nader PR, Parcel GS, Stone EJ, Webber LS, Elder JP, Feldman HA, Johnson CC, et al. Outcomes of a field trial to improve children's dietary patterns and physical activity. The Child and Adolescent Trial for Cardiovascular Health. CATCH collaborative group. JAMA. 1996 Mar 13;275(10):768-76. PubMed PMID: 8598593.	Did not assess dietary patterns as defined for this project
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478.	Mann JI. A prudent diet for the nation. J Hum Nutr. 1979 Feb;33(1):57-63. PubMed PMID: 422845.	Commentary
479.	Mano R, Ishida A, Ohya Y, Todoriki H, Takishita S. Dietary intervention with Okinawan vegetables increased circulating endothelial progenitor cells in healthy young women. Atherosclerosis. 2009 Jun;204(2):544-8. Epub 2008 Oct 11. PubMed PMID: 19013573.	Does not include independent variable (vegetables)
480.	Marchioli R, Barzi F, Marfisi RM. Mediterranean diet and post-mi risk of cardiovascular mortality. Atherosclerosis. 2002;3(2):160.	Participants had experienced a MI
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485.	Martínez-González MÁ, de la Fuente-Arrillaga C, López-Del-Burgo C, Vázquez-Ruiz Z, Benito S, Ruiz-Canela M. Low consumption of fruit and vegetables and risk of chronic disease: a review of the epidemiological evidence and temporal trends among Spanish graduates. Public Health Nutr. 2011 Dec;14(12A):2309-15. Review. PubMed PMID: 22166189.	Review
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487.	Martínez-González MA, Fernández-Jarne E, Martínez-Losa E, Prado-Santamaría M, Brugarolas-Brufau C, Serrano-Martinez M. Role of fibre and fruit in the Mediterranean diet to protect against myocardial infarction: a case-control study in Spain. Eur J Clin Nutr. 2002 Aug;56(8):715-22. PubMed PMID: 12122546.	Case-control; does not include independent variable (fiber and fruit consumption)
488.	Martínez-González MA, Fernández-Jarne E, Serrano-Martínez M, Marti A, Martinez JA, Martín-Moreno JM. Mediterranean diet and reduction in the risk of a first acute myocardial infarction: an operational healthy dietary score. Eur J Nutr. 2002 Aug;41(4):153-60. PubMed PMID: 12242583.	Hospital-based case-control study
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494.	Masala G, Bendinelli B, Versari D, Saieva C, Ceroti M, Santagiuliana F, Caini S, Salvini S, Sera F, Taddei S, Ghiadoni L, Palli D. Anthropometric and dietary determinants of blood pressure in over 7000 Mediterranean women: the European Prospective Investigation into Cancer and Nutrition-Florence cohort. J Hypertens. 2008 Nov;26(11):2112-20. PubMed PMID: 18854749.	Does not include independent variable (nutrients and some foods)
495.	Masala G, Ceroti M, Pala V, Krogh V, Vineis P, Sacerdote C, Saieva C, Salvini S, Sieri S, Berrino F, Panico S, Mattiello A, Tumino R, Giurdanella MC, Bamia C, Trichopoulou A, Riboli E, Palli D. A dietary pattern rich in olive oil and raw vegetables is associated with lower mortality in Italian elderly subjects. Br J Nutr. 2007 Aug;98(2):406-15. Epub 2007 Apr 3. PubMed PMID: 17403268.	Does not include dependent variable (overall mortality)
496.	Masana L, Camprubi M, Sarda P, Sola R, Joven J, Turner PR. The Mediterranean-type diet: is there a need for further modification? Am J Clin Nutr. 1991 Apr;53(4):886-9. PubMed PMID: 2008868.	Insufficient sample size (n=11)
497.	Masarei JR, Rouse IL, Lynch WJ, Robertson K, Vandongen R, Beilin LJ. Vegetarian diets, lipids and cardiovascular risk. Aust N Z J Med. 1984 Aug;14(4):400-4. PubMed PMID: 6596047.	Review
498.	Masarei JR, Rouse IL, Lynch WJ, Robertson K, Vandongen R, Beilin LJ. Effects of a lacto-ovo vegetarian diet on serum concentrations of cholesterol, triglyceride, HDL-C, HDL2-C, HDL3-C, apoprotein-B, and Lp(a). Am J Clin Nutr. 1984 Sep;40(3):468-78. PubMed PMID: 6089540.	Insufficient sample size in the control group (n=19)
499.	Massari M, Freeman KM, Seccareccia F, Menotti A, Farchi G; Research Group of the RIFLE Project. An index to measure the association between dietary patterns and coronary heart disease risk factors: findings from two Italian studies. Prev Med. 2004 Oct;39(4):841-7. PubMed PMID: 15351554.	Independent variable was an index that determines the proportion of fatty to non-fatty foods
500.	Mateo-Gallego R, Perez-Calahorra S, Cenarro A, Bea AM, Andres E, Horno J, Ros E, Civeira F. Effect of lean red meat from lamb v. lean white meat from chicken on the serum lipid profile: a randomised, cross-over study in women. Br J Nutr. 2012 May;107(10):1403-7. Epub 2011 Sep 9. PubMed PMID: 21902857.	Independent variable was lean meat, not a dietary pattern
501.	Mateo-Gallego R, Solanas-Barca M, Burillo E, Cenarro A, Marques-Lopes I, Civeira F. Iron deposits and dietary patterns in familial combined hyperlipidemia and familial hypertriglyceridemia. J Physiol Biochem. 2010 Sep;66(3):229-36. Epub 2010 Jul 20. PMID: 20645139.	Did not examine a CVD outcome (examined iron deposits)
502.	Mattei J, Hu FB, Campos H. A higher ratio of beans to white rice is associated with lower cardiometabolic risk factors in Costa Rican adults. Am J Clin Nutr. 2011 Sep;94(3):869-76. Epub 2011 Aug 3. PubMed PMID: 21813808; PubMed Central PMCID: PMC3155926.	Does not include independent variable (analysis was performed on white rice and beans)
503.	Mattei J, Noel SE, Tucker KL. A meat, processed meat, and French fries dietary pattern is associated with high allostatic load in Puerto Rican older adults. J Am Diet Assoc. 2011 Oct;111(10):1498-506. PubMed PMID: 21963016; PubMed Central PMCID: PMC3185297.	Does not include dependent variable (analysis was performed on allostatic load)
504.	Matteucci E, Passerai S, Mariotti M, Fagnani F, Evangelista I, Rossi L, Giampietro O. Dietary habits and nutritional biomarkers in Italian type 1 diabetes families: evidence of unhealthy diet and combined-vitamin-deficient intakes. Eur J Clin Nutr. 2005 Jan;59(1):114-22. PubMed PMID: 15340368.	Cross-sectional study
505.	Mattioli AV, Miloro C, Pennella S, Pedrazzi P, Farinetti A. Adherence to Mediterranean diet and intake of antioxidants influence spontaneous conversion of atrial fibrillation. Nutr Metab Cardiovasc Dis. 2011 Jul 26. [Epub ahead of print] PubMed PMID: 21798731.	Outcomes were spontaneous conversion of atrial fibrillation and arrhythmia
506.	Mazaraki A, Tsioufis C, Dimitriadis K, Tsiachris D, Stefanadi E, Zampelas A, Richter D, Mariolis A, Panagiotakos D, Tousoulis D, Stefanadis C. Adherence to the Mediterranean diet and albuminuria levels in Greek adolescents: data from the Leontio Lyceum ALbuminuria (3L study). Eur J Clin Nutr. 2011 Feb;65(2):219-25. Epub 2010 Nov 10. PubMed PMID: 21063428.	Does not include dependent variable (albumin)

507.	McArthur DB. Heart healthy eating behaviors of children following a school-based intervention: a meta-analysis. Issues Compr Pediatr Nurs. 1998 Jan-Mar;21(1):35-48. PubMed PMID: 10188424.	Meta-analysis
508.	McCarron DA, Oparil S, Chait A, Haynes RB, Kris-Etherton P, Stern JS, Resnick LM, Clark S, Morris CD, Hatton DC, Metz JA, McMahon M, Holcomb S, Snyder GW, Pi-Sunyer FX. Nutritional management of cardiovascular risk factors. A randomized clinical trial. Arch Intern Med. 1997 Jan 27;157(2):169-77. PubMed PMID: 9009974.	Independent variable is a therapeutic diet
509.	McClean R, McCrum E, Scally G, McMaster D, Patterson C, Jackson N, Evans A. Dietary patterns in the Belfast MONICA Project. Proc Nutr Soc. 1990 Jul;49(2):297-305. PubMed PMID: 2236094.	Abstract not available
510.	McCullough ML, Patel AV, Kushi LH, Patel R, Willett WC, Doyle C, Thun MJ, Gapstur SM. Following cancer prevention guidelines reduces risk of cancer, cardiovascular disease, and all-cause mortality. Cancer Epidemiol Biomarkers Prev. 2011 Jun;20(6):1089-97. Epub 2011 Apr 5. PMID: 21467238.	Diet was not separated from other lifestyle factors in the cancer prevention score
511.	McCullough ML, Willett WC. Evaluating adherence to recommended diets in adults: the Alternate Healthy Eating Index. Public Health Nutr. 2006 Feb;9(1A):152-7. PubMed PMID: 16512963	Study to assess DP scores, data related to health outcomes from earlier, included study
512.	McDougall J, Litzau K, Haver E, Saunders V, Spiller GA. Rapid reduction of serum cholesterol and blood pressure by a twelve-day, very low fat, strictly vegetarian diet. J Am Coll Nutr. 1995 Oct;14(5):491-6. PubMed PMID: 8522729.	Before and after study
513.	McGuire HL, Svetkey LP, Harsha DW, Elmer PJ, Appel LJ, Ard JD. Comprehensive lifestyle modification and blood pressure control: a review of the PREMIER trial. J Clin Hypertens (Greenwich). 2004 Jul;6(7):383-90. Erratum in: J Clin Hypertens (Greenwich). 2004 Oct;6(10):568. Elmer, Patrick J [corrected to Elmer, Patricia J]. PMID: 15249794.	Two of three groups involve weight loss intervention
514.	McLaughlin J, Middaugh J, Boudreau D, Malcom G, Parry S, Tracy R, Newman W. Adipose tissue triglyceride fatty acids and atherosclerosis in Alaska Natives and non-Natives. Atherosclerosis. 2005 Aug;181(2):353-62. PubMed PMID: 16039290.	Autopsy study; does not include dependent variable (omega-3)
515.	McMurry MP, Cerqueira MT, Connor SL, Connor WE. Changes in lipid and lipoprotein levels and body weight in Tarahumara Indians after consumption of an affluent diet. N Engl J Med. 1991 Dec 12;325(24):1704-8. PubMed PMID: 1944471.	13 Subjects
516.	McNaughton SA, Mishra GD, Brunner EJ. Dietary patterns, insulin resistance, and incidence of type 2 diabetes in the Whitehall II Study. Diabetes Care. 2008 Jul;31(7):1343-8. Epub 2008 Apr 4. PubMed PMID: 18390803; PubMed Central PMCID: PMC2453656.	Subjects with type 2 diabetes
517.	McNaughton SA, Mishra GD, Stephen AM, Wadsworth ME. Dietary patterns throughout adult life are associated with body mass index, waist circumference, blood pressure, and red cell folate. J Nutr. 2007 Jan;137(1):99-105. PubMed PMID: 17182808.	Cross-sectional
518.	Méjean C, Traissac P, Eymard-Duvernay S, El Ati J, Delpeuch F, Maire B. Diet quality of North African migrants in France partly explains their lower prevalence of diet-related chronic conditions relative to their native French peers. J Nutr. 2007 Sep;137(9):2106-13. PMID: 17709450.	Study design was retrospective cohort
519.	Melby CL, Goldflies DG, Hyner GC, Lyle RM. Relation between vegetarian/nonvegetarian diets and blood pressure in black and white adults. Am J Public Health. 1989 Sep;79(9):1283-8. PubMed PMID: 2764208; PubMed Central PMCID: PMC1349705.	Cross-sectional
520.	Melby CL, Toohey ML, Cebrick J. Blood pressure and blood lipids among vegetarian, semivegetarian, and nonvegetarian African Americans. Am J Clin Nutr. 1994 Jan;59(1):103-9. PubMed PMID: 8279389.	Descriptive study
521.	Melchert HU, Limsathayourat N, Mihajlović H, Eichberg J, Thefeld W, Rottka H. Fatty acid patterns in triglycerides, diglycerides, free fatty acids, cholesteryl esters and phosphatidylcholine in serum from vegetarians and non-vegetarians. Atherosclerosis. 1987 May;65(1-2):159-66. PubMed PMID: 3606730.	Cross-sectional

522.	Mente A, de Koning L, Shannon HS, Anand SS. A systematic review of the evidence supporting a causal link between dietary factors and coronary heart disease. Arch Intern Med. 2009 Apr 13;169(7):659-69. Review. PubMed PMID: 19364995.	Systematic review
523.	Messner T, Erkstam UB, Gustafsson IB, Nilsson SB, Vessby B. Diet and dietary markers in Kiruna and Uppsala, Sweden--a comparison. Int J Circumpolar Health. 1997 Apr;56(1-2):21-9. PubMed PMID: 9300843.	Case-control study
524.	Metcalf PA, Scragg RR, Schaaf D, Dyall L, Black PN, Jackson R. Dietary intakes of European, Māori, Pacific and Asian adults living in Auckland: the Diabetes, Heart and Health Study. Aust N Z J Public Health. 2008 Oct;32(5):454-60. PubMed PMID: 18959550.	Cross-sectional
525.	Metcalf PA, Stevens J, Shimakawa T, Hutchinson RG, Schmidt M, Dennis BH, Davis CE, Heiss G. Comparison of diets of NIDDM and non-diabetic African Americans and whites: The atherosclerosis risk in communities study. Nutrition Research. 1998;18(3):447-456.	Cross-sectional
526.	Meyer KA, Kushi LH, Jacobs DR Jr, Folsom AR. Dietary fat and incidence of type 2 diabetes in older Iowa women. Diabetes Care. 2001 Sep;24(9):1528-35. PubMed PMID: 11522694.	Outcome was incidence of type 2 diabetes
527.	Mezzano D, Leighton F, Martínez C, Marshall G, Cuevas A, Castillo O, Panes O, Muñoz B, Pérez DD, Mizón C, Rozowski J, San Martín A, Pereira J. Complementary effects of Mediterranean diet and moderate red wine intake on haemostatic cardiovascular risk factors. Eur J Clin Nutr. 2001 Jun;55(6):444-51. PubMed PMID: 11423921.	Does not include independent variable (Alcohol)
528.	Mezzano D, Leighton F, Strobel P, Martínez C, Marshall G, Cuevas A, Castillo O, Panes O, Muñoz B, Rozowski J, Pereira J. Mediterranean diet, but not red wine, is associated with beneficial changes in primary haemostasis. Eur J Clin Nutr. 2003 Mar;57(3):439-46. PubMed PMID: 12627181.	Does not include independent variable (Alcohol)
529.	Mezzano D, Muñoz X, Martínez C, Cuevas A, Panes O, Aranda E, Guasch V, Strobel P, Muñoz B, Rodríguez S, Pereira J, Leighton F. Vegetarians and cardiovascular risk factors: hemostasis, inflammatory markers and plasma homocysteine. Thromb Haemost. 1999 Jun;81(6):913-7. PubMed PMID: 10404767.	Does not include dependent variable (inflammatory markers)
530.	Mia FB, Vorster HH. Coronary heart disease risk factors in Indian adolescents - The role of diet. Cardiovascular Journal of Southern Africa. 2000;11(2):68-75.	Cross-sectional
531.	Michalsen A, Lehmann N, Pithan C, Knoblauch NT, Moebus S, Kannenberg F, Binder L, Budde T, Dobos GJ. Mediterranean diet has no effect on markers of inflammation and metabolic risk factors in patients with coronary artery disease. Eur J Clin Nutr. 2006 Apr;60(4):478-85. PubMed PMID: 16306923.	Participants diagnosed with coronary artery disease
532.	Mikkilä V, Räsänen L, Laaksonen MM, Juonala M, Viikari J, Pietinen P, Raitakari OT. Long-term dietary patterns and carotid artery intima media thickness: the Cardiovascular Risk in Young Finns Study. Br J Nutr. 2009 Nov;102(10):1507-12. Epub 2009 Oct 8. PubMed PMID: 19811695.	Dependent variable is intima media thickness
533.	Mikkilä V, Räsänen L, Raitakari OT, Pietinen P, Viikari J. Consistent dietary patterns identified from childhood to adulthood: the cardiovascular risk in Young Finns Study. Br J Nutr. 2005 Jun;93(6):923-31. PubMed PMID: 16022763.	Descriptive study
534.	Millen BE, Franz MM, Quatromoni PA, Gagnon DR, Sonnenberg LM, Ordovas JM, Wilson PW, Schaefer EJ, Cupples LA. Diet and plasma lipids in women. I. Macronutrients and plasma total and low-density lipoprotein cholesterol in women: the Framingham nutrition studies. J Clin Epidemiol. 1996 Jun;49(6):657-63. PubMed PMID: 8656227.	Cross-sectional
535.	Millen BE, Quatromoni PA, Copenhafer DL, Demissie S, O'Horo CE, D'Agostino RB. Validation of a dietary pattern approach for evaluating nutritional risk: the Framingham Nutrition Studies. J Am Diet Assoc. 2001 Feb;101(2):187-94. PubMed PMID: 11271691.	Validation study
536.	Millen BE, Quatromoni PA, Nam BH, O'Horo CE, Polak JF, D'Agostino RB. Dietary patterns and the odds of carotid atherosclerosis in women: the Framingham Nutrition Studies. Prev Med. 2002 Dec;35(6):540-7. PMID: 12460521.	Dependent variable is carotid atherosclerosis

537.	Millen BE, Quatromoni PA, Nam BH, O'Horo CE, Polak JF, Wolf PA, D'Agostino RB; Framingham Nutrition Studies. Dietary patterns, smoking, and subclinical heart disease in women: opportunities for primary prevention from the Framingham Nutrition Studies. J Am Diet Assoc. 2004 Feb;104(2):208-14. PubMed PMID: 14760568.	Dependent variable is carotid atherosclerosis
538.	Millen BE, Quatromoni PA, Nam BH, Pencina MJ, Polak JF, Kimokoti RW, Ordovas JM, D'Agostino RB. Compliance with expert population-based dietary guidelines and lower odds of carotid atherosclerosis in women: the Framingham Nutrition Studies. Am J Clin Nutr. 2005 Jul;82(1):174-80. PubMed PMID: 16002816.	Dependent variable is carotid atherosclerosis
539.	Miller ER 3rd, Erlinger TP, Sacks FM, Svetkey LP, Charleston J, Lin PH, Appel LJ. A dietary pattern that lowers oxidative stress increases antibodies to oxidized LDL: results from a randomized controlled feeding study. Atherosclerosis. 2005 Nov;183(1):175-82. Epub 2005 Apr 18. PubMed PMID: 16216596.	Dependent variables are oxidative stress and oxidized LDL
540.	Mimura G, Nakamasu J, Irie M. Incidence of hyperlipemia in diabetics in Okinawa and its relation to ischemic heart disease. Tohoku J Exp Med. 1983 Dec;141 Suppl:611-7. PubMed PMID: 6680539.	Cross-sectional
541.	Min C, Noh H, Kang YS, Sim HJ, Baik HW, Song WO, Yoon J, Park YH, Joung H. Breakfast patterns are associated with metabolic syndrome in Korean adults. Nutr Res Pract. 2012 Feb;6(1):61-7. Epub 2012 Feb 29. PubMed PMID: 22413042; PubMed Central PMCID: PMC3296924.	Assessed dietary patterns only for breakfast
542.	Mirmiran P, Azadbakht L, Azizi F. Dietary quality-adherence to the dietary guidelines in Tehranian adolescents: Tehran Lipid and Glucose Study. Int J Vitam Nutr Res. 2005 May;75(3):195-200. PubMed PMID: 16028635.	Cross-sectional analyses
543.	Miura K, Greenland P, Stamler J, Liu K, Daviglus ML, Nakagawa H. Relation of vegetable, fruit, and meat intake to 7-year blood pressure change in middle-aged men: the Chicago Western Electric Study. Am J Epidemiol. 2004 Mar 15;159(6):572-80. PubMed PMID: 15003961.	Examined individual food groups and BP
544.	Mizushima S, Moriguchi EH, Ishikawa P, Hekman P, Nara Y, Mimura G, Moriguchi Y, Yamori Y. Fish intake and cardiovascular risk among middle-aged Japanese in Japan and Brazil. J Cardiovasc Risk. 1997 Jun;4(3):191-9. PubMed PMID: 9475674.	Does not include dependent variable (fish consumption)
545.	Moghadasi M, Nikbakht M, et al. Association between lifestyle status and dyslipidemia in ilam adults. Iranian Journal of Endocrinology and Metabolism. 2011;13(2):137-144+223.	Cross-sectional
546.	Mohammadifard N, Sarrafzadegan N, Nouri F, Sajjadi F, Alikhasi H, Maghroun M, Kelishadi R, Iraji F, Rahmati M. Using factor analysis to identify dietary patterns in Iranian adults: Isfahan Healthy Heart Program. Int J Public Health. 2012 Feb;57(1):235-41. Epub 2011 May 5. PMID: 21544530.	Cross-sectional; did not consider body weight measures as outcomes
547.	Mohan S, Wilkes L, Jackson D. Lifestyle of Asian Indians with coronary heart disease: the Australian context. Collegian. 2008;15(3):115-21. PubMed PMID: 18780678.	Descriptive study
548.	Mohindra NA, Nicklas TA, O'neil CE, Yang SJ, Berenson GS. Eating patterns and overweight status in young adults: the Bogalusa Heart Study. Int J Food Sci Nutr. 2009;60 Suppl 3:14-25. Epub 2009 May 21. PubMed PMID: 19462322; PubMed Central PMCID: PMC2769992.	Cross-sectional
549.	Mojonnier ML, Hall Y, Berkson DM, Robinson E, Wethers B, Pannbacker B, Moss D, Pardo E, Stamler J, Shekelle RB, Raynor W. Experience in changing food habits of hyperlipidemic men and women. J Am Diet Assoc. 1980 Aug;77(2):140-8. PubMed PMID: 7400495.	Dependent variable was education program effectiveness to change dietary habits
550.	Mok VK, Sit JW, Tsang AS, Chair SY, Cheng TL, Chiang CS. A Controlled Trial of a Nurse Follow-up Dietary Intervention on Maintaining a Heart-Healthy Dietary Pattern Among Patients After Myocardial Infarction. J Cardiovasc Nurs. 2012 May 1. [Epub ahead of print] PubMed PMID: 22534471.	All subjects diagnosed with myocardial infarction
551.	Moore LL, Bradlee ML, Singer MR, Qureshi MM, Buendia JR, Daniels SR. Dietary Approaches to Stop Hypertension (DASH) eating pattern and risk of elevated blood pressure in adolescent girls. Br J Nutr. 2012 Jan 16:1-8. [Epub ahead of print] PubMed PMID: 22243687	Diet pattern not assessed using an index or score

552.	Moore LL, Singer MR, Bradlee ML, Djoussé L, Proctor MH, Cupples LA, Ellison RC. Intake of fruits, vegetables, and dairy products in early childhood and subsequent blood pressure change. Epidemiology. 2005 Jan;16(1):4-11. PubMed PMID: 15613939.	Does not include independent variable (analysis was performed on some foods)
553.	Moore TJ, Alsabeeh N, Apovian CM, Murphy MC, Coffman GA, Cullum-Dugan D, Jenkins M, Cabral H. Weight, blood pressure, and dietary benefits after 12 months of a Web-based Nutrition Education Program (DASH for health): longitudinal observational study. J Med Internet Res. 2008 Dec 12;10(4):e52. PMID: 19073541.	Drop out rate >20% (74%)
554.	Moore TJ, Conlin PR, Ard J, Svetkey LP. DASH (Dietary Approaches to Stop Hypertension) diet is effective treatment for stage 1 isolated systolic hypertension. Hypertension. 2001 Aug;38(2):155-8. PubMed PMID: 11509468.	Intervention N<30/arm
555.	Moreno Vazquez JM, Garcia Alcon JL, Campillo Alvarez JE. Influence of diet and physical exercise on plasma lipid concentrations in an homogeneous sample of young Spanish Air Force pilots. Eur J Appl Physiol Occup Physiol. 1994;69(1):75-80. PubMed PMID: 7957160.	Study did not assess a dietary pattern as defined for the project.
556.	Moriguchi EH, Moriguchi Y, Yamori Y. Impact of diet on the cardiovascular risk profile of Japanese immigrants living in Brazil: contributions of World Health Organization CARDIAC and MONALISA studies. Clin Exp Pharmacol Physiol. 2004 Dec;31 Suppl 2:S5-7. PubMed PMID: 18254187.	Cross-sectional
557.	Mozaffarian D, Kumanyika SK, Lemaitre RN, Olson JL, Burke GL, Siscovick DS. Cereal, fruit, and vegetable fiber intake and the risk of cardiovascular disease in elderly individuals. JAMA. 2003 Apr 2;289(13):1659-66. PubMed PMID: 12672734.	Independent variables were individual food groups
558.	Munch-Andersen T, Olsen DB, Søndergaard H, Daugaard JR, Bysted A, Christensen DL, Saltin B, Helge JW. Metabolic profile in two physically active Inuit groups consuming either a western or a traditional Inuit diet. Int J Circumpolar Health. 2012 Mar 19;71:17342. doi: 10.3402/ijch.v71i0.17342. PubMed PMID: 22456044.	Cross-sectional
559.	Murie M, Buil P, Irimia P, Toledo E, Riverol M, Martinez E et al. Effect of Mediterranean diet on carotid intima-media thickness progression in patients with high vascular risk. Cerebrovascular Diseases. 2010;29(Suppl 1):21.	Dependent variable carotid intima-media thickness
560.	Muros Molina JJ, Oliveras López MJ, Mayor Reyes M, Reyes Burgos T, López García de la Serrana H. Influence of physical activity and dietary habits on lipid profile, blood pressure and BMI in subjects with metabolic syndrome. Nutr Hosp. 2011 Sep-Oct;26(5):1105-9. PubMed PMID: 22072359.	Doesn't address the question; determined the influence of physical activity and dietary habits
561.	Nafar M, Noori N, Jalali-Farahani S, Hosseinpanah F, Poorrezagholi F, Ahmadpoor P, Samadian F, Firouzan A, Einollahi B. Mediterranean diets are associated with a lower incidence of metabolic syndrome one year following renal transplantation. Kidney Int. 2009 Dec;76(11):1199-206. Epub 2009 Sep 9. PMID: 19741589.	Subjects were renal transplant patients
562.	Nagura J, Iso H, Watanabe Y, Maruyama K, Date C, Toyoshima H, Yamamoto A, Kikuchi S, Koizumi A, Kondo T, Wada Y, Inaba Y, Tamakoshi A; JACC Study Group. Fruit, vegetable and bean intake and mortality from cardiovascular disease among Japanese men and women: the JACC Study. Br J Nutr. 2009 Jul;102(2):285-92. Epub 2009 Jan 13. PubMed PMID: 19138438.	Does not include independent variable (analysis was performed on fruits and vegetables)
563.	Nagyová A, Kudlácková M, Grancicová E, Magálová T. LDL oxidizability and antioxidative status of plasma in vegetarians. Ann Nutr Metab. 1998;42(6):328-32. PMID: 9895420.	Insufficient sample size (n=19 per group)
564.	Nakamura Y, Hozawa A, Turin TC, Takashima N, Okamura T, Hayakawa T, Kita Y, Okayama A, Miura K, Ueshima H; NIPPON DATA80 Research Group. Dietary habits in middle age and future changes in activities of daily living - NIPPON DATA80. Gerontology. 2009;55(6):707-13. Epub 2009 Aug 28. PubMed PMID: 19713695.	Does not include independent variable (analysis was performed on meat, fish and egg)
565.	Nestel PJ, Billington T, Smith B. Low density and high density lipoprotein kinetics and sterol balance in vegetarians. Metabolism. 1981 Oct;30(10):941-5. PubMed PMID: 7278649.	Total sample size=13
566.	Nettleton JA, Matijevic N, Follis JL, Folsom AR, Boerwinkle E. Associations between dietary patterns and flow cytometry-measured biomarkers of inflammation and cellular activation in the Atherosclerosis Risk in Communities (ARIC) Carotid Artery MRI Study. Atherosclerosis. 2010 Sep;212(1):260-7. Epub 2010 Apr 29. PubMed PMID: 20537646; PubMed Central PMCID: PMC2933270.	Cross-sectional analysis

567.	Nettleton JA, Schulze MB, Jiang R, Jenny NS, Burke GL, Jacobs DR Jr. A priori-defined dietary patterns and markers of cardiovascular disease risk in the Multi-Ethnic Study of Atherosclerosis (MESA). Am J Clin Nutr. 2008 Jul;88(1):185-94. PubMed PMID: 18614740; PubMed Central PMCID: PMC2504029.	Cross-sectional analysis
568.	Nettleton JA, Steffen LM, Loehr LR, Rosamond WD, Folsom AR. Incident heart failure is associated with lower whole-grain intake and greater high-fat dairy and egg intake in the Atherosclerosis Risk in Communities (ARIC) study. J Am Diet Assoc. 2008 Nov;108(11):1881-7. PubMed PMID: 18954578; PubMed Central PMCID: PMC2650810.	Does not include independent variable (analysis was performed on foods)
569.	Nettleton JA, Steffen LM, Mayer-Davis EJ, Jenny NS, Jiang R, Herrington DM, Jacobs DR Jr. Dietary patterns are associated with biochemical markers of inflammation and endothelial activation in the Multi-Ethnic Study of Atherosclerosis (MESA). Am J Clin Nutr. 2006 Jun;83(6):1369-79. PubMed PMID: 16762949; PubMed Central PMCID: PMC2933059.	Cross-sectional analysis
570.	Nettleton JA, Steffen LM, Ni H, Liu K, Jacobs DR Jr. Dietary patterns and risk of incident type 2 diabetes in the Multi-Ethnic Study of Atherosclerosis (MESA). Diabetes Care. 2008 Sep;31(9):1777-82. Epub 2008 Jun 10. PubMed PMID: 18544792; PubMed Central PMCID: PMC2518344.	Cross-sectional analysis
571.	Nettleton JA, Steffen LM, Schulze MB, Jenny NS, Barr RG, Bertoni AG, Jacobs DR Jr. Associations between markers of subclinical atherosclerosis and dietary patterns derived by principal components analysis and reduced rank regression in the Multi-Ethnic Study of Atherosclerosis (MESA). Am J Clin Nutr. 2007 Jun;85(6):1615-25. PubMed PMID: 17556701; PubMed Central PMCID: PMC2858465.	Cross-sectional analysis
572.	Neuhouser ML, Howard B, Lu J, Tinker LF, Van Horn L, Caan B, Rohan T, Stefanick ML, Thomson CA. A low-fat dietary pattern and risk of metabolic syndrome in postmenopausal women: The Women's Health Initiative. Metabolism. 2012 May 25. [Epub ahead of print] PubMed PMID: 22633601.	Dependent variable was metabolic syndrome
573.	Neuhouser ML, Miller DL, Kristal AR, Barnett MJ, Cheskin LJ. Diet and exercise habits of patients with diabetes, dyslipidemia, cardiovascular disease or hypertension. J Am Coll Nutr. 2002 Oct;21(5):394-401. PubMed PMID: 12356780.	Cross-sectional
574.	Neuhouser ML, Patterson RE, King IB, Horner NK, Lampe JW. Selected nutritional biomarkers predict diet quality. Public Health Nutr. 2003 Oct;6(7):703-9. PubMed PMID: 14552672.	Does not include dependent variable
575.	Newby PK, Hu FB, Rimm EB, Smith-Warner SA, Feskanich D, Sampson L, Willett WC. Reproducibility and validity of the Diet Quality Index Revised as assessed by use of a food-frequency questionnaire. Am J Clin Nutr. 2003 Nov;78(5):941-9. PubMed PMID: 14594780.	Excluded by title
576.	Nichols AB, Ravenscroft C, Lamphiear DE, Ostrander LD Jr. Independence of serum lipid levels and dietary habits. The Tecumseh study. JAMA. 1976 Oct 25;236(17):1948-53. PubMed PMID: 989556.	Did not assess dietary patterns as defined for this project
577.	Nicholson AS, Sklar M, Barnard ND, Gore S, Sullivan R, Browning S. Toward improved management of NIDDM: A randomized, controlled, pilot intervention using a lowfat, vegetarian diet. Prev Med. 1999 Aug;29(2):87-91. PubMed PMID: 10446033.	Sample size n = 11
578.	Nicklas TA, Demory-Luce D, Yang SJ, Baranowski T, Zakeri I, Berenson G. Children's food consumption patterns have changed over two decades (1973-1994): The Bogalusa heart study. J Am Diet Assoc. 2004 Jul;104(7):1127-40. PubMed PMID: 15215772.	Cross-sectional
579.	Nicklas TA, Farris RP, Major C, Frank GC, Webber LS, Cresanta JL, Berenson GS. Cardiovascular risk factors from birth to 7 years of age: the Bogalusa Heart Study. Dietary intakes. Pediatrics. 1987 Nov;80(5 Pt 2):797-806. PubMed PMID: 3670990.	Descriptive study
580.	Nicklas TA, Farris RP, Myers L, Berenson GS. Impact of meat consumption on nutritional quality and cardiovascular risk factors in young adults: the Bogalusa Heart Study. J Am Diet Assoc. 1995 Aug;95(8):887-92. PubMed PMID: 7636079.	Cross-sectional data
581.	Nicklas TA, Morales M, Linares A, Yang SJ, Baranowski T, De Moor C, Berenson G. Children's meal patterns have changed over a 21-year period: the Bogalusa Heart Study. J Am Diet Assoc. 2004 May;104(5):753-61. PubMed PMID: 15127060.	Cross-sectional

582.	Nicklas TA, Webber LS, Srinivasan SR, Berenson GS. Secular trends in dietary intakes and cardiovascular risk factors of 10-y-old children: the Bogalusa Heart Study (1973-1988). Am J Clin Nutr. 1993 Jun;57(6):930-7. PubMed PMID: 8503364.	Trend study
583.	Nicklas TA, Webber LS, Thompson B, Berenson GS. A multivariate model for assessing eating patterns and their relationship to cardiovascular risk factors: the Bogalusa Heart Study. Am J Clin Nutr. 1989 Jun;49(6):1320-7. PubMed PMID: 2729171.	Cross-sectional analysis
584.	Nicklas TA, Yang SJ, Baranowski T, Zakeri I, Berenson G. Eating patterns and obesity in children. The Bogalusa Heart Study. Am J Prev Med. 2003 Jul;25(1):9-16. PubMed PMID: 12818304.	Cross-sectional study
585.	Niinikoski H, Jula A, Viikari J, Rönnemaa T, Heino P, Lagström H, Jokinen E, Simell O. Blood pressure is lower in children and adolescents with a low-saturated-fat diet since infancy: the special turku coronary risk factor intervention project. Hypertension. 2009 Jun;53(6):918-24. Epub 2009 Apr 13. PubMed PMID: 19364991.	Did not examine dietary patterns as defined for this project
586.	Nobmann ED, Ebbesson SO, White RG, Bulkow LR, Schraer CD. Associations between dietary factors and plasma lipids related to cardiovascular disease among Siberian Yupiks of Alaska. Int J Circumpolar Health. 1999 Oct;58(4):254-71. PubMed PMID: 10615831.	Does not include independent variable (foods and nutrients)
587.	Nobmann ED, Ebbesson SO, White RG, Schraer CD, Lanier AP, Bulkow LR. Dietary intakes among Siberian Yupiks of Alaska and implications for cardiovascular disease. Int J Circumpolar Health. 1998 Jan;57(1):4-17. PubMed PMID: 9567571.	Descriptive study
588.	Noel SE, Newby PK, Ordovas JM, Tucker KL. A traditional rice and beans pattern is associated with metabolic syndrome in Puerto Rican older adults. J Nutr. 2009 Jul;139(7):1360-7. Epub 2009 May 20. PubMed PMID: 19458029; PubMed Central PMCID: PMC2696989.	Cross-sectional
589.	Nordmann AJ, Suter-Zimmermann K, Bucher HC, Shai I, Tuttle KR, Estruch R, Briel M. Meta-analysis comparing Mediterranean to low-fat diets for modification of cardiovascular risk factors. Am J Med. 2011 Sep;124(9):841-51.e2. PubMed PMID: 21854893.	Meta-analysis of RCTs
590.	Northstone K, Joinson C, Emmett P, Ness A, Paus T. Are dietary patterns in childhood associated with IQ at 8 years of age? A population-based cohort study. J Epidemiol Community Health. 2012 Jul;66(7):624-8. Epub 2011 Feb 7. PubMed PMID: 21300993.	Dependent variable was IQ
591.	Nowson C, Margerison C, Jorna M, Torres S, Worsley T. A randomised crossover community dietary study of three diets including one based on the dietary approaches to stop hypertension diet. 2003;21:S20.	Discusses Nowson, 2003 (included above)
592.	Nowson CA, Wattanapenpaiboon N, Pachett A. Low-sodium Dietary Approaches to Stop Hypertension-type diet including lean red meat lowers blood pressure in postmenopausal women. Nutr Res. 2009 Jan;29(1):8-18. PubMed PMID: 19185772.	Study did not account for subjects on hypertension medication in the analyses
593.	Nowson CA, Worsley A, Margerison C, Jorna MK, Godfrey SJ, Booth A. Blood pressure change with weight loss is affected by diet type in men. Am J Clin Nutr. 2005 May;81(5):983-9. PMID: 15883419.	Insufficient sample size (n=27 per group)
594.	Nowson CA, Worsley T, Margerison C, Jorna MK, Frame AG, Torres SJ, Godfrey SG. Dietary approaches to reduce blood pressure in a community setting: a randomised crossover study. Asia Pac J Clin Nutr. 2003;12 Suppl:S19. PubMed PMID: 15023613.	Study did not assess a dietary pattern as defined for the project. .
595.	Nuñez-Cordoba JM, Alonso A, Beunza JJ, Palma S, Gomez-Gracia E, Martinez-Gonzalez MA. Role of vegetables and fruits in Mediterranean diets to prevent hypertension. Eur J Clin Nutr. 2009 May;63(5):605-12. Epub 2008 Feb 27. PubMed PMID: 18301434.	Does not include independent variable (analysis was performed on fruits and vegetables)
596.	Nutrient intake and its association with high-density lipoprotein and low-density lipoprotein cholesterol in selected US and USSR subpopulations. The US-USSR Steering Committee for Problem Area I: The pathogenesis of atherosclerosis. Am J Clin Nutr. 1984 Jun;39(6):942-52. PubMed PMID: 6609630.	Cross-sectional
597.	Nyenhuis DL, Gorelick PB, Easley C, Garron DC, Harris Y, Richardson D, Raman R, Levy P. The Black Seventh-Day Adventist exploratory health study. Ethn Dis. 2003 Spring;13(2):208-12. PubMed PMID: 12785417.	Does not examine relationship between dietary patterns and risk of CVD

