

NUMBER AND TITLE OF EACH ONLINE ITEM

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Figure S1. Joint associations of dietary patterns and body mass index (BMI) with risk of type 2 diabetes. Whiskers indicate 95%CI. Bars show HRs from Cox PH regression analyses comparing other categories to quintile 1—normal weight of each diet as reference. All analyses were adjusted for age, hypertension, type 2 diabetes family history, hormone use, physical activity, education, race, pack-years of smoking, high cholesterol, WHI study arms, nonsteroidal anti-inflammatory drug use, statin use, nutritional supplement use, and BMI (continuous). The GL (total carbohydrates) was additionally adjusted for total fat, total protein, dietary fiber.

Figure S2. Type 2 diabetes incidence rate per 100,000 person-years by BMI categories (A=EDIH, Empirical Dietary Index for hyperinsulinemia; B=EDIP, Empirical Dietary Inflammatory Pattern; C=GI, Glycemic Index; D=GL, Glycemic Load). AA: African American; EA: European American; HP: Hispanic American; OA: Other American. Each dietary score was adjusted for total energy intake, baseline age, hypertension, type 2 diabetes family history, hormone use, physical activity, education, race, pack-years of smoking, high cholesterol, WHI study arms, nonsteroidal anti-inflammatory drug use, statin use, and nutritional supplement use, and BMI (continuous). The GL (calculated using total carbohydrates) was additionally adjusted for total fat, total protein, dietary fiber.

Table S14. Hazard ratios (95% CI) for the associations of dietary patterns with risk of developing type 2 diabetes in subgroups defined by race/ethnicity

Online text. APPENDIX – Long List of Women's Health Initiative Investigators

Table S1. Distribution of baseline characteristics and dietary intakes in the final analytic sample and among excluded participants^{*,†}

Characteristic	Excluded Sample (N= 88,313)	Included Sample (N=73,495)	P-value
Race/ethnicity			
African American	10022(11.4)	4596(6.3)	
American Indian or Alaskan Native	461(0.5)	252(0.3)	
Hispanic	3890(4.4)	2594(3.5)	<.0001
Asian or Pacific Islander	2031(2.3)	2159(2.9)	
European American	70678(80.0)	62863(85.5)	
Other	1231(1.4)	1031(1.4)	
Age, years	63.4(63.3,63.4)	63.1(63.0,63.1)	<.0001
BMI, kg/m²			
Under/Normal weight (15≤BMI < 25)	29393(33.3)	31558(42.9)	<.0001
Overweight (25≤BMI < 30)	30010(34.0)	25082(34.1)	<.0001
Obese (BMI ≥30)	28910(32.7)	16855(22.9)	
Physical activity, MET-hours/week	11.2(11.1,11.3)	14.0(13.9,14.1)	<.0001
Pack Years of Smoking			
Current Smoking	6080(6.9)	5062(6.9)	0.77
Aspirin/NSAIDs use	11794(13.4)	9849(13.4)	0.79
Statin Use	2155(2.4)	1570(2.1)	<.0001
Hypercholesterolemia	14383(16.3)	8914(12.1)	<.0001
Educational level			
Less than high school	5135(5.9)	3509(5.2)	
High school/GED	49860(56.9)	38673(52.9)	<.0001
≥4 years of college	32690(37.3)	30725(42.0)	
Total Alcohol Intake, alcohol Servings/week	1.8(1.77,1.83)	1.8(1.76,1.81)	0.49
Food intake, servings/day			
Red meat	3.9(3.9,3.9)	3.1(3.1,3.2)	<.0001
Processed meat	2.1(2.1,2.1)	1.6(1.6,1.6)	<.0001
Sugar-sweetened beverages	1.2(1.2,1.2)	1.1(1.1,1.2)	0.0006
Tomatoes	3.6(3.6,3.6)	3.8(3.7,3.8)	<.0001
Refined grains	13.1(13.1,13.2)	12.8(12.7,12.8)	<.0001
Wholegrains	9.5(9.4,9.5)	9.6(9.5,9.6)	0.0004
Wine	1.13(1.1,1.1)	1.6(1.5,1.6)	<.0001
Fruit juice	4.0(3.9,4.0)	4.3(4.2,4.3)	<.0001
Yellow vegetables	5.1(5.1,5.1)	5.5(5.4,5.5)	<.0001
Green-leafy vegetables	5.8(5.8,5.9)	6.2(6.2,6.2)	<.0001
Coffee or tea	14.8(14.7,14.9)	15.1(15.0,15.2)	<.0001
Pizza	0.4(0.4,0.4)	0.3(0.3,0.4)	<.0001
Nutrient Intake			
Total fiber, g/d	15.5(15.4,15.5)	16.4(16.3,16.4)	<.0001
Total carbohydrate, g/d	199(198,200)	203(202,204)	<.0001
Total protein, g/d	69.3(69.1,69.6)	65.9(65.7,66.1)	<.0001
Branched-chain amino acids (BCAA), g/d	12.3(12.3,12.4)	11.7(11.7,11.8)	<.0001
Total fat, g/d	66.1(65.8,66.4)	54(53.8,54.2)	<.0001
Saturated fat, g/d	22.2(22.1,22.3)	18.1(18.0,18.2)	<.0001
Total cholesterol, g/d	235(234,236)	199(198,200)	<.0001
Dietary calcium, mg/d	805(801,808)	829(826,832)	<.0001
Lycopene, mcg/d	4799(4777,4821)	5015(4991,5038)	<.0001

