



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)	<ul style="list-style-type: none"> • Dietary energy density • Fiber density • Percentage of energy intake from fat <p>Pattern 1 explained 45% of the variation in the response variables at all ages (seven years, 10 years and 13 years), and more than 80% of the variation in DP scores was explained by the top five and bottom five factor</p>	<p>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.</p>
Johnson 2008 (Positive Quality) Prospective cohort (ALSPAC; United Kingdom)	<ul style="list-style-type: none"> • Dietary energy density • Fiber density • Percentage of energy intake from fat <p>Pattern 1 explained 47% of the variation in the response variables at ages five years and seven years.</p>	<p>Pattern 1 at five years: (+) 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.</p> <p>Pattern 1 at seven years: (+) 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.</p>
Noh 2011 (Positive Quality) Prospective cohort (SUN; Korea)	<ul style="list-style-type: none"> • Change in BMI • Change in percentage body fat • Change in bone mineral content • Change in bone mineral density <p>Pattern 1 and Pattern 2 explained 14% of the variation in the response variables.</p>	<p>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.</p> <p>Pattern 2 (fruit, nut, milk, beverage, egg, grain pattern): 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.</p>
Schulz 2005 (Positive Quality) Prospective cohort (EPIC-Potsdam; Germany)	<ul style="list-style-type: none"> • Total fat • Total carbohydrate • Fiber <p>Pattern 1 explained 53% of the variation in the response variables.</p>	<p>Pattern 1: (+) Whole-grain bread, fresh fruit, fruit juices, grains (cereals), raw vegetables; (-) processed meat, butter, high-fat cheese, margarine, meat (other than poultry).</p>
Sherafat-Kazemzadeh 2010 (Positive Quality) Prospective cohort (Tehran Lipid and Glucose Study; Iran)	<ul style="list-style-type: none"> • Fat • Polyunsaturated to saturated fat ratio • Calcium • Cholesterol • Fiber <p>Pattern 1 explained 39%, Pattern 2 explained 19%, Pattern 3 explained 13%, Pattern 4 explained 9% and Pattern 5 explained 5% of total variation.</p>	<p>Pattern 1 (traditional pattern): High intake of sources of hydrogenated and saturated fat, egg, red and processed meat, refined carbohydrates, vegetables, and whole grain and starchy vegetables</p> <p>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.</p> <p>Pattern 3 (fiber and dairy pattern): High intake of fruits and vegetables, dairy and whole grain, and low intake of plant oil and egg.</p> <p>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.</p> <p>Pattern 5 (egg pattern): High intake of egg, fruit and salty snacks, and low intake of dairy, plant and saturated oil and red meat.</p>
Wosje 2010 (Positive Quality) Prospective cohort (United States)	<ul style="list-style-type: none"> • Fat mass • Bone mass <p>Pattern 1 explained 13% to 19% of variation in the response variables and Pattern 2 explained 11% to 18% of the variation.</p>	<p>Pattern 1: Whole grains, cheese, processed meats, eggs, fried potatoes, discretionary fats and artificially sweetened beverages.</p> <p>Pattern 2: Dark-green vegetables, deep-yellow vegetables, and processed meats.</p>

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