598.	Obarzanek E, Proschan MA, Vollmer WM, Moore TJ, Sacks FM, Appel LJ, Svetkey LP, Most-Windhauser MM, Cutler JA. Individual blood pressure responses to changes in salt intake: results from the DASH-Sodium trial. Hypertension. 2003 Oct;42(4):459-67. Epub 2003 Sep 2. PMID: 12953018.	Independent variable is 3 dietary sodium levels while on DASH diet
599.	Odegaard AO, Koh WP, Butler LM, Duval S, Gross MD, Yu MC, Yuan JM, Pereira MA. Dietary patterns and incident type 2 diabetes in chinese men and women: the singapore chinese health study. Diabetes Care. 2011 Apr;34(4):880-5. Epub 2011 Feb 17. PubMed PMID: 21330641; PubMed Central PMCID: PMC3064045.	Question does not include dependent variable (T2D)
600.	O'Doherty MG, Skidmore PM, Young IS, McKinley MC, Cardwell C, Yarnell JW, Gey FK, Evans A, Woodside JV. Dietary patterns and smoking in Northern Irish men: a population at high risk of coronary heart disease. Int J Vitam Nutr Res. 2011 Jan;81(1):21-33. PubMed PMID: 22002215.	Excluded by title: doesn't address the question; dietary pattern is dependent variable
601.	O'Keefe SJ, Ndaba N, Woodward A. Relationship between nutritional status, dietary intake patterns and plasma lipoprotein concentrations in rural black South Africans. Hum Nutr Clin Nutr. 1985 Sep;39(5):335-41. PubMed PMID: 4055424.	South Africa defined as medium on HDI
602.	Olinto MT, Gigante DP, Horta B, Silveira V, Oliveira I, Willett W. Major dietary patterns and cardiovascular risk factors among young Brazilian adults. Eur J Nutr. 2012 Apr;51(3):281-91. Epub 2011 Jun 17. PubMed PMID: 21681439; PubMed Central PMCID: PMC3313034.	Cross-sectional
603.	Oliveira A, Lopes C, Rodríguez-Artalejo F. Adherence to the Southern European Atlantic Diet and occurrence of nonfatal acute myocardial infarction. Am J Clin Nutr. 2010 Jul;92(1):211-7. Epub 2010 May 19. PubMed PMID: 20484454.	Case-control study
604.	Oliveira A, Rodríguez-Artalejo F, Gaio R, Santos AC, Ramos E, Lopes C. Major habitual dietary patterns are associated with acute myocardial infarction and cardiovascular risk markers in a southern European population. J Am Diet Assoc. 2011 Feb;111(2):241-50. PubMed PMID: 21272698.	Case-control study
605.	Oliveira EP, Camargo KF, Castanho GK, Nicola M, Portero-McLellan KC, Burini RC. Dietary variety is a protective factor for elevated systolic blood pressure. Arq Bras Cardiol. 2012 Mar 15:0. [Epub ahead of print] English, Portuguese. PubMed PMID: 22426991.	Cross-sectional
606.	Omoto M, Sawamura T, Hara H. Dietary habits and cardiovascular diseases (I). The mortality rate from cerebrovascular and cardiovascular diseases and the eicosapentaenoic acid and arachidonic acid ratio in the blood of the inland- and coast-dwellers in Japan. Nihon Eiseigaku Zasshi. 1984 Feb;38(6):887-98. PubMed PMID: 6086990.	Independent variables are EPA and arachidonic acid ratios in the blood
607.	Ophir O, Peer G, Gilad J, Blum M, Aviram A. Low blood pressure in vegetarians: the possible role of potassium. Am J Clin Nutr. 1983 May;37(5):755-62. PubMed PMID: 6846214.	Case-control study
608.	O'Reilly SL, McCann LR. Development and validation of the Diet Quality Tool for use in cardiovascular disease prevention settings. Aust J Prim Health. 2012;18(2):138-47. PubMed PMID: 22551836.	Dietary patterns methodology
609.	Ornish D, Brown SE, Scherwitz LW, Billings JH, Armstrong WT, Ports TA, McLanahan SM, Kirkeeide RL, Brand RJ, Gould KL. Can lifestyle changes reverse coronary heart disease? The Lifestyle Heart Trial. Lancet. 1990 Jul 21;336(8708):129-33. PubMed PMID: 1973470.	Insufficient sample size (n=28 and 20 per group)
610.	Ornish lifestyle modification program continues to produce impressive outcomes for CHD. Healthc Demand Dis Manag. 1997 Apr;3(4):59-61. PubMed PMID: 10174891.	Not an original research article (commentary)
611.	Osler M, Schroll M. Diet and mortality in a cohort of elderly people in a north European community. Int J Epidemiol. 1997 Feb;26(1):155-9. PubMed PMID: 9126515	Only total mortality
612.	Panagiotakos D, Bountziouka V, Zeimbekis A, Vlachou I, Polychronopoulos E. Food pattern analysis and prevalence of cardiovascular disease risk factors among elderly people from Mediterranean islands. J Med Food. 2007 Dec;10(4):615-21. PubMed PMID: 18158831.	Cross-sectional
613.	Panagiotakos D, Kalogeropoulos N, Pitsavos C, Roussinou G, Palliou K, Chrysohoou C, Stefanadis C. Validation of the MedDietScore via the determination of plasma fatty acids. Int J Food Sci Nutr. 2009;60 Suppl 5:168-80. Epub 2009 Apr 8. PubMed PMID: 19353422.	Does not include dependent variable (plasma fatty acid levels), cross-sectional

614.	Panagiotakos D, Sitara M, Pitsavos C, Stefanadis C. Estimating the 10-year risk of cardiovascular disease and its economic consequences, by the level of adherence to the Mediterranean diet: the ATTICA study. J Med Food. 2007 Jun;10(2):239-43. PubMed PMID: 17651058.	Cross-sectional analysis, assesses 10 y risk w/ Framingham equation
615.	Panagiotakos DB, Arapi S, Pitsavos C, Antonoulas A, Mantas Y, Zombolos S, Stefanadis C. The relationship between adherence to the Mediterranean diet and the severity and short-term prognosis of acute coronary syndromes (ACS): The Greek Study of ACS (The GREECS). Nutrition. 2006 Jul-Aug;22(7-8):722-30. Epub 2006 May 30. PubMed PMID: 16730948.	Participants were recruited at hospitals after an acute coronary syndrome
616.	Panagiotakos DB, Chrysohoou C, Aggelopoulos P, Kehagia I, Metallinos G, Pitsavos C, Stefanadis C. Greater adherence to the mediterranean diet reduces the risk for the development of left ventricular systolic dysfunction in patients who had had an acute coronary syndrome. Journal of the American College of Cardiology. 2009;53(10):A332.	Participants had had an acute coronary syndrome
617.	Panagiotakos DB, Chrysohoou C, Pitsavos C, Tzioumis K, Papaioannou I, Stefanadis C, Toutouzas P. The association of Mediterranean diet with lower risk of acute coronary syndromes in hypertensive subjects. Int J Cardiol. 2002 Feb;82(2):141-7. PubMed PMID: 11853900.	Case-control: hospitalized patients
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675.	Rankins J, Wortham J, Brown LL. Modifying soul food for the Dietary Approaches to Stop Hypertension diet (DASH) plan: implications for metabolic syndrome (DASH of Soul). Ethn Dis. 2007 Summer;17(3 Suppl 4):S4-7-12. PubMed PMID: 17987695.	Study did not examine the relationship between dietary patterns and CVD; examined methods for modifying the DASH diet
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677.	Rathod AD, Bharadwaj AS, Badheka AO, Kizilbash M, Afonso L. Healthy Eating Index and mortality in a nationally representative elderly cohort. Arch Intern Med. 2012 Feb 13;172(3):275-7. PubMed PMID: 22332163.	Cross-sectional study
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684.	Remmell PS, Benfari RC. Assessing dietary adherence in the Multiple Risk Factor Intervention Trial (MRFIT). II. Food record rating as an indicator of compliance. J Am Diet Assoc. 1980 Apr;76(4):357-60. PubMed PMID: 7391469.	Examined dietary patterns derived from nutrients

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693.	Rinzler SH. The Prudent Diet in prevention of coronary heart disease. Dis Chest. 1968 Jun;53(6):726-8. PubMed PMID: 5653747.	Commentary
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696.	Rodrigues SSP, Trichopoulou A, De Almeida MDV. Household diet quality in relation to mortality in Portuguese regions: An ecological study. Journal of Public Health. 2008;16(1):43-51.	Dietary intake estimated using household budget survey food and nutrient data
697.	Rodríguez Artalejo F, Banegas JR, García Colmenero C, del Rey Calero J. Lower consumption of wine and fish as a possible explanation for higher ischaemic heart disease mortality in Spain's Mediterranean region. Int J Epidemiol. 1996 Dec;25(6):1196-201. PubMed PMID: 9027524.	Did not examine dietary patterns as defined for the project (individual components of the diet)
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701.	Rosamond WD, Ammerman AS, Holliday JL, Tawney KW, Hunt KJ, Keyserling TC, Will JC, Mokdad AH. Cardiovascular disease risk factor intervention in low-income women: the North Carolina WISEWOMAN project. Prev Med. 2000 Oct;31(4):370-9. PubMed PMID: 11006062.	Did not examine dietary patterns as defined for this project
702.	Rouse IL, Armstrong BK, Beilin LJ. Vegetarian diet, lifestyle and blood pressure in two religious populations. Clin Exp Pharmacol Physiol. 1982 May-Jun;9(3):327-30. PubMed PMID: 7140012.	Case-control study
703.	Rouse IL, Beilin LJ, Armstrong BK, Vandongen R. Blood-pressure-lowering effect of a vegetarian diet: controlled trial in normotensive subjects. Lancet. 1983 Jan 1;1(8314-5):5-10. PubMed PMID: 6129380.	Sample size <30 subjects per study arm
704.	Rouse IL, Beilin LJ, Armstrong BK, Vandongen R. Vegetarian diet, blood pressure and cardiovascular risk. Aust N Z J Med. 1984 Aug;14(4):439-43. PubMed PMID: 6596054.	Narrative review
705.	Roussell MA, Hill AM, Gaugler TL, West SG, Heuvel JP, Alaupovic P, Gillies PJ, Kris-Etherton PM. Beef in an Optimal Lean Diet study: effects on lipids, lipoproteins, and apolipoproteins. Am J Clin Nutr. 2012 Jan;95(1):9-16. Epub 2011 Dec 14. PubMed PMID: 22170364; PubMed Central PMCID: PMC3238465.	All subjects were hypercholesterolemic
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708.	Saadah MA, Thakre MC, Saadah LM, Nazzal ME. Homocystinemia and stroke in vegetarians. Neurosciences (Riyadh). 2006 Apr;11(2):107-11. PMID: 22266560.	Case study
709.	Sacks FM, Appel LJ, Moore TJ, Obarzanek E, Vollmer WM, Svetkey LP, Bray GA, Vogt TM, Cutler JA, Windhauser MM, Lin PH, Karanja N. A dietary approach to prevent hypertension: a review of the Dietary Approaches to Stop Hypertension (DASH) Study. Clin Cardiol. 1999 Jul;22(7 Suppl):III6-10. PMID: 10410299.	Descriptive; uses sub-group analysis; refer to Sacks et al 2001
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711.	Sacks FM, Kass EH. Low blood pressure in vegetarians: effects of specific foods and nutrients. Am J Clin Nutr. 1988 Sep;48(3 Suppl):795-800. PubMed PMID: 3414588.	Did not examine dietary patterns, but individual foods and nutrients
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713.	Sacks FM, Ornish D, Rosner B, McLanahan S, Castelli WP, Kass EH. Plasma lipoprotein levels in vegetarians. The effect of ingestion of fats from dairy products. JAMA. 1985 Sep 13;254(10):1337-41. PubMed PMID: 4021011.	Cross-sectional
714.	Sacks FM, Rosner B, Kass EH. Blood pressure in vegetarians. Am J Epidemiol. 1974 Nov;100(5):390-8. PubMed PMID: 4418801.	Cross-sectional
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717.	Salas-Salvadó J, Garcia-Arellano A, Estruch R, Marquez-Sandoval F, Corella D, Fiol M, Gómez-Gracia E, Viñoles E, Arós F, Herrera C, Lahoz C, Lapetra J, Perona JS, Muñoz-Aguado D, Martínez-González MA, Ros E; PREDIMED Investigators. Components of the Mediterranean-type food pattern and serum inflammatory markers among patients at high risk for cardiovascular disease. Eur J Clin Nutr. 2008 May;62(5):651-9. Epub 2007 Apr 18. PubMed PMID: 17440519.	Cross-sectional
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721.	Sanchez-Bayle M, Gonzalez-Requejo A, Pelaez MJ, Morales MT, Asensio-Anton J, Anton-Pacheco E. A cross-sectional study of dietary habits and lipid profiles. The Rivas-Vaciamadrid study. Eur J Pediatr. 2008 Feb;167(2):149-54. Epub 2007 Feb 28. PubMed PMID: 17333272.	Cross-sectional
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736.	Seftel HC. The rarity of coronary heart disease in South African blacks. S Afr Med J. 1978 Jul 15;54(3):99-105. PubMed PMID: 694706.	Subjects from South Africa
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744.	Shahar DR, Grotto I. Mediterranean diet and longevity. Current Nutrition and Food Science. 2006;2(4):337-342.	Review article
745.	Shahar DR, Yu B, Houston DK, Kritchevsky SB, Lee JS, Rubin SM, Sellmeyer DE, Tylavsky FA, Harris TB; Health, Aging and Body Composition Study. Dietary factors in relation to daily activity energy expenditure and mortality among older adults. J Nutr Health Aging. 2009 May;13(5):414-20. PubMed PMID: 19390747; PubMed Central PMCID: PMC2757288.	Did not examine CVD; examined all-cause mortality

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757.	Simell O, Niinikoski H, Rönnemaa T, Raitakari OT, Lagström H, Laurinen M, Aromaa M, Hakala P, Jula A, Jokinen E, Välimäki I, Viikari J; STRIP Study Group. Cohort Profile: the STRIP Study (Special Turku Coronary Risk Factor Intervention Project), an Infancy-onset Dietary and Life-style Intervention Trial. Int J Epidemiol. 2009 Jun;38(3):650-5. Epub 2008 Apr 22. PubMed PMID: 18430753.	Descriptive study
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762.	Singh RB, Ghosh S, Singh R. Effects on serum lipids of adding fruits and vegetables to prudent diet in the Indian Experiment of Infarct Survival (IEIS). Cardiology. 1992;80(3-4):283-93. PubMed PMID: 1511475.	Subjects from India
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764.	Singh RB, Niaz MA, Ghosh S. Effect on central obesity and associated disturbances of low-energy, fruit- and vegetable-enriched prudent diet in north Indians. Postgrad Med J. 1994 Dec;70(830):895-900. PubMed PMID: 7870637; PubMed Central PMCID: PMC2398005.	India is a medium HDI country
765.	Sirtori CR, Tremoli E, Gatti E, Montanari G, Sirtori M, Colli S, Gianfranceschi G, Maderna P, Dentone CZ, Testolin G, et al. Controlled evaluation of fat intake in the Mediterranean diet: comparative activities of olive oil and corn oil on plasma lipids and platelets in high-risk patients. Am J Clin Nutr. 1986 Nov;44(5):635-42. PubMed PMID: 3094360.	Insufficient sample size (n=23)
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767.	Snell-Bergeon JK, Chartier-Logan C, Maahs DM, Ogden LG, Hokanson JE, Kinney GL, Eckel RH, Ehrlich J, Rewers M. Adults with type 1 diabetes eat a high-fat atherogenic diet that is associated with coronary artery calcium. Diabetologia. 2009 May;52(5):801-9. Epub 2009 Feb 14. PubMed PMID: 19219420; PubMed Central PMCID: PMC2896567.	Subjects with type 1 diabetes
768.	Snetselaar L, Stumbo P, Chenard C, Ahrens L, Smith K, Zimmerman B. Adolescents eating diets rich in either lean beef or lean poultry and fish reduced fat and saturated fat intake and those eating beef maintained serum ferritin status. J Am Diet Assoc. 2004 Mar;104(3):424-8. PubMed PMID: 14993866.	Did not examine dietary patterns; examined beef, poultry, and fish
769.	Sodjinou R, Agueh V, Fayomi B, Delisle H. Dietary patterns of urban adults in Benin: relationship with overall diet quality and socio-demographic characteristics. Eur J Clin Nutr. 2009 Feb;63(2):222-8. Epub 2007 Sep 12. PubMed PMID: 17851458.	Subjects from Benin
770.	Sofi F, Cesari F, Abbate R, Gensini GF, Casini A. Adherence to Mediterranean diet and health status: meta-analysis. BMJ. 2008 Sep 11;337:a1344. doi: 10.1136/bmj.a1344. Review. PubMed PMID: 18786971; PubMed Central PMCID: PMC2533524.	Meta-analysis
771.	Sofi F, Vecchio S, Giuliani G, Martinelli F, Marcucci R, Gori AM, Fedi S, Casini A, Surrenti C, Abbate R, Gensini GF. Dietary habits, lifestyle and cardiovascular risk factors in a clinically healthy Italian population: the 'Florence' diet is not Mediterranean. Eur J Clin Nutr. 2005 Apr;59(4):584-91. Erratum in: Eur J Clin Nutr. 2005 May;59(5):731. Martinelli, F [added]. PubMed PMID: 15741987.	Cross-sectional
772.	Sofi F. The Mediterranean diet revisited: evidence of its effectiveness grows. Curr Opin Cardiol. 2009 Sep;24(5):442-6. Review. PMID: 19550306.	Review and commentary
773.	Sogani RK, Katoch K. Correlation of serum cholesterol levels and incidence of myocardial infarction with dietary onion and garlic eating habits. J Assoc Physicians India. 1981 Jun;29(6):443-6. PubMed PMID: 7319999.	Did not examine dietary patterns; examined onion and garlic intake
774.	Solá R, Fitó M, Estruch R, Salas-Salvadó J, Corella D, de La Torre R, Muñoz MA, López-Sabater Mdel C, Martínez-González MA, Arós F, Ruiz-Gutierrez V, Fiol M, Casals E, Wärnberg J, Buil-Cosiales P, Ros E, Konstantinidou V, Lapetra J, Serra-Majem L, Covas MI. Effect of a traditional Mediterranean diet on apolipoproteins B, A-I, and their ratio: a randomized, controlled trial. Atherosclerosis. 2011 Sep;218(1):174-80. Epub 2011 May 6. PubMed PMID: 21640348.	Outcomes were apoB and ApoA-1

775.	Son YJ, Lee Y, Song EK. Adherence to a sodium-restricted diet is associated with lower symptom burden and longer cardiac event-free survival in patients with heart failure. J Clin Nurs. 2011 Nov;20(21-22):3029-38. doi: 10.1111/j.1365-2702.2011.03755.x. Epub 2011 Jun 24. PubMed PMID: 21707808.	Assessed the effects of a sodium-restricted diet on symptom burden and cardiac mortality
776.	Sonnenberg LM, Quatromoni PA, Gagnon DR, Cupples LA, Franz MM, Ordovas JM, Wilson PW, Schaefer EJ, Millen BE. Diet and plasma lipids in women. II. Macronutrients and plasma triglycerides, high-density lipoprotein, and the ratio of total to high-density lipoprotein cholesterol in women: the Framingham nutrition studies. J Clin Epidemiol. 1996 Jun;49(6):665-72. PubMed PMID: 8656228.	Did not examine dietary patterns as defined for this project (examined nutrients)
777.	Spiller GA, Miller A, Olivera K, Reynolds J, Miller B, Morse SJ, Dewell A, Farquhar JW. Effects of plant-based diets high in raw or roasted almonds, or roasted almond butter on serum lipoproteins in humans. J Am Coll Nutr. 2003 Jun;22(3):195-200. PubMed PMID: 12805245.	Did not examine dietary patterns; examined nuts
778.	Staffileno BA, Tangney CC, Wilbur J, Marquez DX, Fogg L, Manning A, Bustamante EE, Morris MC. Dietary Approaches to Stop Hypertension Patterns in Older Latinos With or at Risk for Hypertension. J Cardiovasc Nurs. 2012 Jun 19. [Epub ahead of print] PubMed PMID: 22722473.	Cross-sectional
779.	Stamler J. Population-wide adverse dietary patterns: a pivotal cause of epidemic coronary heart disease/cardiovascular disease. J Am Diet Assoc. 2008 Feb;108(2):228-32. PubMed PMID: 18237569.	Commentary
780.	Stamler J. The marked decline in coronary heart disease mortality rates in the United States, 1968-1981; summary of findings and possible explanations. Cardiology. 1985;72(1-2):11-22. PubMed PMID: 3978664.	Did not examine the relationship between dietary patterns and CVD
781.	Stang J, Zephier EM, Story M, Himes JH, Yeh JL, Welty T, Howard BV. Dietary intakes of nutrients thought to modify cardiovascular risk from three groups of American Indians: The Strong Heart Dietary Study, Phase II. J Am Diet Assoc. 2005 Dec;105(12):1895-903. PubMed PMID: 16321595.	Cross-sectional
782.	Stefani ED, Deneo-Pellegrini H, Ronco AL, Correa P, Boffetta P, Aune D, Acosta G, Mendilaharsu M, Luaces ME, Lando G, Silva C. Dietary patterns and risk of colorectal cancer: a factor analysis in uruguay. Asian Pac J Cancer Prev. 2011;12(3):753-9. PubMed PMID: 21627378.	Case-control study
783.	Steffen LM, Jacobs DR Jr, Stevens J, Shahar E, Carithers T, Folsom AR. Associations of whole-grain, refined-grain, and fruit and vegetable consumption with risks of all-cause mortality and incident coronary artery disease and ischemic stroke: the Atherosclerosis Risk in Communities (ARIC) Study. Am J Clin Nutr. 2003 Sep;78(3):383-90. PubMed PMID: 12936919.	Did not examine dietary patterns; examined individual foods
784.	Strandhagen E, Hansson PO, Bosaeus I, Isaksson B, Eriksson H. High fruit intake may reduce mortality among middle-aged and elderly men. The Study of Men Born in 1913. Eur J Clin Nutr. 2000 Apr;54(4):337-41. PubMed PMID: 10745285.	Did not examine dietary patterns; examined individual foods
785.	Strazzullo P, Ferro-Luzzi A, Siani A, Scaccini C, Sette S, Catasta G, Mancini M. Changing the Mediterranean diet: effects on blood pressure. J Hypertens. 1986 Aug;4(4):407-12. PubMed PMID: 3534087.	Did not examine dietary patterns; examined saturated fatty acid intake
786.	Sugano M. Changing dietary patterns in Japan. Acta Cardiol. 1993;48(5):470-2. PubMed PMID: 8284983.	Narrative review
787.	Summaries for patients. The effects of a Mediterranean diet on risk factors for heart disease. Ann Intern Med. 2006 Jul 4;145(1):I11. PubMed PMID: 16818920.	Summary for patients
788.	Sun WY, Chen WW. A preliminary study of potential dietary risk factors for coronary heart disease among Chinese American adolescents. J Sch Health. 1994 Nov;64(9):368-71. PubMed PMID: 7877278.	Did not examine the relationship between dietary patterns and CVD
789.	Suzana S, Azlinda A, Hin SL, Khor WH, Zahara Z, Sa'ida MJ, Norliza M. Influence of food intake and eating habits on hypertension control among outpatients at a government health clinic in the Klang Valley, Malaysia. Malays J Nutr. 2011 Aug;17(2):163-73. PubMed PMID: 22303571.	Cross-sectional

790.	Svetkey LP, Sacks FM, Obarzanek E, Vollmer WM, Appel LJ, Lin PH, Karanja NM, Harsha DW, Bray GA, Aickin M, Proschan MA, Windhauser MM, Swain JF, McCarron PB, Rhodes DG, Laws RL. The DASH Diet, Sodium Intake and Blood Pressure Trial (DASH-sodium): rationale and design. DASH-Sodium Collaborative Research Group. J Am Diet Assoc. 1999 Aug;99(8 Suppl):S96-104. PubMed PMID: 10450301.	Study describes the rationale and design of the DASH trial
791.	Svetkey LP, Simons-Morton D, Vollmer WM, Appel LJ, Conlin PR, Ryan DH, Ard J, Kennedy BM. Effects of dietary patterns on blood pressure: subgroup analysis of the Dietary Approaches to Stop Hypertension (DASH) randomized clinical trial. Arch Intern Med. 1999 Feb 8;159(3):285-93. PubMed PMID: 9989541.	Descriptive; uses sub-group analysis; refer to Sacks et al 2001
792.	Swain JF, McCarron PB, Hamilton EF, Sacks FM, Appel LJ. Characteristics of the diet patterns tested in the optimal macronutrient intake trial to prevent heart disease (OmniHeart): options for a heart-healthy diet. J Am Diet Assoc. 2008 Feb;108(2):257-65. PubMed PMID: 18237574; PubMed Central PMCID: PMC3236092.	Study describes the dietary patterns tested in the OmniHeart trial
793.	Szeto YT, Kwok TC, Benzie IF. Effects of a long-term vegetarian diet on biomarkers of antioxidant status and cardiovascular disease risk. Nutrition. 2004 Oct;20(10):863-6. PubMed PMID: 15474873.	Cross-sectional
794.	Taechangam S, Pinitchun U, Pachotikarn C. Development of nutrition education tool: healthy eating index in Thailand. Asia Pac J Clin Nutr. 2008;17 Suppl 1:365-7. Review. PubMed PMID: 18296380.	Study describes the Thai HEI, but does not examine associations with CVD
795.	Taglieri N, Fernandez-Berges DJ, Koenig W, Consuegra-Sanchez L, Fernandez JM, Robles NR, Sánchez PL, Beiras AC, Orbe PM, Kaski JC; SIESTA Investigators. Plasma cystatin C for prediction of 1-year cardiac events in Mediterranean patients with non-ST elevation acute coronary syndrome. Atherosclerosis. 2010 Mar;209(1):300-5. Epub 2009 Sep 20. PubMed PMID: 19819453.	Subjects with acute coronary syndrome
796.	Takada H, Harrell J, Deng S, Bandgiwala S, Washino K, Iwata H. Eating habits, activity, lipids and body mass index in Japanese children: the Shiratori Children Study. Int J Obes Relat Metab Disord. 1998 May;22(5):470-6. PubMed PMID: 9622345.	Cross-sectional
797.	Takahashi Y, Sasaki S, Okubo S, Hayashi M, Tsugane S. Blood pressure change in a free-living population-based dietary modification study in Japan. J Hypertens. 2006 Mar;24(3):451-8. PubMed PMID: 16467647.	Did not examine dietary patterns; examined individual foods and nutrients
798.	Takashima Y, Iwase Y, Yoshida M, Kokaze A, Takagi Y, Taubono Y, Tsugane S, Takahashi T, Iitoi Y, Akabane M, Watanabe S, Akamatsu T. Relationship of food intake and dietary patterns with blood pressure levels among middle-aged Japanese men. J Epidemiol. 1998 Jun;8(2):106-15. Erratum in: J Epidemiol 1998 Oct;8(4):257. Tsubono Y [corrected to Taubono Y]. PubMed PMID: 9673080.	Cross-sectional
799.	Tanaka H, Date C, Hayashi M, Mui K, Tsuchida M, Kurihara H, Kim DK. Trends in death and consultation rates of ischemic heart disease in Japan and the risk factors in a rural community. Jpn Circ J. 1987 Mar;51(3):306-13. PubMed PMID: 3599372.	Did not examine dietary patterns; examined individual foods and nutrients
800.	Taylor AJ, Wong H, Wish K, Carrow J, Bell D, Bindeman J, Watkins T, Lehmann T, Bhattarai S, O'Malley PG. Validation of the MEDFICTS dietary questionnaire: a clinical tool to assess adherence to American Heart Association dietary fat intake guidelines. Nutr J. 2003 Jun 13;2:4. PubMed PMID: 12852791; PubMed Central PMCID: PMC194867.	Study done to validate a dietary assessment tool
801.	Taylor CB, Allen ES, Mikkelson B, Kang-Jey H. Serum cholesterol levels of Seventh-day Adventists. Paroi Arterielle. 1976 Oct;3(4):175-9. PubMed PMID: 1037021.	Cross-sectional
802.	Teramoto T, Kawamori R, Miyazaki S, Teramukai S, Shirayama M, Hiramatsu K, Kobayashi F; the OMEGA Study Group. Relationship between achieved blood pressure, dietary habits and cardiovascular disease in hypertensive patients treated with olmesartan: the OMEGA study. Hypertens Res. 2012 Jul 5. doi: 10.1038/hr.2012.93. [Epub ahead of print] PubMed PMID: 22763478.	Subjects were being treated with a drug

803.	Thacker R, Ross RD. Healthy eating index and anthropometric, inflammatory, and lipid markers of cardiovascular risk in u.s. adolescents: Insights NHANES III. Congenital Heart Disease. 2011;6(5):526.	Cross-sectional
804.	Thompson HJ, Sedlacek SM, Paul D, Wolfe P, McGinley JN, Playdon MC, Daeninck EA, Bartels SN, Wisthoff MR. Effect of dietary patterns differing in carbohydrate and fat content on blood lipid and glucose profiles based on weight-loss success of breast-cancer survivors. Breast Cancer Res. 2012 Jan 6;14(1):R1. [Epub ahead of print] PubMed PMID: 22225711.	Did not assess dietary patterns as defined for this project
805.	Thomson JL, Onufrak SJ, Connell CL, Zoellner JM, Tussing-Humphreys LM, Bogle ML, Yadrick K. Food and beverage choices contributing to dietary guidelines adherence in the Lower Mississippi Delta. Public Health Nutr. 2011 Jun 30:1-11. [Epub ahead of print] PubMed PMID: 21729458.	Assessed the top dietary sources contributing to diet quality
806.	Thorogood M, Carter R, Benfield L, McPherson K, Mann JI. Plasma lipids and lipoprotein cholesterol concentrations in people with different diets in Britain. Br Med J (Clin Res Ed). 1987 Aug 8;295(6594):351-3. PubMed PMID: 3115444; PubMed Central PMCID: PMC1247209.	Cross-sectional
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808.	Timmermans S, Steegers-Theunissen RP, Vujkovic M, Bakker R, den Breeijen H, Raat H, Russcher H, Lindemans J, Hofman A, Jaddoe VW, Steegers EA. Major dietary patterns and blood pressure patterns during pregnancy: the Generation R Study. Am J Obstet Gynecol. 2011 Oct;205(4):337.e1-12. Epub 2011 May 14. PubMed PMID: 21855845.	Subjects were pregnant women
809.	Toft U, Kristoffersen LH, Lau C, Borch-Johnsen K, Jørgensen T. The Dietary Quality Score: validation and association with cardiovascular risk factors: the Inter99 study. Eur J Clin Nutr. 2007 Feb;61(2):270-8. Epub 2006 Aug 23. PubMed PMID: 16929244.	Cross-sectional
810.	Toft U, Jorgensen T. Five-year changes in dietary indexes are associated with changes in cardiovascular risk factors. Annals of Nutrition and Metabolism. 2011;58:327.	Did not examine dietary patterns as defined by this project
811.	Tognon G, Rothenberg E, Eiben G, Sundh V, Winkvist A, Lissner L. Does the Mediterranean diet predict longevity in the elderly? A Swedish perspective. Age (Dordr). 2011 Sep;33(3):439-50. Epub 2010 Nov 26. PubMed PMID: 21110231; PubMed Central PMCID: PMC3168601.	Cross-sectional
812.	Toledo E, Delgado-Rodríguez M, Estruch R, Salas-Salvadó J, Corella D, Gomez-Gracia E, Fiol M, Lamuela-Raventós RM, Schröder H, Arós F, Ros E, Ruíz-Gutiérrez V, Lapetra J, Conde-Herrera M, Sáez G, Vinyoles E, Martínez-González MA. Low-fat dairy products and blood pressure: follow-up of 2290 older persons at high cardiovascular risk participating in the PREDIMED study. Br J Nutr. 2009 Jan;101(1):59-67. Epub 2008 May 20. PubMed PMID: 18492300.	Did not examine dietary patterns; examined low-fat dairy products
813.	Toobert DJ, Strycker LA, Glasgow RE, Barrera Jr M, Angell K. Effects of the mediterranean lifestyle program on multiple risk behaviors and psychosocial outcomes among women at risk for heart disease. Ann Behav Med. 2005 Apr;29(2):128-37. PubMed PMID: 15823786; PubMed Central PMCID: PMC1557654.	Subjects diagnosed with type 2 diabetes
814.	Toohey ML, Harris MA, DeWitt W, Foster G, Schmidt WD, Melby CL. Cardiovascular disease risk factors are lower in African-American vegans compared to lacto-ovo-vegetarians. J Am Coll Nutr. 1998 Oct;17(5):425-34. PubMed PMID: 9791838.	Cross-sectional
815.	Torres IC, Mira L, Ornelas CP, Melim A. Study of the effects of dietary fish intake on serum lipids and lipoproteins in two populations with different dietary habits. Br J Nutr. 2000 Apr;83(4):371-9. PubMed PMID: 10858695.	Did not examine dietary patterns; examined fish intake
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817.	Trichopoulos D, Lagiou P. Mediterranean diet and overall mortality differences in the European Union. Public Health Nutr. 2004 Oct;7(7):949-51. PubMed PMID: 15482623.	Cross-sectional

818.	Trichopoulou A, Bamia C, Norat T, Overvad K, Schmidt EB, Tjønneland A, Halkjaer J, Clavel-Chapelon F, Vercambre MN, Boutron-Ruault MC, Linseisen J, Rohrmann S, Boeing H, Weikert C, Benetou V, Psaltopoulou T, Orfanos P, Boffetta P, Masala G, Pala V, Panico S, Tumino R, Sacerdote C, Bueno-de-Mesquita HB, Ocke MC, Peeters PH, Van der Schouw YT, González C, Sanchez MJ, Chirlaque MD, Moreno C, Larrañaga N, Van Guelpen B, Jansson JH, Bingham S, Khaw KT, Spencer EA, Key T, Riboli E, Trichopoulos D. Modified Mediterranean diet and survival after myocardial infarction: the EPIC-Elderly study. Eur J Epidemiol. 2007;22(12):871-81. Epub 2007 Oct 10. PubMed PMID: 17926134.	Subjects had previous myocardial infarction
819.	Trichopoulou A, Bamia C, Trichopoulos D. Anatomy of health effects of Mediterranean diet: Greek EPIC prospective cohort study. BMJ. 2009 Jun 23;338:b2337. doi: 10.1136/bmj.b2337. PubMed PMID: 19549997; PubMed Central PMCID: PMC3272659.	Did not examine CVD; examined all-cause mortality
820.	Trichopoulou A, Bamia C, Trichopoulos D. Mediterranean diet and survival among patients with coronary heart disease in Greece. Arch Intern Med. 2005 Apr 25;165(8):929-35. PubMed PMID: 15851646.	Participants diagnosed with coronary heart disease
821.	Trichopoulou A, Critselis E. Mediterranean diet and longevity. Eur J Cancer Prev. 2004 Oct;13(5):453-6. PubMed PMID: 15452459.	Narrative review
822.	Trichopoulou A, Kouris-Blazos A, Wahlqvist ML, Gnardellis C, Lagiou P, Polychronopoulos E, Vassilakou T, Lipworth L, Trichopoulos D. Diet and overall survival in elderly people. BMJ. 1995 Dec 2;311(7018):1457-60. PubMed PMID: 8520331; PubMed Central PMCID: PMC2543726.	Examined total mortality (not CVD mortality, individually)
823.	Trichopoulou A, Orfanos P, Norat T, Bueno-de-Mesquita B, Ocké MC, Peeters PH, van der Schouw YT, Boeing H, Hoffmann K, Boffetta P, Nagel G, Masala G, Krogh V, Panico S, Tumino R, Vineis P, Bamia C, Naska A, Benetou V, Ferrari P, Slimani N, Pera G, Martinez-Garcia C, Navarro C, Rodriguez-Barranco M, Dorronsoro M, Spencer EA, Key TJ, Bingham S, Khaw KT, Kesse E, Clavel-Chapelon F, Boutron-Ruault MC, Berglund G, Wirfalt E, Hallmans G, Johansson I, Tjonneland A, Olsen A, Overvad K, Hundborg HH, Riboli E, Trichopoulos D. Modified Mediterranean diet and survival: EPIC-elderly prospective cohort study. BMJ. 2005 Apr 30;330(7498):991. Epub 2005 Apr 8. PubMed PMID: 15820966; PubMed Central PMCID: PMC557144.	Did not examine CVD; examined all-cause mortality
824.	Trichopoulou A, Vasilopoulou E. Mediterranean diet and longevity. Br J Nutr. 2000 Dec;84 Suppl 2:S205-9. Review. PubMed PMID: 11242471.	Narrative review
825.	Trichopoulou A. Traditional Mediterranean diet and longevity in the elderly: a review. Public Health Nutr. 2004 Oct;7(7):943-7. Review. PubMed PMID: 15482622.	Narrative review
826.	Troyer JL, Racine EF, Ngugi GW, McAuley WJ. The effect of home-delivered Dietary Approach to Stop Hypertension (DASH) meals on the diets of older adults with cardiovascular disease. Am J Clin Nutr. 2010 May;91(5):1204-12. Epub 2010 Mar 3. PubMed PMID: 20200258.	Dependent variable was DASH/ therapeutic diet accordance
827.	Tsugane S, Sasaki S, Kobayashi M, Tsubono Y, Sobue T. Dietary habits among the JPHC study participants at baseline survey. Japan Public Health Center-based Prospective Study on Cancer and Cardiovascular Diseases. J Epidemiol. 2001 Oct;11(6 Suppl):S30-43. PubMed PMID: 11763138.	Did not examine dietary patterns; examined individual foods
828.	Tucker KL, Dallal GE, Rush D. Dietary patterns of elderly Boston-area residents defined by cluster analysis. J Am Diet Assoc. 1992 Dec;92(12):1487-91. PubMed PMID: 1452962.	Study design is cross-sectional cluster analysis
829.	Turner-McGrievy GM, Barnard ND, Cohen J, Jenkins DJ, Gloede L, Green AA. Changes in nutrient intake and dietary quality among participants with type 2 diabetes following a low-fat vegan diet or a conventional diabetes diet for 22 weeks. J Am Diet Assoc. 2008 Oct;108(10):1636-45. PubMed PMID: 18926128.	Participants diagnosed with type 2 diabetes
830.	Tuttle KR, Shuler LA, Packard DP, Milton JE, Daratha KB, Bibus DM, Short RA. Comparison of low-fat versus Mediterranean-style dietary intervention after first myocardial infarction (from The Heart Institute of Spokane Diet Intervention and Evaluation Trial). Am J Cardiol. 2008 Jun 1;101(11):1523-30. Epub 2008 Mar 26. PubMed PMID: 18489927.	Subjects had previous myocardial infarction

831.	Twardella D, Merx H, Hahmann H, Wüsten B, Rothenbacher D, Brenner H. Long term adherence to dietary recommendations after inpatient rehabilitation: prospective follow up study of patients with coronary heart disease. Heart. 2006 May;92(5):635-40. Epub 2005 Sep 13. PubMed PMID: 16159977; PubMed Central PMCID: PMC1860928.	Subjects had previous acute manifestation of CHD
832.	Twisk JW, Kemper HC, Van Mechelen W, Post GB. Clustering of risk factors for coronary heart disease. the longitudinal relationship with lifestyle. Ann Epidemiol. 2001 Apr;11(3):157-65. PubMed PMID: 11248580.	Did not examine dietary patterns; examined individual foods
833.	Twisk JW, Van Mechelen W, Kemper HC, Post GB. The relation between "long-term exposure" to lifestyle during youth and young adulthood and risk factors for cardiovascular disease at adult age. J Adolesc Health. 1997 Apr;20(4):309-19. PubMed PMID: 9098736.	Did not examine dietary patterns as defined for this project
834.	Tyrovolas S, Panagiotakos DB. The role of Mediterranean type of diet on the development of cancer and cardiovascular disease, in the elderly: a systematic review. Maturitas. 2010 Feb;65(2):122-30. Epub 2009 Aug 4. Review. PubMed PMID: 19656644.	Systematic review
835.	Tyson CC, Nwankwo C, Lin PH, Svetkey LP. The Dietary Approaches to Stop Hypertension (DASH) Eating Pattern in Special Populations. Curr Hypertens Rep. 2012 Jul 31. [Epub ahead of print] PubMed PMID: 22846984.	Narrative review
836.	Ueshima H. Changes in dietary habits, cardiovascular risk factors and mortality in Japan. Acta Cardiol. 1990;45(4):311-27. PubMed PMID: 2239030.	Trend study
837.	Ueshima H. Changes in dietary habits, cardiovascular risk factors and mortality in Japan. Acta Cardiol. 1989;44(6):475-7. PubMed PMID: 2626912.	Narrative review
838.	Uhernik AI, Erceg M, Milanović SM. Association of BMI and nutritional habits with hypertension in the adult population of Croatia. Public Health Nutr. 2009 Jan;12(1):97-104. Epub 2008 Apr 15. Erratum in: Public Health Nutr. 2011 Jan;14(1):187. PubMed PMID: 18410702.	Cross-sectional
839.	Umemura U, Ishimori M, Kobayashi T, Tamura Y, Koike KA, Shimamoto T, Iso H. Possible effects of diets on serum lipids, fatty acids and blood pressure levels in male and female Japanese university students. Environ Health Prev Med. 2005 Jan;10(1):42-7. PubMed PMID: 21432162; PubMed Central PMCID: PMC2723630.	Cross-sectional
840.	Urpi-Sarda M, Casas R, Chiva-Blanch G, Romero-Mamani ES, Valderas-Martínez P, Salas-Salvadó J, Covas MI, Toledo E, Andres-Lacueva C, Llorach R, García-Arellano A, Bulló M, Ruiz-Gutierrez V, Lamuela-Raventos RM, Estruch R. The mediterranean diet pattern and its main components are associated with lower plasma concentrations of tumor necrosis factor receptor 60 in patients at high risk for cardiovascular disease. J Nutr. 2012 Jun;142(6):1019-25. Epub 2012 Apr 25. PubMed PMID: 22535754.	Dependent variables were inflammatory biomarkers
841.	Urpi-Sarda M, Casas R, Chiva-Blanch G, Romero-Mamani ES, Valderas-Martínez P, Arranz S, Andres-Lacueva C, Llorach R, Medina-Remón A, Lamuela-Raventos RM, Estruch R. Virgin olive oil and nuts as key foods of the Mediterranean diet effects on inflammatory biomakers related to atherosclerosis. Pharmacol Res. 2012 Jun;65(6):577-83. Epub 2012 Mar 18. PubMed PMID: 22449789.	Did not examine the CVD outcomes considered in this review
842.	Urpi-Sarda M, Casas R, Chiva-Blanch G, Romero-Mamani ES, Valderas-Martínez P, Salas-Salvadó J, Covas MI, Toledo E, Andres-Lacueva C, Llorach R, García-Arellano A, Bulló M, Ruiz-Gutierrez V, Lamuela-Raventos RM, Estruch R. The Mediterranean diet pattern and its main components are associated with lower plasma concentrations of tumor necrosis factor receptor 60 in patients at high risk for cardiovascular disease. J Nutr. 2012 Jun;142(6):1019-25. Epub 2012 Apr 25. PubMed PMID: 22535754.	Did not examine the CVD outcomes considered in this review
843.	Urquiaga I, Guasch V, Marshall G, San Martín A, Castillo O, Rozowski J, Leighton F. Effect of Mediterranean and Occidental diets, and red wine, on plasma fatty acids in humans. An intervention study. Biol Res. 2004;37(2):253-61. PubMed PMID: 15455655.	Did not report CVD outcomes of interest; Dependent variables were plasma fatty acid levels
844.	Urquiaga I, Strobel P, Perez D, Martinez C, Cuevas A, Castillo O, Marshall G, Rozowski J, Leighton F. Mediterranean diet and red wine protect against oxidative damage in young volunteers. Atherosclerosis. 2010 Aug;211(2):694-9. Epub 2010 Apr 21. PubMed PMID: 20451910.	Did not report CVD outcomes of interest