*Whole grain is calculated by taking the sum of dark bread, corn tortilla, popcorn, cooked cereal, corn/ hominy.

†Data presented are frequencies (percentages)

Table S2. Baseline characteristics and intake distribution of the final analytic sample compared with the entire WHI cohort^{*,†}

Characteristic	Whole WHI cohort (N=161,808)	Included Sample (N=73,495)
Race/ethnicity		
African American	14618(9.03)	4596(6.25)
American Indian or Alaskan Native	713(0.44)	252(0.34)
Hispanic	6484(4.01)	2594(3.53)
Asian or Pacific Islander	4190(2.59)	2159(2.94)
European American	133541(82.53)	62863(85.53)
Other	2262(1.4)	1031(1.4)
Age, years	63.2±7.2	63.1±7.3
BMI, kg/m ²	27.4±6.5	26.8±5.4
Under/Normal weight (15≤BMI < 25)	60951(37.67)	31558(42.94)
Overweight (25≤BMI < 30)	55092(34.05)	25082(34.13)
Obese (BMI ≥30)	45765(28.28)	16855(22.93)
Physical activity, MET-hours/week	12.4±13.5	14.0±14.5
Pack Years of Smoking	10±18.3	9.7±17.7
Current Smoking	11142(6.89)	5062(6.98)
Aspirin/NSAIDs use	21643(13.38)	9849(13.4)
Statin Use	3725(2.3)	1570(2.14)
Hypercholesterolemia	23297(14.4)	8914(12.13)
Educational level		
Less than high school	8644(5.53)	3509(5.15)
High school/GED	88533(55.06)	38673(52.9)
≥4 years of college	63415(39.41)	30725(41.95)
Total Alcohol Intake, alcohol Servings/week	1.8±3.9	2.7±5.3
Food intake, servings/day		
Red meat	3.6±3.4	3.1±3.0
Processed meat	1.9±2.3	1.6±2.0
Sugar-sweetened beverages	1.2±3.6	1.1±3.6
Tomatoes	3.7±3.5	3.8±3.5
Refined grains	13.0±8.4	12.8±7.7
Wholegrains	9.5±5.5	9.6±5.5
Wine	1.3±3.3	1.6±3.6
Fruit juice	4.1±4.4	4.3±4.5
Yellow vegetables	5.3±4.3	5.5±4.4
Green-leafy vegetables	6.0±5.0	6.2±5.1
Coffee or tea	14.9±12.5	15.1±12.4
Pizza	0.4±0.5	0.3±0.5
Nutrient Intake		
Total fiber, g/d	15.9±7.2	16.4±7.0
Total carbohydrate, g/d	200±86.6	203±77.9
Total protein, g/d	67.8±31.7	65.9±27.2
Branched-chain amino acids (BCAA), g/d	12.1±5.8	11.7±5.0
Total fat, g/d	60.6±35.7	54.0±29.6
Saturated fat, g/d	20.3±12.8	18.1±10.7
Total cholesterol, g/d	219±141	199±121
Dietary calcium, mg/d	816±468	829±454
Lycopene, mcg/d	4897±3328	5015±3305

* Whole grain is calculated by taking the sum of dark bread, corn tortilla, popcorn, cooked cereal, corn/ hominy.

† Data presented are frequencies (percentages).

