

**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		<ul style="list-style-type: none"> <li>• <b>"Pattern 1"</b> (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</li> </ul>	<ul style="list-style-type: none"> <li>• <b>"Pattern 2"</b> (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</li> </ul>
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	<ul style="list-style-type: none"> <li>• <b>"Healthy"</b> (fruit, vegetables, whole-meal bread, low-fat dairy, and little alcohol), HR = 0.74 (95% CI: 0.58, 0.94), p = 0.016</li> </ul>	<ul style="list-style-type: none"> <li>• <b>"Sweet"</b> (white bread, biscuits, cakes, processed meat, puddings, and high-fat dairy products), NS</li> <li>• <b>"Mediterranean-like"</b> (fruit, vegetables, rice, pasta, and wine), NS</li> </ul> <p><b>Comparator:</b></p> <ul style="list-style-type: none"> <li>• <b>"Unhealthy"</b> (white bread, processed meat, fries, and full-cream milk, red meat, and low intake of low-fat dairy products)</li> </ul>	

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

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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	<ul style="list-style-type: none"> <li>• <b>"Vegetable"</b> (dark-green, deep-yellow, and other vegetables; and with a relatively lower loading other fruits and citrus fruits, melons and berries). <b>Men</b>, 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</li> <li>• <b>"Fruit and milk"</b> (milk, yogurt, cheese, and other fruits and citrus fruits, melons and berries). <b>Men</b>, 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 <b>Women</b>, cases by quintile Q1 - Q5: 984; 862; 816; 725; 645 --All women: HR = 0.85 (0.76, 0.96), P for trend 0.05</li> </ul>	<ul style="list-style-type: none"> <li>• <b>"Vegetable"</b> (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 <b>Women</b>, cases by quintile Q1 - Q5: 665; 808; 816; 858; 885 NS all women and women of all ethnicities</li> <li>• <b>"Fruit and milk"</b> (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</li> <li>• <b>"Fat meat"</b> (discretionary fat, meat, eggs, cheese, white potatoes, and non-whole grains) NS for Native Hawaiian Men NS for Caucasian and Native Hawaiian women</li> </ul>	<ul style="list-style-type: none"> <li>• <b>"Fat meat"</b> (discretionary fat, meat, eggs, cheese, white potatoes, and non-whole grains) <b>Men</b>, cases by quintile Q1 - Q5: 773; 812; 912; 958; 1,100 --All men: HR = 1.4 (1.23-1.60), P for trend &lt; 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 &lt; 0.0002</li> <li><b>Women</b>, 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</li> </ul>
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		<ul style="list-style-type: none"> <li>• <b>"Prudent"</b> (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</li> </ul>	<ul style="list-style-type: none"> <li>• <b>"Western"</b> (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 &lt; 0.001</li> </ul>

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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		<ul style="list-style-type: none"> <li>• <b>Factor 1</b> (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</li> <li>• <b>Factor 2</b> (salad and cooked vegetables), OR = 0.83 (0.56, 1.23), P for trend 0.19, NS</li> <li>• <b>Factor 3</b> (meats, savory pastries, fried eggs, fried fish, and fried potatoes), OR = 1.65 (1.03, 2.63), P for trend 0.24, NS</li> <li>• <b>Factor 4</b> (fruits), OR = 1.18 (0.81, 1.71), P for trend 0.85, NS</li> </ul>	
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		<ul style="list-style-type: none"> <li>• <b>"Prudent"</b> (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</li> <li>• <b>"Western"</b> (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</li> </ul>	

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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	• <b>"Prudent"</b> (vegetables, and fruits), RR = 0.72 (0.53, 0.97), P for trend 0.03		• <b>"Conservative"</b> (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 <b>"healthy"</b> factor was identified, and characterized by more frequent consumption of vegetables, potatoes, seaweeds, fruits and soybean products, HR = 0.78 (0.61, 0.95), P for trend 0.008  Results were similar when stratified by sex		

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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		<ul style="list-style-type: none"> <li>• <b>"Prudent"</b> (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</li> <li>• <b>"Westernized"</b> (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</li> <li>• <b>"Traditional Japanese"</b> (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</li> </ul>	
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	• <b>"Whole grains and fruit"</b> (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	<ul style="list-style-type: none"> <li>• <b>"Fats and processed meat"</b> (added fats, processed meat, fried potatoes, and desserts), NS</li> <li>• <b>"Vegetables and fish"</b> (several vegetable groups, fish, soup, Chinese foods, red meat, poultry, and soy), NS</li> </ul> <p>There were no significant associations between T2D race/ethnic specific dietary patterns</p>	• <b>"Beans, tomatoes and refined grains"</b> (beans, tomatoes, refined grains, high-fat dairy foods, avocado, and red meat), HR = 1.28 (0.88, 1.84), P for trend 0.003

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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		<ul style="list-style-type: none"> <li>• <b>"Prudent"</b> (vegetables, fruit, legumes, fish, poultry, and whole grains), RR = 0.84 (0.70, 1.00), P for trend 0.2, NS</li> </ul>	<ul style="list-style-type: none"> <li>• <b>"Western"</b> (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 &lt; 0.001</li> </ul>
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	<ul style="list-style-type: none"> <li>• <b>"More vegetables, fruit and fish"</b> (fish, seafood, fruit, other vegetables, dark green, and leafy vegetables), OR = 0.76 (0.58, 0.99)</li> </ul>	<ul style="list-style-type: none"> <li>• <b>"More snacks and drinks"</b> (chinese dim sum, tea, and soup), NS</li> <li>• <b>"More refined grains"</b> (sweets and desserts), NS</li> </ul>	<ul style="list-style-type: none"> <li>• <b>"More meat and milk products"</b> (red meat and milk), OR = 1.39 (1.04, 1.84)</li> </ul>