845.	Vajifdar BU, Goyal VS, Lokhandwala YY, Mhamunkar SR, Mahadik SP, Gawad AK, Halankar SA, Kulkarni HL. Anthropometry, lipid profile and dietary pattern of patients with chronic ischaemic heart disease. J Postgrad Med. 1999 Oct-Dec;45(4):110-3. PubMed PMID: 10734348.	Study design is cross-sectional
846.	van Bussel BC, Soedamah-Muthu SS, Henry RM, Schalkwijk CG, Ferreira I, Chaturvedi N, Toeller M, Fuller JH, Stehouwer CD; EURODIAB Prospective Complications Study Group. Unhealthy dietary patterns associated with inflammation and endothelial dysfunction in type 1 diabetes: The EURODIAB study. Nutr Metab Cardiovasc Dis. 2012 Jul 11. [Epub ahead of print] PubMed PMID: 22795869.	Subjects diagnosed with type 1 diabetes
847.	van Dam RM, Rimm EB, Willett WC, Stampfer MJ, Hu FB. Dietary patterns and risk for type 2 diabetes mellitus in U.S. men. Ann Intern Med. 2002 Feb 5;136(3):201-9. PubMed PMID: 11827496.	Did not examine CVD; examined type 2 diabetes
848.	van den Brandt PA. The impact of a Mediterranean diet and healthy lifestyle on premature mortality in men and women. Am J Clin Nutr. 2011 Sep;94(3):913-20. Epub 2011 Jul 27. PubMed PMID: 21795445.	Did not examine CVD; examined total mortality
849.	van Dokkum W, van der Beek EJ, de Pee S, Schaafsma G, Wesstra A, Wedel M. Dutch dietary guidelines: impact on blood lipids, blood pressure, body composition and urinary mineral excretion of Dutch middle-aged men. Eur J Clin Nutr. 1991 Sep;45(9):431-9. PubMed PMID: 1959515.	Insufficient sample size (n=12)
850.	Van Horn L, Dolecek TA, Grandits GA, Skweres L. Adherence to dietary recommendations in the special intervention group in the Multiple Risk Factor Intervention Trial. Am J Clin Nutr. 1997 Jan;65(1 Suppl):289S-304S. PubMed PMID: 8988943.	Dependent variable is adherence to MRFIT components, but does not describe dietary pattern
851.	Vang A, Singh PN, Lee JW, Haddad EH, Brinegar CH. Meats, processed meats, obesity, weight gain and occurrence of diabetes among adults: findings from Adventist Health Studies. Ann Nutr Metab. 2008;52(2):96-104. Epub 2008 Mar 18. Erratum in: Ann Nutr Metab. 2010;56(3):232. PubMed PMID: 18349528.	Did not examine CVD; examined type 2 diabetes
852.	Vardavas CI, Linardakis MK, Hatzis CM, Saris WH, Kafatos AG. Cardiovascular disease risk factors and dietary habits of farmers from Crete 45 years after the first description of the Mediterranean diet. Eur J Cardiovasc Prev Rehabil. 2010 Aug;17(4):440-6. PubMed PMID: 20531009.	Cross-sectional
853.	Vengiau G, Umezaki M, Phuanukoonnon S, Siba P, Watanabe C. Diet and physical activity among migrant Bougainvilleans in Port Moresby, Papua New Guinea: Association with anthropometric measures and blood pressure. Am J Hum Biol. 2012 Sep;24(5):716-8. doi: 10.1002/ajhb.22299. Epub 2012 Jul 17. PubMed PMID: 22806995.	Cross-sectional study
854.	Vercambre MN, Grodstein F, Berr C, Kang JH. Mediterranean diet and cognitive decline in women with cardiovascular disease or risk factors. J Acad Nutr Diet. 2012 Jun;112(6):816-23. PubMed PMID: 22709809; PubMed Central PMCID: PMC3378990.	Did not examine CVD; examined cognitive decline
855.	Vernay M, Aïdara M, Salanave B, Deschamps V, Malon A, Oleko A, Mallion JM, Hercberg S, Castetbon K. Diet and blood pressure in 18-74-year-old adults: the French Nutrition and Health Survey (ENNS, 2006-2007). J Hypertens. 2012 Jul 12. [Epub ahead of print] PubMed PMID: 22796715.	Cross-sectional
856.	Verschuren WM, Jacobs DR, Bloemberg BP, Kromhout D, Menotti A, Aravanis C, Blackburn H, Buzina R, Dontas AS, Fidanza F, et al. Serum total cholesterol and long-term coronary heart disease mortality in different cultures. Twenty-five-year follow-up of the seven countries study. JAMA. 1995 Jul 12;274(2):131-6. PubMed PMID: 7596000.	Did not examine dietary patterns
857.	Villegas R, Kearney PM, Perry IJ. The cumulative effect of core lifestyle behaviours on the prevalence of hypertension and dyslipidemia. BMC Public Health. 2008 Jun 13;8:210. PubMed PMID: 18554385; PubMed Central PMCID: PMC2442070.	Cross-sectional study
858.	Villegas R, Yang G, Gao YT, Cai H, Li H, Zheng W, Shu XO. Dietary patterns are associated with lower incidence of type 2 diabetes in middle-aged women: the Shanghai Women's Health Study. Int J Epidemiol. 2010 Jun;39(3):889-99. Epub 2010 Mar 15. PMID: 20231261.	China is a medium HDI country.

859.	Vinagre JC, Vinagre CG, Pozzi FS, Slywitch E, Maranhão RC. Metabolism of triglyceride-rich lipoproteins and transfer of lipids to high-density lipoproteins (HDL) in vegan and omnivore subjects. Nutr Metab Cardiovasc Dis. 2011 Sep 19. [Epub ahead of print] PubMed PMID: 21937206.	Sample size (n= 21 and 29 in the two study groups)
860.	Vincent S, Gerber M, Bernard MC, Defoort C, Loundou A, Portugal H, Planells R, Juhan-Vague I, Charpiot P, Grolier P, Amiot-Carlin MJ, Vague P, Lairon D. The Medi-RIVAGE study (Mediterranean Diet, Cardiovascular Risks and Gene Polymorphisms): rationale, recruitment, design, dietary intervention and baseline characteristics of participants. Public Health Nutr. 2004 Jun;7(4):531-42. PubMed PMID: 15153259.	Study described the rational and design of the Medi-RIVAGE study
861.	Vincent-Baudry S, Defoort C, Gerber M, Bernard MC, Verger P, Helal O, Portugal H, Planells R, Grolier P, Amiot-Carlin MJ, Vague P, Lairon D. The Medi-RIVAGE study: reduction of cardiovascular disease risk factors after a 3-mo intervention with a Mediterranean-type diet or a low-fat diet. Am J Clin Nutr. 2005 Nov;82(5):964-71. PubMed PMID: 16280426.	Drop out rate >20%
862.	Vlismas K, Panagiotakos DB, Pitsavos C, Chrysohoou C, Skoumas Y, Stavrinos V, Stefanadis C. The role of dietary and socioeconomic status assessment on the predictive ability of the HellenicSCORE. Hellenic J Cardiol. 2011 Sep-Oct;52(5):391-8. PubMed PMID: 21940286.	Study assessed predictive ability of HellenicSCORE using a risk model
863.	Vobecky JS, David P, Vobecky J. Dietary habits in relation to tracking of cholesterol level in young adolescents: a nine-year follow-up. Ann Nutr Metab. 1988;32(5-6):312-23. PubMed PMID: 3254688.	Did not examine dietary patterns
864.	Vogel RA. The Mediterranean diet and endothelial function: why some dietary fats may be healthy. Cleve Clin J Med. 2000 Apr;67(4):232, 235-6. Erratum in: Cleve Clin J Med 2000 Jul;67(7):467. PubMed PMID: 10780093.	Paper is a narrative review/commentary
865.	von Lossonczy TO, Ruiter A, Bronsgeest-Schoute HC, van Gent CM, Hermus RJ. The effect of a fish diet on serum lipids in healthy human subjects. Am J Clin Nutr. 1978 Aug;31(8):1340-6. PubMed PMID: 567008.	Did not examine dietary patterns; examined fish intake
866.	Vrentzos GE, Papadakis JA, Malliaraki N, Zacharis EA, Mazokopakis E, Margioris A, Ganotakis ES, Kafatos A. Diet, serum homocysteine levels and ischaemic heart disease in a Mediterranean population. Br J Nutr. 2004 Jun;91(6):1013-9. PMID: 15182405.	Case-control study
867.	Vuoristo M, Miettinen TA. Absorption, metabolism, and serum concentrations of cholesterol in vegetarians: effects of cholesterol feeding. Am J Clin Nutr. 1994 Jun;59(6):1325-31. PubMed PMID: 8198057.	Did not examine relationship between dietary patterns and CVD
868.	Wahlqvist ML, Darmadi-Blackberry I, Kouris-Blazos A, Jolley D, Steen B, Lukito W, Horie Y. Does diet matter for survival in long-lived cultures? Asia Pac J Clin Nutr. 2005;14(1):2-6. PubMed PMID: 15734702.	Did not examine CVD; examined total mortality
869.	Waijers PM, Feskens EJ, Ocké MC. A critical review of predefined diet quality scores. Br J Nutr. 2007 Feb;97(2):219-31. Review. PubMed PMID: 17298689.	Narrative review
870.	Waijers PM, Ocké MC, van Rossum CT, Peeters PH, Bamia C, Chloptsios Y, van der Schouw YT, Slimani N, Bueno-de-Mesquita HB. Dietary patterns and survival in older Dutch women. Am J Clin Nutr. 2006 May;83(5):1170-6. PubMed PMID: 16685062.	Did not examine CVD outcomes; examined total mortality
871.	Waldmann A, Koschizke JW, Leitzmann C, Hahn A. German vegan study: diet, life-style factors, and cardiovascular risk profile. Ann Nutr Metab. 2005 Nov-Dec;49(6):366-72. Epub 2005 Oct 11. PubMed PMID: 16219987.	Cross-sectional
872.	Waldmann A, Ströhle A, Koschizke JW, Leitzmann C, Hahn A. Overall glycemic index and glycemic load of vegan diets in relation to plasma lipoproteins and triacylglycerols. Ann Nutr Metab. 2007;51(4):335-44. Epub 2007 Aug 28. PMID: 17726311.	Cross-sectional
873.	Walker AR, Walker BF. High high-density-lipoprotein cholesterol in African children and adults in a population free of coronary heart diseae. Br Med J. 1978 Nov 11;2(6148):1336-7. PubMed PMID: 214199; PubMed Central PMCID: PMC1608393.	Subjects from South Africa

874.	Wallström P, Sonestedt E, Hlebowicz J, Ericson U, Drake I, Persson M, Gullberg B, Hedblad B, Wirfält E. Dietary fiber and saturated fat intake associations with cardiovascular disease differ by sex in the Malmö Diet and Cancer Cohort: a prospective study. PLoS One. 2012;7(2):e31637. Epub 2012 Feb 27. PubMed PMID: 22384046; PubMed Central PMCID: PMC3288044.	Did not examine dietary patterns; examined individual nutrients
875.	Wang CN, Liang Z, Wei P, Liu P, Yu JX, Zhang DM, Ma FL. Changes in dietary patterns and certain nutrition-related diseases in urban and rural residents of Jiangsu Province, China, during the 1990s. Biomed Environ Sci. 2002 Dec;15(4):271-6. PubMed PMID: 12642982.	Subjects from China
876.	Wang L, Manson JE, Buring JE, Sesso HD. Meat intake and the risk of hypertension in middle-aged and older women. J Hypertens. 2008 Feb;26(2):215-22. PubMed PMID: 18192834.	Did not examine dietary patterns; examined meat intake
877.	Wang L, Manson JE, Gaziano JM, Buring JE, Sesso HD. Fruit and vegetable intake and the risk of hypertension in middle-aged and older women. Am J Hypertens. 2012 Feb;25(2):180-9. doi: 10.1038/ajh.2011.186. Epub 2011 Oct 13. PubMed PMID: 21993367; PubMed Central PMCID: PMC3258456.	Did not examine dietary patterns; examined fruit and vegetable intake
878.	Wang Y, Tuomilehto J, Jousilahti P, Antikainen R, Mähönen M, Katzmarzyk PT, Hu G. Lifestyle factors in relation to heart failure among Finnish men and women. Circ Heart Fail. 2011 Sep;4(5):607-12. Epub 2011 Sep 13. PubMed PMID: 21914814.	Did not examine dietary patterns; examined individual food groups
879.	Waśkiewicz A, Piotrowski W, Sygnowska E, Rywik S, Jasiński B. Did favourable trends in food consumption observed in the 1984-2001 period contribute to the decrease in cardiovascular mortality? - Pol-MONICA Warsaw Project. Kardiol Pol. 2006 Jan;64(1):16-23; discussion 24-5. PubMed PMID: 16444623.	Cross-sectional study
880.	Watts V, Rockett H, Baer H, Leppert J, Colditz G. Assessing diet quality in a population of low-income pregnant women: a comparison between Native Americans and whites. Matern Child Health J. 2007 Mar;11(2):127-36. Epub 2006 Dec 27. PubMed PMID: 17191147.	Subjects were pregnant
881.	Welch AA, Bingham SA, Ive J, Friesen MD, Wareham NJ, Riboli E, Khaw KT. Dietary fish intake and plasma phospholipid n-3 polyunsaturated fatty acid concentrations in men and women in the European Prospective Investigation into Cancer-Norfolk United Kingdom cohort. Am J Clin Nutr. 2006 Dec;84(6):1330-9. PubMed PMID: 17158413.	Did not examine dietary patterns; examined fish intake
882.	Wen Hua L, Laitinen M, Hanninen O. Shifting from conventional diet to an uncooked vegan diet reversibly alters serum lipid and apolipoprotein levels. Nutrition Research. 1992;12(12):1431-1440.	Insufficient sample size (n=18)
883.	Wenkam NS, Wolff RJ. A half century of changing food habits among Japanese in Hawaii. J Am Diet Assoc. 1970 Jul;57(1):29-32. PubMed PMID: 5421406.	Narrative review
884.	West RO, Hayes OB. Diet and serum cholersterol levels. A comparision between vegetarians and nonvegetarians in a Seventh-day Adventist group. Am J Clin Nutr. 1968 Aug;21(8):853-62. PubMed PMID: 5667926.	Cross-sectional
885.	Whichelow MJ, Erzinclioglu SW, Cox BD. Some regional variations in dietary patterns in a random sample of British adults. Eur J Clin Nutr. 1991 May;45(5):253-62. PubMed PMID: 1915196.	Cross-sectional study
886.	Whichelow MJ, Prevost AT. Dietary patterns and their associations with demographic, lifestyle and health variables in a random sample of British adults. Br J Nutr. 1996 Jul;76(1):17-30. PubMed PMID: 8774214.	Study design is cross-sectional principle components analysis
887.	Whittle CR, Woodside JV, Cardwell CR, McCourt HJ, Young IS, Murray LJ, Boreham CA, Gallagher AM, Neville CE, McKinley MC. Dietary patterns and bone mineral status in young adults: the Northern Ireland Young Hearts Project. Br J Nutr. 2012 Jan 4:1-11. [Epub ahead of print] PubMed PMID: 22214826.	Outcome was bone mineral status
888.	Willcox DC, Willcox BJ, Todoriki H, Suzuki M. The Okinawan diet: health implications of a low-calorie, nutrient-dense, antioxidant-rich dietary pattern low in glycemic load. J Am Coll Nutr. 2009 Aug;28 Suppl:500S-516S. Review. PubMed PMID: 20234038.	Narrative review
889.	Willett WC, McCullough ML. Dietary pattern analysis for the evaluation of dietary guidelines. Asia Pac J Clin Nutr. 2008;17 Suppl 1:75-8. Review. PubMed PMID: 18296306.	Narrative review

890.	Williams PT. Interactive effects of exercise, alcohol, and vegetarian diet on coronary artery disease risk factors in 9242 runners: the National Runners' Health Study. Am J Clin Nutr. 1997 Nov;66(5):1197-206. PMID: 9356539.	Cross-sectional
891.	Windhauser MM, Ernst DB, Karanja NM, Crawford SW, Redican SE, Swain JF, Karimbakas JM, Champagne CM, Hoben KP, Evans MA. Translating the Dietary Approaches to Stop Hypertension diet from research to practice: dietary and behavior change techniques. DASH Collaborative Research Group. J Am Diet Assoc. 1999 Aug;99(8 Suppl):S90-5. PubMed PMID: 10450300.	Narrative review
892.	Windhauser MM, Evans MA, McCullough ML, Swain JF, Lin PH, Hoben KP, Plaisted CS, Karanja NM, Vollmer WM. Dietary adherence in the Dietary Approaches to Stop Hypertension trial. DASH Collaborative Research Group. J Am Diet Assoc. 1999 Aug;99(8 Suppl):S76-83. PubMed PMID: 10450298.	Did not examine the relationship between dietary patterns and CVD; examined adherence to DASH
893.	Wirfält AK, Jeffery RW. Using cluster analysis to examine dietary patterns: nutrient intakes, gender, and weight status differ across food pattern clusters. J Am Diet Assoc. 1997 Mar;97(3):272-9. PubMed PMID: 9060944.	Did not include CVD as an outcome measure
894.	Wissel PS, Denke M, Inturrisi CE. A comparison of the effects of a macrobiotic diet and a Western diet on drug metabolism and plasma lipids in man. Eur J Clin Pharmacol. 1987;33(4):403-7. PubMed PMID: 3443147.	Insufficient sample size (n=7)
895.	Witana K, Nowak RJ, Szpak A, Genowska A. The influence of the dietary habit on lipoprotein density in blood serum of men from Podlasie region. Rocz Akad Med Bialymst. 2005;50 Suppl 1:82-6. PubMed PMID: 16119634.	Did not examine dietary patterns; examined individual foods and nutrients
896.	Wolmarans P, Laubscher JA, van der Merwe S, Kriek JA, Lombard CJ, Marais M, Vorster HH, Tichelaar HY, Dhansay MA, Benadé AJ. Effects of a prudent diet containing either lean beef and mutton or fish and skinless chicken on the plasma lipoproteins and fatty acid composition of triacylglycerol and cholesteryl ester of hypercholesterolemic subjects. J Nutr Biochem. 1999 Oct;10(10):598-608. PubMed PMID: 15539255.	Did not examine dietary pattern as defined by this project
897.	Woo J, Cheung B, Ho S, Sham A, Lam TH. Influence of dietary pattern on the development of overweight in a Chinese population. Eur J Clin Nutr. 2008 Apr;62(4):480-7. Epub 2007 Feb 28. PMID: 17327865.	Dependent variable was overweight
898.	Woo J, Leung SS, Ho SC, Sham A, Lam TH, Janus ED. Dietary practices and lipid intake in relation to plasma lipid profile in Hong Kong Chinese. Eur J Clin Nutr. 1997 Jul;51(7):467-71. PubMed PMID: 9234030.	Did not examine dietary patterns; examined individual nutrients
899.	Woo J, Woo KS, Leung SS, Chook P, Liu B, Ip R, Ho SC, Chan SW, Feng JZ, Celermajer DS. The Mediterranean score of dietary habits in Chinese populations in four different geographical areas. Eur J Clin Nutr. 2001 Mar;55(3):215-20. PubMed PMID: 11305271.	Cross-sectional study
900.	Wrieden WL, Moore EJ. The dietary habits of 11-12 year-old children in two Tayside secondary schools--comparison with the targets set by the Scottish Diet Report. Health Bull (Edinb). 1995 Sep;53(5):299-306. PubMed PMID: 7490201.	Study design is cross-sectional
901.	Wu K, Hu FB, Willett WC, Giovannucci E. Dietary patterns and risk of prostate cancer in U.S. men. Cancer Epidemiol Biomarkers Prev. 2006 Jan;15(1):167-71. PubMed PMID: 16434606.	Did not examine CVD; examined prostate cancer
902.	Xie J, Liu L, Kesteloot H. Blood pressure and urinary cations in a low-fat intake Chinese population sample. Acta Cardiol. 2001 Jun;56(3):163-8. PubMed PMID: 11471929.	Subjects from a medium HDI country (China)
903.	Yamashita T, Sasahara T, Pomeroy SE, Collier G, Nestel PJ. Arterial compliance, blood pressure, plasma leptin, and plasma lipids in women are improved with weight reduction equally with a meat-based diet and a plant-based diet. Metabolism. 1998 Nov;47(11):1308-14. PubMed PMID: 9826205.	Did not examine dietary patterns; examined dietary protein
904.	Yamori Y, Kihara M, Fujikawa J, Soh Y, Nara Y, Ohtaka M, Horie R, Tsunematsu T, Note S, Fukase M. Dietary risk factors of stroke and hypertension in Japan -- Part 3: Comparative study on risk factors between farming and fishing villages in japan. Jpn Circ J. 1982 Sep;46(9):944-7. PubMed PMID: 7109211.	Cross-sectional

905.	Yang SY, Li XJ, Zhang W, Liu CQ, Zhang HJ, Lin JR, Yan B, Yu YX, Shi XL, Li CD, Li WH. Chinese lacto-vegetarian diet exerts favorable effects on metabolic parameters, intima-media thickness, and cardiovascular risks in healthy men. Nutr Clin Pract. 2012 Jun;27(3):392-8. Epub 2012 Mar 12. PubMed PMID: 22412169.	China is medium HDI country
906.	Yang SY, Zhang HJ, Sun SY, Wang LY, Yan B, Liu CQ, Zhang W, Li XJ. Relationship of carotid intima-media thickness and duration of vegetarian diet in Chinese male vegetarians. Nutr Metab (Lond). 2011 Sep 19;8(1):63. PubMed PMID: 21929760; PubMed Central PMCID: PMC3184257.	Case-control study
907.	Yang W, Read M. Dietary pattern changes of Asian immigrants. Nutrition Research. 1996;16(8):1277-1293.	Did not consider CVD outcome in analyses
908.	Yao M, Lichtenstein AH, Roberts SB, Ma G, Gao S, Tucker KL, McCrory MA. Relative influence of diet and physical activity on cardiovascular risk factors in urban Chinese adults. Int J Obes Relat Metab Disord. 2003 Aug;27(8):920-32. PMID: 12861233.	Cross-sectional
909.	Yarnell JWG, Fehily AM, Gilbert JF, Butland B, Wheatley D. Effects of diet on blood lipid levels: Western-type diet and 'prudent' diet compared. Journal of Human Nutrition and Dietetics. 1990;3(4):265-271.	Insufficient sample size (n=10)
910.	Yoo S, Nicklas T, Baranowski T, Zakeri IF, Yang SJ, Srinivasan SR, Berenson GS. Comparison of dietary intakes associated with metabolic syndrome risk factors in young adults: the Bogalusa Heart Study. Am J Clin Nutr. 2004 Oct;80(4):841-8. PubMed PMID: 15447888.	Cross-sectional study
911.	Yusuf S, Hawken S, Ounpuu S, Dans T, Avezum A, Lanas F, McQueen M, Budaj A, Pais P, Varigos J, Lisheng L; INTERHEART Study Investigators. Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): case-control study. Lancet. 2004 Sep 11-17;364(9438):937-52. PubMed PMID: 15364185.	Case-control study
912.	Zamora D, Gordon-Larsen P, Jacobs DR Jr, Popkin BM. Diet quality and weight gain among black and white young adults: the Coronary Artery Risk Development in Young Adults (CARDIA) Study (1985-2005). Am J Clin Nutr. 2010 Oct;92(4):784-93. Epub 2010 Aug 4. PubMed PMID: 20685947; PubMed Central PMCID: PMC2937583.	Did not examine CVD; examined weight gain
913.	Zazpe I, Estruch R, Toledo E, Sánchez-Taínta A, Corella D, Bulló M, Fiol M, Iglesias P, Gómez-Gracia E, Arós F, Ros E, Schröder H, Serra-Majem L, Pintó X, Lamuela-Raventós R, Ruiz-Gutiérrez V, Martínez-González MA. Predictors of adherence to a Mediterranean-type diet in the PREDIMED trial. Eur J Nutr. 2010 Mar;49(2):91-9. Epub 2009 Sep 4. PubMed PMID: 19760359.	Did not examine the relationship between dietary patterns and CVD; examined diet adherence
914.	Zazpe I, Sanchez-Tainta A, Estruch R, Lamuela-Raventos RM, Schröder H, Salas-Salvado J, Corella D, Fiol M, Gomez-Gracia E, Aros F, Ros E, Ruíz-Gutierrez V, Iglesias P, Conde-Herrera M, Martinez-Gonzalez MA. A large randomized individual and group intervention conducted by registered dietitians increased adherence to Mediterranean-type diets: the PREDIMED study. J Am Diet Assoc. 2008 Jul;108(7):1134-44; discussion 1145. PubMed PMID: 18589019.	Did not examine the relationship between dietary patterns and CVD; examined diet adherence
915.	Zhang C, Schulze MB, Solomon CG, Hu FB. A prospective study of dietary patterns, meat intake and the risk of gestational diabetes mellitus. Diabetologia. 2006 Nov;49(11):2604-13. Epub 2006 Sep 7. PubMed PMID: 16957814.	Did not examine CVD; examined gestational diabetes
916.	Zhang X, Shu XO, Xiang YB, Yang G, Li H, Gao J, Cai H, Gao YT, Zheng W. Cruciferous vegetable consumption is associated with a reduced risk of total and cardiovascular disease mortality. Am J Clin Nutr. 2011 Jul;94(1):240-6. Epub 2011 May 18. PubMed PMID: 21593509; PubMed Central PMCID: PMC3127519.	Did not examine dietary patterns; examined vegetable intake
917.	Zhou B, Rao X, Dennis BH, Li Y, Zhuo Q, Folsom AR, Yang J, Li Y, Stamler J, Cao T, et al. The relationship between dietary factors and serum lipids in Chinese urban and rural populations of Beijing and Guangzhou. PRC-USA Cardiovascular and Cardiopulmonary Research Group. Int J Epidemiol. 1995 Jun;24(3):528-34. PubMed PMID: 7672892.	China classified as medium on HDI
918.	Zhou BF, Wu XG, Tao SQ, Yang J, Cao TX, Zheng RP, Tian XZ, Lu CQ, Miao HY, Ye FM, et al. Dietary patterns in 10 groups and the relationship with blood pressure. Collaborative Study Group for Cardiovascular Diseases and Their Risk Factors. Chin Med J (Engl). 1989 Apr;102(4):257-61. PubMed PMID: 2507238.	Subjects from China

919.	Zyriax BC, Boeing H, Windler E. Nutrition is a powerful independent risk factor for coronary heart disease in women--The CORA study: a population-based case-control study. Eur J Clin Nutr. 2005 Oct;59(10):1201-7. PubMed PMID: 16034361.	Case-control study

Exlcuded list for updated search (11/15/12-08/10/13) for only Dietary Patterns and CVD using "Other Methods" methodology

#	Citation	Rationale for Exclusion
1	Ajala O, English P, Pinkney J. Systematic review and meta-analysis of different dietary approaches to the management of type 2 diabetes. Am J Clin Nutr. 2013 Mar;97(3):505-16. doi: 10.3945/ajcn.112.042457. Epub 2013 Jan 30. Review. PubMed PMID: 23364002.	Systematic review/meta-analysis
2	Akter S, Nanri A, Pham NM, Kurotani K, Mizoue T. Dietary patterns and metabolic syndrome in a Japanese working population. Nutr Metab (Lond). 2013 Mar 27;10(1):30. doi: 10.1186/1743-7075-10-30. PubMed PMID: 23537319; PubMed Central PMCID: PMC3623882.	Cross-sectional
3	Alosco ML, Spitznagel MB, Raz N, Cohen R, Sweet LH, Colbert LH, Josephson R, van Dulmen M, Hughes J, Rosneck J, Gunstad J. Dietary habits moderate the association between heart failure and cognitive impairment. J Nutr Gerontol Geriatr. 2013;32(2):106-21. doi: 10.1080/21551197.2013.781408. PubMed PMID: 23663211.	Dependent variable is cognitive impairment
4	Alrabadi NI. The effect of lifestyle food on chronic diseases: a comparison between vegetarians and non-vegetarians in Jordan. Glob J Health Sci. 2012 Nov 4;5(1):65-9. doi: 10.5539/gjhs.v5n1p65. PubMed PMID: 23283037.	Jordan is ranked as medium on 2011 Human Development Index
5	Au LE, Economos CD, Goodman E, Houser RF, Must A, Chomitz VR, Morgan EH, Sacheck JM. Dietary intake and cardiometabolic risk in ethnically diverse urban schoolchildren. J Acad Nutr Diet. 2012 ov;112(11):1815-21. doi: 10.1016/j.jand.2012.07.027. PubMed PMID: 23102181.	Cross-sectional
6	Bahreynian M, Paknahad Z, Maracy MR. Major dietary patterns and their associations with overweight and obesity among Iranian children. Int J Prev Med. 2013 Apr;4(4):448-58. PubMed PMID: 23671778; PubMed Central PMCID: PMC3650598.	Cross-sectional
7	Baik I, Lee M, Jun NR, Lee JY, Shin C. A healthy dietary pattern consisting of a variety of food choices is inversely associated with the development of metabolic syndrome. Nutr Res Pract. 2013 Jun;7(3):233-41. doi: 10.4162/nrp.2013.7.3.233. Epub 2013 Jun 3. PubMed PMID: 23766885; PubMed Central PMCID: PMC3679333.	Methodology is factor analysis
8	Bauer F, Beulens JW, van der A DL, Wijmenga C, Grobbee DE, Spijkerman AM, van der Schouw YT, Onland-Moret NC. Dietary patterns and the risk of type 2 diabetes in overweight and obese individuals. Eur J Nutr. 2013 Apr;52(3):1127-34. doi: 10.1007/s00394-012-0423-4. Epub 2012 Jul 28. PubMed PMID: 22972436.	Dependent variable is T2D
9	Bédard A, Dodin S, Corneau L, Lemieux S. The impact of abdominal obesity status on cardiovascular response to the mediterranean diet. J Obes. 2012;2012:969124. doi: 10.1155/2012/969124. Epub 2012 Oct 21. PubMed PMID: 23133745; PubMed Central PMCID: PMC3485524.	Before and after study
10	Bell LK, Golley RK, Daniels L, Magarey AM. Dietary patterns of Australian children aged 14 and 24 months, and associations with socio-demographic factors and adiposity. Eur J Clin Nutr. 2013 Jun;67(6):638-45. doi: 10.1038/ejcn.2013.23. Epub 2013 Feb 27. PubMed PMID: 23443830.	Methodology is principal component analysis
11	Bradlee ML, Singer MR, Daniels SR, Moore LL. Eating patterns and lipid levels in older adolescent girls. Nutr Metab Cardiovasc Dis. 2013 Mar;23(3):196-204.doi: 10.1016/j.numecd.2011.10.010. Epub 2012 Mar 13. PubMed PMID: 22417625; PubMed Central PMCID: PMC3399938.	Does not assess dietary patterns as defined for the project; assesses food components

12	Bruner BG, Chad KE. Dietary practices and influences on diet intake among women in a Woodland Cree community. J Hum Nutr Diet. 2013 May 13. doi: 10.1111/jhn.12121. [Epub ahead of print] PubMed PMID: 23662654.	Does not assess dietary patterns as defined for the project; assesses factors influencing diet intake and healthy eating
13	Carson JA, Michalsky L, Latson B, Banks K, Tong L, Gimpel N, Lee JJ, Dehaven MJ. The cardiovascular health of urban African Americans: diet-related results from the Genes, Nutrition, Exercise, Wellness, and Spiritual Growth (GoodNEWS) trial. J Acad Nutr Diet. 2012 Nov;112(11):1852-8. doi: 10.1016/j.jand.2012.06.357. Epub 2012 Sep 18. PubMed PMID: 22995059; PubMed Central PMCID: PMC3523949.	Cross-sectional
14	Clarys P, Deriemaeker P, Huybrechts I, Hebbelinck M, Mullie P. Dietary pattern analysis: a comparison between matched vegetarian and omnivorous subjects. Nutr J. 2013 Jun 13;12:82. doi: 10.1186/1475-2891-12-82. PubMed PMID: 23758767; PubMed Central PMCID: PMC3700875.	Methodology is index/score
15	Crowe FL, Appleby PN, Travis RC, Key TJ. Risk of hospitalization or death from ischemic heart disease among British vegetarians and nonvegetarians: results from the EPIC-Oxford cohort study. Am J Clin Nutr. 2013 Mar;97(3):597-603. doi: 10.3945/ajcn.112.044073. Epub 2013 Jan 30.PMID:23364007	Duplicate
16	Cuenca-García M, Ortega FB, Ruiz JR, González-Gross M, Labayen I, Jago R, Martínez-Gómez D, Dallongeville J, Bel-Serrat S, Marcos A, Manios Y, Breidenassel C, Widhalm K, Gottrand F, Ferrari M, Kafatos A, Molnár D, Moreno LA, De Henauw S, Castillo MJ, Sjöström M; HELENA study group. Combined influence of healthy diet and active lifestyle on cardiovascular disease risk factors in adolescents. Scand J Med Sci Sports. 2012 Dec 12. doi: 10.1111/sms.12022. [Epub ahead of print] PubMed PMID: 23237548.	Methodology is index/score
17	Davis NJ, Schechter CB, Ortega F, Rosen R, Wylie-Rosett J, Walker EA. Dietary patterns in Blacks and Hispanics with diagnosed diabetes in New York City's South Bronx. Am J Clin Nutr. 2013 Apr;97(4):878-85. doi: 10.3945/ajcn.112.051185. Epub 2013 Feb 27. PubMed PMID: 23446901; PubMed Central PMCID: PMC3607660.	Cross-sectional
18	Dominique Ashen M. Vegetarian Diets in Cardiovascular Prevention. Curr Treat Options Cardiovasc Med. 2013 Aug 9. [Epub ahead of print] PubMed PMID: 23928682.	Review
19	Domínguez LJ, Bes-Rastrollo M, de la Fuente-Arrillaga C, Toledo E, Beunza JJ, Barbagallo M, Martínez-González MA. Similar prediction of total mortality,diabetes incidence and cardiovascular events using relative- and absolute-component Mediterranean diet score: the SUN cohort. Nutr Metab Cardiovasc Dis. 2013 May;23(5):451-8. doi: 10.1016/j.numecd.2011.10.009. Epub 2012 Mar 7. PubMed PMID: 22402062.	Cross-sectional
20	Drake I, Gullberg B, Sonestedt E, Wallström P, Persson M, Hlebowicz J, Nilsson J, Hedblad B, Wirfält E. Scoring models of a diet quality index and the predictive capability of mortality in a population-based cohort of Swedish men and women. Public Health Nutr. 2013 Mar;16(3):468-78. doi: 10.1017/S1368980012002789. Epub 2012 May 29. PubMed PMID: 22643161.	Methodology is index/score
21	Eilat-Adar S, Mete M, Fretts A, Fabsitz RR, Handeland V, Lee ET, Loria C, Xu J, Yeh J, Howard BV. Dietary patterns and their association with cardiovascular risk factors in a population undergoing lifestyle changes: The Strong Heart Study. Nutr Metab Cardiovasc Dis. 2013 Jun;23(6):528-35. doi: 10.1016/j.numecd.2011.12.005. Epub 2012 Apr 24. PubMed PMID: 22534653; PubMed Central PMCID: PMC3674116.	Methodology is principal component analysis
22	Epstein DE, Sherwood A, Smith PJ, Craighead L, Caccia C, Lin PH, Babyak MA, Johnson JJ, Hinderliter A, Blumenthal JA. Determinants and consequences of adherence to the dietary approaches to stop hypertension diet in African-American and white adults with high blood pressure: results from the ENCORE trial. J Acad Nutr Diet. 2012 Nov;112(11):1763-73. doi: 10.1016/j.jand.2012.07.007. Epub 2012 Sep 19. PubMed PMID: 23000025; PubMed Central PMCID: PMC3483427.	Dependent variable was adherence to DASH dietary pattern