Table S3. Food group components of the empirical dietary index for hyperinsulinemia (EDIH) score in the Women's Health Initiative.*

EDIH food group components	Weight per serving	Food items
Positive components		
Processed meat	0.199	Processed meats (lunch meat other lunch meat), bacon, hot dog
Red meat	0.250	Beef, pork and lamb as a main dish, ground meat incl hamburgers, Beef, pork, and lamb as a sandwich, stew, pot pie and casseroles with meat, gravies made with meat drippings, Menudo and tortilla soup
High-energy sugary beverages	0.104	Regular soft drinks (not diet)
Margarine	0.054	Margarine
Butter	0.094	Butter
French fries	0.581	French fries
Non-dark fish	0.172	Tuna, shrimp, lobster, scallops, seafood other than dark fish
Eggs	0.124	Egg
Low-fat dairy	0.025	Low-fat milk, sherbet or ice milk, yogurt, low-fat desserts
Cream soup	0.787	Chowder or cream soup
Tomatoes	0.095	Fresh tomato & tomato juice, tomato sauce
Poultry	0.183	Chicken & turkey, fried chicken, Chicken or turkey with or without skin
Inverse components		
Green leafy vegetables	-0.055	Spinach & mustard greens& turnip greens& collards, iceberg or head lettuce, romaine or leaf lettuce
Wine	-0.165	Red, white wine
Coffee	-0.035	Coffee (regular or decaffeinated)
High-fat dairy	-0.046	Whole milk, cream, sour cream, ice cream, cream cheese, other cheese
Whole fruit	-0.029	Raisins, grapes, avocado, banana, cantaloupe, watermelon, orange, apple, pear, grapefruit, strawberries, blueberries, peaches, apricots, plums

*The EDIH component foods (servings/d) in the WHI were: Red meat (ground meat including hamburgers, beef, pork and lamb as a main dish, or as a sandwich; stew, pot pie and casseroles with meat; gravies made with meat drippings); high-energy sugary beverages, (all regular - not diet - soft drinks); low-energy sugary beverages (the WHI FFQ did not assess low-energy beverages separately from other sugar-sweetened beverages); cream soup (such as chowders, potato, tomato, cheese, ajiaco); processed meat (hot dogs, chorizo; other sausage, bacon, breakfast sausage, scrapple; lunch meat such as ham, turkey; other lunch meat such as bologna); butter, margarine (butter, margarine or oil, on bread or tortillas; margarine or butter added to cooked cereal or grits; butter, margarine, sour cream, oils, or other fat added to vegetables, beans, rice, and potatoes, after cooking); poultry (poultry); French fries (French fries, fried potatoes, fried rice, fried cassava and fritters); non-dark or non-oily fish (fried fish, shrimp, lobster, crab and oysters, canned tuna, tuna salad, and tuna casserole, white fish such as sole, snapper, cod); tomatoes (fresh tomato, tomato juice, tomato sauce, cooked tomato, salsa and salsa picante); low-fat dairy (part-skim or reduced fat cheeses, such as Mexican-type cheeses or mozzarella. Include cheese added to foods and in cooking; low-fat cottage cheese; low-fat or no-fat frozen desserts, such as frozen yogurt, sherbet, ice milk, and low-fat milkshakes; non-fat yogurt (not frozen); all other yogurt (not frozen); low-fat milk; Milk, cream, or creamer in coffee or tea); eggs (eggs); wine (red wine, white wine); coffee or tea (all types); fruits (all types); high-fat dairy (whole milk, evaporated/condense milk, ice cream, cottage cheese and ricotta cheese, other cheese); green leafy vegetables (cooked greens such as spinach, mustard greens, turnip greens, collards; lettuce and plain lettuce salad; mixed lettuce or spinach salad with vegetables)

Table S4. Food group components of the empirical dietary inflammatory pattern (EDIP) score in the Women’s Health Initiative.*

EDIP food group components	Weight per serving	Food items
Positive components		
Processed meat	157.121	Hot dogs, processed meats (including processed meat sandwich), bacon
Red meat	135.786	Hamburger, beef /pork /lamb sandwich, beef /pork/ lamb main dish
Organ meat	45.528	Livers
Other fish	243.829	Canned tuna, shrimp, breaded fish, lobster, scallops or other seafood
Other vegetables	136.891	Corn, mixed vegetables, eggplant, celery, alfalfa sprouts, mushrooms, green/yellow/red peppers, zucchini, cucumbers
Refined grain	87.025	White bread, white rice, bagels/English muffins/rolls, muffins or biscuits, pasta, pancakes or waffles, refined cold breakfast cereals
High energy beverage	154.800	Cola, Hawaiian punch, caffeine-free coke, pepsi, carbonated beverage with caffeine and sugar, other carbonated beverage with sugar
Tomato	160.659	Fresh tomatoes, tomato juice, tomato sauce
Inverse components		
Beer	-135.240	Beer, light beer
Wine	-248.815	White wine, red wine
Tea	-128.297	Tea, tea (not herbal)
Coffee	-128.297	Coffee, decaffeinated coffee
Dark yellow vegetable	-166.196	Carrots, sweet potatoes, winter squash
Green leafy vegetable	-188.935	Spinach, iceberg lettuce, romaine lettuce
Snack	-43.825	Potato/corn chips, popcorn, crackers
Fruit juice	-60.660	Apple juice, orange juice, grape juice, prune juice, other juice
Pizza	-1169.052	Pizza

