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

Incidence of 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
Abiemo et al, 2012 Neutral Prospective cohort	N=5,390 U.S. 6.6 years FFQ (127 items)	Range: 45 years to 84 years 54% Women Multi-Ethnic Study of Atherosclerosis (MESA) Whites, Blacks, Hispanic, Chinese	MedDiet Score Total Score: 0 to 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 to 1.49; P_{trend}=0.51, NS) • *Men:* HR=1.11 (95% CI: 0.70 to 1.76; P_{trend}=0.69, NS) • *Women:* HR=1.12 (95% CI: 0.74 to 1.71; P_{trend}=0.55, NS)
Fung et al, 2007 Positive Prospective cohort	N=80,029 U.S. 18 years FFQ (116 items)	Range: 30 years to 55 years Women Nurses' Health Study (NHS)	AHEI Total score: 2.5 to 87.5	T2D incidence 5,183 incident cases of T2D (6.5%)	T2D, Comparing the Highest With the Lowest Quintile of AHEI Score: • *Model 1:* RR=0.64 (95% CI: 0.58 to 0.71; P_{trend}<0.0001) • *Model 2 (+WHR):* RR=0.76 (95% CI: 0.66 to 0.88; P_{trend}<0.0001) • *Among symptomatic individuals:* Model 1 has RR=0.56 (95% CI: 0.49 to 0.64; P_{trend}<0.0001) • *For change in AHEI over follow-up:* Model 1 change from low to high AHEI in the last four years has RR=0.78 (95% CI: 0.66 to 0.92, P=0.003)
Gopinath et al, 2013 Positive Prospective cohort	N=1,821 Australia 10 years FFQ (145 items)	Mean: Approximately 63 years 42% Women (T2D) 58% Women (IFG) Blue Mountain Eye Study (BMES)	Total Diet Score Total score: Zero to 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 to 1.58; P_{trend}=0.99, NS)
Liese et al, 2009 Positive Prospective cohort	N=822 U.S. Five years FFQ (114 items)	Range: 40 years to 69 years 50% Women with insulin resistance Atherosclerosis Study (IRAS)	DASH score Total score: Zero to 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 to 1.13; P_{trend}=0.29, NS) • *Whites:* OR=0.25 (95% CI: 0.09 to 0.67; P_{trend}=0.02) • *Blacks/Hispanics:* OR=0.96 (95% CI: 0.46 to 1.97; P_{trend}=0.95, NS)

Source: Nutrition Evidence Library. *A series of systematic reviews on the relationship between dietary patterns and health outcomes.* Alexandria, VA: U.S. Department of Agriculture, Center for Nutrition Policy and Promotion, March 2014.

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
Martínez-González et al, 2008 Positive Prospective Cohort	N=13,380 Spain 4.4 years FFQ (136 items)	Mean age: Approximately 38 years 60% Women Seguimiento Universidad de Navarra (SUN)	Mediterranean Diet Score (MDS) Total score: Zero to nine	T2D incidence 33 incident cases of T2D (0.25%)	T2D, Comparing Highest to Lowest MDS (High, Medium, Low): RR=0.17 (95% CI: 0.04 to 0.72; P_{trend}=0.04) T2D, per 2 point increase in MDS: Rate Ratio=0.65 (95% CI = 0.44 - 0.95; P_{trend}=0.04)
Rossi et al, 2013 Neutral Prospective cohort	N=22,295 Greece 11.3 years FFQ (150 items)	Median age: 50 years 59% Women EPIC-Greece	Mediterranean Diet Score (MDS) Total score: Zero to nine	T2D incidence 2,330 incident cases of T2D (10%)	T2D, Comparing Highest to Lowest MDS: HR=0.88 (95% CI: 0.78 to 0.99; P=0.021)
von Ruesten et al, 2010 Positive Prospective cohort	N=23,531 Germany 7.8 years FFQ (148 items)	Mean age by GFPI: *Female:* 46.5±8.8 years to 49.7±9.6 years *Male:* 50.1±7.6 years to 53.2±8.3 years 61% Women EPIC-Potsdam	German Food Pyramid Index (GFPI) Total score: Zero to 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 to 1.01; P_{trend}=0.03) (Model 1); HR=0.94 (95% CI: 0.69 to 1.30; P_{trend}=0.63, NS) (Model 2) (+BMI) • *Women:* HR=0.72 (95% CI: 0.51 to 1.00; P_{trend}=0.06, NS) (Model 1); HR=1.09 (95% CI: 0.77 to 1.54; P_{trend}=0.57, NS) (Model 2) (+BMI)
Zamora et al, 2011 Positive Prospective cohort	N=4,381 U.S. 20 years FFQ (CARDIA)	Range: 18 years to 30 years Blacks: 58% Women Whites: 53% Women Coronary Artery Risk Development in Young Adults (CARDIA)	DQI-2005 Total score: Zero to 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 to 1.56, NS) (Model 1); HR=1.16 (95% CI: 0.79 to 1.71, NS) (Model 2) (+BMI) • *Blacks:* HR=1.10 (95% CI: 0.65 to 1.86, NS) (Model 1); HR=0.96 (95% CI: 0.57 to 1.62, NS) (Model 2) (+BMI) • *Whites:* HR=0.78 (95% CI: 0.44 to 1.37, NS) (Model 1); HR=1.14 (95% CI: 0.65 to 2.00, NS) (Model 2) (+BMI)

Source: Nutrition Evidence Library. *A series of systematic reviews on the relationship between dietary patterns and health outcomes.* Alexandria, VA: U.S. Department of Agriculture, Center for Nutrition Policy and Promotion, March 2014.