23	Feart C, Alles B, Merle B, Samieri C, Barberger-Gateau P. Adherence to a Mediterranean diet and energy, macro-, and micronutrient intakes in older persons. J Physiol Biochem. 2012 Dec;68(4):691-700. doi: 10.1007/s13105-012-0190-y. Epub 2012 Jul 4. PubMed PMID: 22760695.	Cross-sectional
24	Ford DW, Jensen GL, Hartman TJ, Wray L, Smiciklas-Wright H. Association between dietary quality and mortality in older adults: a review of the epidemiological evidence. J Nutr Gerontol Geriatr. 2013;32(2):85-105. doi: 10.1080/21551197.2013.779622. PubMed PMID: 23663210.	Review
25	Foster M, Chu A, Petocz P, Samman S. Effect of vegetarian diets on zinc status: a systematic review and meta-analysis of studies in humans. J Sci Food Agric. 2013 Aug 15;93(10):2362-71. doi: 10.1002/jsfa.6179. Epub 2013 May 29. PubMed PMID: 23595983.	Systematic review/meta-analysis
26	Glasziou P. ACP Journal Club. Mediterranean diets reduced cardiovascular events more than a low-fat diet in high-risk persons. Ann Intern Med. 2013 Jun 18;158(12):JC3. doi: 10.7326/0003-4819-158-12-201306180-02003. PubMed PMID: 23778927.	Review
27	Granic A, Andel R, Dahl AK, Gatz M, Pedersen NL. Midlife dietary patterns and mortality in the population-based study of Swedish twins. J Epidemiol Community Health. 2013 Jul;67(7):578-86. doi: 10.1136/jech-2012-201780. Epub 2013 Apr 9. PubMed PMID: 23572533.	Methodology is cluster analysis
28	Guo J, Li W, Wang Y, Chen T, Teo K, Liu LS, Yusuf S; INTERHEART China study investigators. Influence of dietary patterns on the risk of acute myocardial infarction in China population: the INTERHEART China study. Chin Med J (Engl). 2013 Feb;126(3):464-70. PubMed PMID: 23422108.	Case-control
29	Harrington JM, Fitzgerald AP, Kearney PM, McCarthy VJ, Madden J, Browne G, Dolan E, Perry IJ. DASH Diet Score and Distribution of Blood Pressure in Middle-Aged Men and Women. Am J Hypertens. 2013 Aug 6. [Epub ahead of print] PubMed PMID: 23920282.	Cross-sectional
30	Hearty ÁP, Gibney MJ. Dietary patterns in Irish adolescents: a comparison of cluster and principal component analyses. Public Health Nutr. 2013 May;16(5):848-57. doi: 10.1017/S1368980011002473. Epub 2011 Oct 13. PubMed PMID: 22014626.	Methodology is cluster analysis
31	Hsiao PY, Mitchell DC, Coffman DL, Craig Wood G, Hartman TJ, Still C, Jensen GL. Dietary patterns and relationship to obesity-related health outcomes and mortality in adults 75 years of age or greater. J Nutr Health Aging. 2013;17(6):566-72. doi: 10.1007/s12603-013-0014-y. PubMed PMID: 23732554.	Methodology is cluster analysis
32	Huang T, Yu X, Shou T, Wahlqvist ML, Li D. Associations of plasma phospholipid fatty acids with plasma homocysteine in Chinese vegetarians. Br J Nutr. 2013 May;109(9):1688-94. Doi: 10.1017/S000711451200356X. Epub 2012 Aug 31. PubMed PMID: 22935202.	China is ranked as medium on the 2011 Human Development Index
33	Jeppesen C, Bjerregaard P, Jørgensen ME. Dietary patterns in Greenland and their relationship with type 2 diabetes mellitus and glucose intolerance. Public Health Nutr. 2013 Feb 11:1-9. [Epub ahead of print] PubMed PMID: 23399043.	Cross-sectional
34	Kehoe SH, Krishnaveni GV, Veena SR, Guntupalli AM, Margetts BM, Fall CH, Robinson SM. Diet patterns are associated with demographic factors and nutritional status in South Indian children. Matern Child Nutr. 2013 Jul 2. doi: 10.1111/mcn.12046. [Epub ahead of print] PubMed PMID: 23819872.	Methodology is principal component analysis
35	Kesse-Guyot E, Ahluwalia N, Lassale C, Hercberg S, Fezeu L, Lairon D. Adherence to Mediterranean diet reduces the risk of metabolic syndrome: a 6-year prospective study. Nutr Metab Cardiovasc Dis. 2013 Jul;23(7):677-83. doi: 10.1016/j.numecd.2012.02.005. Epub 2012 May 25. PubMed PMID: 22633793.	Methodology is index/score
36	Lee M, Chae SW, Cha YS, Cho MS, Oh HY, Kim MK. Development of a Korean Diet Score (KDS) and its application assessing adherence to Korean healthy diet based on the Korean Food Guide Wheels. Nutr Res Pract. 2013 Feb;7(1):49-58. doi: 10.4162/nrp.2013.7.1.49. Epub 2013 Feb 4. PubMed PMID: 23424060; PubMed Central PMCID: PMC3572226.	Methodology is index/score
37	Levy LB. Dietary strategies, policy and cardiovascular disease risk reduction in England. Proc Nutr Soc. 2013 Jul 10:1-4. [Epub ahead of print] PubMed PMID: 23842106.	Review

38	Liu J, Hickson DA, Musani SK, Talegawkar SA, Carithers TC, Tucker KL, Fox CS, Taylor HA. Dietary patterns, abdominal visceral adipose tissue, and cardiometabolic risk factors in African Americans: the Jackson heart study. Obesity (Silver Spring). 2013 Mar;21(3):644-51. doi: 10.1002/oby.20265. PubMed PMID: 23592674.	Cross-sectional
39	Maruyama K, Iso H, Date C, Kikuchi S, Watanabe Y, Wada Y, Inaba Y, Tamakoshi A; JACC Study Group. Dietary patterns and risk of cardiovascular deaths among middle-aged Japanese: JACC Study. Nutr Metab Cardiovasc Dis. 2013 Jun;23(6):519-27. doi: 10.1016/j.numecd.2011.10.007. Epub 2012 Mar 10. PubMed PMID: 22410388.	Methodology is factor analysis
40	Mattioli AV, Miloro C, Pennella S, Pedrazzi P, Farinetti A. Adherence to Mediterranean diet and intake of antioxidants influence spontaneous conversion of atrial fibrillation. Nutr Metab Cardiovasc Dis. 2013 Feb;23(2):115-21. doi: 10.1016/j.numecd.2011.03.005. Epub 2011 Jul 27. PubMed PMID: 21798731.	Methodology is index/score
41	Meneton P, Kesse-Guyot E, Fezeu L, Galan P, Hercberg S, Ménard J. Distinctive unhealthy eating pattern in free-living middle-aged hypertensives when compared with dyslipidemic or overweight patients. J Hypertens. 2013 Aug;31(8):1554-63. doi: 10.1097/HJH.0b013e32836130f8. PubMed PMID: 23591702.	Dependent variable is dietary intake
42	Moore LL, Bradlee ML, Singer MR, Qureshi MM, Buendia JR, Daniels SR. Dietary Approaches to Stop Hypertension (DASH) eating pattern and risk of elevated blood pressure in adolescent girls. Br J Nutr. 2012 Nov 14;108(9):1678-85. doi: 10.1017/S000711451100715X. Epub 2012 Jan 16. PMID: 22243687	Duplicate
43	Naja F, Hwalla N, Itani L, Salem M, Azar ST, Zeidan MN, Nasreddine L. Dietary patterns and odds of Type 2 diabetes in Beirut, Lebanon: a case-control study. Nutr Metab (Lond). 2012 Dec 27;9(1):111. doi: 10.1186/1743-7075-9-111. PubMed PMID: 23270372; PubMed Central PMCID: PMC3565896.	Case-control
44	Neuhouser ML, Howard B, Lu J, Tinker LF, Van Horn L, Caan B, Rohan T, Stefanick ML, Thomson CA. A low-fat dietary pattern and risk of metabolic syndrome in postmenopausal women: the Women's Health Initiative. Metabolism. 2012 Nov;61(11):1572-81. doi: 10.1016/j.metabol.2012.04.007. Epub 2012 May 26. PubMed PMID: 22633601; PubMed Central PMCID: PMC3430820.	Primary outcome is metabolic syndrome and statistical significance was assessed using the 5 components simultaneously as outcomes, i.e. all components as a whole.
45	Nicklas TA, Jahns L, Bogle ML, Chester DN, Giovanni M, Klurfeld DM, Laugero K, Liu Y, Lopez S, Tucker KL. Barriers and Facilitators for Consumer Adherence to the Dietary Guidelines for Americans: The HEALTH Study. J Acad Nutr Diet. 2013 Jul 16. doi:pii: S2212-2672(13)00527-3. 10.1016/j.jand.2013.05.004. [Epub ahead of print] PubMed PMID: 23871110.	Independent variables are barriers and facilitators to adherence
46	Nicklas TA, O'Neil CE, Fulgoni VL 3rd. Diet quality is inversely related to cardiovascular risk factors in adults. J Nutr. 2012 Dec;142(12):2112-8. doi: 10.3945/jn.112.164889. Epub 2012 Oct 17. Erratum in: J Nutr. 2013 Apr;143(4):550. PubMed PMID: 23077187.	Methodology is index/score
47	Northstone K, Smith AD, Cribb VL, Emmett PM. Dietary patterns in UK adolescents obtained from a dual-source FFQ and their associations with socio-economic position, nutrient intake and modes of eating. Public Health Nutr. 2013 Jun 20:1-10. [Epub ahead of print] PubMed PMID: 23782861.	Methodology is principal component analysis
48	Nyholm M, Lissner L, Hörnell A, Johansson I, Hallmans G, Weinehall L, Winkvist A. Exploring dietary patterns, obesity and sources of bias: the Västerbotten Intervention Programme (VIP). Public Health Nutr. 2013 Apr;16(4):631-8. doi: 10.1017/S1368980012003199. Epub 2012 Jul 5. PubMed PMID: 22874584.	Methodology is cluster analysis
49	Nóbrega OT, Paula RS, Silveira SR, Pires AS, Toledo JO, Moraes CF, Córdova C. Usual dietary intake and cardiovascular risk factors in older Brazilian women. Aging Clin Exp Res. 2012 Dec;24(6):669-74. doi: 10.3275/7674. Epub 2011 Apr 15. PubMed PMID: 21499023.	Cross-sectional

50	Olmedo-Requena R, Fernández JG, Prieto CA, Moreno JM, Bueno-Cavanillas A, Jiménez-Moleón JJ. Factors associated with a low adherence to a Mediterranean diet pattern in healthy Spanish women before pregnancy. Public Health Nutr. 2013 Mar 18:1-9. [Epub ahead of print] PubMed PMID: 23507495.	Methodology is index/score
51	Orlich MJ, Singh PN, Sabaté J, Jaceldo-Siegl K, Fan J, Knutsen S, Beeson WL, Fraser GE. Vegetarian dietary patterns and mortality in adventist health study 2. JAMA Intern Med. 2013 Jul 8;173(13):1230-8. doi: 10.1001/jamainternmed.2013.6473. PMID: 23836264	Duplicate
52	Oude Griep LM, Wang H, Chan Q. Empirically-derived dietary patterns, diet quality scores, and markers of inflammation and endothelial dysfunction. Curr Nutr Rep. 2013 Jun;2(2):97-104. PubMed PMID: 23750327; PubMed Central PMCID: PMC3674493.	Review
53	Park JE, Jung H, Lee JE. Dietary pattern and hypertension in Korean adults. Public Health Nutr. 2013 Feb 27:1-10. [Epub ahead of print] PubMed PMID: 23442232.	Cross-sectional
54	Park SJ, Lee SM, Kim SM, Lee M. Gender specific effect of major dietary patterns on the metabolic syndrome risk in Korean pre-pubertal children. Nutr Res Pract. 2013 Apr;7(2):139-45. doi: 10.4162/nrp.2013.7.2.139. Epub 2013 Apr 1. PubMed PMID: 23610607; PubMed Central PMCID: PMC3627931.	Cross-sectional
55	Salehi-Abargouei A, Maghsoudi Z, Shirani F, Azadbakht L. Effects of dietary approaches to stop hypertension (DASH)-style diet on fatal or nonfatal cardiovascular diseases--incidence: a systematic review and meta-analysis on observational prospective studies. Nutrition. 2013 Apr;29(4):611-8. doi: 10.1016/j.nut.2012.12.018. PubMed PMID: 23466047.	Systematic review
56	Sangita S, Vik SA, Pakseresht M, Kolonel LN. Adherence to recommendations for fruit and vegetable intake, ethnicity and ischemic heart disease mortality. Nutr Metab Cardiovasc Dis. 2013 May 28. doi:pii: S0939-4753(13)00072-0. 10.1016/j.numecd.2013.03.004. [Epub ahead of print] PubMed PMID: 23725771.	Does not assess dietary patterns as defined for the project; assesses fruit and vegetable intake
57	Sheehy T, Roache C, Sharma S. Eating habits of a population undergoing a rapid dietary transition: portion sizes of traditional and non-traditional foods and beverages consumed by Inuit adults in Nunavut, Canada. Nutr J. 2013 Jun 2;12:70. doi: 10.1186/1475-2891-12-70. PubMed PMID: 23724920; PubMed Central PMCID: PMC3674896.	Cross-sectional
58	Shin JY, Kim JM, Kim Y. Associations between dietary patterns and hypertension among Korean adults: the Korean National Health and Nutrition Examination Survey (2008-2010). Nutr Res Pract. 2013 Jun;7(3):224-32. doi: 10.4162/nrp.2013.7.3.224. Epub 2013 Jun 3. PubMed PMID: 23766884; PubMed Central PMCID: PMC3679332.	Methodology is factor analysis
59	Shirani F, Salehi-Abargouei A, Azadbakht L. Effects of Dietary Approaches to Stop Hypertension (DASH) diet on some risk for developing type 2 diabetes: a systematic review and meta-analysis on controlled clinical trials. Nutrition. 2013 Jul-Aug;29(7-8):939-47. doi: 10.1016/j.nut.2012.12.021. Epub 2013 Mar 6.PubMed PMID: 23473733.	Systematic review/ meta-analysis
60	Shroff MR, Perng W, Baylin A, Mora-Plazas M, Marin C, Villamor E. Adherence to a snacking dietary pattern and soda intake are related to the development of adiposity: a prospective study in school-age children. Public Health Nutr. 2013 May 24:1-7. [Epub ahead of print] PubMed PMID: 23701749.	Does not assess dietary patterns as defined for the project; assesses snacking dietary pattern
61	Srinivasan CS. Can adherence to dietary guidelines address excess caloric intake? An empirical assessment for the UK. Econ Hum Biol. 2013 Apr 18. doi:pii: S1570-677X(13)00038-5. 10.1016/j.ehb.2013.04.003. [Epub ahead of print] PubMed PMID: 23665354.	Independent variable is consumption of nutrients, not foods
62	Staffileno BA, Tangney CC, Wilbur J, Marquez DX, Fogg L, Manning A, Bustamante EE, Morris MC. Dietary approaches to stop hypertension patterns in older Latinos with or at risk for hypertension. J Cardiovasc Nurs. 2013 Jul-Aug;28(4):338-47. doi: 10.1097/JCN.0b013e3182563892. PubMed PMID: 22722473.	Cross-sectional
63	Stamler J. Hypertension, not essential: an epidemic preventable by improved eating patterns. J Hum Hypertens. 2013 Apr 18. doi: 10.1038/jhh.2013.25. [Epub ahead of print] PubMed PMID: 23595160.	Review

64	Stricker MD, Onland-Moret NC, Boer JM, van der Schouw YT, Verschuren WM, May AM, Peeters PH, Beulens JW. Dietary patterns derived from principal component- and k-means cluster analysis: long-term association with coronary heart disease and stroke. Nutr Metab Cardiovasc Dis. 2013 Mar;23(3):250-6. doi: 10.1016/j.numecd.2012.02.006. Epub 2012 May 28. PubMed PMID: 22647416.	Methodology is principal component analysis and cluster analysis
65	Szostak WB, Cybulska B, Kłosiewicz-Latoszek L, Szostak-Węgierek D. Primary prevention of cardiovascular disease and other chronic noncommunicable diseases in the centre of attention of the United Nations: special importance of a prudent diet. Kardiol Pol. 2013;71(4):321-4. doi: 10.5603/KP.2013.0058. PubMed PMID: 23788336.	Review
66	Tantamango-Bartley Y, Jaceldo-Siegl K, Fan J, Fraser G. Vegetarian diets and the incidence of cancer in a low-risk population. Cancer Epidemiol Biomarkers Prev. 2013 Feb;22(2):286-94. doi: 10.1158/1055-9965.EPI-12-1060. Epub 2012 Nov 20. PubMed PMID: 23169929; PubMed Central PMCID: PMC3565018.	Dependent variable is cancer
67	Threapleton DE, Greenwood DC, Evans CE, Cleghorn CL, Nykjaer C, Woodhead C, Cade JE, Gale CP, Burley VJ. Dietary fiber intake and risk of first stroke: a systematic review and meta-analysis. Stroke. 2013 May;44(5):1360-8. doi: 10.1161/STROKEAHA.111.000151. Epub 2013 Mar 28. Review. PubMed PMID: 23539529.	Systematic review/meta-analysis
68	Tognon G, Lissner L, Sæbye D, Walker KZ, Heitmann BL. The Mediterranean diet in relation to mortality and CVD: a Danish cohort study. Br J Nutr. 2013 Jul 3:1-9. [Epub ahead of print] PubMed PMID: 23823619.	Duplicate
69	Tracy SW. Something new under the sun? The Mediterranean diet and cardiovascular health. N Engl J Med. 2013 Apr 4;368(14):1274-6. doi: 10.1056/NEJMp1302616. PubMed PMID: 23550666.	Review
70	Tuţă-Sas I, Vlaicu B, Doroftei S, Petrescu C, Fira-Mladinescu C, Putnoky S, Suciu O, Bagiu R, Ursoniu S, Serban D. Dietary patterns in young adults from Timiş County. Rev Med Chir Soc Med Nat Iasi. 2012 Oct-Dec;116(4):1150-6. PubMed PMID: 23700904.	Cross-sectional study
71	Uusitupa M, Hermansen K, Savolainen MJ, Schwab U, Kolehmainen M, Brader L, Mortensen LS, Cloetens L, Johansson-Persson A, Onning G, Landin-Olsson M, Herzig KH, Hukkanen J, Rosqvist F, Iggman D, Paananen J, Pulkki KJ, Siloaho M, Dragsted L, Barri T, Overvad K, Bach Knudsen KE, Hedemann MS, Arner P, Dahlman I, Borge GI, Baardseth P, Ulven SM, Gunnarsdottir I, Jónsdóttir S, Thorsdottir I, Orešič M, Poutanen KS, Risérus U, Akesson B. Effects of an isocaloric healthy Nordic diet on insulin sensitivity, lipid profile and inflammation markers in metabolic syndrome -- a randomized study (SYSDIET). J Intern Med. 2013 Jul;274(1):52-66. doi: 10.1111/joim.12044. Epub 2013 Mar 2. PubMed PMID: 23398528.	Drop-out rate >20%
72	van de Laar RJ, Stehouwer CD, van Bussel BC, Prins MH, Twisk JW, Ferreira I. Adherence to a Mediterranean dietary pattern in early life is associated with lower arterial stiffness in adulthood: the Amsterdam Growth and Health Longitudinal Study. J Intern Med. 2013 Jan;273(1):79-93. doi: 10.1111/j.1365-796.2012.02577.x. Epub 2012 Sep 4. PubMed PMID: 22809371.	Methodology is index/score
73	Vinagre JC, Vinagre CG, Pozzi FS, Slywitch E, Maranhão RC. Metabolism of triglyceride-rich lipoproteins and transfer of lipids to high-density lipoproteins (HDL) in vegan and omnivore subjects. Nutr Metab Cardiovasc Dis. 2013 Jan;23(1):61-7. doi: 10.1016/j.numecd.2011.02.011. Epub 2011 Sep 21.PMID:21937206	<30 subjects per study arm
74	Viscogliosi G, Cipriani E, Liguori ML, Marigliano B, Saliola M, Ettorre E, Andreozzi P. Mediterranean dietary pattern adherence: associations with prediabetes, metabolic syndrome, and related microinflammation. Metab Syndr Relat Disord. 2013 Jun;11(3):210-6. doi: 10.1089/met.2012.0168. Epub 2013 Mar 1. PubMed PMID: 23451814; PubMed Central PMCID: PMC3696914.	Methodology is index/score
75	Weng LC, Steffen LM, Szklo M, Nettleton J, Chambless L, Folsom AR. A diet pattern with more dairy and nuts, but less meat is related to lower risk of developing hypertension in middle-aged adults: the Atherosclerosis Risk in Communities (ARIC) study. Nutrients. 2013 May 21;5(5):1719-33. doi: 10.3390/nu5051719. PubMed PMID: 23698164; PubMed Central PMCID: PMC3708346.	Methodology is index/score

76	Zhang HJ, Han P, Sun SY, Wang LY, Yan B, Zhang JH, Zhang W, Yang SY, Li XJ. Attenuated associations between increasing BMI and unfavorable lipid profiles in Chinese Buddhist vegetarians. Asia Pac J Clin Nutr. 2013;22(2):249-56. doi: 10.6133/apjcn.2013.22.2.07.PMID:23635369.	China is ranked medium on the 2011 Human Development Index
77	Zhang Z, Ma G, Chen S, Li Z, Xia E, Sun Y, Yang F, Zheng L, Feng X. Comparison of plasma triacylglycerol levels in vegetarians and omnivores: a meta-analysis. Nutrition. 2013 Feb;29(2):426-30. doi: 10.1016/j.nut.2012.07.016. Epub 2012 Dec 5. PubMed PMID: 23218480.	Meta-analysis
78	Zuo H, Shi Z, Yuan B, Dai Y, Pan X, Wu G, Hussain A. Dietary patterns are associated with insulin resistance in Chinese adults without known diabetes. Br J Nutr. 2013 May;109(9):1662-9. doi: 10.1017/S0007114512003674. Epub 2012 Sep 19. PubMed PMID: 22989490.	China is ranked as medium on the 2011 Human Development Index

Appendix H: Literature Search Results – Type 2 Diabetes

Systematic Review Questions:

- What is the relationship between adherence to dietary guidelines/ recommendations or specific dietary patterns and risk of type 2 diabetes?
    - *a priori* index
- Are prevailing patterns of diet behavior in a population related to risk of type 2 diabetes?
    - factor analysis, principal component analysis; cluster analysis
- What combinations of food intake explain the most variation in risk of type 2 diabetes?
    - reduced rank regression; discriminant analysis
- What is the relationship between adherence to dietary guidelines/ recommendations or specific dietary patterns and risk of type 2 diabetes?
    - (studies that do not use methodologies included above)

Search Results:

Total Hits: 4,047
Total Selected: 347
Total Included: 37

Databases Searched:

A. PubMed

Search date: 09/2012; updated through 08/2013
Date range: No limit
Search Terms:
(“insulin resistance”[mh] OR “insulin”[ti] OR inflammation[ti] OR glucose intoleran*[ti] OR "Glucose Intolerance"[Mesh] OR diabetes[ti] OR "Diabetes Mellitus, Type 2"[Mesh] OR "Hemoglobin A, Glycosylated"[Mesh] OR “hemoglobin A1c “[ti] OR (“impaired fasting” AND (glucose OR glycemi*)) OR “onset diabetes” OR “impaired glucose”)
AND
(“diet quality” OR dietary pattern* OR diet pattern* OR eating pattern* OR food pattern* OR eating habit* OR dietary habit* OR food habit* OR dietary profile* OR food profile* OR diet profile* OR eating profile* OR dietary guideline* OR dietary recommendation* OR food intake pattern* OR dietary intake pattern* OR diet pattern* OR eating style*) OR

(DASH OR (dietary approaches to stop hypertension) OR "Diet, Mediterranean"[Mesh] OR vegan* OR vegetarian* OR "Diet, Vegetarian"[Mesh] OR “prudent diet” OR “western diet” OR omniheart OR (Optimal Macronutrient Intake Trial to Prevent Heart Disease) OR ((Okinawa* OR "Ethnic Groups"[Mesh] OR “plant based” OR Mediterranean[tiab]) AND (diet[mh] OR diet[tiab] OR food[mh])))
OR
("Guideline Adherence"[Mesh] AND (diet OR food OR eating OR eat OR dietary OR feeding OR nutrition OR nutrient*)) OR (adherence AND (nutrient* OR nutrition OR diet OR dietary OR food OR eat OR eating) AND (guideline* OR guidance OR recommendation*)) OR

(dietary score* OR adequacy index* OR kidmed OR Diet Quality Index* OR Food Score* OR Diet Score* OR MedDietScore OR Dietary Pattern Score* OR “healthy eating index”)OR
((index*[ti] OR score*[ti] OR indexes OR scoring[ti] indices[ti]) AND (dietary[ti] OR nutrient*[ti] OR eating[tiab] OR OR food[ti] OR food[mh] OR diet[ti] OR diet[mh]) AND (pattern* OR habit* OR profile*))
Eng/hum AND ("Study Characteristics" [Publication Type] OR “clinical trial”[ptyp] OR "Epidemiologic Studies"[Mesh] OR "Support of Research"[ptyp]) NOT (editorial[ptyp] OR comment[ptyp] OR news[ptyp] OR letter[ptyp] OR review[ptyp]) 1696; 1545 Eng/hum

B. Cochrane

Search date: 11/2012; updated through 08/2013
Date range: No limit
Search Terms:
(“diet quality” OR dietary NEXT guideline OR dietary NEXT recommendation OR ((food OR eating OR diet OR dietary) NEAR/3 (pattern OR profile OR habit)) OR (eating NEXT style) OR (“dietary approaches to stop hypertension” OR vegan* OR vegetarian* OR “prudent diet” OR “western diet” OR omniheart OR "Optimal Macronutrient Intake Trial to Prevent Heart Disease" OR ((asia* OR western OR Okinawa* OR “plant based” OR Mediterranean:ti,ab,kw OR DASH) AND (diet*:ti,ab,kw OR food:ti,ab,kw))) OR ((Index OR score OR indices OR scoring) NEAR/3 (dietary OR diet OR food OR eating)) OR “adequacy index” OR kidmed OR MedDietScore) AND
((“insulin resistance”:ti,kw OR “insulin”:ti OR inflammation:ti OR glucose intoleran*:ti,kw OR "Glucose Intolerance":ti,kw OR diabetes:ti,kw OR ("Hemoglobin A":ti AND Glycosylated:ti) OR “hemoglobin A1c “:ti OR (“impaired fasting”:ti AND (glucose:ti OR glycemi*:ti)) OR “onset diabetes”:ti OR “impaired glucose”:ti) NOT (pubmed AND trials) OR
(“insulin resistance”:ti,kw or “insulin”:ti or inflammation:ti or glucose intoleran*:ti,kw or "Glucose Intolerance":ti,kw or diabetes:ti,kw or ("Hemoglobin A":ti and Glycosylated:ti) or “hemoglobin A1c “:ti or (“impaired fasting” and (glucose:ti or glycemi*:ti)) or “onset diabetes” or “impaired glucose”))

C. Embase

Search date: 09/2012; updated through 08/2013
Date range: No limit
Search Terms:
(MedDietScore OR adequacy index* OR kidmed OR “healthy eating index”)
((index:ab,ti OR score:ab,ti OR scoring:ab,ti) NEAR/3 ('diet quality' OR dietary OR nutrient* OR eating:ti,ab OR food:ti,ab OR diet:ab,ti))
(‘diet quality’ OR 'eating habit'/exp OR 'Mediterranean diet'/exp OR DASH:ti,ab OR ‘dietary approaches to stop hypertension’:ti,ab OR vegan*:ab,ti OR vegetarian*:ab,ti OR 'vegetarian diet'/exp OR 'vegetarian'/exp OR ‘prudent diet’:ti,ab OR ‘western diet’:ti,ab OR omniheart:ti,ab OR omni:ti OR ‘plant based diet’) OR ((dietary OR eating OR food OR diet) NEAR/2 (pattern? OR habit? OR profile? OR recommendation? OR guideline?)) OR (('ethnic, racial and religious groups'/exp or Okinawa*) AND (diet/exp OR eating/exp OR 'food intake'/de)) AND

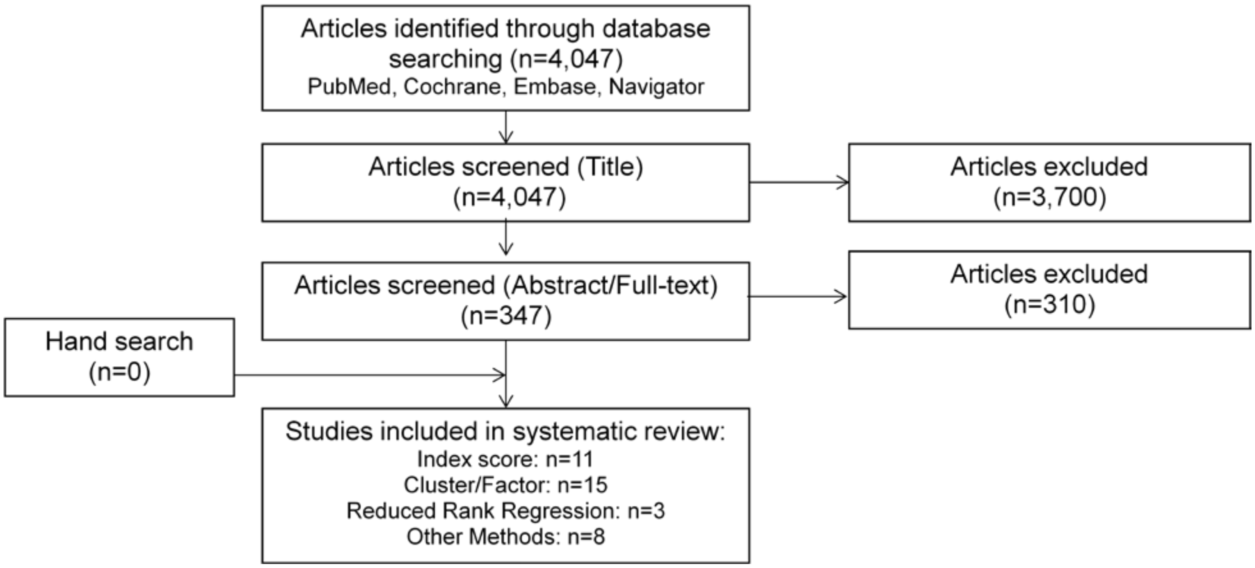
(“insulin”:ti OR inflammation:ti OR glucose intoleran*:ti OR diabetes:ti OR “hemoglobin A1c”:ti OR (“impaired fasting” AND (glucose OR glycemi*)) OR “onset diabetes” OR “impaired glucose” OR 'insulin resistance'/exp OR 'glucose intolerance'/exp OR 'non insulin dependent diabetes mellitus'/exp OR 'glycosylated hemoglobin'/exp OR 'impaired glucose tolerance'/exp OR 'maturity onset diabetes mellitus'/exp)

D. Navigator: (FSTA/BIOSIS/CAB Abstracts)

Search date: 11/2012; updated through 01/2013
Date range: No limit
Search Terms:
(MedDietScore or "adequacy index" or kidmed or ((index or score) near/2 (("diet quality") or dietary or nutrient* or eating or food or diet)) or ((Diet or dietary or eating or food) near/2 (pattern* or profile* or habit* or guideline* or recommendation*) or "diet quality") or “dietary approaches to stop hypertension” or vegan* or vegetarian* or "prudent diet" or "western diet" or omniheart or "Optimal Macronutrient Intake Trial to Prevent Heart Disease" or ((Okinawa* or asia* or Chinese or japan* or Hispanic* or ethnic or "plant based" or title:omni or title:Mediterranean or DASH) near/3 (title:diet* or abstract:diet*))) and (abstract:"insulin resistance" or title: "insulin" or title: inflammation or title:glucose near/1 intoleran* or abstract:"Glucose Intolerance" or title:diabetes or ("Hemoglobin A" near/1 Glycosylated) or title:"hemoglobin A1c " or ("impaired fasting" and (glucose or glycemi*)) or "onset diabetes" or "impaired glucose")) -(database:medline OR database:agricola OR database:agris OR database:ffab OR database:wesw OR database:geobase OR database:zoor) doc-type:Articles language:English

(MedDietScore or "adequacy index" or kidmed or ((index or score) near/2 (("diet quality") or dietary or nutrient* or eating or food or diet)) or ((Diet or dietary or eating or food) near/2 (pattern* or profile* or habit* or guideline* or recommendation*) or "diet quality") or “dietary approaches to stop hypertension” or vegan* or vegetarian* or "prudent diet" or "western diet" or omniheart or "Optimal Macronutrient Intake Trial to Prevent Heart Disease" or ((Okinawa* or asia* or Chinese or japan* or Hispanic* or ethnic or "plant based" or title:omni or title:Mediterranean or DASH) near/3 (title:diet* or abstract:diet*))) AND ((keyword:"insulin resistance" or keyword:"Glucose Intolerance" or keyword:diabetes or ("Hemoglobin A" near/1 Glycosylated) or keyword:"hemoglobin A1c ") NOT (abstract:"insulin resistance" or title: "insulin" or title: inflammation or ti:glucose near/1 intoleran* or abstract:"Glucose Intolerance" or title:diabetes or ("Hemoglobin A" near/1 Glycosylated) or title:"hemoglobin A1c " or ("impaired fasting" and (glucose or glycemi*)) or "onset diabetes" or "impaired glucose")) -(database:medline OR database:agricola OR database:agris OR database:ffab OR database:wesw OR database:geobase OR database:zoor) doc-type:Articles language:English

Figure H.1. Flow chart of literature search results for studies examining the relationship between dietary patterns and risk of type 2 diabetes



INCLUDED ARTICLES

Index/Score:

1. Abiemo EE, Alonso A, Nettleton JA, Steffen LM, Bertoni AG, Jain A, Lutsey PL. Relationships of the Mediterranean dietary pattern with insulin resistance and diabetes incidence in the Multi-Ethnic Study of Atherosclerosis (MESA). Br J Nutr. 2012 Aug 30:1-8. [Epub ahead of print] PubMed PMID: 22932232.
2. Estruch R, Martínez-González MA, Corella D, Salas-Salvadó J, Ruiz-Gutiérrez V, Covas MI, Fiol M, Gómez-Gracia E, López-Sabater MC, Vinyoles E, Arós F, Conde M, Lahoz C, Lapetra J, Sáez G, Ros E; PREDIMED Study. Investigators. Effects of a Mediterranean-style diet on cardiovascular risk factors: a randomized trial. Ann Intern Med. 2006 Jul 4;145(1):1-11. PMID: 16818923. (HAND SEARCH – Also in DP and BW/Obesity and CVD questions)
3. Fung TT, McCullough M, van Dam RM, Hu FB. A prospective study of overall diet quality and risk of type 2 diabetes in women. Diabetes Care. 2007 Jul;30(7):1753-7. Epub 2007 Apr 11. PubMed PMID: 17429059.
4. Gopinath B, Rochtchina E, Flood VM, Mitchell P. Diet quality is prospectively associated with incident impaired fasting glucose in older adults. Diabet Med. 2013 Jan 10. doi: 10.1111/dme.12109. [Epub ahead of print] PubMed PMID: 23301551.
5. Jacobs DR Jr, Sluik D, Rokling-Andersen MH, Anderssen SA, Drevon CA. Association of 1-y changes in diet pattern with cardiovascular disease risk factors and adipokines: results from the 1-y randomized Oslo Diet and Exercise Study. Am J Clin Nutr. 2009 Feb;89(2):509-17. Epub 2008 Dec 30. PubMed PMID: 19116328. (Also in DP and BW/Obesity and CVD questions)
6. Liese AD, Nichols M, Sun X, D'Agostino RB Jr, Haffner SM. Adherence to the DASH Diet is inversely associated with incidence of type 2 diabetes: the insulin resistance atherosclerosis

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11. Zamora D, Gordon-Larsen P, He K, Jacobs DR Jr, Shikany JM, Popkin BM. Are the 2005 Dietary Guidelines for Americans Associated With reduced risk of type 2 diabetes and cardiometabolic risk factors? Twenty-year findings from the CARDIA study. Diabetes Care. 2011 May;34(5):1183-5. Epub 2011 Apr 8. PubMed PMID: 21478463; PubMed Central PMCID: PMC3114488. (Also in DP and BW/Obesity and CVD questions)

Factor Analysis:

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Reduced Rank Regression:

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2. Liese AD, Weis KE, Schulz M, Tooze JA. Food intake patterns associated with incident type 2 diabetes: the Insulin Resistance Atherosclerosis Study. Diabetes Care. 2009 Feb;32(2):263-8. Epub 2008 Nov 25. PubMed PMID: 19033409; PubMed Central PMCID: PMC2628691.