*The EDIP component foods (servings/d) in the WHI were: processed meat (hot dogs, chorizo, other sausage, bacon, breakfast sausage, scrapple; lunch meat such as ham, turkey; other lunch meat such as bologna); red meat (ground meat including hamburgers, beef, pork, and lamb as a main dish or as a sandwich; stew, pot pie, and casseroles with meat; gravies made with meat drippings); organ meat (liver, including chicken liver; other organ meats); fish other than dark-meat fish (fried fish, shrimp, lobster, crab and oysters, canned tuna, tuna salad, and tuna casserole, white fish such as sole, snapper, cod); other vegetables (i.e., vegetables other than green leafy vegetables and dark yellow vegetables: red peppers and red chilies, green peppers, green chilies, jalapenos, and green chili salsa, corn, and hominy); refined grains (total grain variable minus whole grain variable, both WHI-computed food groups); high-energy beverages [all regular (not diet) soft drinks]; low-energy beverages (the WHI FFQ did not assess low-energy beverages); tomatoes (fresh tomato, tomato juice, tomato sauce, cooked tomato, salsa and salsa picante); beer (all types); wine (red wine, white wine); coffee or tea (all types); dark-yellow vegetables (carrots, including mixed dishes with carrots; summer squash, zucchini, nopales, and okra; winter squash, such as acorn, butternut, and pumpkin; sweet potatoes and yams; other potatoes, cassava, and yucca—boiled, baked, or mashed); green leafy vegetables (cooked greens such as spinach, mustard greens, turnip greens, collards; lettuce and plain lettuce salad; mixed lettuce or spinach salad with vegetables); pizza (low-fat pizza; other pizza); fruit juice (orange juice and grapefruit juice; other fruit juices such as apple and grape); snacks (snacks such as potato chips, corn chips, tortilla chips, Ritz and cheese crackers; saltines, Snackwell’s, fat-free tortilla chips and fat-free potato chips; popcorn).

Table S5. Description of covariates used in the current study

Covariates	Variable Description
Total energy intake	Dietary energy intake (kcal/day)
Education	1 Didn't go to school; 2 Grade school (1-4 years);3 Grade school (5-8 years);4 Some high school (9-11 years)/High school diploma or GED; 5 Vocational or training school /Some college or Associate Degree; 6 College graduate or Baccalaureate Degree /Some post-graduate or professional; 7 Master's Degree/Doctoral Degree (Ph.D, M.D.,J.D.,etc.); Missing values were imputed by the income variable.
Race/Ethnicity	1 American Indian or Alaskan Native; 2 Asian or Pacific Islander; 3 Black or African American; 4 Hispanic/Latino; 5 White (not of Hispanic origin);8 Other
Pack-years of smoking	Continuous variable
Hypercholesterolemia	High cholesterol requiring pills ever: no=1, yes=1
Hormone Replacement Therapy (HT) study arm	HT study arm to which the participant was randomized: 0 Not randomized to HRT;1 Estrogen-alone intervention; 2 Estrogen-alone control;3 Estrogen + Progestin intervention;4 Estrogen+Progestin control
NSAID	Baseline nonsteroidal anti-inflammatory agents use: no=1, yes=1
Statin	Baseline statin use: no=1, yes=1
Supplement	Number of supplements taken. The variable was created from a sum of the following 23 supplements variables (yes=1/no=0): vitamin A, alpha-tocopherol, vitamin B1, vitamin B12, vitamin B2, vitamin B6, beta-carotene, biotin, vitamin C, calcium, chromium, copper, vitamin D, folic acid, iron, magnesium, manganese, molybdenum, niacin, pantothenic acid, retinol, selenium, and zinc
Age, years	Age at screening
Hypertension	Hypertension ever. Did a doctor ever say that you had hypertension or high blood pressure? (Do not include high blood pressure that you had only when you were pregnant): no=1, yes=1
Family history of diabetes	Family history of diabetes: no=1, yes=1
Hormone use	Number of hormones used. The variable was created from a sum of the following 8 WHI variables: Oral contraceptive use ever, diethylstilbestrol use ever, depo-provera use ever, unopposed estrogen use ever, Estrogen + progesterone use ever, Testosterone or other male hormone use, Estratest use, oral daily use of a glucocorticosteroid
Physical activity	Total energy expended from recreational physical activity (MET-hours/week)
Total fiber	Dietary fiber (g/day)
Total fat	Dietary total fat (g/day)
Total protein	Dietary protein (g/day)
Body mass index (BMI)	Continuous, kg/m ²
BMI (categorical)	Four level categorical variable (kg/m ²):1 underweight to normal (15 to <18.5);2 normal weight (18.5 to <25);3 overweight (25 to <30);4 obese (30 to 50)