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

Impaired Fasting Glucose and/or Insulin Resistance

Author, Year Study Design	Sample Size, Location, Duration, Dietary Assessment	Population Age / Gender Cohort	Exposure Index / Score	Outcomes Measured Cases	Health Outcome
Estruch et al, 2006 Positive RCT	Initial N: 772 Final N: 769 Spain Three months FFQ (137 items)	Range: 55 years to 80 years High CVD risk Female: 60%, 50%, 58%, Med + OO, Med + nuts, and control, respectively 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:* -0.39mmol per L (95% CI: -0.72 to -0.07, P=0.017) • *Med + nuts vs. control, mean change:* -0.30mmol per L (95% CI: -0.58 to -0.01, P=0.039) Fasting Insulin: • *Med + OO vs. control, mean change:* -16.7pmol per L (95% CI: -27.1 to -0.4, P=0.001) • *Med + nuts vs. control, mean change:* -20.4pmol per 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)
Gopinath et al, 2013 Positive Prospective cohort	N=1,630 Australia 10 years FFQ (145 items)	Mean: Approximately 63 years 42% Women (T2D) 58% Women (IFG) Blue Mountain Eye Study (BMES)	Total Diet Score Total score: Zero to 20	Fasting glucose 91 incident cases of IFG (5.6%)	Fasting Glucose, Comparing the Highest With the Lowest Tertile of TDS: • *Men:* OR=0.25 (95% CI: 0.08 to 0.73; P_{trend}=0.004) • *Women:* OR=1.74 (95% CI: 0.75 to 4.00; P_{trend}=0.24, NS)

Source: Nutrition Evidence Library. *A series of systematic reviews on the relationship between dietary patterns and health outcomes.* Alexandria, VA: U.S. Department of Agriculture, Center for Nutrition Policy and Promotion, March 2014.

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
Jacobs et al, 2009 Positive RCT	Initial N: 219 Final N: 187 Norway One year FFQ (180 items)	Mean age: 45±2 years Met criteria for metabolic syndrome Men Oslo Diet and Exercise Study (ODES)	Author derived *a priori* score Total score: Zero to 62	Fasting glucose and insulin	Fasting Glucose, Per 10-point Increase in *a priori* Diet Score: • *Mean change:* -0.17±0.06mmol per L; P=0.01 (Model 1) • *Mean change:* -0.12±0.06mmol per L; P=0.06, NS (Model 2) (+ percent body fat) Fasting Insulin, Per 10 point Increase in *a priori* Diet Score: • *Mean change:* -20.1±6.69pmol per L; P=0.003 (Model 1) • *Mean change:* -22.5±6.87pmol per L; P=0.002 (Model 2) (+ percent body fat) Insulin After Glucose Challenge: • *Mean change:* -125.1±54.94pmol per L; P=0.02 (Model 1) • *Mean change:* -120.3±56.77pmol per L; P=0.04 (Model 2) (+ percent body fat)
Rumawas et al, 2009 Positive Prospective cohort	N=2,730 U.S. Seven years FFQ (Harvard)	Range: 43 years to 70 years 43% to 70% Women across quintiles Framingham Offspring and Spouse (FOS)	Mediterranean-style dietary pattern score (MSDPS) Total score: Zero to 100	Fasting blood glucose and HOMA-IR	Fasting glucose for Quintile 5 of MSDPS: Mean=97.1mg per dL (95% CI: 96.3 to 98.0; P_{trend}=0.03, compared to Quintile 1) HOMA-IR for Quintile 5 of MSDPS: Mean=3.16 (95% CI: 3.03 to 3.30; P_{trend}=0.02, compared to Quintile 1)
Zamora et al, 2011 Positive Prospective cohort	N=4,381 U.S. 20 years FFQ (CARDIA)	Range: 18 years to 30 years Blacks: 58% Women Whites: 53% Women Coronary Artery Risk Development in Young Adults (CARDIA)	DQI-2005 Total score: Zero to 100	HOMA-IR	HOMA-IR, Comparing Highest to Lowest Quartiles of DQI *Blacks:* • *Quartile 4:* Mean=1.20 (95% CI: 0.77 to 1.66; P_{trend}=0.01, compared to Quartile 1) *Whites:* • *Quartile 4:* Mean=0.48 (95% CI: 0.29 to 0.69; P_{trend}=0.08, compared to Quartile 1)

Source: Nutrition Evidence Library. *A series of systematic reviews on the relationship between dietary patterns and health outcomes.* Alexandria, VA: U.S. Department of Agriculture, Center for Nutrition Policy and Promotion, March 2014.