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Other Methods:

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2. Blumenthal JA, Babyak MA, Sherwood A, Craighead L, Lin PH, Johnson J, Watkins LL, Wang JT, Kuhn C, Feinglos M, Hinderliter A. Effects of the dietary approaches to stop hypertension diet alone and in combination with exercise and caloric restriction on insulin sensitivity and lipids. Hypertension. 2010 May;55(5):1199-205. Epub 2010 Mar 8. PMID: 20212264. (Also in DP-BW+CVD- Other Methods)
3. Esposito K, Marfella R, Ciotola M, Di Palo C, Giugliano F, Giugliano G, D'Armiento M, D'Andrea F, Giugliano D. Effect of a mediterranean-style diet on endothelial dysfunction and markers of vascular inflammation in the metabolic syndrome: a randomized trial. JAMA. 2004 Sep 22;292(12):1440-6. PubMed PMID: 15383514.
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EXCLUDED ARTICLES

#	Citations	Rationale for Exclusion
1.	Aas AM, Johansson L, Bjerkan K, Lorentsen N, Mostad IL. Do Norwegians with diabetes have a healthier diet than the general population? Norsk Epidemiologi. 2013. Bergen Norway. 23. 61-74. PMID: #accession number# DOI: #DOI#	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
2.	Adamson AJ, Foster E, Butler TJ, Bennet S, Walker M. Non-diabetic relatives of Type 2 diabetic families: dietary intake contributes to the increased risk of diabetes. Diabet Med. 2001 Dec;18(12):984-90. PubMed PMID: 11903398.	Case-control study
3.	Ahluwalia N, Andreeva VA, Kesse-Guyot E, Hercberg S. Dietary patterns, inflammation and the metabolic syndrome. Diabetes Metab. 2012 Oct 10. doi:pii: S1262-3636(12)00152-8. 10.1016/j.diabet.2012.08.007. [Epub ahead of print] PubMed PMID: 23062863.	Narrative review
4.	Ahn HJ, Eom YK, Han KA, Kwon HR, Kim HJ, Park KS, Min KW. The effects of small sized rice bowl on carbohydrate intake and dietary patterns in women with type 2 diabetes. Korean Diabetes J. 2010 Jun;34(3):166-73. Epub 2010 Jun 30. PubMed PMID: 20617077; PubMed Central PMCID: PMC2898930.	Does not assess dietary patterns as the independent variable; examined rice bowl size
5.	Ajala O, English P, Pinkney J. Systematic review and meta-analysis of different dietary approaches to the management of type 2 diabetes. Am J Clin Nutr. 2013 Jan 30. [Epub ahead of print] PubMed PMID: 23364002.	Systematic review/meta-analysis
6.	Akhtar MS, Almas K, Kausar T, Wolever TMS. Blood glucose responses to traditional South Asian vegetable dishes in normal and diabetic human subjects. Nutrition Research. 2002. #author address#. #volume#. 989-996. DOI:#DOI#	Insufficient sample size (less than 30 subjects per study arm)
7.	Albarran NB, Ballesteros MN, Morales GG, Ortega MI. Dietary behavior and type 2 diabetes care. Patient Educ Couns. 2006 May;61(2):191-9. PubMed PMID: 15905066.	Subjects were diagnosed with type 2 diabetes
8.	Alexander H, Lockwood LP, Harris MA, Melby CL. Risk factors for cardiovascular disease and diabetes in two groups of Hispanic Americans with differing dietary habits. J Am Coll Nutr. 1999. #author address#. 18. 127-136. DOI:#DOI#	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
9.	Al-Solaiman Y, Jesri A, Mountford WK, Lackland DT, Zhao Y, Egan BM. DASH lowers blood pressure in obese hypertensives beyond potassium, magnesium and fibre. J Hum Hypertens. 2010 Apr;24(4):237-46. Epub 2009 Jul 23. PubMed PMID: 19626043; PubMed Central PMCID: PMC2841705.	Size of study groups <30 subjects
10.	Anderson AL, Harris TB, Tylavsky FA, Perry SE, Houston DK, Lee JS, Kanaya AM, Sahyoun NR. Dietary patterns, insulin sensitivity and inflammation in older adults. Eur J Clin Nutr. 2012 Jan;66(1):18-24. doi: 10.1038/ejcn.2011.162. Epub 2011 Sep 14. PubMed PMID: 21915138; PubMed Central PMCID: PMC3251708.	Measured diet and type 2 diabetes-related outcomes at 1 time point
11.	Antonopoulou S, Fragopoulou E, Karantonis HC, Mitsou E, Sitara M, Rementzis J, Mourelatos A, Ginis A, Phenekos C. Effect of traditional Greek Mediterranean meals on platelet aggregation in normal subjects and in patients with type 2 diabetes mellitus. J Med Food. 2006 Fall;9(3):356-62. PubMed PMID: 17004898.	Does not assess type 2 diabetes as the dependent variable; examined platelet aggregation
12.	Aronis P, Antonopoulou S, Karantonis HC, Phenekos C, Tsoukatos DC. Effect of fast-food Mediterranean-type diet on human plasma oxidation. J Med Food. 2007 Sep;10(3):511-20. PubMed PMID: 17887946.	Size of study groups <30 subjects

13.	Arora SK, McFarlane SI. The case for low carbohydrate diets in diabetes management. Nutr Metab (Lond). 2005 Jul 14;2:16. PubMed PMID: 16018812; PubMed Central PMCID: PMC1188071.	Narrative review
14.	Asemi Z, Tabassi Z, Samimi M, Fahiminejad T, Esmaillzadeh A. Favourable effects of the Dietary Approaches to Stop Hypertension diet on glucose tolerance and lipid profiles in gestational diabetes: a randomised clinical trial. Br J Nutr. 2012 Nov 13:1-7. [Epub ahead of print] PubMed PMID: 23148885.	All subjects diagnosed with gestational diabetes
15.	Auslander W, Haire-Joshu D, Houston C, Rhee CW, Williams JH. A controlled evaluation of staging dietary patterns to reduce the risk of diabetes in African-American women. Diabetes Care. 2002 May;25(5):809-14. PubMed PMID: 11978673.	Did not examine type 2 diabetes as the dependent variable; examined changes in diet following the intervention
16.	Azadbakht L, Fard NR, Karimi M, Baghaei MH, Surkan PJ, Rahimi M, Esmaillzadeh A, Willett WC. Effects of the Dietary Approaches to Stop Hypertension (DASH) eating plan on cardiovascular risks among type 2 diabetic patients: a randomized crossover clinical trial. Diabetes Care. 2011 Jan;34(1):55-7. Epub 2010 Sep 15. PubMed PMID: 20843978; PubMed Central PMCID: PMC3005461.	All subjects diagnosed with type 2 diabetes
17.	Azadbakht L, Mirmiran P, Esmaillzadeh A, Azizi T, Azizi F. Beneficial effects of a Dietary Approaches to Stop Hypertension eating plan on features of the metabolic syndrome. Diabetes Care. 2005 Dec;28(12):2823-31. PMID: 16306540.	Intervention diets were for weight reduction
18.	Azadbakht L, Surkan PJ, Esmaillzadeh A, Willett WC. The Dietary Approaches to Stop Hypertension eating plan affects C-reactive protein, coagulation abnormalities, and hepatic function tests among type 2 diabetic patients. J Nutr. 2011 Jun;141(6):1083-8. Epub 2011 Apr 27. PubMed PMID: 21525259; PubMed Central PMCID: PMC3137257.	All subjects diagnosed with type 2 diabetes
19.	Baldrick FR, Elborn JS, Woodside JV, Treacy K, Bradley JM, Patterson CC, Schock BC, Ennis M, Young IS, McKinley MC. Effect of fruit and vegetable intake on oxidative stress and inflammation in COPD: a randomised controlled trial. Eur Respir J. 2012 Jun;39(6):1377-84. doi: 10.1183/09031936.00086011. Epub 2011 Nov 16. PubMed PMID: 22088966.	Did not examine dietary patterns as defined for this project; examined effect of fruit and vegetable intake
20.	Barakatun Nisak MY, Ruzita AT, Norimah AK, Gilbertson H, Nor Azmi K. Improvement of dietary quality with the aid of a low glycemic index diet in Asian patients with type 2 diabetes mellitus. J Am Coll Nutr. 2010 Jun;29(3):161-70. PubMed PMID: 20833988.	All subjects diagnosed with type 2 diabetes
21.	Barbaresko J, Koch M, Schulze MB, Nothlings U. Dietary pattern analysis and biomarkers of low-grade inflammation: a systematic literature review. Nutrition Reviews. 2013. Department of Nutrition and Food Sciences, Nutritional Epidemiology, University of Bonn, Bonn, Germany; Section of Epidemiology, Institute of Experimental Medicine, Christian-Albrechts University of Kiel, Kiel, Germany.. 71. 511-27. PMID: 23865797 DOI: 10.1111/nure.12035	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
22.	Barnard ND, Cohen J, Jenkins DJ, Turner-McGrievy G, Gloede L, Green A, Ferdowsian H. A low-fat vegan diet and a conventional diabetes diet in the treatment of type 2 diabetes: a randomized, controlled, 74-wk clinical trial. Am J Clin Nutr. 2009 May;89(5):1588S-1596S. Epub 2009 Apr 1. PubMed PMID: 19339401; PubMed Central PMCID: PMC2677007.	All subjects diagnosed with type 2 diabetes
23.	Barnard ND, Cohen J, Jenkins DJ, Turner-McGrievy G, Gloede L, Jaster B, Seidl K, Green AA, Talpers S. A low-fat vegan diet improves glycemic control and cardiovascular risk factors in a randomized clinical trial in individuals with type 2 diabetes. Diabetes Care. 2006 Aug;29(8):1777-83. PubMed PMID: 16873779.	All subjects diagnosed with type 2 diabetes

24.	Barnard ND, Gloede L, Cohen J, Jenkins DJ, Turner-McGrievy G, Green AA, Ferdowsian H. A low-fat vegan diet elicits greater macronutrient changes, but is comparable in adherence and acceptability, compared with a more conventional diabetes diet among individuals with type 2 diabetes. J Am Diet Assoc. 2009 Feb;109(2):263-72. PubMed PMID: 19167953; PubMed Central PMCID: PMC2680723.	All subjects diagnosed with type 2 diabetes
25.	Barnard ND, Scialli AR, Turner-McGrievy G, Lanou AJ, Glass J. The effects of a low-fat, plant-based dietary intervention on body weight, metabolism, and insulin sensitivity. Am J Med. 2005 Sep;118(9):991-7. PubMed PMID: 16164885.	<30 subjects per study arm
26.	Barona J, Jones JJ, Kopec RE, Comperatore M, Andersen C, Schwartz SJ, Lerman RH, Fernandez ML. A Mediterranean-style low-glycemic-load diet increases plasma carotenoids and decreases LDL oxidation in women with metabolic syndrome. J Nutr Biochem. 2012 Jun;23(6):609-15. doi: 10.1016/j.jnutbio.2011.02.016. Epub 2011 Jul 19. PubMed PMID: 21775117.	<30 subjects per study arm; n=15, 20
27.	Bauer F, Beulens JW, van der AD, Wijmenga C, Grobbee DE, Spijkerman AM,van der Schouw YT,Onland-Moret NC. Dietary patterns and the risk of type 2 diabetes in overweight and obese individuals. European Journal of Nutrition. 2013. Julius Center for Health Sciences and Primary Care, University Medical Center Utrecht, Mailbox: Str. 6.131, PO Box 85500, 3508 GA, Utrecht, The Netherlands.. 52. 1127-34. PMID: 22972436 DOI: 10.1007/s00394-012-0423-4	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
28.	Baxheinrich A, Stratmann B, Lee-Barkey YH, Tschoepe D, Wahrburg U. Effects of a rapeseed oil-enriched hypoenergetic diet with a high content of α-linolenic acid on body weight and cardiovascular risk profile in patients with the metabolic syndrome. Br J Nutr. 2012 Aug;108(4):682-91. doi: 10.1017/S0007114512002875. PubMed PMID: 22894911.	Did not examine dietary patterns as defined for this project; examined effects of a rapeseed oil-enriched hypoenergetic diet with a high content of α-linolenic acid
29.	Bermudez OI, Velez-Carrasco W, Schaefer EJ, Tucker KL. Dietary and plasma lipid, lipoprotein, and apolipoprotein profiles among elderly Hispanics and non-Hispanics and their association with diabetes. Am J Clin Nutr. 2002 Dec;76(6):1214-21. PubMed PMID: 12450885.	Did not examine dietary patterns as defined for this project; examined macronutrient intakes
30.	Blonk MC, Jacobs MA, Friedberg CE, Nauta JJ, Teerlink T, Popp-Snijders C, Heine RJ. Determinants of insulin sensitivity and consequences for lipoproteins and blood pressure in subjects with non-insulin-dependent diabetes mellitus. Metabolism. 1994 Apr;43(4):501-8. PubMed PMID: 8159111.	All subjects diagnosed with type 2 diabetes
31.	Bloomer RJ, Kabir MM, Canale RE, Trepanowski JF, Marshall KE, Farney TM, Hammond KG. Effect of a 21 day Daniel Fast on metabolic and cardiovascular disease risk factors in men and women. Lipids Health Dis. 2010 Sep 3;9:94. PubMed PMID: 20815907; PubMed Central PMCID: PMC2941756.	Study is a before-after study
32.	Boehm S, Schlenk EA, Funnell MM, Powers H, Ronis DL. Predictors of adherence to nutrition recommendations in people with non-insulin-dependent diabetes mellitus. Diabetes Educ. 1997 Mar-Apr;23(2):157-65. PubMed PMID: 9155314.	All subjects diagnosed with type 2 diabetes
33.	Bos MB, de Vries JH, Feskens EJ, van Dijk SJ, Hoelen DW, Siebelink E, Heijligenberg R, de Groot LC. Effect of a high monounsaturated fatty acids diet and a Mediterranean diet on serum lipids and insulin sensitivity in adults with mild abdominal obesity. Nutr Metab Cardiovasc Dis. 2010 Oct;20(8):591-8. Epub 2009 Aug 18. PubMed PMID: 19692213.	<30 subjects per study arm

34.	Brehm BJ, Lattin BL, Summer SS, Boback JA, Gilchrist GM, Jandacek RJ, D'Alessio DA. One-year comparison of a high-monounsaturated fat diet with a high-carbohydrate diet in type 2 diabetes. Diabetes Care. 2009 Feb;32(2):215-20. Epub 2008 Oct 28. PubMed PMID: 18957534; PubMed Central PMCID: PMC2628682.	All subjects diagnosed with type 2 diabetes
35.	Brinkworth GD, Noakes M, Parker B, Foster P, Clifton PM. Long-term effects of advice to consume a high-protein, low-fat diet, rather than a conventional weight-loss diet, in obese adults with type 2 diabetes: one-year follow-up of a randomised trial. Diabetologia. 2004 Oct;47(10):1677-86. Epub 2004 Oct 6. PubMed PMID: 15480538.	All subjects diagnosed with type 2 diabetes
36.	Bryden KS, Neil A, Mayou RA, Peveler RC, Fairburn CG, Dunger DB. Eating habits, body weight, and insulin misuse. A longitudinal study of teenagers and young adults with type 1 diabetes. Diabetes Care. 1999 Dec;22(12):1956-60. PubMed PMID: 10587825.	All subjects diagnosed with type 1 diabetes
37.	Burke LE, Hudson AG, Warziski MT, Styn MA, Music E, Elci OU, Sereika SM. Effects of a vegetarian diet and treatment preference on biochemical and dietary variables in overweight and obese adults: a randomized clinical trial. Am J Clin Nutr. 2007 Sep;86(3):588-96. PubMed PMID: 17823421.	**Follow-up rate was <80%
38.	Calle-Pascual AL, Saavedra A, Benedi A, Martin-Alvarez PJ, Garcia-Honduvilla J, Calle JR, Marañes JP. Changes in nutritional pattern, insulin sensitivity and glucose tolerance during weight loss in obese patients from a Mediterranean area. Horm Metab Res. 1995 Nov;27(11):499-502. PubMed PMID: 8770626.	Before-After study
39.	Carpenter R. Appraisal of perceived threat of diabetes and the relation to adherence for adults in Appalachia. J Health Care Poor Underserved. 2012 May;23(2):726-38. doi: 10.1353/hpu.2012.0049. PubMed PMID: 22643620.	Did not examine dietary patterns as defined for this project; examined perceived threat of diabetes
40.	Carty CL, Kooperberg C, Neuhouser ML, Tinker L, Howard B, Wactawski-Wende J, Beresford SA, Snetselaar L, Vitolins M, Allison M, Budrys N, Prentice R, Peters U. Low-fat dietary pattern and change in body-composition traits in the Women's Health Initiative Dietary Modification Trial. Am J Clin Nutr. 2011 Mar;93(3):516-24. Epub 2010 Dec 22. PubMed PMID: 21177798; PubMed Central PMCID: PMC3041598.	Did not examine type 2 diabetes as a dependent variable, but as a mediator
41.	Champagne CM. The usefulness of a Mediterranean-based diet in individuals with type 2 diabetes. Curr Diab Rep. 2009 Oct;9(5):389-95. Review. PubMed PMID: 19793509.	Narrative review
42.	Chan TYT. Dietary management of type 2 diabetes mellitus. Hong Kong Practitioner. 2003. Chan, T.Y.T., Dietetic Department, United Christian Hospital, Kwun Tong, Kowloon, Hong Kong. 25. 22-28. DOI:#DOI#	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
43.	Cheng D. Prevalence, predisposition and prevention of type II diabetes. Nutr Metab (Lond). 2005 Oct 18;2:29. PubMed PMID: 16232315; PubMed Central PMCID: PMC1309619.	Narrative review
44.	Chrysohoou C, Panagiotakos DB, Pitsavos C, Das UN, Stefanadis C. Adherence to the Mediterranean diet attenuates inflammation and coagulation process in healthy adults: The ATTICA Study. J Am Coll Cardiol. 2004 Jul 7;44(1):152-8. PubMed PMID: 15234425.	Did not examine type 2 diabetes as a dependent variable; examined markers of inflammation and coagulation
45.	Ciccarone E, Di Castelnuovo A, Salcuni M, Siani A, Giacco A, Donati MB, De Gaetano G, Capani F, Iacoviello L; Gendiabe Investigators. A high-score Mediterranean dietary pattern is associated with a reduced risk of peripheral arterial disease in Italian patients with Type 2 diabetes. J Thromb Haemost. 2003 Aug;1(8):1744-52. PubMed PMID: 12911588.	All subjects diagnosed with type 2 diabetes

46.	Cole SM, Teufel-Shone NI, Ritenbaugh CK, Yzenbaard RA, Cockerham DL. Dietary intake and food patterns of Zuni adolescents. J Am Diet Assoc. 2001 Jul;101(7):802-6. PubMed PMID: 11478480.	Cross-sectional study
47.	Coltman AE, Keim KS, Chapman-Novakofski KM, Taylor CA. Assessing diet quality of a type 2 diabetes sample using the healthy eating index 2005. Topics in Clinical Nutrition. 2013. Coltman, A.E., Rush University Medical Center, Chicago, IL 60612, United States. 28. 145-153. PMID: #accession number# DOI: #DOI#	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
48.	Davis NJ, Schechter CB, Ortega F, Rosen R, Wylie-Rosett J, Walker EA. Dietary patterns in Blacks and Hispanics with diagnosed diabetes in New York City's South Bronx. American Journal of Clinical Nutrition. 2013. Albert Einstein College of Medicine, Bronx, NY, USA. nichola.davis@nbhn.net. 97. 878-85. PMID: 23446901 DOI: 10.3945/ajcn.112.051185.	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
49.	de Koning L, Fung TT, Liao X, Chiuve SE, Rimm EB, Willett WC, Spiegelman D, Hu FB. Low-carbohydrate diet scores and risk of type 2 diabetes in men. Am J Clin Nutr. 2011 Apr;93(4):844-50. Epub 2011 Feb 10. PubMed PMID: 21310828; PubMed Central PMCID: PMC3057550.	Did not examine dietary patterns as defined for this project; diet scores were based on macronutrients
50.	De Natale C, Annuzzi G, Bozzetto L, Mazzarella R, Costabile G, Ciano O, Riccardi G, Rivellese AA. Effects of a plant-based high-carbohydrate/high-fiber diet versus high-monounsaturated fat/low-carbohydrate diet on postprandial lipids in type 2 diabetic patients. Diabetes Care. 2009 Dec;32(12):2168-73. Epub 2009 Sep 9. PubMed PMID: 19741188; PubMed Central PMCID: PMC2782970.	All subjects diagnosed with type 2 diabetes
51.	de Paula TP, Steemburgo T, de Almeida JC, Dall'alba V, Gross JL, de Azevedo MJ. The role of Dietary Approaches to Stop Hypertension (DASH) diet food groups in blood pressure in type 2 diabetes. Br J Nutr. 2012 Jul;108(1):155-62. Epub 2011 Dec 6. PubMed PMID: 22142820.	All subjects diagnosed with type 2 diabetes
52.	Deas GW. Contribution of diet to the increased incidence of type 2 diabetes mellitus in inner city African-American children. J Pediatr Endocrinol Metab. 2002 Apr;15 Suppl 1:503-4. PubMed PMID: 12017223.	Commentary
53.	Delahanty L,Kriska A,Edelstein S,Amodei N,Chadwick J,Copeland K,Galvin B,El Ghormli L,Haymond M,Kelsey MM,Lassiter C,Milaszewski K,Syme A,Mayer-Davis E. Self-reported dietary intake of youth with recent onset of type 2 diabetes: results from the TODAY study. J Acad Nutr Diet. 2013. George Washington University Biostatistics Center, 6110 Executive Blvd, Ste 750, Rockville,MD 20852, USA. elghorml@biostat.bsc.gwu.edu. 113. 431-9. PMID: 23438494 DOI: 10.1016/j.jand.2012.11.015.	Did not assess dietary patterns as defined for the project
54.	Delavar MA, Lye MS, Khor GL, Hassan ST, Hanachi P. Dietary patterns and the metabolic syndrome in middle aged women, Babol, Iran. Asia Pac J Clin Nutr. 2009;18(2):285-92. PubMed PMID: 19713190.	Cross-sectional study
55.	DiBello JR, McGarvey ST, Kraft P, Goldberg R, Campos H, Quested C, Laumoli TS, Baylin A. Dietary patterns are associated with metabolic syndrome in adult Samoans. J Nutr. 2009 Oct;139(10):1933-43. Epub 2009 Aug 26. PubMed PMID: 19710163; PubMed Central PMCID: PMC2744614.	Cross-sectional study
56.	Dietary measures for type 2 diabetes. Weight loss and a Mediterranean-type diet, with no foods off-limits. Prescrire Int. 2009 Oct;18(103):224. PubMed PMID: 19882798.	Commentary
57.	Dominguez LJ,Bes-Rastrollo M,de la Fuente-Arrillaga C,Toledo E,Beunza JJ,Barbagallo M,Martinez-Gonzalez MA. Similar prediction of total mortality, diabetes incidence and cardiovascular events using relative- and absolute-component Mediterranean diet score: the SUN cohort. Nutr Metab Cardiovasc Dis. 2013. Geriatric Unit, Department of Internal Medicine and Geriatrics, University of Palermo, via F. Scaduto 6/c, 90144 Palermo, Italy.. 23. 451-8. PMID: 22402062 DOI: 10.1016/j.numecd.2011.10.009.	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)

58.	Duc Son le NT, Hanh TT, Kusama K, Kunii D, Sakai T, Hung NT, Yamamoto S. Anthropometric characteristics, dietary patterns and risk of type 2 diabetes mellitus in Vietnam. J Am Coll Nutr. 2005 Aug;24(4):229-34. PubMed PMID: 16093399.	Study subjects from Vietnam
59.	Edwards S, Murphy C, Feltbower RG, Stephenson CR, Cade JE, McKinney PA, Bodansky HJ. Changes in the diet of a South Asian transmigratory population may be associated with an increase in incidence of childhood diabetes. Nutrition Research. 2006. Feltbower, R.G., Paediatric Epidemiology Group, Centre for Epidemiology and Biostatistics, University of Leeds, Leeds, LS2 9LN, United Kingdom. 26. 249-254. DOI:#DOI#	Country is ranked as low or medium on Human Development Index
60.	Elhayany A, Lustman A, Abel R, Attal-Singer J, Vinker S. A low carbohydrate Mediterranean diet improves cardiovascular risk factors and diabetes control among overweight patients with type 2 diabetes mellitus: a 1-year prospective randomized intervention study. Diabetes Obes Metab. 2010 Mar;12(3):204-9. PubMed PMID: 20151996.	All subjects diagnosed with type 2 diabetes
61.	Erlinger TP, Miller ER 3rd, Charleston J, Appel LJ. Inflammation modifies the effects of a reduced-fat low-cholesterol diet on lipids: results from the DASH-sodium trial. Circulation. 2003 Jul 15;108(2):150-4. Epub 2003 Jul 7. PubMed PMID: 12847067.	Did not examine type 2 diabetes as the dependent variable; examined inflammation and blood lipids
62.	Esposito K, Ciotola M, Giugliano F, Schisano B, Autorino R, Iuliano S, Vietri MT, Cioffi M, De Sio M, Giugliano D. Mediterranean diet improves sexual function in women with the metabolic syndrome. Int J Impot Res. 2007 Sep-Oct;19(5):486-91. Epub 2007 Aug 2. PubMed PMID: 17673936.	Sample size <30 subjects per study arm
63.	Esposito K, Kastorini CM, Panagiotakos DB, Giugliano D. Prevention of type 2 diabetes by dietary patterns: a systematic review of prospective studies and meta-analysis. Metab Syndr Relat Disord. 2010 Dec;8(6):471-6. Epub 2010 Oct 19. Review. PubMed PMID: 20958207.	Systematic review/ meta-analysis
64.	Esposito K, Maiorino MI, Ceriello A, Giugliano D. Prevention and control of type 2 diabetes by Mediterranean diet: a systematic review. Diabetes Res Clin Pract. 2010 Aug;89(2):97-102. Epub 2010 May 23. Review. PubMed PMID: 20546959.	Systematic review/ meta-analysis
65.	Esposito K, Maiorino MI, Ciotola M, Di Palo C, Scognamiglio P, Gicchino M, Petrizzo M, Saccomanno F, Beneduce F, Ceriello A, Giugliano D. Effects of a Mediterranean-style diet on the need for antihyperglycemic drug therapy in patients with newly diagnosed type 2 diabetes: a randomized trial. Ann Intern Med. 2009 Sep 1;151(5):306-14. Erratum in: Ann Intern Med. 2009 Oct 20;151(8):591. PubMed PMID: 19721018.	All subjects diagnosed with type 2 diabetes
66.	Fargnoli J, Kim Y, Mantzoros CS. Mediterranean Diet in Disease Prevention: Current Perspectives. Nutrition and metabolism: underlying mechanisms and clinical consequencesNutrition and Health Series. 2009. 999 RIVERVIEW DR, STE 208, TOTOWA, NJ 07512-1165 USA. #volume#. #pages. 10.1007/978-1-60327-453-1_14:DOI#	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
67.	Fargnoli JL, Fung TT, Olenczuk DM, Chamberland JP, Hu FB, Mantzoros CS. Adherence to healthy eating patterns is associated with higher circulating total and high-molecular-weight adiponectin and lower resistin concentrations in women from the Nurses' Health Study. Am J Clin Nutr. 2008 Nov;88(5):1213-24. PubMed PMID: 18996855.	Cross-sectional
68.	Farshchi HR, Taylor MA, Macdonald IA. Regular meal frequency creates more appropriate insulin sensitivity and lipid profiles compared with irregular meal frequency in healthy lean women. Eur J Clin Nutr. 2004 Jul;58(7):1071-7. PubMed PMID: 15220950.	Did not examine dietary patterns as defined for this project; examined meal frequency

69.	Ferreira SR, Gimeno SG, Hirai AT, Harima H, Matsumura L, Pittito Bde A. Effects of an intervention in eating habits and physical activity in Japanese-Brazilian women with a high prevalence of metabolic syndrome in Bauru, São Paulo State, Brazil. Cad Saude Publica. 2008;24 Suppl 2:S294-302. PubMed PMID: 18670709.	Before-After study
70.	Feskens EJ, Kromhout D. Habitual dietary intake and glucose tolerance in euglycaemic men: the Zutphen Study. Int J Epidemiol. 1990 Dec;19(4):953-9. PubMed PMID: 2084027.	Did not examine dietary patterns; examined individual foods and nutrients
71.	Feskens EJ, Virtanen SM, Räsänen L, Tuomilehto J, Stengård J, Pekkanen J, Nissinen A, Kromhout D. Dietary factors determining diabetes and impaired glucose tolerance. A 20-year follow-up of the Finnish and Dutch cohorts of the Seven Countries Study. Diabetes Care. 1995 Aug;18(8):1104-12. PMID: 7759744.	Did not examine dietary patterns; examined individual foods and nutrients
72.	Fitzgerald N, Damio G, Segura-Pérez S, Pérez-Escamilla R. Nutrition knowledge, food label use, and food intake patterns among Latinas with and without type 2 diabetes. J Am Diet Assoc. 2008 Jun;108(6):960-7. PubMed PMID: 18502226.	Case-control study
73.	Fogli-Cawley JJ, Dwyer JT, Saltzman E, McCullough ML, Troy LM, Meigs JB, Jacques PF. The 2005 Dietary Guidelines for Americans and risk of the metabolic syndrome. Am J Clin Nutr. 2007 Oct;86(4):1193-201. PMID: 17921402.	Cross-sectional study
74.	Folsom AR, Szklo M, Stevens J, Liao F, Smith R, Eckfeldt JH. A prospective study of coronary heart disease in relation to fasting insulin, glucose, and diabetes. The Atherosclerosis Risk in Communities (ARIC) Study. Diabetes Care. 1997 Jun;20(6):935-42. PubMed PMID: 9167103.	Did not examine dietary patterns; Examined the association between CHD and diabetes
75.	Fonseca MJ,Gaio R,Lopes C,Santos AC. Association between dietary patterns and metabolic syndrome in a sample of Portuguese adults. Nutr J. 2012. Institute of Public Health, University of Porto, Rua das Taipas n masculine 135, Porto 4050-600, Portugal. mjoaolfonseca@gmail.com. 11. 64. PMID: 22943133 DOI: 10.1186/1475-2891-11-64.	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
76.	Fontana L, Meyer TE, Klein S, Holloszy JO. Long-term low-calorie low-protein vegan diet and endurance exercise are associated with low cardiometabolic risk. Rejuvenation Res. 2007 Jun;10(2):225-34. PubMed PMID: 17518696.	Cross-sectional study
77.	Ford ES, Mokdad AH. Fruit and vegetable consumption and diabetes mellitus incidence among U.S. adults. Prev Med. 2001 Jan;32(1):33-9. PubMed PMID: 11162324.	Did not examine dietary patterns; examined individual food groups
78.	Fraser A, Abel R, Lawlor DA, Fraser D, Elhayany A. A modified Mediterranean diet is associated with the greatest reduction in alanine aminotransferase levels in obese type 2 diabetes patients: results of a quasi-randomised controlled trial. Diabetologia. 2008 Sep;51(9):1616-22. Epub 2008 Jul 3. PubMed PMID: 18597068.	All subjects diagnosed with type 2 diabetes
79.	Fung TT, McCullough ML, Newby PK, Manson JE, Meigs JB, Rifai N, Willett WC, Hu FB. Diet-quality scores and plasma concentrations of markers of inflammation and endothelial dysfunction. Am J Clin Nutr. 2005 Jul;82(1):163-73. PubMed PMID: 16002815.	Cross-sectional study
80.	Gallagher A, Henderson W, Abraira C. Dietary patterns and metabolic control in diabetic diets: a prospective study of 51 outpatient men on unmeasured and exchange diets. J Am Coll Nutr. 1987 Dec;6(6):525-32. PubMed PMID: 3693756.	All subjects diagnosed with type 2 diabetes
81.	Gammon CS, Hurst PR, Kruger R, Stonehouse W, Brough L. Vegetarianism, vitamin B12 status and insulin resistance in South Asian women. Proceedings of the nutrition society of new zealand. 2008. Canterbury New Zealand. 33. 27-31. DOI:#DOI#	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)

82.	Gesteiro E, Rodríguez Bernal B, Bastida S, Sánchez-Muniz FJ. Maternal diets with low healthy eating index or mediterranean diet adherence scores are associated with high cord-blood insulin levels and insulin resistance markers at birth. Eur J Clin Nutr. 2012 Sep;66(9):1008-15. doi: 10.1038/ejcn.2012.92. Epub 2012 Jul 25. PubMed PMID: 22828732.	Subjects are pregnant women
83.	Gimeno SG, Andreoni S, Ferreira SR, Franco LJ, Cardoso MA. Assessing food dietary intakes in Japanese-Brazilians using factor analysis. Cad Saude Publica. 2010 Nov;26(11):2157-67. PubMed PMID: 21180989.	Cross-sectional study
84.	Goff LM, Bell JD, So PW, Dornhorst A, Frost GS. Veganism and its relationship with insulin resistance and intramyocellular lipid. Eur J Clin Nutr. 2005 Feb;59(2):291-8. PubMed PMID: 15523486.	Case-control study
85.	Gower BA, Goree LL, Chandler-Laney PC, Ellis AC, Casazza K, Granger WM. A higher-carbohydrate, lower-fat diet reduces fasting glucose concentration and improves β-cell function in individuals with impaired fasting glucose. Metabolism. 2012 Mar;61(3):358-65. Epub 2011 Sep 23. PubMed PMID: 21944267; PubMed Central PMCID: PMC3248972.	Did not examine dietary patterns as defined for this project; examined patterns derived from macronutrients
86.	Guevara-Cruz M, Tovar AR, Aguilar-Salinas CA, Medina-Vera I, Gil-Zenteno L, Hernández-Viveros I, López-Romero P, Ordaz-Nava G, Canizales-Quinteros S, Guillen Pineda LE, Torres N. A dietary pattern including nopal, chia seed, soy protein, and oat reduces serum triglycerides and glucose intolerance in patients with metabolic syndrome. J Nutr. 2012 Jan;142(1):64-9. Epub 2011 Nov 16. PubMed PMID: 22090467.	Did not examine dietary patterns as defined for this project
87.	Haffner SM, Stern MP, Mitchell BD, Hazuda HP, Patterson JK. Incidence of type II diabetes in Mexican Americans predicted by fasting insulin and glucose levels, obesity, and body-fat distribution. Diabetes. 1990 Mar;39(3):283-8. PubMed PMID: 2407581.	Did not include any assessment of dietary patterns
88.	Hagura R. Diabetes mellitus and life-style - for the primary prevention of diabetes mellitus: the role of diet. British Journal of Nutrition. 2000. #author address#. 84. #pages. 10.1079/096582197388671:DOI#	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
89.	Hall WD, Feng Z, George VA, Lewis CE, Oberman A, Huber M, Fouad M, Cutler JA; Women's Health Trial: Feasibility Study in Minority Populations. Low-fat diet: effect on anthropometrics, blood pressure, glucose, and insulin in older women. Ethn Dis. 2003 Summer;13(3):337-43. PubMed PMID: 12894958.	Did not examine dietary patterns as defined for this project; examined patterns derived from macronutrients
90.	Halton TL, Liu S, Manson JE, Hu FB. Low-carbohydrate-diet score and risk of type 2 diabetes in women. Am J Clin Nutr. 2008 Feb;87(2):339-46. PubMed PMID: 18258623; PubMed Central PMCID: PMC2760285.	Did not examine dietary patterns as defined for this project; examined patterns derived from macronutrients
91.	Hamada A, Mori M, Mori H, Muhihi A, Njelekela M, Masesa Z, Mtabaji J, Yamori Y. Deterioration of traditional dietary custom increases the risk of lifestyle-related diseases in young male Africans. J Biomed Sci. 2010 Aug 24;17 Suppl 1:S34. PubMed PMID: 20804610; PubMed Central PMCID: PMC2994379.	Study subjects from Tanzania
92.	Hasegawa T, Oshima M. Serum fatty acid composition as a marker of eating habits in normal and diabetic subjects. Diabetes Res Clin Pract. 1999 Nov;46(2):115-20. PubMed PMID: 10724089.	Cross-sectional study
93.	Haynes RB, Kris-Etherton P, McCarron DA, Oparil S, Chait A, Resnick LM, Morris CD, Clark S, Hatton DC, Metz JA, McMahon M, Holcomb S, Snyder GW, Pi-Sunyer FX, Stern JS. Nutritionally complete prepared meal plan to reduce cardiovascular risk factors: a randomized clinical trial. J Am Diet Assoc. 1999 Sep;99(9):1077-83. PubMed PMID: 10491676.	Unhealthy population - all subjects had either hypertension, dyslipidemia, type 2 diabetes, or a combination of these.

94.	He Y, Ma G, Zhai F, Li Y, Hu Y, Feskens EJ, Yang X. Dietary patterns and glucose tolerance abnormalities in Chinese adults. Diabetes Care. 2009 Nov;32(11):1972-6. Epub 2009 Aug 12. PubMed PMID: 19675202; PubMed Central PMCID: PMC2768212.	Cross-sectional study
95.	He YN, Feskens E, Li YP, Zhang J, Fu P, Ma GS, Yang XG. Association between high fat-low carbohydrate diet score and newly diagnosed type 2 diabetes in Chinese population. Biomed Environ Sci. 2012 Aug;25(4):373-82. doi: 10.3967/0895-3988.2012.04.001. PubMed PMID: 23026516.	Study subjects from China
96.	Heald AH, Cade JE, Cruickshank JK, Anderson S, White A, Gibson JM. The influence of dietary intake on the insulin-like growth factor (IGF) system across three ethnic groups: a population-based study. Public Health Nutr. 2003 Apr;6(2):175-80. PubMed PMID: 12675960.	Cross-sectional study
97.	Heidemann C, Hoffmann K, Spranger J, Klipstein-Grobusch K, Möhlig M, Pfeiffer AF, Boeing H; European Prospective Investigation into Cancer and Nutrition (EPIC)--Potsdam Study Cohort. A dietary pattern protective against type 2 diabetes in the European Prospective Investigation into Cancer and Nutrition (EPIC)--Potsdam Study cohort. Diabetologia. 2005 Jun;48(6):1126-34. Epub 2005 May 12. PubMed PMID: 15889235.	Case-control study
98.	Helmer C, Bricout H, Gin H, Barberger-Gateau P. Macronutrient intake and discrepancy with nutritional recommendations in a group of elderly diabetic subjects. Br J Nutr. 2008 Mar;99(3):632-8. Epub 2007 Aug 29. PubMed PMID: 17761016; PubMed Central PMCID: PMC3305467.	Cross-sectional study
99.	Hlebowicz J, Persson M, Gullberg B, Sonestedt E, Wallström P, Drake I, Nilsson J, Hedblad B, Wirfält E. Food patterns, inflammation markers and incidence of cardiovascular disease: the Malmö Diet and Cancer study. J Intern Med. 2011 Oct;270(4):365-76. doi: 10.1111/j.1365-2796.2011.02382.x. Epub 2011 May 4. PubMed PMID: 21443679.	Did not assess any type 2 diabetes outcomes of interest
100.	Hodge AM, English DR, Itsiopoulos C, O'Dea K, Giles GG. Does a Mediterranean diet reduce the mortality risk associated with diabetes: evidence from the Melbourne Collaborative Cohort Study. Nutr Metab Cardiovasc Dis. 2011 Sep;21(9):733-9. Epub 2010 Dec 30. PubMed PMID: 21194913.	Subjects diagnosed with type 2 diabetes
101.	Holbrook TL, Barrett-Connor E, Wingard DL. The association of lifetime weight and weight control patterns with diabetes among men and women in an adult community. Int J Obes. 1989;13(5):723-9. PubMed PMID: 2583926.	Cross-sectional study
102.	Hong S, Song Y, Lee KH, Lee HS, Lee M, Jee SH, Joung H. A fruit and dairy dietary pattern is associated with a reduced risk of metabolic syndrome. Metabolism. 2012 Jun;61(6):883-90. Epub 2011 Dec 28. PubMed PMID: 22209672.	Cross-sectional study
103.	Hua NW, Stoohs RA, Facchini FS. Low iron status and enhanced insulin sensitivity in lacto-ovo vegetarians. Br J Nutr. 2001 Oct;86(4):515-9. PMID: 11591239.	Cross-sectional study
104.	Huffman FG, De La Cera M, Vaccaro JA, Zarini GG, Exebio J, Gundupalli D, Shaban L. Healthy Eating Index and Alternate Healthy Eating Index among Haitian Americans and African Americans with and without Type 2 Diabetes. J Nutr Metab. 2011;2011:398324. Epub 2011 Dec 8. PubMed PMID: 22187639; PubMed Central PMCID: PMC3236495.	Cross-sectional study
105.	Hung CJ, Huang PC, Li YH, Lu SC, Ho LT, Chou HF. Taiwanese vegetarians have higher insulin sensitivity than omnivores. Br J Nutr. 2006 Jan;95(1):129-35. PubMed PMID: 16441925.	Study subjects from Taiwan
106.	Hwang YJ, Park BK, Park S, Kim SH. A Comparative Study of Eating Habits and Food Intake in Women with Gestational Diabetes according to Early Postpartum Glucose Tolerance Status. Diabetes Metab J. 2011 Aug;35(4):354-63. Epub 2011 Aug 31. PubMed PMID: 21977455; PubMed Central PMCID: PMC3178696.	Cross-sectional study

107.	Iimuro S, Yoshimura Y, Umegaki H, Sakurai T, Araki A, Ohashi Y, Iijima K, Ito H; Japanese Elderly Diabetes Intervention Trial Study Group. Dietary pattern and mortality in Japanese elderly patients with type 2 diabetes mellitus: does a vegetable- and fish-rich diet improve mortality? An explanatory study. Geriatr Gerontol Int. 2012 Apr;12 Suppl 1:59-67. doi: 10.1111/j.1447-0594.2011.00813.x. PubMed PMID: 22435941.	Study subjects diagnosed with type 2 diabetes
108.	InterAct Consortium, Romaguera D, Guevara M, Norat T, Lagenberg C, Forouhi NG, Sharp S, Slimani N, Schulze MB, Buijsse B, Buckland G, Molina-Montes E, Sánchez MJ, Moreno-Iribas MC, Bendinelli B, Grioni S, van der Schouw YT, Arriola L, Beulens JW, Boeing H, Clavel-Chapelon F, Cottet V, Crowe FL, de Lauzon-Guillan B, Franks PW, Gonzalez C, Hallmans G, Kaaks R, Key TJ, Khaw K, Nilsson P, Overvad K, Palla L, Palli D, Panico S, Quirós JR, Rolandsson O, Romieu I, Sacerdote C, Spijkerman AM, Teucher B, Tjonneland A, Tormo MJ, Tumino R, van der AD, Feskens EJ, Riboli E, Wareham NJ. Mediterranean diet and type 2 diabetes risk in the European Prospective Investigation into Cancer and Nutrition (EPIC) study: the InterAct project. Diabetes Care. 2011 Sep;34(9):1913-8. Epub 2011 Jul 25. PubMed PMID: 21788627; PubMed Central PMCID: PMC3161259.	Case-cohort study
109.	Itsiopoulos C, Brazionis L, Kaimakamis M, Cameron M, Best JD, O'Dea K, Rowley K. Can the Mediterranean diet lower HbA1c in type 2 diabetes? Results from a randomized cross-over study. Nutr Metab Cardiovasc Dis. 2011 Sep;21(9):740-7. Epub 2010 Jul 31. PubMed PMID: 20674309.	Sample size <30 subjects per study arm
110.	Jarvandi S, Gougeon R, Bader A, Dasgupta K. Differences in food intake among obese and nonobese women and men with type 2 diabetes. J Am Coll Nutr. 2011 Aug;30(4):225-32. PubMed PMID: 21917702.	Subjects diagnosed with type 2 diabetes
111.	Jenkins DJ, Kendall, CW Marchie A, Jenkins AL, Augustin LS, Ludwig DS, Barnard ND, Anderson JW. Type 2 diabetes and the vegetarian diet. American Journal of Clinical Nutrition. 2003. #author address#. 78. #pages#. DOI:#DOI#	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
112.	Jenkins DJ, Wong JM, Kendall CW, Esfahani A, Ng VW, Leong TC, Faulkner DA, Vidgen E, Greaves KA, Paul G, Singer W. The effect of a plant-based low-carbohydrate ("Eco-Atkins") diet on body weight and blood lipid concentrations in hyperlipidemic subjects. Arch Intern Med. 2009 Jun 8;169(11):1046-54. Erratum in: Arch Intern Med. 2009 Sep 14;169(16):1490. PubMed PMID: 19506174.	Sample size <30 subjects per study arm
113.	Jeppesen C, Bjerregaard P, Jorgensen ME. Dietary patterns in Greenland and their relationship with type 2 diabetes mellitus and glucose intolerance. Public Health Nutr. 2013. 1 The National Institute of Public Health, University of Southern Denmark, Oster Farimagsgade 5A, 2nd floor, 1353 Copenhagen K, Denmark.. #volume#. 1-9. PMID: 23399043 DOI: 10.1017/s136898001300013x.	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
114.	Jimenez MM, Receveur O, Trifonopoulos M, Kuhnlein H, Paradis G, Macaulay AC. Comparison of the dietary intakes of two different groups of children (grades 4 to 6) before and after the Kahnawake Schools Diabetes Prevention Project. J Am Diet Assoc. 2003 Sep;103(9):1191-4. PubMed PMID: 12963951.	Did not examine dietary patterns; examined individual nutrients and foods
115.	Jimenez-Cruz A, Turnbull WH, Bacardi-Gascon M, Rosales-Garay P. A high-fiber, moderate-glycemic-index, Mexican style diet improves dyslipidemia in individuals with type 2 diabetes. Nutrition Research. 2004. #author address#. #volume#. 19-27. DOI:#DOI#	Insufficient sample size (less than 30 subjects per study arm)