Table S6. Distribution of food and nutrient intakes across dietary index quintiles

	EDIH* [†]			EDIP* [‡]			GI*			GL*		
	Q1	Q3	Q5	Q1	Q3	Q5	Q1	Q3	Q5	Q1	Q3	Q5
Food/food groups, medium servings/week (means ± standard deviations)												
Red meat	2.0±2.0	2.7±2.3	5.5±4.1	2.8±2.7	2.9±2.6	4.1±2.9	2.7±2.8	3.2±3.0	3.4±3.1	5.1±4.1	2.7±2.4	2.2±2.3
Processed meat	1.0±1.4	1.4±1.6	2.9±2.9	1.3±1.7	1.5±1.7	2.3±2.8	1.3±1.9	1.6±2.0	1.9±2.2	2.5±2.8	1.4±1.7	1.3±1.7
Sugar-sweetened beverages	0.4±1.4	0.6±1.7	3.4±6.9	0.4±1.4	0.6±1.9	3.2±6.8	0.3±1.0	0.8±2.2	3.0±6.6	0.6±1.6	0.7±1.9	2.8±6.9
Tomatoes	4.2±3.7	3.5±3.2	3.9±4.2	4.1±3.5	3.5±3.1	4.1±4.5	4.3±3.9	3.9±3.6	2.9±3.1	3.8±3.6	3.5±3.2	4.3±4.2
Refined grains	14.9±9.0	12.0±6.9	12.4±7.8	11.6±6.9	12.1±6.9	15.7±9.6	8.9±5.9	13.1±7.3	15.8±9.0	10.4±6.7	11.7±6.5	17.7±9.4
Wholegrains	10.7±6.5	9.2±5.2	9.1±5.1	10.1±5.8	9.5±5.3	9.3±5.7	8.6±5.1	10.0±5.7	9.4±5.7	8.3±4.8	9.1±4.9	12.0±6.8
Wine	4.1±6.5	1.0±1.9	0.5±1.2	4.1±6.6	1.0±1.8	0.3±0.9	2.6±5.4	1.5±3.1	0.7±2.0	3.3±6.3	1.2±2.4	0.7±1.7
Fruit juice	5.1±5.3	4.2±4.3	3.6±4.1	4.6±5.1	4.4 ± 4.4	3.7±4.1	4.3±4.9	4.6±4.6	3.4±3.8	3.3±3.7	4.1±4.0	5.7±5.9
Yellow vegetables	7.0±5.5	5.2±3.8	4.7±4.0	7.7±6.0	5.3 ± 3.7	3.8±3.1	6.0±4.8	5.8±4.4	4.5±3.8	4.7±3.9	5.1±3.9	7.0±5.5
Green-leafy vegetables	8.6±6.7	5.8±4.3	4.7±4.1	9.6±7.0	5.8±4.0	3.8±3.3	8.4±6.3	6.2±4.6	4.1±3.8	6.4±5.1	6.0±4.8	6.6±5.7
Coffee or tea	22.4±14.9	13.7±10.5	10.9±10.6	28.0±15.5	13.5±7.8	6.3±6.5	15.8±13.1	15.1±12.1	14.7±12.5	17.0±13.5	14.3±11.8	14.9±12.6
Pizza	0.4±0.6	0.3±0.4	0.4±0.5	0.5±0.7	0.3±0.4	0.3±0.4	0.3±0.4	0.4±0.5	0.4±0.5	0.4±0.6	0.3±0.4	0.4±0.5
Nutrient intakes (means ± standard deviations)												
Total fiber, g/d	20.6±8.0	15.7±5.9	13.8±6.1	18.3±7.5	16.1±6.5	15.1±7.0	17.2±7.3	17.2±7.0	13.7±6.0	13.2±5.7	15.4±5.6	21.9±7.8
Total carbohydrate, g/d	245±83.8	188±64.7	195±85.3	213±78.5	195±71.6	213±89.8	196±77.6	208±77.6	198±79.4	168±69	186±60.0	278±79.3
Total protein, g/d	71.2±26.9	60.7±24.4	73.0±31.9	69.7±27.2	63.4±25.2	68.9±31.6	70.4±29.7	67.2±26.7	58.2±24.1	74.5±31.6	60.6±24.7	70.0±26.5
BCAA [§] , g/d	12.7±5.0	10.8±4.5	12.9±5.8	12.4±5.0	11.3±4.6	12.2±5.7	12.8±5.6	11.9±4.9	10.2±4.3	13.3±5.8	10.8±4.5	12.3±4.9
Total fat, g/d	52.9±27.6	47.9±25.4	70.1±36.1	53.7±28.5	50.8±26.9	62.9±35.9	48.5±28.3	55.2±30.0	56.5±29.6	74.0±36.5	47.5±24.4	49.3±26.0
Saturated fat, g/d	17.8±10.4	15.9±9.1	23.6±13.1	18.0±10.5	17.0±9.8	21.1±12.8	16.4±10.5	18.5±10.9	18.8±10.7	25.2±13.4	15.9±8.8	16.2±9.4
Total cholesterol, g/d	181±105	177±99.1	271±158	199±119	188±112	231±147	196±133	202±119	197±119	280±160	177±97.1	171±99.6
Dietary calcium, mg/d	1050±535	783±405	718±404	912±492	814±432	796±470	1025±572	829±409	630±319	800±466	779±416	979±497
Lycopene, mcg/d	6026±3828	4792±3054	4526±3125	5625±3488	4895±3099	4663±3485	5813±3722	5238±3222	3688±2509	4579±2894	4762±3025	6088±4068