116.	Johnson GH, Fritsche K. Effect of dietary linoleic acid on markers of inflammation in healthy persons: a systematic review of randomized controlled trials. J Acad Nutr Diet. 2012 Jul;112(7):1029-41, 1041.e1-15. doi: 10.1016/j.jand.2012.03.029. Review. PubMed PMID: 22889633.	Systematic review
117.	Jones JL, Comperatore M, Barona J, Calle MC, Andersen C, McIntosh M, Najm W, Lerman RH, Fernandez ML. A Mediterranean-style, low-glycemic-load diet decreases atherogenic lipoproteins and reduces lipoprotein (a) and oxidized low-density lipoprotein in women with metabolic syndrome. Metabolism. 2012 Mar;61(3):366-72. Epub 2011 Sep 23. PubMed PMID: 21944261.	Did not examine dietary patterns; examined the effects of a “medical food”
118.	Jönsson T, Granfeldt Y, Ahrén B, Branell UC, Pålsson G, Hansson A, Söderström M, Lindeberg S. Beneficial effects of a Paleolithic diet on cardiovascular risk factors in type 2 diabetes: a randomized cross-over pilot study. Cardiovasc Diabetol. 2009 Jul 16;8:35. PubMed PMID: 19604407; PubMed Central PMCID: PMC2724493.	Subjects diagnosed with type 2 diabetes
119.	Juang SJ, Peng LN, Lin MH, Lai HY, Hwang SJ, Chen LK, Chiou ST. Metabolic characteristics of breakfast-vegetarian (BV) elderly people in rural Taiwan. Arch Gerontol Geriatr. 2010 Jan-Feb;50(1):20-3. Epub 2009 Feb 12. PubMed PMID: 19217171.	Cross-sectional study
120.	Julia C, Vernay M, Salanave B, Deschamps V, Malon A, Oleko A, Hercberg S, Castetbon K. Nutrition patterns and metabolic syndrome: a need for action in young adults (French Nutrition and Health Survey - ENNS, 2006-2007). Prev Med. 2010 Dec;51(6):488-93. Epub 2010 Sep 24. PubMed PMID: 20869985.	Cross-sectional study
121.	Kahleova H, Hrachovinova T, Hill M, Pelikanova T. Vegetarian diet in type 2 diabetes--improvement in quality of life, mood and eating behaviour. Diabetic Medicine. 2013. #author address#. 30. 127-9. PMID: 23050853 DOI: 10.1111/dme.12032.	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
122.	Kahleova H, Matoulek M, Malinska H, Oliyarnik O, Kazdova L, Neskudla T, Skoch A, Hajek M, Hill M, Kahle M, Pelikanova T. Vegetarian diet improves insulin resistance and oxidative stress markers more than conventional diet in subjects with Type 2 diabetes. Diabet Med. 2011 May;28(5):549-59. doi: 10.1111/j.1464-5491.2010.03209.x. PubMed PMID: 21480966; PubMed Central PMCID: PMC3427880.	Subjects diagnosed with type 2 diabetes
123.	Kahleova H,Matoulek M,Bratova M,Malinska H,Kazdova L,Hill M,Pelikanova T. Vegetarian diet-induced increase in linoleic acid in serum phospholipids is associated with improved insulin sensitivity in subjects with type 2 diabetes. Nutr Diabetes. 2013. Diabetes Centre, Institute for Clinical and Experimental Medicine, Prague, Czech Republic. 3. e75. PMID: 23775014 DOI: 10.1038/nutd.2013.12	Not a healthy population (all subjects have type 2 diabetes, glucose intolerance, insulin resistance, or any other disease; or are hospitalized or malnourished)
124.	Kant AK, Graubard BI. A comparison of three dietary pattern indices for predicting biomarkers of diet and disease. J Am Coll Nutr. 2005. Clearwater USA. 24. 294-303. DOI:#DOI#	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
125.	Karantonis HC, Fragopoulou E, Antonopoulou S, Rementzis J, Phenekos C, Demopoulos CA. Effect of fast-food Mediterranean-type diet on type 2 diabetics and healthy human subjects' platelet aggregation. Diabetes Res Clin Pract. 2006 Apr;72(1):33-41. Epub 2005 Oct 19. PubMed PMID: 16236380.	Sample size <30 subjects per study arm
126.	Karlström B, Nydahl M, Vessby B. Dietary habits and effects of dietary advice in patients with type 2 diabetes. Results from a one-year intervention study. Eur J Clin Nutr. 1989 Jan;43(1):59-68. PubMed PMID: 2543554.	Subjects diagnosed with type 2 diabetes

127.	Kastorini CM, Panagiotakos DB. Dietary patterns and prevention of type 2 diabetes: from research to clinical practice; a systematic review. Curr Diabetes Rev. 2009 Nov;5(4):221-7. Review. PubMed PMID: 19531025.	Systematic review
128.	Kastorini CM, Panagiotakos DB. Mediterranean diet and diabetes prevention: Myth or fact? World J Diabetes. 2010 Jul 15;1(3):65-7. PubMed PMID: 21537429; PubMed Central PMCID: PMC3083888.	Narrative review
129.	Kastorini CM, Polychronopoulos E, Panagiotakos DB. An update on the implications of dietary patterns on diabetes incidence. Agro food industry hi-tech. 2009. #author address#. 20. #pages#. DOI:#DOI#	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
130.	Katsilambros NL, Zampelas A, Matalas AL, Stavrinos V, Wolinsky I. Diabetes mellitus, obesity, and the Mediterranean Diet. The mediterranean diet: constituents and health promotion. 2001. Boca Raton USA. #volume#. 225-242. DOI:#DOI#	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
131.	Kesse-Guyot E, Fezeu L, Galan P, Hercberg S, Czernichow S, Castetbon K. Adherence to French nutritional guidelines is associated with lower risk of metabolic syndrome. J Nutr. 2011 Jun;141(6):1134-9. Epub 2011 Apr 13. PubMed PMID: 21490288.	Examined incidence of MetS; did not report results alone for type 2 diabetes outcomes of interest
132.	Key TJ, Appleby PN, Sabate J. Vegetarianism, coronary risk factors and coronary heart disease. Vegetarian nutrition. 2001. Boca Raton USA. #volume#. 33-54. DOI:#DOI#	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
133.	Kilkus JM, Booth JN, Bromley LE, Darukhanavala AP, Imperial JG, Penev PD. Sleep and eating behavior in adults at risk for type 2 diabetes. Obesity (Silver Spring). 2012 Jan;20(1):112-7. doi: 10.1038/oby.2011.319. Epub 2011 Oct 13. PubMed PMID: 21996663; PubMed Central PMCID: PMC3245813.	Did not examine dietary patterns as defined for this project
134.	Kim H, Song HJ, Han HR, Kim KB, Kim MT. Translation and Validation of the Dietary Approaches to Stop Hypertension for Koreans Intervention: Culturally Tailored Dietary Guidelines for Korean Americans With High Blood Pressure. J Cardiovasc Nurs. 2012 Sep 7. [Epub ahead of print] PubMed PMID: 22964589.	Before and after study
135.	Kim J,Cho Y,Park Y,Sohn C,Rha M,Lee MK,Jang HC. Association of dietary quality indices with glycemic status in korean patients with type 2 diabetes. Clin Nutr Res. 2013. Department of Dietetics, Samsung Medical Center, Seoul 135-710, Korea.. 2. 100-6. PMID: 23908976 DOI: 10.7762/cnr.2013.2.2.100.	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
136.	Kimokoti RW, Gona P, Zhu L, Newby PK, Millen BE, Brown LS, D'Agostino RB, Fung TT. Dietary patterns of women are associated with incident abdominal obesity but not metabolic syndrome. J Nutr. 2012. Department of Nutrition, Simmons College, Boston, MA, USA. ruth.kimokoti@simmons.edu. 142. #pages. 10.3945/jn.112.162479:DOI#	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
137.	King H, Zimmet P, Pargeter K, Raper LR, Collins V. Ethnic differences in susceptibility to non-insulin-dependent diabetes. A comparative study of two urbanized Micronesian populations. Diabetes. 1984 Oct;33(10):1002-7. PubMed PMID: 6479458.	Subjects from Micronesia
138.	Kodama H. Dietary habits that protect children from lifestyle-related diseases: from the perspective of dietary education. Jmaj - japan medical association journal. 2008. Tokyo Japan. 51. 303-309. DOI:#DOI#	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)

139.	Krishnan S, Rosenberg L, Singer M, Hu FB, Djoussé L, Cupples LA, Palmer JR. Glycemic index, glycemic load, and cereal fiber intake and risk of type 2 diabetes in US black women. Arch Intern Med. 2007 Nov 26;167(21):2304-9. PubMed PMID: 18039988.	Did not examine dietary patterns; examined glycemic index/load
140.	Kuo CS, Lai NS, Ho LT, Lin CL. Insulin sensitivity in Chinese ovo-lactovegetarians compared with omnivores. Eur J Clin Nutr. 2004 Feb;58(2):312-6. PubMed PMID: 14749752.	Subjects from China
141.	Kuroki Y, Kanauchi K, Kanauchi M. Adherence index to the American Heart Association Diet and Lifestyle Recommendation is associated with the metabolic syndrome in Japanese male workers. Eur J Intern Med. 2012. Department of Health and Nutrition, Faculty of Health Science, Kio University, Japan.. 23. e199-203. PMID: 22951435 DOI: 10.1016/j.ejim.2012.08.002.	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
142.	Lako JV, Nguyen VC. Dietary patterns and risk factors of diabetes mellitus among urban indigenous women in Fiji. Asia Pac J Clin Nutr. 2001;10(3):188-93. PubMed PMID: 11708306.	Study subjects from Fiji
143.	Larsson H, Elmståhl S, Berglund G, Ahrén B. Habitual dietary intake versus glucose tolerance, insulin sensitivity and insulin secretion in postmenopausal women. J Intern Med. 1999 Jun;245(6):581-91. PubMed PMID: 10395187.	Cross-sectional study
144.	Li TY, Brennan AM, Wedick NM, Mantzoros C, Rifai N, Hu FB. Regular consumption of nuts is associated with a lower risk of cardiovascular disease in women with type 2 diabetes. J Nutr. 2009 Jul;139(7):1333-8. Epub 2009 May 6. PubMed PMID: 19420347; PubMed Central PMCID: PMC2696988.	Subjects diagnosed with type 2 diabetes
145.	Liese AD, Bortsov A, Günther AL, Dabelea D, Reynolds K, Standiford DA, Liu L, Williams DE, Mayer-Davis EJ, D'Agostino RB Jr, Bell R, Marcovina S. Association of DASH diet with cardiovascular risk factors in youth with diabetes mellitus: the SEARCH for Diabetes in Youth study. Circulation. 2011 Apr 5;123(13):1410-7. Epub 2011 Mar 21. PubMed PMID: 21422385.	Subjects diagnosed with types 1 and 2 diabetes
146.	Liese AD, Nichols M, Hodo D, Mellen PB, Schulz M, Goff DC, D'Agostino RB. Food intake patterns associated with carotid artery atherosclerosis in the Insulin Resistance Atherosclerosis Study. Br J Nutr. 2010 May;103(10):1471-9. Epub 2010 Jan 22. PubMed PMID: 20092665.	Did not include dependent variables of interest; examined carotid artery measures
147.	Lim JH, Lee YS, Chang HC, Moon MK, Song Y. Association between dietary patterns and blood lipid profiles in Korean adults with type 2 diabetes. J Korean Med Sci. 2011 Sep;26(9):1201-8. Epub 2011 Sep 1. PubMed PMID: 21935277; PubMed Central PMCID: PMC3172659.	Cross-sectional study
148.	Lim JH, Paik HY, Lee YS, Song Y. Adherence to lifestyle recommendations is associated with improved glycemic control and improved blood lipid levels in Korean adults with type 2 diabetes. Diabetes Research and Clinical Practice. 2013. Song, Y., Major of Food and Nutrition, School of Human Ecology, The Catholic University of Korea, Gyeonggi-do. #volume#. #pages#. PMID: #accession number# DOI: #DOI#	Not a healthy population (all subjects have type 2 diabetes, glucose intolerance, insulin resistance, or any other disease; or are hospitalized or malnourished)
149.	Lin PH,Yeh WT,Svetkey LP,Chuang SY,Chang YC,Wang C,Pan WH. Dietary intakes consistent with the DASH dietary pattern reduce blood pressure increase with age and risk for stroke in a Chinese population. Asia Pac J Clin Nutr. 2013. Box 3487 DUMC, Durham, NC 27712, USA; National Health Research Institutes, 35 Keyan Rd., Zhunan, Miaoli 350, Taiwan. pao.hwa.lin@dm.duke.edu; panwh@nhri.org.tw. 22. 482-91. PMID: 23945400 DOI: 10.6133/apjcn.2013.22.3.05.	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
150.	Lindeberg S, Jönsson T, Granfeldt Y, Borgstrand E, Soffman J, Sjöström K, Ahrén B. A Palaeolithic diet improves glucose tolerance more than a Mediterranean-like diet in individuals with ischaemic heart disease. Diabetologia. 2007 Sep;50(9):1795-807. Epub 2007 Jun 22. PubMed PMID: 17583796.	Sample size <30 subjects per study arm

151.	Lindquist CH, Gower BA, Goran MI. Role of dietary factors in ethnic differences in early risk of cardiovascular disease and type 2 diabetes. Am J Clin Nutr. 2000 Mar;71(3):725-32. PubMed PMID: 10702165.	Cross-sectional study
152.	Liu G, Coulston A, Hollenbeck C, Reaven G. The effect of sucrose content in high and low carbohydrate diets on plasma glucose, insulin, and lipid responses in hypertriglyceridemic humans. J Clin Endocrinol Metab. 1984 Oct;59(4):636-42. PubMed PMID: 6384250.	Sample size <30 subjects per study arm
153.	Liu S, Choi HK, Ford E, Song Y, Klevak A, Buring JE, Manson JE. A prospective study of dairy intake and the risk of type 2 diabetes in women. Diabetes Care. 2006 Jul;29(7):1579-84. PubMed PMID: 16801582.	Did not examine dietary patterns; examined intake of dairy foods and calcium
154.	Liu S, Serdula M, Janket SJ, Cook NR, Sesso HD, Willett WC, Manson JE, Buring JE. A prospective study of fruit and vegetable intake and the risk of type 2 diabetes in women. Diabetes Care. 2004 Dec;27(12):2993-6. PubMed PMID: 15562224.	Did not examine dietary patterns; examined intake of fruit/ vegetables
155.	Llaneza P, Gonzalez C, Fernandez-Iñarrea J, Alonso A, Diaz-Fernandez MJ, Arnott I, Ferrer-Barriendos J. Soy isoflavones, Mediterranean diet, and physical exercise in postmenopausal women with insulin resistance. Menopause. 2010 Mar;17(2):372-8. PubMed PMID: 20216276.	Did not examine dietary patterns; examined soy isoflavones
156.	Lopes HF, Martin KL, Nashar K, Morrow JD, Goodfriend TL, Egan BM. DASH diet lowers blood pressure and lipid-induced oxidative stress in obesity. Hypertension. 2003 Mar;41(3):422-30. Epub 2003 Feb 3. PubMed PMID: 12623938.	Sample size <30 subjects per study arm
157.	Lundgren H, Bengtsson C, Blohmé G, Isaksson B, Lapidus L, Lenner RA, Saaek A, Winther E. Dietary habits and incidence of noninsulin-dependent diabetes mellitus in a population study of women in Gothenburg, Sweden. Am J Clin Nutr. 1989 Apr;49(4):708-12. PubMed PMID: 2929491.	Did not examine dietary patterns; examined individual nutrients and dietary practices
158.	Lutsey PL, Steffen LM, Stevens J. Dietary intake and the development of the metabolic syndrome: the Atherosclerosis Risk in Communities study. Circulation. 2008 Feb 12;117(6):754-61. Epub 2008 Jan 22. PMID: 18212291.	Did not examine type 2 diabetes outcomes; examined incidence of metabolic syndrome
159.	Ma Y, Olendzki BC, Hafner AR, Chiriboga DE, Culver AL, Andersen VA, Merriam PA, Pagoto SL. Low-carbohydrate and high-fat intake among adult patients with poorly controlled type 2 diabetes mellitus. Nutrition. 2006 Nov-Dec;22(11-12):1129-36. Epub 2006 Oct 4. PubMed PMID: 17027229; PubMed Central PMCID: PMC2039705.	Subjects diagnosed with type 2 diabetes
160.	Maghsoudi Z, Azadbakht L. How dietary patterns could have a role in prevention, progression, or management of diabetes mellitus? Review on the current evidence. J Res Med Sci. 2012. Food Security Research Center, Isfahan University of Medical Sciences, Isfahan, Iran ; Department of Community Nutrition, School of Nutrition and Food Science, Isfahan University of Medical Sciences, Isfahan, Iran.. 17. 694-709. PMID: 23798934 DOI: #DOI#	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
161.	Marchini JS, Fáccio JR, Rodrigues MM, Unamuno MR, Foss MC, Dutra-de-Oliveira JE. Effect of local diets with added sucrose on glycemic profiles of healthy and diabetic Brazilian subjects. J Am Coll Nutr. 1994 Dec;13(6):623-8. PubMed PMID: 7706597.	Sample size <30 subjects per study arm
162.	Matalas AL, Grivetti LE, Franti CE. Comparative study of diets and disease prevalence in Greek Chians part II Chian immigrants to Athens and to the United States. Ecology of food nutrition. 1999. #author address#. 38. 381-414. DOI:#DOI#	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
163.	Mattei J, Hu FB, Campos H. A higher ratio of beans to white rice is associated with lower cardiometabolic risk factors in Costa Rican adults. Am J Clin Nutr. 2011 Sep;94(3):869-76. Epub 2011 Aug 3. PubMed PMID: 21813808; PubMed Central PMCID: PMC3155926.	Did not examine dietary patterns; examined ratio of beans to white rice

164.	Mattei J, Noel SE, Tucker KL. A meat, processed meat, and French fries dietary pattern is associated with high allostatic load in Puerto Rican older adults. J Am Diet Assoc. 2011 Oct;111(10):1498-506. PubMed PMID: 21963016; PubMed Central PMCID: PMC3185297.	Cross-sectional study
165.	Mayer-Davis EJ, Sparks KC, Hirst K, Costacou T, Lovejoy JC, Regensteiner JG, Hoskin MA, Kriska AM, Bray GA; Diabetes Prevention Program Research Group. Dietary intake in the diabetes prevention program cohort: baseline and 1-year post randomization. Ann Epidemiol. 2004 Nov;14(10):763-72. PubMed PMID: 15573453.	Did not examine the relationship between dietary patterns and type 2 diabetes outcomes; described the effects of a trial on changes in diet
166.	McCarty MF. Vegan proteins may reduce risk of cancer, obesity, and cardiovascular disease by promoting increased glucagon activity. Med Hypotheses. 1999 Dec;53(6):459-85. PubMed PMID: 10687887.	Narrative review
167.	McEvoy CT, Temple N, Woodside JV. Vegetarian diets, low-meat diets and health: a review. Public Health Nutr. 2012. Centre for Public Health, Queen's University Belfast, Institute of Clinical Science B, Belfast, UK. c.mcevoy@qub.ac.uk. 15. 2287-94. PMID: 22717188 DOI: 10.1017/s1368980012000936.	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
168.	McNaughton SA, Dunstan DW, Ball K, Shaw J, Crawford D. Dietary quality is associated with diabetes and cardio-metabolic risk factors. J Nutr. 2009 Apr;139(4):734-42. Epub 2009 Feb 11. PubMed PMID: 19211825.	Cross-sectional study
169.	Mediterranean diet and diabetes. Arbor clinical nutrition updates. 2009. Melbourne Australia. #volume#. #pages#. DOI:#DOI#	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
170.	Meetoo D. Dietary pattern of self-care among Asian and Caucasian diabetic patients. Br J Nurs. 2004 Oct 14-27;13(18):1074-8. PubMed PMID: 15564992.	Case study
171.	Mekary RA, Giovannucci E, Willett WC, van Dam RM, Hu FB. Eating patterns and type 2 diabetes risk in men: breakfast omission, eating frequency, and snacking. Am J Clin Nutr. 2012 May;95(5):1182-9. Epub 2012 Mar 28. PubMed PMID: 22456660; PubMed Central PMCID: PMC3325839.	Did not examine dietary patterns as defined for this project; examined meal patterns
172.	Mekary RA,Giovannucci E,Cahill L,Willett WC,van Dam RM,Hu FB. Eating patterns and type 2 diabetes risk in older women: breakfast consumption and eating frequency. American Journal of Clinical Nutrition. 2013. Departments of Nutrition and Epidemiology, Harvard School of Public Health, Boston, MA; Massachusetts College of Pharmacy and Health Sciences University, Boston, MA.. 98. 436-43. PMID: 23761483 DOI: 10.3945/ajcn.112.057521.	Did not assess dietary patterns as defined for the project
173.	Merat S, Casanada F, Sutphin M, Palinski W, Reaven PD. Western-type diets induce insulin resistance and hyperinsulinemia in LDL receptor-deficient mice but do not increase aortic atherosclerosis compared with normoinsulinemic mice in which similar plasma cholesterol levels are achieved by a fructose-rich diet. Arteriosclerosis thrombosis and vascular biology. 1999. #author address#. 19. 1223-1230. DOI:#DOI#	Non-human subjects
174.	Metcalf PA, Scragg RR, Schaaf D, Dyall L, Black PN, Jackson R. Dietary intakes of European, Maori, Pacific and Asian adults living in Auckland: the Diabetes, Heart and Health Study. Australian and new zealand journal of public health. 2008. Oxford UK. 32. 454-460. DOI:#DOI#	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)

175.	Metcalf PA, Stevens J, Shimakawa T, Hutchinson RG, Schmidt M, Dennis BH, Davis CE, Heiss G. Comparison of diets of NIDDM and non-diabetic African Americans and whites: The atherosclerosis risk in communities study. Nutrition Research. 1998. Heiss, G., Department of Epidemiology, School of Public Health, University of North Carolina, Chapel Hill, NC 27599-7400, United States. 18. 447-456. DOI:#DOI#	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
176.	Meyer KA, Kushi LH, Jacobs DR Jr, Folsom AR. Dietary fat and incidence of type 2 diabetes in older Iowa women. Diabetes Care. 2001 Sep;24(9):1528-35. PubMed PMID: 11522694.	Did not examine dietary patterns; examined individual nutrients and foods
177.	Michalsen A, Lehmann N, Pithan C, Knoblauch NT, Moebus S, Kannenberg F, Binder L, Budde T, Dobos GJ. Mediterranean diet has no effect on markers of inflammation and metabolic risk factors in patients with coronary artery disease. Eur J Clin Nutr. 2006 Apr;60(4):478-85. PubMed PMID: 16306923.	Subjects diagnosed with coronary artery disease
178.	Miller C, Warland R, Achterberg C. Food purchase decision-making typologies of women with non-insulin-dependent diabetes mellitus. Patient Educ Couns. 1997 Mar;30(3):271-81. PubMed PMID: 9104383.	Subjects diagnosed with type 2 diabetes
179.	Miller CK, Kristeller JL, Headings A, Nagaraja H. Comparison of a Mindful Eating Intevention to a Diabetes Self-Mangement Intevention Among Adults With Type 2 Diabetes: A Randomized Controlled Trial. Health Education and Behavior. 2013. 1Ohio State University, Columbus, OH, USA.. #volume#. #pages#. PMID: 23855018 DOI: 10.1177/1090198113493092.	Not a healthy population (all subjects have type 2 diabetes, glucose intolerance, insulin resistance, or any other disease; or are hospitalized or malnourished)
180.	Milne RM, Mann JI, Chisholm AW, Williams SM. Long-term comparison of three dietary prescriptions in the treatment of NIDDM. Diabetes Care. 1994 Jan;17(1):74-80. PubMed PMID: 8112194.	Subjects diagnosed with type 2 diabetes
181.	Mishra S, Xu J, Agarwal U, Gonzales J, Levin S,Barnard ND. A multicenter randomized controlled trial of a plant-based nutrition program to reduce body weight and cardiovascular risk in the corporate setting: The GEICO study. European Journal of Clinical Nutrition. 2013. Mishra, S., Clinical Research, Physicians Committee for Responsible Medicine, Washington, DC 20016, United States. 67. 718-724. PMID: #accession number# DOI: #DOI#	Follow-up rate < 80%
182.	Mizoue T, Yamaji T, Tabata S, Yamaguchi K, Ogawa S, Mineshita M, Kono S. Dietary patterns and glucose tolerance abnormalities in Japanese men. J Nutr. 2006 May;136(5):1352-8. PubMed PMID: 16614429.	Cross-sectional study
183.	Mohamed BA, Almajwal AM, Saeed AA, Bani IA. Dietary practices among patients with type 2 diabetes in Riyadh, Saudi Arabia. Journal of Food, Agriculture and Environment. 2013. Department of Community Health Sciences, College of Applied Medical Sciences, King Saud University, Riyadh 11375, Saudi Arabia. 11. 110-114. PMID: #accession number# DOI: #DOI#	Not a healthy population (all subjects have type 2 diabetes, glucose intolerance, insulin resistance, or any other disease; or are hospitalized or malnourished)
184.	Montonen J, Järvinen R, Heliövaara M, Reunanen A, Aromaa A, Knekt P. Food consumption and the incidence of type II diabetes mellitus. Eur J Clin Nutr. 2005 Mar;59(3):441-8. PubMed PMID: 15674312.	Did not examine dietary patterns as defined for this project; examined individual food groups
185.	Montonen J, Knekt P, Järvinen R, Aromaa A, Reunanen A. Whole-grain and fiber intake and the incidence of type 2 diabetes. Am J Clin Nutr. 2003 Mar;77(3):622-9. PubMed PMID: 12600852.	Did not examine dietary patterns; examined whole grain and fiber intake
186.	Morton S, Saydah S, Cleary SD. Consistency with the dietary approaches to stop hypertension diet among adults with diabetes. J Acad Nutr Diet. 2012 Nov;112(11):1798-805. doi: 10.1016/j.jand.2012.06.364. PubMed PMID: 23102178.	All subjects with self-reported diabetes

187.	Murata GH, Shah JH, Duckworth WC, Wendel CS, Mohler MJ, Hoffman RM. Food frequency questionnaire results correlate with metabolic control in insulin-treated veterans with type 2 diabetes: the Diabetes Outcomes in Veterans Study. J Am Diet Assoc. 2004 Dec;104(12):1816-26. PubMed PMID: 15565075.	Subjects diagnosed with type 2 diabetes
188.	Musso G, Gambino R, De Michieli F, Cassader M, Rizzetto M, Durazzo M, Fagà E, Silli B, Pagano G. Dietary habits and their relations to insulin resistance and postprandial lipemia in nonalcoholic steatohepatitis. Hepatology. 2003 Apr;37(4):909-16. PubMed PMID: 12668986.	Subjects diagnosed with NASH
189.	Nafar M, Noori N, Jalali-Farahani S, Hosseinpanah F, Poorrezagholi F, Ahmadpoor P, Samadian F, Firouzan A, Einollahi B. Mediterranean diets are associated with a lower incidence of metabolic syndrome one year following renal transplantation. Kidney Int. 2009 Dec;76(11):1199-206. Epub 2009 Sep 9. PubMed PMID: 19741589.	Subjects all had renal transplants
190.	Naja F, Hwalla N, Itani L, Salem M, Azar ST, Zeidan MN, Nasreddine L. Dietary patterns and odds of Type 2 diabetes in Beirut, Lebanon: a case-control study. Nutr Metab (Lond). 2012 Dec 27;9(1):111. doi: 10.1186/1743-7075-9-111. PubMed PMID: 23270372; PubMed Central PMCID: PMC3565896.	Case-control
191.	Naja F,Nasreddine L,Itani L,Adra N,Sibai AM,Hwalla N. Association between dietary patterns and the risk of metabolic syndrome among Lebanese adults. European Journal of Nutrition. 2013. Department of Nutrition and Food Sciences, Faculty of Agricultural and Food Sciences, American University of Beirut, Riad El-Solh, P.O.Box 11-0236, Beirut, 1107-2020, Lebanon.. 52. 97-105. PMID: 22193708 DOI: 10.1007/s00394-011-0291-3.	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
192.	Nakanishi S, Okubo M, Yoneda M, Jitsuiki K, Yamane K, Kohno N. A comparison between Japanese-Americans living in Hawaii and Los Angeles and native Japanese: the impact of lifestyle westernization on diabetes mellitus. Biomed Pharmacother. 2004 Dec;58(10):571-7. PubMed PMID: 15589065.	Cross-sectional study
193.	Nanri A, Mizoue T, Yoshida D, Takahashi R, Takayanagi R. Dietary patterns and A1C in Japanese men and women. Diabetes Care. 2008 Aug;31(8):1568-73. Epub 2008 Apr 28. PubMed PMID: 18443193; PubMed Central PMCID: PMC2494650.	Cross-sectional study
194.	Nettleton JA, Hivert MF, Lemaitre RN, McKeown NM, Mozaffarian D, Tanaka T, Wojczynski MK, Hruby A, Djoussé L, Ngwa JS, Follis JL, Dimitriou M, Ganna A, Houston DK, Kanoni S, Mikkilä V, Manichaikul A, Ntalla I, Renström F, Sonestedt E, van Rooij FJ, Bandinelli S, de Koning L, Ericson U, Hassanali N, Kiefte-de Jong JC, Lohman KK, Raitakari O, Papoutsakis C, Sjogren P, Stirrups K, Ax E, Deloukas P, Groves CJ, Jacques PF, Johansson I, Liu Y, McCarthy MI, North K, Viikari J, Zillikens MC, Dupuis J, Hofman A, Kolovou G, Mukamal K, Prokopenko I, Rolandsson O, Seppälä I, Cupples LA, Hu FB, Kähönen M, Uitterlinden AG, Borecki IB, Ferrucci L, Jacobs DR Jr, Kritchevsky SB, Orho-Melander M, Pankow JS, Lehtimäki T, Witteman JC, Ingelsson E, Siscovick DS, Dedoussis G, Meigs JB, Franks PW. Meta-analysis investigating associations between healthy diet and fasting glucose and insulin levels and modification by Loci associated with glucose homeostasis in data from 15 cohorts. Am J Epidemiol. 2013 Jan 15;177(2):103-15. doi: 10.1093/aje/kws297. Epub 2012 Dec 19. PubMed PMID: 23255780.	Meta-analysis

195.	Nettleton JA, Steffen LM, Mayer-Davis EJ, Jenny NS, Jiang R, Herrington DM, Jacobs DR Jr. Dietary patterns are associated with biochemical markers of inflammation and endothelial activation in the Multi-Ethnic Study of Atherosclerosis (MESA). Am J Clin Nutr. 2006 Jun;83(6):1369-79. PubMed PMID: 16762949; PubMed Central PMCID: PMC2933059.	Did not examine type 2 diabetes outcomes of interest; examined markers of inflammation
196.	Neuhouser ML,Howard B,Lu J,Tinker LF,Van Horn L,Caan B,Rohan T,Stefanick ML,Thomson CA. A low-fat dietary pattern and risk of metabolic syndrome in postmenopausal women: the Women's Health Initiative. Metabolism: Clinical and Experimental. 2012. Division of Public Health Sciences, Fred Hutchinson Cancer Research Center, Seattle, WA 98109-1024, USA. mneuhous@fhcrc.org. 61. 1572-81. PMID: 22633601 DOI: 10.1016/j.metabol.2012.04.007.	Did not examine outcomes of interest: Type 2 diabetes, glucose intolerance, or insulin resistance
197.	Nicholson AS, Sklar M, Barnard ND, Gore S, Sullivan R, Browning S. Toward improved management of NIDDM: A randomized, controlled, pilot intervention using a lowfat, vegetarian diet. Prev Med. 1999 Aug;29(2):87-91. PubMed PMID: 10446033.	Subjects diagnosed with type 2 diabetes
198.	Nicholson AS. Effect of a low-fat, unrefined, vegan diet on type 2 diabetes. American Journal of Clinical Nutrition. 1999. #author address#. #volume#. 624s-625s. DOI:#DOI#	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
199.	Noel SE, Newby PK, Ordovas JM, Tucker KL. A traditional rice and beans pattern is associated with metabolic syndrome in Puerto Rican older adults. J Nutr. 2009 Jul;139(7):1360-7. Epub 2009 May 20. PubMed PMID: 19458029; PubMed Central PMCID: PMC2696989.	Cross-sectional study
200.	Nöthlings U, Boeing H, Maskarinec G, Sluik D, Teucher B, Kaaks R, Tjønneland A, Halkjaer J, Dethlefsen C, Overvad K, Amiano P, Toledo E, Bendinelli B, Grioni S, Tumino R, Sacerdote C, Mattiello A, Beulens JW, Iestra JA, Spijkerman AM, van der A DL, Nilsson P, Sonestedt E, Rolandsson O, Franks PW, Vergnaud AC, Romaguera D, Norat T, Kolonel LN. Food intake of individuals with and without diabetes across different countries and ethnic groups. Eur J Clin Nutr. 2011 May;65(5):635-41. Epub 2011 Feb 23. PubMed PMID: 21346715; PubMed Central PMCID: PMC3131204.	Cross-sectional study
201.	Noto D, Barbagallo CM, Cefalù AB, Falletta A, Sapienza M, Cavera G, Amato S, Pagano M, Maggiore M, Carroccio A, Notarbartolo A, Averna MR. The metabolic syndrome predicts cardiovascular events in subjects with normal fasting glucose: results of a 15 years follow-up in a Mediterranean population. Atherosclerosis. 2008 Mar;197(1):147-53. Epub 2007 Apr 26. PubMed PMID: 17466306.	Did not examine dietary patterns; examined the relationship between metabolic syndrome and CVD
202.	Odegaard AO, Koh WP, Butler LM, Duval S, Gross MD, Yu MC, Yuan JM, Pereira MA. Dietary patterns and incident type 2 diabetes in chinese men and women: the singapore chinese health study. Diabetes Care. 2011 Apr;34(4):880-5. Epub 2011 Feb 17. PubMed PMID: 21330641; PubMed Central PMCID: PMC3064045.	Subjects from China
203.	Ortega E,Franch J,Castell C,Goday A,Ribas-Barba L,Soriguer F,Vendrell J,Casamitjana R,Bosch-Comas A,Bordiu E,Calle-Pascual A,Carmena R,Castano L,Catala M,Delgado E,Gaztambide S,Girbes J,Lopez-Alba A,Martinez-Larrad MT,Menendez E,Mora-Peces I,Pascual-Manich G,Rojo-Martinez G,Serrano-Rios M,Urrutia I,Valdes S,Vazquez JA,Gomis R. Mediterranean Diet Adherence in Individuals with Prediabetes and Unknown Diabetes: The Di@bet.es Study. Annals of Nutrition and Metabolism. 2013. Centro de Investigacion Biomedica en Red de Diabetes y Enfermedades Metabolicas Asociadas (CIBERDEM), Barcelona, Spain. 62. 339-46. PMID: 23838479 DOI: 10.1159/000346553.	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)

204.	Ortega-Azorin C,Sorli JV,Asensio EM,Coltell O,Martinez-Gonzalez MA,Salas-Salvado J,Covas MI,Aros F,Lapetra J,Serra-Majem L,Gomez-Gracia E,Fiol M,Saez-Tormo G,Pinto X,Munoz MA,Ros E,Ordovas JM,Estruch R,Corella D. Associations of the FTO rs9939609 and the MC4R rs17782313 polymorphisms with type 2 diabetes are modulated by diet, being higher when adherence to the Mediterranean diet pattern is low. Cardiovasc Diabetol. 2012. Department of Preventive Medicine and Public Health, School of Medicine, University of Valencia, Valencia, Spain.. 11. 137. PMID: 23130628 DOI: 10.1186/1475-2840-11-137.	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
205.	Oude Griep LM, Wang H, Chan Q. Empirically-derived dietary patterns, diet quality scores, and markers of inflammation and endothelial dysfunction. Curr Nutr Rep. 2013. Department of Epidemiology and Biostatistics, School of Public Health, Imperial College London, London, United Kingdom.. 2. 97-104. PMID: 23750327 DOI: 10.1007/s13668-013-0045-3.	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
206.	Overby NC, Margeirsdottir HD, Brunborg C, Andersen LF, Dahl-Jørgensen K. The influence of dietary intake and meal pattern on blood glucose control in children and adolescents using intensive insulin treatment. Diabetologia. 2007 Oct;50(10):2044-51. Epub 2007 Aug 9. PubMed PMID: 17687538.	Subjects diagnosed with type 1 diabetes
207.	Pacy PJ, Dodson PM, Kubicki AJ, Fletcher RF, Taylor KG. Effect of a high fibre, high carbohydrate dietary regimen on serum lipids and lipoproteins in type II hypertensive diabetic patients. Diabetes Res. 1984 Sep;1(3):159-63. PubMed PMID: 6099230.	Subjects diagnosed with type 2 diabetes
208.	Paletas K, Athanasiadou E, Sarigianni M, Paschos P, Kalogirou A, Hassapidou M, Tsapas A. The protective role of the Mediterranean diet on the prevalence of metabolic syndrome in a population of Greek obese subjects. J Am Coll Nutr. 2010 Feb;29(1):41-5. PMID: 20595644.	Cross-sectional study
209.	Panagiotakos DB, Pitsavos C, Arvaniti F, Stefanadis C. Adherence to the Mediterranean food pattern predicts the prevalence of hypertension, hypercholesterolemia, diabetes and obesity, among healthy adults; the accuracy of the MedDietScore. Prev Med. 2007 Apr;44(4):335-40. Epub 2006 Dec 30. PubMed PMID: 17350085.	Cross-sectional study
210.	Panagiotakos DB, Pitsavos C, Chrysohoou C, Skoumas J, Tousoulis D, Toutouza M, Toutouzas P, Stefanadis C. Impact of lifestyle habits on the prevalence of the metabolic syndrome among Greek adults from the ATTICA study. Am Heart J. 2004 Jan;147(1):106-12. PMID: 14691427.	Cross-sectional study
211.	Panagiotakos DB, Tzima N, Pitsavos C, Chrysohoou C, Papakonstantinou E, Zampelas A, Stefanadis C. The relationship between dietary habits, blood glucose and insulin levels among people without cardiovascular disease and type 2 diabetes; the ATTICA study. Rev Diabet Stud. 2005 Winter;2(4):208-15. Epub 2006 Feb 10. PubMed PMID: 17491696; PubMed Central PMCID: PMC1783563.	Cross-sectional study
212.	Paniagua JA, Gallego de la Sacristana A, Romero I, Vidal-Puig A, Latre JM, Sanchez E, Perez-Martinez P, Lopez-Miranda J, Perez-Jimenez F. Monounsaturated fat-rich diet prevents central body fat distribution and decreases postprandial adiponectin expression induced by a carbohydrate-rich diet in insulin-resistant subjects. Diabetes Care. 2007 Jul;30(7):1717-23. Epub 2007 Mar 23. PubMed PMID: 17384344.	Sample size <30 subjects per study arm
213.	Papadaki A, Linardakis M, Codrington C, Kafatos A. Nutritional intake of children and adolescents with insulin-dependent diabetes mellitus in crete, Greece. A case-control study. Ann Nutr Metab. 2008;52(4):308-14. Epub 2008 Aug 19. PubMed PMID: 18714148.	Case-control study
214.	Papakonstantinou E, Panagiotakos DB, Pitsavos C, Chrysohoou C, Zampelas A, Skoumas Y, Stefanadis C. Food group consumption and glycemic control in people with and without type 2 diabetes: the ATTICA study. Diabetes Care. 2005 Oct;28(10):2539-40. PubMed PMID: 16186294.	Cross-sectional study

215.	Park TS, Jin HY. Can the incidence and mortality of chronic diseases be explained by dietary patterns?. Journal of Diabetes Investigation. 2011. #author address#. 2. #pages. 10.1111/j.2040-1124.2011.00132.x:DOI#	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
216.	Parker B, Noakes M, Luscombe N, Clifton P. Effect of a high-protein, high-monounsaturated fat weight loss diet on glycemic control and lipid levels in type 2 diabetes. Diabetes Care. 2002 Mar;25(3):425-30. PubMed PMID: 11874925.	Subjects diagnosed with type 2 diabetes
217.	PERDUE GW, ENGELHARDT HT, CORONADO M. Diets to control diabetes mellitus: effect of modification to meet dietary habits of indigent Anglo-, Negro-, and Latin-American patients. Tex State J Med. 1959 Apr;55(4):283-6. PubMed PMID: 13647399.	Subjects diagnosed with type 2 diabetes
218.	Pereira MA, Kartashov AI, Ebbeling CB, Van Horn L, Slattery ML, Jacobs DR Jr, Ludwig DS. Fast-food habits, weight gain, and insulin resistance (the CARDIA study): 15-year prospective analysis. Lancet. 2005 Jan 1-7;365(9453):36-42. Erratum in: Lancet. 2005 Mar 16;365(9464):1030. PubMed PMID: 15639678.	Did not examine dietary patterns; examined fast food intake
219.	Perry IJ. Healthy diet and lifestyle clustering and glucose intolerance. Proceedings of the Nutrition Society. 2002. #author address#. 61. #pages. 10.1079/pns2002196:DOI#	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
220.	Pitsavos C, Chrysohoou C, Panagiotakos DB, Lentzas Y, Stefanadis C. Abdominal obesity and inflammation predicts hypertension among prehypertensive men and women: the ATTICA Study. Heart Vessels. 2008 Mar;23(2):96-103. Epub 2008 Apr 4. PubMed PMID: 18389333.	Did not examine type 2 diabetes as an outcome; examined risk of hypertension
221.	Prasad DS, Kabir Z, Dash AK, Das BC. Prevalence and risk factors for diabetes and impaired glucose tolerance in Asian Indians: a community survey from urban Eastern India. Diabetes Metab Syndr. 2012 Apr-Jun;6(2):96-101. doi: 10.1016/j.dsx.2012.05.016. Epub 2012 Jun 19. PubMed PMID: 23153977.	Study subjects from India
222.	Pun KK, Varghese Z, Moorhead JF. Effects of diets with high carbohydrate content on diabetic hyperlipidaemia and microalbuminuria. Diabetes Res Clin Pract. 1988 Jul 13;5(2):153-7. PubMed PMID: 2843337.	Subjects diagnosed with type 2 diabetes
223.	Qi L, Cornelis MC, Zhang C, van Dam RM, Hu FB. Genetic predisposition, Western dietary pattern, and the risk of type 2 diabetes in men. Am J Clin Nutr. 2009 May;89(5):1453-8. Epub 2009 Mar 11. PubMed PMID: 19279076; PubMed Central PMCID: PMC2676999.	Case-control study
224.	Rajaram S, Wien M, Sabate J. Vegetarian diets in the prevention of osteoporosis, diabetes, and neurological disorders. Vegetarian nutrition. 2001. Boca Raton USA. #volume#. 109-134. DOI:#DOI#	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
225.	Rankins J, Wortham J, Brown LL. Modifying soul food for the Dietary Approaches to Stop Hypertension diet (DASH) plan: implications for metabolic syndrome (DASH of Soul). Ethn Dis. 2007 Summer;17(3 Suppl 4):S4-7-12. PubMed PMID: 17987695.	Did not examine the relationship between dietary patterns and type 2 diabetes; examined strategies for DASH menu planning
226.	Rao PV. Dietary patterns and glucose intolerance among rural Indian populations. J Indian Med Assoc. 2002 Mar;100(3):137-40. PubMed PMID: 12408269.	Subjects from India

227.	Regidor E, Franch J, Segui M, Serrano R, Rodriguez-Artalejo F, Artola S. Traditional risk factors alone could not explain the excess mortality in patients with diabetes: a national cohort study of older Spanish adults. Diabetes Care. 2012. Department of Preventive Medicine and Public Health, Universidad Complutense de Madrid, Madrid, Spain. enriqueregidor@hotmail.com. 35. 2503-9. PMID: 22875228 DOI: 10.2337/dc11-1615.	Did not assess dietary patterns as defined for the project
228.	Richard C, Couture P, Desroches S, Benjannet S, Seidah NG, Lichtenstein AH, Lamarche B. Effect of the Mediterranean diet with and without weight loss on surrogate markers of cholesterol homeostasis in men with the metabolic syndrome. Br J Nutr. 2012 Mar;107(5):705-11. Epub 2011 Jul 26. PubMed PMID: 21787450.	Before and after study
229.	Richard C, Couture P, Desroches S, Charest A, Lamarche B. Effect of the Mediterranean diet with and without weight loss on cardiovascular risk factors in men with the metabolic syndrome. Nutr Metab Cardiovasc Dis. 2011 Sep;21(9):628-35. Epub 2010 Jun 2. PubMed PMID: 20554173.	Before and after study
230.	Richard C, Couture P, Desroches S, Lamarche B. Effect of the Mediterranean Diet With and Without Weight Loss on Markers of Inflammation in Men With Metabolic Syndrome. Obesity (Silver Spring). 2012 Jun 15. doi: 10.1038/oby.2012.148. [Epub ahead of print] PubMed PMID: 22790237.	Before and after study
231.	Richard C,Couture P,Desroches S,Lamarche B. Effect of the Mediterranean diet with and without weight loss on markers of inflammation in men with metabolic syndrome. Obesity (Silver Spring). 2013. Institute of Nutraceuticals and Functional Foods, Laval University, Quebec City, Quebec, Canada.. 21. 51-7. PMID: 23505168 DOI: 10.1002/oby.20239.	Insufficient sample size (less than 30 subjects per study arm)
232.	Richards L. Vegetarian diet and type 2 diabetes. Nature Reviews Endocrinology. 2009. #author address#. 5. 468. DOI:#DOI#	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
233.	Rivellese AA, Boemi M, Cavalot F, Costagliola L, De Feo P, Miccoli R, Patti L, Trovati M, Vaccaro O, Zavaroni I; Mind.it Study Group. Dietary habits in type II diabetes mellitus: how is adherence to dietary recommendations? Eur J Clin Nutr. 2008 May;62(5):660-4. Epub 2007 Apr 11. PubMed PMID: 17426738.	Subjects diagnosed with type 2 diabetes
234.	Rodriguez LM, Castellanos VM. Use of low-fat foods by people with diabetes decreases fat, saturated fat, and cholesterol intakes. J Am Diet Assoc. 2000 May;100(5):531-6. Erratum in: J Am Diet Assoc 2000 Oct;100(10):1137. PubMed PMID: 10812377.	Did not examine dietary patterns; examined low-fat foods
235.	Rojas-Marcos PM, Del Valle L, Ferrer MF, Runkle I, Duran A, Perez-Ferre N, Bordiu E, Cabrerizo L, Calle-Pascual AL. The lifestyle patterns in a Mediterranean population and its association with diabetes mellitus. MOPOR case control study. Obesity and Metabolism. 2010. Calle-Pascual, A. L., Department of Endocrinology and Nutrition, 1a S. Hospital Clinico San Carlos, E-28040 Madrid, Spain. 6. 69-75. DOI:#DOI#	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
236.	Romero-Polvo A, Denova-Gutiérrez E, Rivera-Paredez B, Castañón S, Gallegos-Carrillo K, Halley-Castillo E, Borges G, Flores M, Salmerón J. Association between Dietary Patterns and Insulin Resistance in Mexican Children and Adolescents. Ann Nutr Metab. 2012 Oct 2;61(2):142-150. [Epub ahead of print] PubMed PMID: 23037180.	Cross-sectional
237.	Russell ME, Weiss KM, Buchanan AV, Etherton TD, Moore JH, Kris-Etherton PM. Plasma lipids and diet of the Mvskoke Indians. Am J Clin Nutr. 1994 Apr;59(4):847-52. PubMed PMID: 8147329.	Cross-sectional study

238.	Ryan M, McInerney D, Owens D, Collins P, Johnson A, Tomkin GH. Diabetes and the Mediterranean diet: a beneficial effect of oleic acid on insulin sensitivity, adipocyte glucose transport and endothelium-dependent vasoreactivity. QJM. 2000 Feb;93(2):85-91. PubMed PMID: 10700478.	Subjects diagnosed with type 2 diabetes
239.	Ryan MC, Itsiopoulos C, Thodis T, Ward G, Trost N, Hofferberth S,O'Dea K,Desmond PV,Johnson NA,Wilson AM. The Mediterranean diet improves hepatic steatosis and insulin sensitivity in individuals with non-alcoholic fatty liver disease. Journal of Hepatology. 2013. Gastroenterology Department, St Vincent's Hospital, Melbourne, Australia. Marno.Ryan@svhm.org.au. 59. 138-43. PMID: 23485520 DOI: 10.1016/j.jhep.2013.02.012.	Insufficient sample size (less than 30 subjects per study arm)
240.	Saito T, Watanabe M, Nishida J, Izumi T, Omura M, Takagi T, Fukunaga R, Bandai Y, Tajima N, Nakamura Y, Ito M; Zensharen Study for Prevention of Lifestyle Diseases Group. Lifestyle modification and prevention of type 2 diabetes in overweight Japanese with impaired fasting glucose levels: a randomized controlled trial. Arch Intern Med. 2011 Aug 8;171(15):1352-60. PubMed PMID: 21824948.	Did not examine dietary patterns as defined for this project
241.	Sari I, Baltaci Y, Bagci C, Davutoglu V, Erel O, Celik H, Ozer O, Aksoy N, Aksoy M. Effect of pistachio diet on lipid parameters, endothelial function, inflammation, and oxidative status: a prospective study. Nutrition. 2010 Apr;26(4):399-404. Epub 2009 Jul 31. PubMed PMID: 19647416.	Before and after study
242.	Sarwar Zaman G, Akhtar Zaman F, Arifullah M. Comparative risk of type 2 diabetes mellitus among vegetarians and non-vegetarians. Indian J Community Med. 2010 Jul;35(3):441-2. PubMed PMID: 21031118; PubMed Central PMCID: PMC2963891.	Letter
243.	Savoca M, Miller C. Food selection and eating patterns: themes found among people with type 2 diabetes mellitus. J Nutr Educ. 2001 Jul-Aug;33(4):224-33. PubMed PMID: 11953244.	Subjects diagnosed with type 2 diabetes
244.	Savoca MR, Miller CK, Ludwig DA. Food habits are related to glycemic control among people with type 2 diabetes mellitus. J Am Diet Assoc. 2004 Apr;104(4):560-6. PubMed PMID: 15054341.	Subjects diagnosed with type 2 diabetes
245.	Schmidt LE, Rost KM, McGill JB, Santiago JV. The relationship between eating patterns and metabolic control in patients with non-insulin-dependent diabetes mellitus (NIDDM). Diabetes Educ. 1994 Jul-Aug;20(4):317-21. PubMed PMID: 7851248.	Subjects diagnosed with type 2 diabetes
246.	Schoenaker DA, Dobson AJ, Soedamah-Muthu SS, Mishra GD. Factor Analysis Is More Appropriate to Identify Overall Dietary Patterns Associated with Diabetes When Compared with Treelet Transform Analysis. J Nutr. 2013 Jan 23. [Epub ahead of print] PubMed PMID: 23343674.	Narrative review
247.	Scholfield DJ, Behall KM, Bhathena SJ, Kelsay J, Reiser S, Revett KR. A study on Asian Indian and American vegetarians: indications of a racial predisposition to glucose intolerance. Am J Clin Nutr. 1987 Dec;46(6):955-61. PubMed PMID: 3318380.	Did not examine dietary patterns; examined the relationship between race and glucose intolerance
248.	Schulze MB, Hoffmann K, Manson JE, Willett WC, Meigs JB, Weikert C, Heidemann C, Colditz GA, Hu FB. Dietary pattern, inflammation, and incidence of type 2 diabetes in women. Am J Clin Nutr. 2005 Sep;82(3):675-84; quiz 714-5. PubMed PMID: 16155283; PubMed Central PMCID: PMC2563043.	Case-control study
249.	Schulze MB, Hu FB. Dietary patterns and risk of hypertension, type 2 diabetes mellitus, and coronary heart disease. Curr Atheroscler Rep. 2002. London UK. 4. 462-467. DOI:#DOI#	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)

250.	Schulze MB, Schulz M, Heidemann C, Schienkiewitz A, Hoffmann K, Boeing H. Carbohydrate intake and incidence of type 2 diabetes in the European Prospective Investigation into Cancer and Nutrition (EPIC)-Potsdam Study. Br J Nutr. 2008 May;99(5):1107-16. Epub 2007 Nov 8. PubMed PMID: 17988431.	Did not examine dietary patterns; examined carbohydrate intake
251.	Schwenke DC. Beyond the Mediterranean to optimal dietary patterns. Current Opinion in Lipidology. 2013. #author address#. 24. 96-100. PMID: 23298963 DOI: 10.1097/MOL.0b013e32835c94d2.	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
252.	Scott JM, McDougle L, Schwirian K, Taylor CA. Differences in the dietary intake habits by diabetes status for African American adults. Ethn Dis. 2010 Spring;20(2):99-105. PubMed PMID: 20503887.	Cross-sectional study
253.	Sexton P, Black P, Metcalf P, Wall CR, Ley S, Wu L, Sommerville F, Brodie S, Kolbe J. Influence of mediterranean diet on asthma symptoms, lung function, and systemic inflammation: a randomized controlled trial. Journal of Asthma. 2013. Department of Medicine, Faculty of Medical and Health Sciences, University of Auckland, Auckland, New Zealand. p.sexton@auckland.ac.nz. 50. 75-81. PMID: 23157561 DOI: 10.3109/02770903.2012.740120.	Insufficient sample size (less than 30 subjects per study arm)
254.	Shai I, Schwarzfuchs D, Henkin Y, Shahar DR, Witkow S, Greenberg I, Golan R, Fraser D, Bolotin A, Vardi H, Tangi-Rozental O, Zuk-Ramot R, Sarusi B, Brickner D, Schwartz Z, Sheiner E, Marko R, Katorza E, Thiery J, Fiedler GM, Blüher M, Stumvoll M, Stampfer MJ; Dietary Intervention Randomized Controlled Trial (DIRECT) Group. Weight loss with a low-carbohydrate, Mediterranean, or low-fat diet. N Engl J Med. 2008 Jul 17;359(3):229-41. Erratum in: N Engl J Med. 2009 Dec 31;361(27):2681. PubMed PMID: 18635428.	Only examined type 2 diabetes-related outcomes in subjects who were diagnosed with type 2 diabetes
255.	Sherafat-Kazemzadeh R, Egtesadi S, Mirmiran P, Gohari M, Farahani SJ, Esfahani FH, Vafa MR, Hedayati M, Azizi F. Dietary patterns by reduced rank regression predicting changes in obesity indices in a cohort study: Tehran Lipid and Glucose Study. Asia Pac J Clin Nutr. 2010;19(1):22-32. PubMed PMID: 20199984.	Did not examine type 2 diabetes outcomes; examined obesity indices
256.	Shimakawa T, Herrera-Acena MG, Colditz GA, Manson JE, Stampfer MJ, Willett WC, Stamper MJ. Comparison of diets of diabetic and nondiabetic women. Diabetes Care. 1993 Oct;16(10):1356-62. Erratum in: Diabetes Care 1994 Apr;17(4):349. PubMed PMID: 8269793.	Case-control study
257.	Shirani F, Salehi-Abargouei A, Azadbakht L. Effects of Dietary Approaches to Stop Hypertension (DASH) diet on some risk for developing type 2 diabetes: a systematic review and meta-analysis on controlled clinical trials. Nutrition. 2013. Food Security Research Center, Isfahan University of Medical Sciences, Isfahan, Iran.. 29. 939-47. PMID: 23473733 DOI: 10.1016/j.nut.2012.12.021.	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
258.	Simmons D, Williams R. Dietary practices among Europeans and different South Asian groups in Coventry. Br J Nutr. 1997 Jul;78(1):5-14. PubMed PMID: 9292755.	Cross-sectional study
259.	Singh RB, Dubnov G, Niaz MA, Ghosh S, Singh R, Rastogi SS, Manor O, Pella D, Berry EM. Effect of an Indo-Mediterranean diet on progression of coronary artery disease in high risk patients (Indo-Mediterranean Diet Heart Study): a randomised single-blind trial. Lancet (north american edition). 2002. #author address#. 360. #pages. 10.1016/s0140-6736(02)11472-3:DOI#	Not a healthy population (all subjects have type 2 diabetes, glucose intolerance, insulin resistance, or any other disease; or are hospitalized or malnourished)

260.	Sjögren P, Becker W, Warensjö E, Olsson E, Byberg L, Gustafsson IB, Karlström B, Cederholm T. Mediterranean and carbohydrate-restricted diets and mortality among elderly men: a cohort study in Sweden. Am J Clin Nutr. 2010 Oct;92(4):967-74. Epub 2010 Sep 8. PubMed PMID: 20826627.	Did not examine type 2 diabetes outcomes; examined total and CVD mortality
261.	Sluijs I, Beulens JW, van der A DL, Spijkerman AM, Grobbee DE, van der Schouw YT. Dietary intake of total, animal, and vegetable protein and risk of type 2 diabetes in the European Prospective Investigation into Cancer and Nutrition (EPIC)-NL study. Diabetes Care. 2010 Jan;33(1):43-8. Epub 2009 Oct 13. PubMed PMID: 19825820; PubMed Central PMCID: PMC2797984.	Did not examine dietary patterns; examined type of protein
262.	Sluijs I, van der Schouw YT, van der A DL, Spijkerman AM, Hu FB, Grobbee DE, Beulens JW. Carbohydrate quantity and quality and risk of type 2 diabetes in the European Prospective Investigation into Cancer and Nutrition-Netherlands (EPIC-NL) study. Am J Clin Nutr. 2010 Oct;92(4):905-11. Epub 2010 Aug 4. Erratum in: Am J Clin Nutr. 2011 Mar;93(3):676. PubMed PMID: 20685945.	Did not examine dietary patterns; examined carbohydrate quality and quantity
263.	Snowdon DA, Phillips RL. Does a vegetarian diet reduce the occurrence of diabetes? Am J Public Health. 1985 May;75(5):507-12. PubMed PMID: 3985239; PubMed Central PMCID: PMC1646264.	Vegetarian vs non-vegetarian status based only on meat consumption
264.	Song S, Paik HY, Song Y. High intake of whole grains and beans pattern is inversely associated with insulin resistance in healthy Korean adult population. Diabetes Res Clin Pract. 2012 Dec;98(3):e28-31. doi: 10.1016/j.diabres.2012.09.038. Epub 2012 Oct 4. PubMed PMID: 23041226.	Cross-sectional
265.	Song SJ, Lee JE, Paik HY, Park MS, Song YJ. Dietary patterns based on carbohydrate nutrition are associated with the risk for diabetes and dyslipidemia. Nutr Res Pract. 2012 Aug;6(4):349-56. doi: 10.4162/nrp.2012.6.4.349. Epub 2012 Aug 31. PubMed PMID: 22977690; PubMed Central PMCID: PMC3439580.	Cross-sectional
266.	Song Y, Manson JE, Buring JE, Liu S. A prospective study of red meat consumption and type 2 diabetes in middle-aged and elderly women: the women's health study. Diabetes Care. 2004 Sep;27(9):2108-15. PubMed PMID: 15333470.	Did not examine dietary patterns; examined meat consumption
267.	Sonnenberg L, Pencina M, Kimokoti R, Quatromoni P, Nam BH, D'Agostino R, Meigs JB, Ordovas J, Cobain M, Millen B. Dietary patterns and the metabolic syndrome in obese and non-obese Framingham women. Obes Res. 2005 Jan;13(1):153-62. PubMed PMID: 15761175.	Cross-sectional study
268.	Stagnaro S, Caramel S. The role of modified Mediterranean diet and quantum therapy in Type 2 Diabetes Mellitus primary prevention. Journal of pharmacy and nutrition sciences. 2013. Mississauga Canada. 3. 59-70. PMID: #accession number# DOI: #DOI#	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
269.	Steinbrecher A, Morimoto Y, Heak S, Ollberding NJ, Geller KS, Grandinetti A, Kolonel LN, Maskarinec G. The preventable proportion of type 2 diabetes by ethnicity: the multiethnic cohort. Ann Epidemiol. 2011 Jul;21(7):526-35. Epub 2011 Apr 16. PubMed PMID: 21497517; PubMed Central PMCID: PMC3109209.	Did not examine dietary patterns; examined individual foods
270.	Summaries for patients. Dietary patterns and the risk for type 2 diabetes in U.S. men. Ann Intern Med. 2002 Feb 5;136(3):I30. PubMed PMID: 11928740.	Commentary
271.	Swinburn B. Sustaining dietary changes for preventing obesity and diabetes: lessons learned from the successes of other epidemic control programs. Asia Pac J Clin Nutr. 2002;11 Suppl 3:S598-606. PubMed PMID: 12492653.	Narrative review
272.	Swinburn BA, Metcalf PA, Ley SJ. Long-term (5-year) effects of a reduced-fat diet intervention in individuals with glucose intolerance. Diabetes Care. 2001 Apr;24(4):619-24. PubMed PMID: 11315819.	Did not examine dietary patterns as defined for this project

273.	Thompson SV, Winham DM, Hutchins AM. Bean and rice meals reduce postprandial glycemic response in adults with type 2 diabetes: a cross-over study. Nutr J. 2012 Apr 11;11(1):23. [Epub ahead of print] PubMed PMID: 22494488.	Did not examine dietary patterns; examine bean and rice intake
274.	Tinker LF, Bonds DE, Margolis KL, Manson JE, Howard BV, Larson J, Perri MG, Beresford SA, Robinson JG, Rodríguez B, Safford MM, Wenger NK, Stevens VJ, Parker LM; Women's Health Initiative. Low-fat dietary pattern and risk of treated diabetes mellitus in postmenopausal women: the Women's Health Initiative randomized controlled dietary modification trial. Arch Intern Med. 2008 Jul 28;168(14):1500-11. PubMed PMID: 18663162.	Did not examine dietary patterns as defined for this project
275.	Tobias DK, Hu FB, Chavarro J, Rosner B, Mozaffarian D, Zhang C. Healthful dietary patterns and type 2 diabetes mellitus risk among women with a history of gestational diabetes mellitus. Arch Intern Med. 2012 Nov 12;172(20):1566-72. PubMed PMID: 22987062.	Unhealthy population (gestational diabetes)
276.	Tobias DK, Zhang C, Chavarro J, Bowers K, Rich-Edwards J, Rosner B, Mozaffarian D, Hu FB. Prepregnancy adherence to dietary patterns and lower risk of gestational diabetes mellitus. Am J Clin Nutr. 2012 Aug;96(2):289-95. Epub 2012 Jul 3. PubMed PMID: 22760563; PubMed Central PMCID: PMC3396443.	Did not examine type 2 diabetes; examined risk of gestational diabetes
277.	Tomisaka K, Lako J, Maruyama C, Anh N, Lien D, Khoi HH, Van Chuyen N. Dietary patterns and risk factors for type 2 diabetes mellitus in Fijian, Japanese and Vietnamese populations. Asia Pac J Clin Nutr. 2002;11(1):8-12. PubMed PMID: 11890644.	Cross-sectional study
278.	Tomisaka K, Lako J, Maruyama C, Anh N, Lien D, Khoi HH, Van Chuyen N. Dietary patterns and risk factors for type 2 diabetes mellitus in Fijian, Japanese and Vietnamese populations. Asia Pac J Clin Nutr. 2002;11(1):8-12. PubMed PMID: 11890644.	
279.	Tonstad S, Butler T, Yan R, Fraser GE. Type of vegetarian diet, body weight, and prevalence of type 2 diabetes. Diabetes Care. 2009 May;32(5):791-6. Epub 2009 Apr 7. PubMed PMID: 19351712; PubMed Central PMCID: PMC2671114.	Cross-sectional study
280.	Toobert DJ, Glasgow RE, Strycker LA, Barrera M, Ritzwoller DP, Weidner G. Long-term effects of the Mediterranean lifestyle program: A randomized clinical trial for postmenopausal women with type 2 diabetes. International Journal of Behavioral Nutrition and Physical Activity. 2007. #author address#. #volume#. 1. DOI:#DOI#	Not a healthy population (all subjects have type 2 diabetes, glucose intolerance, insulin resistance, or any other disease; or are hospitalized or malnourished)
281.	Torres-Schow RM, Suen S, Yeh I, Tam CF. A comparison of atherogenic potential of diets between Asian and Hispanic college students and their parents. Nutrition Research. 1999. #author address#. 19. #pages. 10.1016/s0271-5317(99)00021-4:DOI#	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
282.	Trepanowski JF, Kabir MM, Alleman RJ Jr, Bloomer RJ. A 21-day Daniel fast with or without krill oil supplementation improves anthropometric parameters and the cardiometabolic profile in men and women. Nutr Metab (Lond). 2012 Sep 13;9(1):82. doi: 10.1186/1743-7075-9-82. PubMed PMID: 22971786; PubMed Central PMCID: PMC3517900.	Independent variable was effect of diet and use/non use of krill oil
283.	Tsunehara CH, Leonetti DL, Fujimoto WY. Diet of second-generation Japanese-American men with and without non-insulin-dependent diabetes. Am J Clin Nutr. 1990 Oct;52(4):731-8. PubMed PMID: 2403066.	Cross-sectional study
284.	Turner-McGrievy B. Vegetarian meal plan. Beneficial for type 2 diabetes? Diabetes Self Manag. 2006 Jan-Feb;23(1):12, 14-5, 18-9. PubMed PMID: 16453915.	Commentary

285.	Turner-McGrievy GM, Barnard ND, Cohen J, Jenkins DJ, Gloede L, Green AA. Changes in nutrient intake and dietary quality among participants with type 2 diabetes following a low-fat vegan diet or a conventional diabetes diet for 22 weeks. J Am Diet Assoc. 2008 Oct;108(10):1636-45. PubMed PMID: 18926128.	Subjects diagnosed with type 2 diabetes
286.	Tyson CC, Nwankwo C, Lin PH, Svetkey LP. The Dietary Approaches to Stop Hypertension (DASH) Eating Pattern in Special Populations. Current Hypertension Reports. 2012. Svetkey, L.P., Division of Nephrology, Department of Medicine, Duke University Medical Center, Durham, 27710, NC, United States. #volume#. 1-9. DOI:#DOI#	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
287.	Uchigata Y, Iwamoto Y. Survey of dietary habits in obese patients with type 2 diabetes treated with either OHA or insulin injections in Japan. Diabetes Res Clin Pract. 2007 Sep;77(3):371-6. Epub 2006 Sep 5. PubMed PMID: 16911841.	Subjects diagnosed with type 2 diabetes
288.	Uusitupa M,Hermansen K,Savolainen MJ,Schwab U,Kolehmainen M,Brader L,Mortensen LS,Cloetens L,Johansson-Persson A,Onning G,Landin-Olsson M,Herzig KH,Hukkanen J,Rosqvist F,Iggman D,Paananen J,Pulkki KJ,Siloaho M,Dragsted L,Barri T,Overvad K,Bach Knudsen KE,Hedemann MS,Arner P,Dahlman I,Borge GI,Baardseth P,Ulven SM,Gunnarsdottir I,Jonsdottir S,Thorsdottir I,Oresic M,Poutanen KS,Riserus U,Akesson B. Effects of an isocaloric healthy Nordic diet on insulin sensitivity, lipid profile and inflammation markers in metabolic syndrome -- a randomized study (SYSDIET). Journal of Internal Medicine. 2013. Institute of Public Health and Clinical Nutrition, University of Eastern Finland, Kuopio, Finland. matti.uusitupa@uef.fi. 274. 52-66. PMID: 23398528 DOI: 10.1111/joim.12044.	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
289.	van Woudenbergh GJ, van Ballegooijen AJ, Kuijsten A, Sijbrands EJ, van Rooij FJ, Geleijnse JM, Hofman A, Witteman JC, Feskens EJ. Eating fish and risk of type 2 diabetes: A population-based, prospective follow-up study. Diabetes Care. 2009 Nov;32(11):2021-6. Epub 2009 Aug 12. PubMed PMID: 19675200; PubMed Central PMCID: PMC2768220.	Did not examine dietary patterns; examined fish intake
290.	Vang A, Singh PN, Lee JW, Haddad EH, Brinegar CH. Meats, processed meats, obesity, weight gain and occurrence of diabetes among adults: findings from Adventist Health Studies. Ann Nutr Metab. 2008;52(2):96-104. Epub 2008 Mar 18. Erratum in: Ann Nutr Metab. 2010;56(3):232. PubMed PMID: 18349528.	Does not examine dietary patterns as defined for this product; examined intake of animal products
291.	Vasan SK, Karol R, Mahendri NV, Arulappan N, Jacob JJ, Thomas N. A prospective assessment of dietary patterns in Muslim subjects with type 2 diabetes who undertake fasting during Ramadan. Indian J Endocrinol Metab. 2012 Jul;16(4):552-7. PubMed PMID: 22837915; PubMed Central PMCID: PMC3401755.	Subjects diagnosed with type 2 diabetes
292.	Ventura E, Davis J, Byrd-Williams C, Alexander K, McClain A, Lane CJ, Spruijt-Metz D, Weigensberg M, Goran M. Reduction in risk factors for type 2 diabetes mellitus in response to a low-sugar, high-fiber dietary intervention in overweight Latino adolescents. Arch Pediatr Adolesc Med. 2009 Apr;163(4):320-7. PubMed PMID: 19349560; PubMed Central PMCID: PMC2850811.	Sample size <30 subjects per study arm
293.	Vessby B, Karlstrom B, Ohrvall M, Jarvi A, Andersson A, Basu S. Diet, nutrition and diabetes mellitus. Upsala journal of medical sciences. 2000. #author address#. 105. 151-160. DOI:#DOI#	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)

294.	Vidurrizaga-De Amezaga CA, Zulet MA, Marti A, Martinez-Gonzalez MA, Martinez JA. The Mediterranean food pattern: a good recipe for patients with the metabolic syndrome. Mediterranean Journal of Nutrition and Metabolism. 2008. #author address#. 1. #pages. 10.1007/s12349-008-0001-8:DOI#	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
295.	Vijan S, Stuart NS, Fitzgerald JT, Ronis DL, Hayward RA, Slater S, Hofer TP. Barriers to following dietary recommendations in Type 2 diabetes. Diabet Med. 2005 Jan;22(1):32-8. PubMed PMID: 15606688.	Cross-sectional study
296.	Villegas R, Liu S, Gao YT, Yang G, Li H, Zheng W, Shu XO. Prospective study of dietary carbohydrates, glycemic index, glycemic load, and incidence of type 2 diabetes mellitus in middle-aged Chinese women. Arch Intern Med. 2007 Nov 26;167(21):2310-6. PubMed PMID: 18039989.	Subjects from China
297.	Villegas R, Shu XO, Gao YT, Yang G, Elasy T, Li H, Zheng W. Vegetable but not fruit consumption reduces the risk of type 2 diabetes in Chinese women. J Nutr. 2008 Mar;138(3):574-80. PubMed PMID: 18287369; PubMed Central PMCID: PMC2615491.	Subjects from China
298.	Villegas R, Yang G, Gao YT, Cai H, Li H, Zheng W, Shu XO. Dietary patterns are associated with lower incidence of type 2 diabetes in middle-aged women: the Shanghai Women's Health Study. Int J Epidemiol. 2010 Jun;39(3):889-99. Epub 2010 Mar 15. PubMed PMID: 20231261; PubMed Central PMCID: PMC2912484.	Subjects from China
299.	Vinceti M, Rovesti S, Pacchioni C, Ropa G, Roncaia R, Benedetti P, Bergomi M, Vivoli G. Diet as a risk factor for abnormal glucose tolerance in subjects with and without family history of diabetes mellitus. Diabetes, Nutrition and Metabolism - Clinical and Experimental. 1994. Vivoli, G., Institute of Hygiene, University of Modena, I-41100 Modene, Italy. 7. 21-28. DOI:#DOI#	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
300.	Virtanen SM, Feskens EJ, Rasanen L, Fidanza F, Tuomilehto J, Giampaoli S, Nissinen A, Kromhout D. Comparison of diets of diabetic and non-diabetic elderly men in Finland, The Netherlands and Italy. Eur J Clin Nutr. 2000. #author address#. 54. #pages. 10.1038/sj.ejcn.1600916:DOI#	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
301.	Viscogliosi G,Cipriani E,Liguori ML,Marigliano B,Saliola M,Ettorre E,Andreozzi P. Mediterranean dietary pattern adherence: associations with prediabetes, metabolic syndrome, and related microinflammation. Metab Syndr Relat Disord. 2013. Department of Cardiovascular, Respiratory, Nephrologic, Anesthesiologic and Geriatric Sciences, "Sapienza" University, Rome, Italy. giovanni.viscogliosi@libero.it. 11. 210-6. PMID: 23451814 DOI: 10.1089/met.2012.0168.	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
302.	Wagner A, Dallongeville J, Haas B, Ruidavets JB, Amouyel P, Ferrieres J, Simon C, Arveiler D. Sedentary behaviour, physical activity and dietary patterns are independently associated with the metabolic syndrome. Diabetes and Metabolism. 2012. Department of Epidemiology and Public Health, EA 3430, University of Strasbourg, Faculty of Medicine, 4, rue Kirschleger, 67085 Strasbourg cedex, France. aline.wagner@unistra.fr. 38. 428-35. PMID: 22721723 DOI: 10.1016/j.diabet.2012.04.005.	Excluded study design (narrative/systematic review; meta-analysis; before and after/case-control/cross-sectional study)
303.	Wheeler ML, Dunbar SA, Jaacks LM, Karmally W, Mayer-Davis EJ, Wylie-Rosett J, Yancy WS Jr. Macronutrients, food groups, and eating patterns in the management of diabetes: a systematic review of the literature, 2010. Diabetes Care. 2012 Feb;35(2):434-45. Review. PubMed PMID: 22275443; PubMed Central PMCID: PMC3263899.	Systematic review
304.	Wheeler ML, Fineberg SE, Fineberg NS, Gibson RG, Hackward LL. Animal versus plant protein meals in individuals with type 2 diabetes and microalbuminuria: effects on renal, glycemic, and lipid parameters. Diabetes Care. 2002 Aug;25(8):1277-82. PubMed PMID: 12145221.	Sample size <30 subjects per study arm

305.	White KM, Terry DJ, Troup C, Rempel LA, Norman P. Predicting the consumption of foods low in saturated fats among people diagnosed with Type 2 diabetes and cardiovascular disease. The role of planning in the theory of planned behaviour. Appetite. 2010 Oct;55(2):348-54. Epub 2010 Jul 30. PubMed PMID: 20674639.	Subjects diagnosed with type 2 diabetes
306.	Williams DE, Knowler WC, Smith CJ, Hanson RL, Roumain J, Saremi A, Kriska AM, Bennett PH, Nelson RG. The effect of Indian or Anglo dietary preference on the incidence of diabetes in Pima Indians. Diabetes Care. 2001 May;24(5):811-6. PubMed PMID: 11347735.	Cross-sectional study
307.	Wolever TMS, Nguyen PM, Chiasson JL, Hunt JA, Josse RG, Palmason C, Rodger NW, Ross SA, Ryan EA, Tan MH. Relationship between habitual diet and blood glucose and lipids in non- insulin dependent diabetes (NIDDM). Nutrition Research. 1995. Wolever, T.M.S., Department of Nutritional Sciences, University of Toronto, Toronto, Ont. M5S 1A8, Canada. 15. 843-857. DOI:#DOI#	Not a healthy population (all subjects have type 2 diabetes, glucose intolerance, insulin resistance, or any other disease; or are hospitalized or malnourished)
308.	Zazpe I, Estruch R, Toledo E, Sánchez-Taínta A, Corella D, Bulló M, Fiol M, Iglesias P, Gómez-Gracia E, Arós F, Ros E, Schröder H, Serra-Majem L, Pintó X, Lamuela-Raventós R, Ruiz-Gutiérrez V, Martínez-González MA. Predictors of adherence to a Mediterranean-type diet in the PREDIMED trial. Eur J Nutr. 2010 Mar;49(2):91-9. Epub 2009 Sep 4. PubMed PMID: 19760359.	Examined predictors of adherence to a Mediterranean diet
309.	Zhang C, Schulze MB, Solomon CG, Hu FB. A prospective study of dietary patterns, meat intake and the risk of gestational diabetes mellitus. Diabetologia. 2006 Nov;49(11):2604-13. Epub 2006 Sep 7. PubMed PMID: 16957814.	Did not examine type 2 diabetes; examined gestational diabetes
310.	Zuo H, Shi Z, Yuan B, Dai Y, Pan X, Wu G, Hussain A. Dietary patterns are associated with insulin resistance in Chinese adults without known diabetes. Br J Nutr. 2012 Sep 19:1-8. [Epub ahead of print] PubMed PMID: 22989490.	Study subjects from China

Appendix I: Compiled Findings, Limitations, and Research Recommendations

Dietary Patterns and Risk of Cardiovascular Disease

Index Analysis: What is the relationship between adherence to dietary guidelines/ recommendations or specific dietary patterns, *assessed using an index or score*, and risk of cardiovascular disease?

Conclusion Statement

There is strong and consistent evidence that in healthy adults increased adherence to dietary patterns scoring high in fruits, vegetables, whole grains, nuts, legumes, unsaturated oils, low-fat dairy, poultry, and fish; low in red and processed meat, high-fat dairy, and added sugars; and moderate in alcohol is associated with decreased risk of fatal and non-fatal cardiovascular diseases, including coronary heart disease and stroke.

Grade

I – Strong

Key Findings:

- Three major categories of dietary pattern scores were identified related to cardiovascular disease (CVD) risk: dietary exposure based on adherence to (1) a Mediterranean dietary pattern, (2) dietary guidelines recommendations, or (3) a DASH diet.
- The preponderance of the evidence from studies carried out in large, well-characterized prospective cohorts from the United States, Europe, Japan, and Australia showed that, in healthy adults, an increase in a Mediterranean diet score or dietary guidelines-related score was associated with decreased risk of fatal and non-fatal CVD, defined as coronary heart disease (CHD) and stroke, as well as decreased risk of CHD and stroke as individual clinical outcomes. Fewer studies assessed the association between adherence to a DASH diet and CVD, CHD, or stroke outcomes, using an index or score, and their findings were inconsistent.
- Scores that were most frequently associated with decreased risk of CVD, CHD, or stroke, in categorical comparisons of adherence, were the original Mediterranean Diet Score (MDS), the Alternate Mediterranean Diet Score (aMed), the Healthy Eating Index (HEI)-2005, the Alternate HEI (AHEI) and updated AHEI-2010, the Recommended Food Score (RFS), and one of the DASH scores.
- Positive food components of scores that were associated with decreased CVD risk were fruits, vegetables, whole grains, nuts, legumes, unsaturated fats, and fish. Alcohol was included as a positive component when consumed in moderation, but not in all scores. Red and processed meats were negative components in the Mediterranean scores, AHEI scores, and DASH; whereas, poultry was included as a positive component in the original AHEI and RFS scores. Total high-fat dairy was a negative component in the MDS, but dairy was a positive component when meeting recommended intakes for the HEI-2005 or as low-fat dairy in the RFS and DASH scores. Certain scores also included sugars or sugar-sweetened beverages as negative components.

- Studies that assessed the association between *individual* food components of scores and CVD risk were consistent with the identified food components from comparisons across predictive scores.
- A smaller number of studies examined intermediate, secondary outcomes and other individual clinical endpoints outcomes with mixed results.

Limitations of the Evidence

Common limitations of studies on dietary patterns using *a priori* scores involve the use of different scores, differences between scores that are based on median population intakes versus indices that are based on recommended intakes, scores that use similar weights for each component assuming equivalent effects on health, the use of different confounding factors (or lack of sufficient adjustment), and problems associated with use of different FFQs and validation related to other methods of diet assessment. It should be said, however, that in this relatively large body of evidence, a limited number of scores were used, oftentimes less complicated versions of these scores, and in a number of cases the different scores were tested in the same cohorts. Overall, this makes the comparison of food components across these scores feasible. Additionally, a very common limitation in many prospective cohort studies is that dietary intake is based on a single dietary assessment at baseline, with no follow-up assessment of dietary intake over the period of the study. However, this body of evidence had notable exceptions including Chiuve (2010 [aMed/NHS] and 2011 [HEI, AHEI/NHS, HPFS]), and Fung (2008 [DASH/NHS] and 2009 [aMed/NHS]) that measured dietary intakes at regular intervals across the period of follow-up of the respective studies. Therefore, these studies did take into account the fact that diets change over time due to trends in the food supply, as well as the fact that population-level and individual-level food choices change over time.