*Empirical Dietary Inflammatory Pattern (EDIP) score, Empirical Dietary Index for Hyperinsulinemic (EDIH) score, Glycemic Index (GI), and Glycemic Load (GL) scores were adjusted for total energy intake using the residual method. Lower EDIP indicates anti-inflammatory diets while higher EDIP scores indicate pro-inflammatory diets. Lower EDIH indicates anti-hyperinsulinemic diet while a higher score indicates pro-hyperinsulinemic diet. We used pre-computed GI and GL from WHI FFQ.

[†]The EDIH component foods (servings/d) in the WHI were listed in TableS3.

[‡]The EDIP component foods (servings/d) in the WHI were listed in TableS4.

[§]BCAA, branched chain amino acids.

^{||}Whole grain was calculated by taking the sum of dark bread, corn tortilla, popcorn, cooked cereal, corn/hominy.

Table S7. Spearman correlation coefficients between dietary indices*

Dietary Indices	Correlation coefficient, N=73,495
EDIH-EDIP	0.61
EDIH-GI	0.28
EDIH-GL	-0.27
EDIP-GI	0.29
EDIP-GL	0.08
GI-GL	0.31
EDIH-EDIP	0.61

*EDIH, Empirical Dietary Index for Hyperinsulinemia; EDIP, Empirical Dietary Inflammatory Pattern Score; GI, Glycemic Index; GL, Glycemic Load. All dietary scores were energy-adjusted

Table S8. Multivariable-adjusted associations of the dietary scores with type 2 diabetes risk after additional adjustment for baseline blood glucose levels*[†]

Dietary Indices	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	1-SD Increment	P-trend
EDIH	1 (Ref)	1.19 (0.70, 2.00)	1.09 (0.66, 1.81)	1.43 (0.89, 2.31)	1.24 (0.78, 1.97)	1.10 (0.98, 1.23)	0.10
EDIP	1 (Ref)	1.12 (0.68, 1.85)	1.60 (1.01, 2.54)	1.89 (1.20, 2.98)	1.63 (1.06, 2.51)	1.15 (1.03, 1.29)	0.01
GI	1 (Ref)	0.79 (0.51, 1.23)	0.76 (0.49, 1.18)	0.70 (0.46, 1.06)	0.72 (0.48, 1.08)	0.93 (0.82, 1.05)	0.25
GL	1 (Ref)	0.88 (0.62, 1.25)	0.93 (0.62, 1.39)	0.96 (0.64, 1.44)	0.79 (0.52, 1.22)	0.91 (0.81, 1.03)	0.15

*The analytic sample included 18,187 women with available baseline blood glucose concentrations. Covariates being adjusted for in EDIH, EDIP, and GI models include: baseline blood glucose, total energy intake, education (treated as a continuous variable due to small sample size of specific categories), race/ethnicity, pack-years of smoking, hypercholesterolemia, Hormone Replacement Therapy study arm, use of NSAID, statin, supplement, age at baseline, hypertension, family history of diabetes, hormone use, physical activity (MET-hours/week). GL models were further adjusted for total fiber, total fat and total protein.

[†]Values are hazard ratios (95% confidence intervals).

Table S9. Multivariable-adjusted associations of each of the four dietary indices with type 2 diabetes risk including mutual adjustment for the other three indices*[†]

Dietary Indices	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	1-SD Increment	P-trend
EDIH	1 (Ref)	1.17 (0.98, 1.40)	0.99 (0.82, 1.19)	1.08 (0.89, 1.31)	1.23 (1.01, 1.51)	1.06 (1.00, 1.13)	0.06
EDIP	1 (Ref)	0.93 (0.79, 1.10)	1.06 (0.89, 1.26)	1.20 (1.00, 1.43)	1.34 (1.12, 1.60)	1.12 (1.06, 1.19)	0.0001
GI	1 (Ref)	1.06 (0.89, 1.25)	0.95 (0.80, 1.12)	0.93 (0.79, 1.10)	0.90 (0.76, 1.07)	0.95 (0.90, 1.01)	0.11
GL	1 (Ref)	0.86 (0.75, 1.00)	0.90 (0.78, 1.05)	0.94 (0.80, 1.11)	0.92 (0.78, 1.09)	0.97 (0.92, 1.02)	0.25

*All four dietary indices were included in the same multivariable adjusted model. Covariates included in the models were: BMI, total energy intake, education, ethnicity, pack years of smoking, hypercholesterolemia, Hormone Replacement Therapy study arm, NSAID, statin, supplement, age, hypertension, family history of diabetes, hormone use, physical activity (MET-hours/week).

[†]Values are hazard ratios (95% confidence intervals).

Table S10. Propensity score adjusted associations of dietary indices with type 2 diabetes risk*

Dietary Indices	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	1-SD increment	P-trend
EDIH	1 (Ref)	1.10 (0.94, 1.28)	0.99 (0.84, 1.16)	1.04 (0.89, 1.21)	1.30 (1.12, 1.51)	1.10 (1.05, 1.15)	<.0001
EDIP	1 (Ref)	1.02 (0.87, 1.19)	1.16 (1.00, 1.35)	1.25 (1.07, 1.45)	1.38 (1.19, 1.60)	1.13 (1.08, 1.19)	<.0001
GI	1 (Ref)	1.10 (0.93, 1.29)	0.93 (0.79, 1.09)	0.91 (0.78, 1.06)	1.02 (0.87, 1.19)	0.97 (0.93, 1.02)	0.26
GL	1 (Ref)	0.91 (0.78, 1.05)	0.97 (0.83, 1.13)	0.95 (0.80, 1.12)	0.98 (0.83, 1.17)	0.99 (0.94, 1.05)	0.74

*Propensity score for each dietary index was calculated as probabilities derived from multiple logistic regression models using type 2 diabetes status as outcome. Multiple logistic regression models for each dietary index were adjusted for total energy intake, BMI, age, hypertension, family history of T2D, hormone use, physical activity, education, race and/or ethnicities, pack-years of smoking, high cholesterol, WHI study arms, nonsteroidal anti-inflammatory drug use, statin use, and nutritional supplement use. The multiple logistic regression model for GL were additionally adjusted for total fat, total protein, dietary fiber. Propensity scores were then further applied in Cox regression analysis for type 2 diabetes risk.

Table S11. Hazard ratios and 95% confidence intervals after further applying a 2-year lag (n = 72,375)*

Dietary Indices	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	1-SD increment	P-trend
EDIH	1(ref)	1.15 (0.96, 1.38)	1.03 (0.87, 1.22)	1.18 (1.00, 1.40)	1.37 (1.16, 1.61)	1.10 (1.05, 1.16)	<.0001
EDIP	1(ref)	1.03 (0.87, 1.22)	1.14 (0.97, 1.34)	1.29 (1.09, 1.52)	1.39 (1.19, 1.63)	1.12 (1.07, 1.18)	<.0001
GI	1(ref)	1.04 (0.88, 1.24)	0.95 (0.80, 1.12)	0.96 (0.81, 1.13)	1.00 (0.85, 1.17)	0.97 (0.92, 1.03)	0.35
GL	1(ref)	0.89 (0.77, 1.04)	0.91 (0.77, 1.07)	0.93 (0.78, 1.10)	0.96 (0.80, 1.15)	1.00 (0.93, 1.05)	0.70