Research Recommendations

The studies covered in this systematic review provide results that improve some of the problems involved in dietary patterns research. For example, the need for consensus on a single score or index that is applicable across populations is less problematic in this body of evidence than for some other outcomes, as a relatively small number of uncomplicated scores have been used to successfully predict CVD risk in large U.S. and European populations. Further quantitative analysis/comparisons of these scores and their respective components by meta-analysis would be particularly useful. Although a large number of the studies assessed food group components and their association with CVD outcomes, many did not, and more precise determination of the benefits and risks of individual components (e.g., alcohol) would be helpful for policy recommendations. In addition, component analysis could be improved by determining interaction terms across components that would be needed to maintain a dietary patterns approach. Methodologically, research in this area could be improved by measuring dietary intake at regular intervals over the course of a prospective study, rather than just at baseline (although a few of the large cohort studies in this body of evidence did this). Determining the best approach to weighing and scoring individual food components would also improve the rigor in application of scores to assess dietary pattern adherence. Additionally, studies in this body of evidence that assessed gender differences in the relationship between adherence to a dietary pattern and CVD risk found inconsistent results. Further research is needed to clarify this. There were also very few studies that identified racial/ethnic subgroups within their cohorts and analyzed these groups separately related to CVD risk and this warrants additional research. Assessment of dietary patterns at earlier and later stages of the life cycle is also recommended. Lastly, behavioral issues related to timing, frequency, and size of meals need further consideration.

Other Methods: What is the relationship between adherence to dietary guidelines/ recommendations or specific dietary patterns, *assessed using methods other than index/score, cluster or factor, or reduced rank regression analyses,* and risk of cardiovascular disease?

Conclusion Statement

There is strong and consistent evidence that consumption of a DASH diet results in reduced blood pressure in adults with above optimal blood pressure, up to and including stage 1 hypertension. A dietary pattern consistent with the DASH diet is rich in fruits, vegetables, low-fat dairy, fish, whole grains, fiber, potassium, and other minerals at recommended levels and low in red and processed meat, sugar-sweetened foods and drinks, saturated fat, cholesterol, and sodium. There is limited evidence that adherence to vegetarian diets is associated with decreased death from ischemic heart disease, with the association being stronger in men than in women.

Grade

I-Strong **-** DASH and Blood Pressure; III-Limited – Vegetarian and Ischemic Heart Disease

Key Findings:

- Two types of dietary patterns were identified using other methods of assessing dietary exposure related to cardiovascular disease (CVD) risk: (1) a DASH dietary pattern and (2) a vegetarian-style dietary pattern.
- Evidence from RCTs showed a DASH diet resulted in reduced blood pressure (BP) including systolic BP (SBP) and/or diastolic BP (BP) in adults with above optimal blood pressure, up to and including stage 1 hypertension, with further reductions with the low sodium DASH modification and the DASH high protein or DASH high unsaturated fat modifications (OmniHeart). Addition of a behavioral intervention or weight management intervention together with the DASH diet was more effective in reducing BP than DASH diet alone (PREMIER, ENCORE). Approximately two-thirds of the U.S. population has pre-hypertension or hypertension.
- Evidence from prospective cohort studies showed a vegetarian diet was associated with reduced ischemic heart disease (IHD) or cardiovascular disease (CVD) mortality *in four out of six studies*. In studies that showed a favorable association for the vegetarian diet, the risk reduction for men was greater than that for women. The association between vegetarian diets and BP was less clear.
- Studies that examined cerebrovascular disease or stroke mortality did not find differences between vegetarians and non-vegetarians.
- The results of either a DASH diet or vegetarian diet on blood lipids were mixed regarding effects on total-, LDL-, and HDL-cholesterol and triglycerides.
- The DASH diet is high in fruits, vegetables, low-fat diary, whole grains, fish, fiber, potassium, and other minerals at recommended levels and low in red and processed meat, sugar-sweetened foods and drinks, saturated fat, cholesterol, and sodium. Vegetarian diets include vegan (no meat, fish, eggs, or dairy). lacto-ovo vegetarian (includes eggs and dairy, but no fish or meat), and pesco vegetarian (includes fish, but no meat) diets.

Limitations of the Evidence

In the DASH trials, including the original DASH and DASH-sodium, the feeding phases were relatively brief (4-8 weeks) and the trial outcomes were CVD risk factors, not clinical events. In DASH trials with free-living populations, including PREMIER and ENCORE, there was the potential for selection bias, as participants may have been more motivated toward behavior modifications.

The studies on vegetarian diets were all prospective cohort studies, and there was the potential for vegetarian cohorts to be relatively health conscious in other lifestyle components, in addition to diet. Additionally, in these studies, analyses relied on single baseline measurements of diet, without further dietary intake assessment over the time course of prospective studies. Related to the specific systematic review question on dietary patterns, vegetarian diets including vegan, lacto-ovo vegetarian, and pesco vegetarian, were most often described by what was excluded from the diet rather than a full dietary pattern including all foods and beverages consumed. Overall, the definition of vegetarian diets has not been standardized.

Research Recommendations

Vegetarian diets are often defined by what is excluded from the diet rather than what is included; therefore, researchers should make efforts to characterize the diets of self-identified vegetarians more fully in terms of their patterns of food choice. In addition, standardization of the various definitions of vegetarian diets across different populations and locations would further advance knowledge in this area. The benefits of vegetarian diets are associated, in part, with decreased consumption of animal products; given this, it would help to inform policy if investigators could determine how much of a decrease in animal product consumption is most beneficial related to CVD risk. Methodologically, research in this area could be further improved by measuring dietary intake at regular intervals over the course of prospective studies, rather than just at baseline.

Further research needs to be done to clarify the effect of a DASH diet on blood pressure outcomes by racial/ethnic subgroups, as well as gender differences in blood lipid measures. The potential gender difference in the association between vegetarian diets and CHD mortality (i.e., more pronounced in men) needs to be further clarified, and this could be informed by detailed analyses of different forms of vegetarian diets including vegan, lacto-ovo vegetarian, and pesco-vegetarian diets, together with a fuller accounting of what these diets include as well as exclude. Women's diets tend to have higher diet quality with regard to a number of dietary dimensions other than protein sources which could explain why this particular exclusion does not have as pronounced an effect among them.

Factor or Cluster Analysis: Are prevailing patterns of diet behavior in a population, *assessed using factor or cluster analysis,* related to risk of cardiovascular disease?

Conclusion Statement

Limited evidence from epidemiological studies indicates that dietary patterns, assessed using cluster or factor analysis, characterized by vegetables, fruits, whole grains, fish, and low-fat dairy products are associated with decreased risk of cardiovascular disease in adults. Evidence of a relationship between dietary patterns characterized by red and processed meat, sugar-sweetened foods and drinks, and fried foods and an increased risk of cardiovascular disease is limited and less consistent.

Grade

III – Limited

Key Findings

- Cluster and factor analyses are data-driven approaches that describe the dietary patterns consumed by the study population. High variability in the studies included in this review, including populations, case number, sample size, dietary assessment techniques, methods used to define and retain factors and clusters, confounders considered and the statistical analysis employed, made comparisons among studies challenging.
- Patterns derived from either factor or cluster analyses are not reproducible across studies. The consolidation of food items into food groups, the number of factors or clusters to extract, and the labeling of components are based on subjective decisions. Patterns using the same naming convention frequently contain different foods or groups of foods, making it difficult to draw conclusions.
- In general, favorable associations with CVD risk were seen in dietary patterns characterized by high consumption of vegetables, fruits, whole grains, fish, and low-fat dairy products. The unfavorable patterns, characterized by high intake of red and processed meat, sugar-sweetened foods and drinks, and fried foods, were more mixed in results, with no association with risk frequently found.
- Association of patterns with favorable and unfavorable characteristics with CHD risk was mixed. Favorable patterns described as "prudent;" "healthy;" "evolved Mediterranean;" "bread, cereals, vegetables, fish, potatoes, and oils;" and "whole grains and fruit" had an inverse association with CHD, while other patterns described as "prudent" or "healthy" had no association with CHD. The same inconsistency was found among unfavorable patterns described as "western" or "animal."
- Variation in the number, design, size of studies, and patterns identified made it difficult to identify trends related to myocardial infarction, stroke, measures of blood lipids, and blood pressure.

Limitations of the Evidence

- Most longitudinal studies included only baseline measure of dietary intake and did not account for changes to subjects' diets, availability and variations in the food supply, which may have influenced the food components of patterns.
- Variations in the number and type of food groupings and definitions and naming conventions found in the review are not easily comparable, and factors with the same naming convention (e.g., "vegetable" or "healthy") may include somewhat different foods or groups of foods with varying factor loadings.
- Differences in the statistical analysis approaches used to derive and retain factors and clusters influences power and the ability to detect an association.
- Patterns derived from factor analysis and cluster analyses were analyzed differently. In factor analysis, "high" scores were generally compared with "low" scores of the same pattern, though it was not clear what characteristic differences there were in a "high" versus "low" score factor. In cluster analysis, one cluster was compared with another one, making it difficult to interpret results together.

Research Recommendations

- Evaluate and standardize methods used to assess, organize, aggregate, and adjust food variables to facilitate interpretation of findings across studies.
- Additional research is needed to examine if and how gender, age, SES, and ethnicity might influence the relationship between dietary patterns and cardiovascular disease risk.
- Explore the characteristics of dietary patterns beyond food choice, such as timing and frequency of meals, meal sizes, and eating occasions.

Reduced Rank Regression: What is the relationship between adherence to dietary guidelines/recommendations or specific dietary patterns, *assessed using reduced rank regression analysis,* and cardiovascular disease?

Conclusion Statement

Insufficient evidence, due to a small number of studies, was available to examine the relationship between dietary patterns derived using reduced rank regression and risk of cardiovascular disease. The disparate nature of the methods used made it difficult to compare results, and therefore, no conclusions were drawn.

Grade

IV – Not Assignable

Key Findings:

- Four positive quality prospective cohort studies that used reduced rank regression to examine the relationship between dietary patterns and cardiovascular disease (CVD) status were included in this review. Comparison across studies is limited by the small number of studies, differences in methodologies used, and in the populations studied. Therefore, no conclusions were drawn.
- More U.S. population-based research is needed to examine dietary patterns and risk of cardiovascular disease using reduced rank regression, preferably with more consistent methods and response variables.

Limitations of the Evidence

Methodological Differences:

- Three out of the four studies used biomarkers and the fourth study used nutrients as response variables in the reduced rank regression analyses. Among the three studies that used biomarkers as response variables, there were differences in the type of biomarkers chosen, leading to the identification of dietary patterns that differed from study to study. Heroux (2009) used change in BMI, mean arterial pressure, total cholesterol, HDL-cholesterol, triglycerides (mg/dl), fasting glucose, and uric acid; Meyer (2011) used C-reactive protein, Interleukin (IL)-6, and Interleukin (IL)-18; and McNaughton (2009) used total cholesterol, HDL cholesterol, and triglycerides. The fourth study, Drogan (2007), used nutrients, including total fat, total carbohydrate, and fiber, as response variables. Because the dietary patterns described in each study are directly linked to response variables chosen, the variation in the response variables used means that the resulting dietary patterns may not be comparable.

- Dietary assessment methods were different across the studies. One study used 3-day diet records (Heroux 2009); another used a self-administered FFQ (Drogan 2007); a third used a 127-item validated FFQ (McNaughton 2009); and the fourth study used a 7-day dietary record (Meyer 2011). It is unclear what impacts different dietary assessment methods have on the derivation of dietary patterns using reduced rank regression.
- The studies were not consistent in their use of confounders in analyses. In particular, physical activity was not included as a confounder in the analyses by Meyer (2011), and Drogan (2007) did not include smoking as a confounder.

Population Differences:

- The studies were conducted in different countries (United States and several countries in Europe) and represented populations in different regions of the world, which limited the ability to compare and interpret the results due to potential differences in dietary patterns between these regions. From that perspective, the results may not be generalizable to some U.S. populations.

Research Recommendations

More research using reduced rank regression should be conducted. Additionally, standardization in methodology, such as food groupings and response variables used, are also needed.

Dietary Patterns and Body Weight or Risk of Obesity

Index Analysis: What is the relationship between adherence to dietary guidelines/ recommendations or specific dietary patterns, *assessed using an index or score,* and measures of body weight or obesity?

Conclusion Statement

There is moderate evidence that, in adults, increased adherence to dietary patterns scoring high in fruits, vegetables, whole grains, legumes, unsaturated oils, and fish; low in total meat, saturated fat, cholesterol, sugar-sweetened foods and drinks, and sodium; and moderate in dairy products and alcohol is associated with more favorable outcomes related to body weight or risk of obesity, with some reports of variation based on gender, race, or body weight status.

Grade

II - Moderate

Key Findings:

- Two major categories of dietary pattern scores were identified in the literature: (1) studies that examined exposure based on a Mediterranean dietary pattern and (2) studies that examined exposure based on dietary guidelines recommendations.
- In adults, adherence to a Mediterranean diet score or a dietary guidelines-related score is associated with decreased risk of obesity, with some reported variation based on gender or body weight status.
- This protective association in adults is further supported by consistent evidence indicating that an increased Mediterranean diet score or dietary guidelines-related score is associated with decreased body weight, BMI, waist circumference or percent body fat, with some variation based on gender and race.

Limitations of the Evidence

Limitations of the studies included in this systematic review, and potential reasons for differences and inconsistencies in results, include the use of different scores; differences between scores that are based on median population intakes versus indices that are based on recommended intakes; the use of different confounding factors or lack of sufficient adjustment for confounding factors; the problems associated with the use of different FFQs and validation related to other methods of diet assessment; and the handling of underreporting. Furthermore, in the majority of studies, total scores or indices were used and there was no separate analysis of individual score components and their potential association with outcomes. The application of the total score to the diet pattern analysis has the potential to “dilute” the effect of individual components. However, the assessment of individual components without interaction terms assumes that a given component has an independent association which potentially contradicts the theoretical rationale for examining the overall dietary pattern. Lastly, another common limitation was the single measurement of dietary intake at baseline. This does not take into account that diets change over time due to trends in the food supply and population-level and individual-level changes in food choices.

Research Recommendations

Given the combined evidence from this systematic review, several research recommendations can be advanced. Most striking is the need for consensus on a single index or score that is applicable across populations for a diversity of outcomes. If it is not feasible that one index can adequately assess the diversity of populations related to dietary patterns, research should be conducted to determine the best method by which components are chosen, grouped, and scored and whether or not the research tool is population based or independent of the population, so that there is uniformity across scores. The studies included in this review were focused on total scores, rather than component scores and their association with health outcomes. To strengthen the analysis of component scores, the interaction terms across components need to be assessed in order to maintain a dietary patterns approach. For prospective cohort studies, diet intake should be measured at multiple time points with assessment of dietary changes over the time as they relate to health outcomes.

Other Methods: What is the relationship between adherence to dietary guidelines/ recommendations or specific dietary patterns, *assessed using methods other than index/score, cluster or factor, or reduced rank regression analyses,* and body weight status?

Conclusion Statement

There is moderate evidence that adherence to a dietary pattern that emphasizes vegetables, fruits, and whole grains is associated with modest benefits in preventing weight gain or promoting weight loss in adults.

Grade

II – Moderate

Key Findings

- The Women's Health Initiative (WHI), Mediterranean, Vegetarian, and "Healthy" dietary patterns were associated with beneficial body weight outcomes. These dietary patterns consistently emphasized fruits, vegetables, and whole grains. Fewer studies considered, but consistently observed benefits, with reduced meat intake. Some studies also considered total fat intake; these studies did not support that targeting a low total fat intake is required for weight loss or stability.
- Studies included in this review were short to moderate in duration, and individuals with greater adherence to the plant-based dietary pattern experienced better body weight outcomes.
- Additional research is needed to quantify the amounts of food groups that are beneficial to consume, but, in general, movement to a dietary pattern with more plant foods and less meat is favorable related to body weight status.

Limitations

- Five of the seven studies included in this review assessed dietary intake using FFQs. Additionally, one study assessed dietary patterns by using a simple series of questions. These dietary assessment methodologies have measurement error and also prevent sufficient quantification of dietary intake.
- The studies did not consistently consider or report calorie intake and/or energy expenditure, which are important to consider when examining body weight status.

Research Recommendations

- Additional research is needed to specify dietary patterns, particularly the quantity of different food and beverages that should be consumed.
- Studies, particularly randomized controlled trials, are needed that include several dietary patterns so that dietary patterns can be compared within, in addition to between, studies to determine the optimal dietary pattern, or the consistent components across dietary patterns, that are most beneficial related to body weight status.

Factor or Cluster Analysis: Are prevailing patterns of diet behavior in a population, *assessed using factor or cluster analysis,* related to body weight or risk of obesity?

Conclusion Statement

Limited and inconsistent evidence from epidemiological studies examining dietary patterns derived using factor or cluster analysis in adults found that consumption of a dietary pattern characterized by vegetables, fruits, whole grains, and reduced-fat dairy products tends to be associated with more favorable body weight status over time than consumption of a dietary pattern characterized by red meat, processed meats, sugar-sweetened foods and drinks, and refined grains.

Grade

III – Limited

Key Findings:

- Cluster and factor analyses are data-driven approaches that describe the dietary patterns consumed by the study population. Variability in the studies included in this review, including populations considered, dietary assessment methods used, the number and type of food groupings included in the analyses, and the statistical techniques employed, made comparisons among studies challenging.
- The number of patterns identified in the studies ranged from 2 to 6 and some similarities emerged among them. The patterns were not consistently defined by specific foods, but rather by a range of foods with overlap among the patterns. What differentiated the patterns was the amount or frequency of each food consumed.
- Dietary patterns that emerged in factor or cluster analysis that were associated with lower risk of obesity were characterized by the presence of vegetables, fruit, whole grains, and reduced-fat dairy. In adults, results pointed toward a more favorable weight status, lower weight/waist circumference (WC) gain, and lower body mass index (BMI) over time.
- Dietary patterns derived from factor or cluster analysis associated with a higher risk of obesity were characterized by the presence of red meat and processed meats, sugar-sweetened foods and drinks, and refined grains. Results related to consumption of these patterns pointed toward increased body weight and waist circumference measures over time.
- Ethnicity and socioeconomic status were often not reported or included in analyses. Insufficient evidence was available to support conclusions related to children and adolescents.

Limitations

- Factor and cluster analyses are data-driven approaches that describe the dietary patterns in a particular population. The studies describe preexisting dietary patterns within the population and the dietary patterns are not based on a hypothesized association to health. The patterns derived through analyses may not represent the most beneficial or detrimental patterns relative to the health outcome of interest.
- Among the studies reviewed, the dietary pattern analyses varied with regard to the dietary assessment methods, the number and type of food groupings, and the statistical analysis techniques, which make comparisons challenging.
- In factor and cluster analysis, the consolidation of food items into food groups, the number of factors or clusters to extract, and even the labeling of components are subjective. Furthermore, patterns derived from either factor or cluster analysis may not be reproducible across studies because elements of dietary patterns and analytic decisions differ.

- Dietary pattern analysis using factor or cluster methods may not be very informative in determining which elements of the diet or which biological relationships between these elements are responsible for the health outcome.
- Some studies completed over long periods of time did not account for changes to subjects' diets or seasonal variations in food supplies, which may have influenced the food components of patterns.
- One study analyzed the dietary patterns of pre-pubescent children transitioning into adolescence. In general, the results show that patterns vary widely at this age and caution should be observed when analyzing these data because the diet of children changes rapidly, as well as their weight.

Research Recommendations

- Insufficient evidence was available in population subgroups to examine the relationship between dietary patterns derived using factor and cluster analyses and body weight status. Future studies using this methodology should examine variables such as ethnicity, SES, sex, baseline weight status, and age. In addition, it is important to incorporate environmental and behavioral factors, such as physical activity, non-leisure physical activity, eating practices (eating out, cooking at home), indulgence over the weekend, among others, as potential confounders These variables may be moderators that in the long term will define the association between a particular pattern and weight status. There is a need for more research into specific ethnic groups and how cultural practices may influence dietary patterns and their repercussions for body weight.
- Research is needed to further examine if various dietary patterns influence body weight status differently among participants who are normal weight, overweight, or obese. There is some indication that obese versus normal weight individuals respond differently to changes of food patterns on body weight measures. Research in this area may help uncover better approaches to body weight management practices.
- There is a need to examine the most common unhealthy/western pattern components, variations, and amounts of food consumed by those who have such a diet. Rationale: If a pre-existing pattern is found to be detrimental to health, there is an impetus for dietary pattern modification.

Reduced Rank Regression: What is the relationship between adherence to dietary guidelines/recommendations or specific dietary patterns, *assessed using reduced rank regression analysis*, and measures of body weight or obesity?

Conclusion Statement

There were a number of methodological differences among the studies examining the relationship between dietary patterns derived using reduced rank regression and body weight status. The disparate nature of these studies made it difficult to compare results, and therefore, no conclusions were drawn.

Grade

Not Assignable (IV)

Key Findings:

- Six positive quality prospective cohort studies that used reduced rank regression to examine the relationship between dietary patterns and body weight status were included in this review. However, differences in methodologies used and populations studied prevented comparison across studies, and conclusions could not be drawn.
- Further research is needed to examine dietary patterns and body weight status using reduced rank regression, preferably with standardized methods and response variables.

Limitations of the Evidence

Methodological Differences

- Each study used different response variables in the reduced rank regression analyses. Two studies used biomarkers as response variables. Noh (2011) used change in BMI, percent body fat, bone mineral content, and bone mineral density as response variables, and Wosje (2010) included fat and bone mass as response variables. Four studies used nutrients as response variables: Ambrosini (2012) and Johnson (2008) used dietary energy density, fiber density, and percent of energy as fat; Schulze (2005) used total fat, carbohydrate, and fiber; and Sherafat-Kazemzadeh (2010) used fat, PUFA:SFA, calcium, cholesterol, and fiber. In reduced rank regression, the dietary patterns identified are those that explain the most variation in the response variables chosen. Therefore, because the studies included in this review used different response variables, the dietary patterns derived may not be comparable.
- Different weight-related outcomes were examined across the studies. The most common outcomes considered were body mass index (Ambrosini, 2012; Johnson, 2008; Noh, 2011; Sherafat-Kazemzadeh, 2010) and fat mass or percentage (Ambrosini, 2012; Johnson, 2008; Noh, 2011; Wosje, 2010). Two studies examined incidence of overweight or obesity and excess adiposity (Ambrosini, 2012; Johnson, 2008). Only one study examined waist circumference (Serafat-Kazemzadeh, 2010). This variability made it difficult to identify themes within this body of evidence.
- Dietary assessment methods were different across the studies. Of the six studies, three used diet records (Ambrosini, 2012; Johnson, 2008; Wosje, 2010), one used 24-hour recalls (Sherafat-Kazemzadeh, 2010), another used a 24-hour recall and a diet record (Noh, 2011), and one used an FFQ (Schulz, 2005). It is unclear what impacts different dietary assessment methods have on the derivation of dietary patterns using reduced rank regression.
- The studies were not consistent in their use of confounders in analyses. In particular, physical activity was not included as a confounder in the analyses by Johnson (2008) or Noh (2011).

Population Differences

- Each study was conducted in a different country (United States, Korea, United Kingdom, Iran, and Germany) and represented populations in different regions of the world, which prevented the ability to compare and interpret the results.
- The studies were conducted with different age groups, four with children (Ambrosini, 2012; Johnson, 2008; Noh, 2011; Wosje, 2010) and two with adults (Schulz, 2005; Sherafat-Kazemzadeh, 2010). Even among the studies with children, the age groups were significantly different.

Research Recommendations

More research using reduced rank regression should be conducted. Additionally, standardization in methodology, particularly in response variables used, is needed.

Dietary Patterns and Risk of Type 2 Diabetes

Index Analysis: What is the relationship between adherence to dietary guidelines/ recommendations or specific dietary patterns, *assessed using an index or score*, and risk of type 2 diabetes?

Conclusion Statement

There is limited evidence that adherence to a dietary pattern rich in fruits, vegetables, legumes, cereals/whole grains, nuts, fish, and unsaturated oils, and low in meat and red meat and high-fat dairy, assessed using an index or score, is associated with decreased risk of type 2 diabetes.

Grade

III – Limited

Key Findings:

- Among included studies there was variation in the types of indices or scores used, without a preponderance of studies with any one index related to either risk of type 2 diabetes or fasting blood glucose and insulin resistance, making it difficult to draw overarching conclusions related to a specific dietary pattern.
- The different scores showed varied predictability of incident type 2 diabetes:
  - In European populations, adherence to the MDS was associated with reduced incidence of type 2 diabetes. Additionally, among women in a U.S. cohort, the AHEI had similar relationships.
  - For other scores considered, such as the Total Diet Score, German Food Pyramid Index, DQI-2005, as well as the MDS in a U.S. population, there was no relationship between diet quality and incidence of type 2 diabetes.
  - One study assessing the DASH score in a U.S. population showed an association in Whites but not in Blacks. A second study showed no association between DQI-2005 and T2D incidence in Black or White young adults.
- The different scores showed varied association with glucose tolerance and/or insulin resistance:
  - For impaired fasting glucose or insulin resistance, there was some agreement with the MDS and MSDPS being protective for the measures examined.
  - There were mixed findings for Total Diet Score, DQI-2005, and an authors' *a priori* score. For the mixed results, the findings differed by sex, type of intermediate outcome examined, and race/ethnicity.

Limitations of the Evidence

For several of the studied indices, there was only one analysis, including for the Total Diet Score, German Food Pyramid Index, DQI-2005, AHEI, and DASH. Mediterranean-style scores were the only dietary pattern measures/indices used in more than one study. It was a challenge to compare results across the studies because some of the scores were not validated and used different diet assessment tools. Furthermore, the number of study participants and number of type 2 diabetes cases varied widely. Additionally, sample size was cited by authors who examined racial/ethnic subgroups as a potential limitation in their ability to detect significant associations related to incident T2D in the MESA, CARDIA, and IRAS cohorts.

Research Recommendations

Overall, there is a need for more coordinated studies involving multiple U.S. cohorts, all of which examine the same scores or indices assessed in a standardized way. In addition, more analysis of key subpopulation groups, with sufficient sample sizes, would further inform policy in this area.

Factor or Cluster Analysis: Are prevailing patterns of diet behavior in a population, *assessed using factor or cluster analysis,* related to risk of type 2 diabetes?

Conclusion Statement

Limited and inconsistent evidence from epidemiological studies indicates that in adults, dietary patterns derived using factor or cluster analysis, characterized by vegetables, fruits, and low-fat dairy products tend to have an association with decreased risk of type 2 diabetes and those patterns characterized by red meat, sugar-sweetened foods and drinks, French fries, refined grains, and high-fat dairy products tended to show an increased association for risk of type 2 diabetes. Among studies, there was substantial variation in food group components and not all studies with similar patterns showed significant association.

Grade

III– Limited

Key Findings

- Cluster and factor analyses are data-driven approaches that describe the dietary patterns consumed by the study population. High variability in the studies included in this review, including populations, case number, sample size, dietary assessment techniques, methods used to define and retain factors and clusters, confounders considered and the statistical analysis employed, made comparisons among studies challenging.
- Studies focused on intermediate outcomes were too few and too diverse in methodology to draw a conclusion.

Limitations of the Evidence

- Variation in methodology used to derive and analyze dietary patterns (e.g., factor versus cluster analysis, subjective decisions regarding groupings of foods, number of patterns retained and naming conventions, population characteristics, sample size, and case numbers) make the analysis challenging. Even factors with the same naming convention (e.g., “vegetable” or “prudent”) included somewhat different foods or groups of foods.
- Patterns derived from either factor or cluster analysis may not be reproducible because of variations in populations, sample sizes, dietary assessment methods, and decisions made to define food variables used in factor and cluster analysis, and factors and clusters differ across studies.
- Differences in the statistical analysis approaches used to derive and retain factors and clusters influences power and the ability to detect an association.
- Patterns derived from factor analysis and cluster analyses were analyzed differently. In factor analysis, “high” scores were generally compared with “low” scores of the same pattern, though it was not clear what characteristic differences there were in a “high” versus “low” score factor. In cluster analysis, one cluster was compared with another one, making it difficult to interpret results together.

- Dietary patterns with significant association should not be construed as the best or worst possible diet associated with diabetes risk.
- Most longitudinal studies included only baseline measure of dietary intake and did not account for changes in subject's diets, availability, and variations in the food supply, which may have influenced the food components of patterns. Food frequency questionnaires may not accurately capture important elements of the diet.

Research Recommendations

- Evaluate and standardize methods used to assess, organize, aggregate, and adjust food variables to facilitate interpretation of findings across studies.
- Additional research is needed to examine if and how gender, age, SES, and ethnicity might influence the relationship between dietary patterns and risk for T2D.
- Consider important confounders that may modify or explain the association between dietary intake and T2D, for example weight change.

Other Methods: What is the relationship between adherence to dietary guidelines/ recommendations or specific dietary patterns, *assessed using methods other than index/score, cluster or factor, or reduced rank regression analyses,* and risk of type 2 diabetes?

Conclusion Statement

There is insufficient evidence on a relationship between adherence to a Mediterranean-style or vegetarian diet pattern and incidence of type 2 diabetes. There is limited, inconsistent evidence that adherence to a Mediterranean-style, DASH or modified DASH, or Nordic dietary pattern results in improved glucose tolerance and insulin resistance.

Grade

IV-Not Assignable – Incidence of type 2 diabetes; III-Limited-Glucose tolerance and insulin resistance

Key Findings:

- Four types of dietary patterns were identified using other methods of assessing dietary exposure related to type 2 diabetes risk: (1) a Mediterranean-style pattern, (2) a DASH or modified DASH pattern, (3) a vegetarian pattern, and (4) a Nordic pattern.
- Overall, there were too few articles and the dietary patterns and study characteristics were too varied to compare across studies.
- A favorable association was found in a Mediterranean-style diet combined with olive oil and/or nuts, and in a vegetarian diet compared to a non-vegetarian diet with incidence of type 2 diabetes higher in Black versus non-Blacks.
- Five out of eight studies were conducted outside of the United States with only three out of eight articles reporting race/ethnicity and, of those, only one study reported results based on race/ethnicity.
- Limitations of the studies include:
    - All of the randomized controlled trials (RCTs) included different at-risk populations.

- Too few articles examined a relationship between dietary patterns and the endpoint outcome of incident type 2 diabetes to draw a conclusion, although the two patterns studied (one Mediterranean-style and one vegetarian) showed a favorable effect.
- Too few articles assessed the intermediate outcomes of impaired glucose tolerance and/or insulin resistance. The results related to impaired glucose tolerance and/or insulin resistance were too mixed to identify a consistent pattern.
- It is difficult to assess food components, as there were too few studies across several different patterns that were operationalized differently.

Limitations of the Evidence

It is difficult to synthesize the results from the studies in this review because there were too few studies and they examined different dietary patterns or patterns that were operationalized differently. The studies included a predominantly Caucasian population with varied baseline health status.

Research Recommendations

Overall, there is a need for additional research RCTs and observational studies conducted in the United States on risk of type 2 diabetes that address the key dietary patterns in a standardized way. In addition, more analysis of key subpopulation groups would further inform policy in this area.

Reduced Rank Regression: What is the relationship between adherence to dietary guidelines/recommendations or specific dietary patterns, *assessed using reduced rank regression analysis,* and risk of type 2 diabetes?

Conclusion Statement

There is insufficient evidence, due to a small number of studies, to examine the relationship between dietary patterns derived using reduced rank regression and risk of type 2 diabetes. The differences in the methods used and populations studied made it difficult to compare results, and therefore no conclusions were drawn.

Grade

IV – Not Assignable

Key Findings:

The three positive quality prospective cohort studies included in this review used reduced rank regression (see appendix A) analysis to examine the relationship between dietary patterns and the risk of type 2 diabetes (T2D). Comparison across studies was limited by the small number of studies, differences in methodology, and in the populations studied. Therefore, no conclusions were drawn.

Limitations of the Evidence

Methodological Differences:

- All of the studies used different types of biomarkers as response variables, such as PAI-1 and fibrinogen; HOMA-IR index; and BMI, fasting glucose, TG, HDL, and hypertension, making it difficult to make comparisons across these studies.

- The dietary patterns described in each of these studies were directly linked to the response variables selected; therefore, the variation in the response variables used suggest that the resulting dietary patterns may not be comparable.
- There were variations in dietary assessment methods used to assess dietary intake, as well as the food groupings used in the analyses across the studies. For example, Liese (2009) used a 114-item validated semi-quantitative FFQ, created 33 food groups on the basis of similarities in food and nutrient composition, and queried alcoholic beverages separately. McNaughton (2008) used a 127-item validated FFQ and the food and beverage items were aggregated into 71 groups on the basis of nutrient content, cooking, and preparation methods. Imamura (2009) used a 126-item validated semi-quantitative FFQ (FOS) and used food groupings from previous studies to each RRR-derived dietary pattern and applied to the FOS data to create three different sets of food groups used in their analyses. These methodological differences make it difficult to compare the resulting dietary patterns across studies and to determine how these differences may have contributed to differences in relationships between the patterns and type 2 diabetes risks.
- The studies were not consistent in their use of confounders in the analyses. For example, as compared to McNaughton (2008), alcohol intake was not included as a confounder in the analyses by Liese (2009), and alcohol, BMI, and smoking status were not included as confounders by Imamura (2009).

Population Differences:
Two of the studies were conducted in the United States and one in the United Kingdom and represented populations in different regions of the world, which limited the ability to compare and interpret the results due to potential differences in dietary patterns between these regions.

Research Recommendations

More research using reduced rank regression analyses should be conducted to investigate the relationship between dietary patterns and type 2 diabetes, particularly among U.S.-based populations, and including both intermediate outcomes (glucose intolerance, insulin resistance), as well as incidence of disease. Additionally, standardization in methodology, such as response variables and food groupings used, are also needed.

Appendix J: Conclusion Statement Summary Table

Systematic Review Question	Systematic Review Question	Outcome	Conclusion Statement	Grade	Research Design	
					RCT	Cohort
What is the relationship between adherence to dietary guidelines/ recommendations or specific dietary patterns, assessed using an index or score, and risk of cardiovascular disease?	Index/Score	Cardiovascular Disease	There is strong and consistent evidence that in healthy adults increased adherence to dietary patterns scoring high in fruits, vegetables, whole grains, nuts, legumes, unsaturated oils, low-fat dairy, poultry, and fish; low in red and processed meat, high-fat dairy, and sugar-sweetened foods and drinks; and moderate in alcohol is associated with decreased risk of fatal and non-fatal cardiovascular diseases, including coronary heart disease and stroke.	I	3	52
What is the relationship between adherence to dietary guidelines/ recommendations or specific dietary patterns, assessed using methods other than index/score, cluster or factor, or reduced rank regression analyses, and risk of cardiovascular disease?	Other Methods	Cardiovascular Disease	There is strong and consistent evidence that consumption of a DASH diet results in reduced blood pressure in adults with above optimal blood pressure, up to and including stage 1 hypertension. A dietary pattern consistent with the DASH diet is rich in fruits, vegetables, low-fat dairy, fish, whole grains, fiber, potassium, and other minerals at recommended levels, and low in red and processed meat, sugar-sweetened foods and drinks, saturated fat, cholesterol, and sodium. There is limited evidence that adherence to vegetarian diets is associated with decreased death from ischemic heart disease, with the association being stronger in men than in women.	I - DASH & Blood Pressure III – Vegetarian & Ischemic Heart Disease	8 trials (14 articles)	6

Systematic Review Question	Systematic Review Question	Outcome	Conclusion Statement	Grade	Research Design	
					RCT	Cohort
Are prevailing patterns of dietary intake in a population, assessed using cluster or factor analyses, related to the risk of cardiovascular disease (CVD)?	Factor/Cluster	Cardiovascular Disease	Limited evidence from epidemiological studies indicates that dietary patterns, assessed using cluster or factor analysis, characterized by vegetables, fruits, whole grains, fish, and low-fat dairy products are associated with decreased risk of cardiovascular disease in adults. Evidence of a relationship between dietary patterns characterized by red and processed meat, sugar-sweetened foods and drinks, and fried foods and an increased risk of cardiovascular disease is limited and less consistent. (Grade: III-Limited).	III	0	22
What combinations of food intake, assessed using reduced rank regression, explain the most variation in risk of cardiovascular disease?	Reduced Rank Regression	Cardiovascular Disease	Insufficient evidence, due to a small number of studies, was available to examine the relationship between dietary patterns derived using reduced rank regression and risk of cardiovascular disease. The disparate nature of the methods used made it difficult to compare results, and therefore, no conclusions were drawn.	IV	0	4
What is the relationship between adherence to dietary guidelines/ recommendations or specific dietary patterns, assessed using an index or score, and measures of body weight or obesity?	Index/Score	Body Weight/ Obesity	There is moderate evidence that, in adults, increased adherence to dietary patterns scoring high in fruits, vegetables, whole grains, legumes, unsaturated oils, and fish; low in total meat, saturated fat, cholesterol, sugar-sweetened foods and drinks, and sodium; and moderate in dairy products and alcohol is associated with more favorable outcomes related to body weight or risk of obesity, with some reports of variation based on gender, race, or body weight status.	II	2	12
What is the relationship between adherence to dietary guidelines/ recommendations or specific dietary patterns, assessed using methods other than index/score, cluster or factor, or reduced rank regression analyses, and body weight status?	Other Methods	Body Weight/ Obesity	There is moderate evidence that adherence to a dietary pattern that emphasizes vegetables, fruits, and whole grains is associated with modest benefits in preventing weight gain or promoting weight loss in adults.	II	4	3

Systematic Review Questions	Systematic Review Question	Outcome	Conclusion Statement	Grade	Research Design	
					RCT	Cohort
Are prevailing patterns of dietary intake in a population, assessed using cluster or factor analyses, related to the risk of obesity?	Factor/Cluster	Body Weight/ Obesity	Limited and inconsistent evidence from epidemiological studies examining dietary patterns derived using factor or cluster analysis in adults found that consumption of a dietary pattern characterized by vegetables, fruits, whole grains, and reduced-fat dairy products tends to be associated with more favorable body weight status over time than consumption of a dietary pattern characterized by red meat, processed meats, sugar-sweetened foods and drinks, and refined grains.	III		11
What combinations of food intake, assessed using reduced rank regression, explain the most variation in risk of obesity?	Reduced Rank Regression	Body Weight/ Obesity	There are a number of methodological differences among the studies examining the relationship between dietary patterns derived using reduced rank regression and body weight status. The disparate nature of these studies made it difficult to compare results, and therefore, no conclusions were drawn.	IV	0	6
What is the relationship between adherence to dietary guidelines/ recommendations or specific dietary patterns, assessed using an index or score, and risk of type 2 diabetes?	Index/Score	Type 2 Diabetes	There is limited evidence that adherence to a dietary pattern rich in fruits, vegetables, legumes, cereals/whole grains, nuts, fish, and unsaturated oils, and low in meat, and high fat dairy, assessed using an index or score, is associated with decreased risk of type 2 diabetes.	III	2	9
Are prevailing patterns of dietary intake in a population, derived using cluster or factor analysis, related to the risk of type 2 diabetes?	Factor/Cluster	Type 2 Diabetes	Limited and inconsistent evidence from epidemiological studies indicates that in adults, dietary patterns derived using factor or cluster analysis, characterized by vegetables, fruits, and low-fat dairy products tend to have an association with decreased risk of type 2 diabetes and those patterns characterized by red meat, sugar-sweetened foods and drinks, French fries, refined grains, and high-fat dairy products tended to show an increased association for risk of type 2 diabetes. Among studies, there was substantial variation in food group components and not all studies with similar patterns showed significant association.	III		15

Systematic Review Questions	Systematic Review Question	Outcome	Conclusion Statement	Grade	Research Design	
					RCT	Cohort
What is the relationship between adherence to dietary guidelines/ recommendations or specific dietary patterns, assessed using methods other than index/score, cluster or factor, or reduced rank regression analyses, and risk of type 2 diabetes?	Other Methods	Type 2 Diabetes	There is insufficient evidence on a relationship between adherence to a Mediterranean-style or vegetarian diet pattern and incidence of type 2 diabetes. There is limited, inconsistent evidence that adherence to a Mediterranean-style, DASH or modified DASH, or Nordic dietary pattern results in improved glucose tolerance and insulin resistance.	IV - T2D III - Gluocse tolerance and insulin resistance	6 trials (7 articles)	1
What combinations of food intake, assessed using reduced rank regression, explain the most variation in risk of type 2 diabetes?	Reduced Rank Regression	Type 2 Diabetes	There is insufficient evidence, due to a small number of studies, to examine the relationship between dietary patterns derived using reduced rank regression and risk of type 2 diabetes. The differences in the methods used and populations studied made it difficult to compare results, and therefore, no conclusions were drawn.	IV	0	3