*We excluded 1,120 women who had type 2 diabetes within two years since enrollment EDIP, EDIH, GI, and GL scores were adjusted for total energy intake using the residual method. The Multivariable (MV)-adjusted models for EDIP, EDIH, GI and GL were adjusted for age, hypertension, type 2 diabetes family history, hormone use, physical activity, education, race/ethnicity, pack-years of smoking, high cholesterol, WHI study arms, nonsteroidal anti-inflammatory drug use, statin use, and nutritional supplement use, and BMI. The Multivariable (MV)-adjusted models for GL additionally adjusted for total fat, total protein, and dietary fiber.

Table S12. Hazard ratios (95% CI) for the associations of dietary patterns with risk of developing type 2 diabetes in subgroups defined by waist-hip ratio (WHR)^{*†}

	Quintile 1 [§]	Quintile 2	Quintile 3	Quintile 4	Quintile 5	P-trend [‡]
High waist-to-hip ratio (WHR >0.85)						
Cases/noncases	489/2148	628/2323	648/2516	853/2943	1179/3534	..
Empirical dietary index for hyperinsulinemic (EDIH) score [§]	1 (Ref)	1.14 (0.94, 1.39)	1.14 (0.94, 1.38)	1.27 (1.07, 1.52)	1.39 (1.17, 1.65)	<.0001
Cases/noncases	557/2309	618/2353	689/2648	790/2767	1143/3387	
Empirical dietary inflammatory pattern (EDIP) score [§]	1 (Ref)	1.01 (0.84, 1.21)	1.04 (0.87, 1.24)	1.16 (0.97, 1.37)	1.37 (1.17, 1.61)	<.0001
Cases/noncases	657/2474	682/2401	755/2637	813/2852	890/3100	
Glycemic index (GI) (Total Carbohydrates) [§]	1 (Ref)	1.05 (0.88, 1.25)	1.02 (0.86, 1.21)	0.95 (0.81, 1.12)	1.00 (0.86, 1.18)	0.42
Cases/noncases	881/3223	740/2805	753/2553	663/2396	760/2487	
Glycemic load (GL) (Total Carbohydrates) [§]	1 (Ref)	0.99 (0.85, 1.15)	1.09 (0.93, 1.28)	1.07 (0.90, 1.27)	1.05 (0.88, 1.25)	0.25
Low/Normal waist-to-hip ratio (WHR ≤0.85)						
Cases/noncases	1455/10607	1360/10388	1430/10105	1414/9489	1553/8433	..
Empirical dietary index for hyperinsulinemic (EDIH) score [§]	1 (Ref)	0.98 (0.88, 1.10)	1.04 (0.93, 1.16)	1.03 (0.93, 1.15)	1.22 (1.09, 1.36)	0.002
Cases/noncases	1424/10409	1373/10355	1384/9978	1478/9664	1553/8616	
Empirical dietary inflammatory pattern (EDIP) score [§]	1 (Ref)	1.06 (0.95, 1.18)	1.06 (0.95, 1.18)	1.13 (1.02, 1.26)	1.22 (1.09, 1.36)	0.0001
Cases/noncases	1486/10082	1462/10154	1432/9875	1451/9583	1381/9328	
Glycemic index (GI) (Total Carbohydrates) [§]	1 (Ref)	0.99 (0.89, 1.10)	0.99 (0.89, 1.10)	0.97 (0.87, 1.08)	0.99 (0.89, 1.10)	0.38
Cases/noncases	1407/9188	1432/9722	1408/9985	1483/10157	1482/9970	
Glycemic load (GL) (Total Carbohydrates) [§]	1 (Ref)	0.98 (0.88, 1.09)	0.97 (0.86, 1.08)	0.99 (0.88, 1.11)	0.96 (0.85, 1.09)	0.92

* EDIP, EDIH, GI, and GL scores were adjusted for total energy intake using the residual method. The Multivariable (MV)-adjusted models for EDIP, EDIH, GI and GL were adjusted for age, hypertension, T2D family history, hormone use, physical activity, education, race/ethnicity, pack-years of smoking, high cholesterol, WHI study arms, nonsteroidal anti-inflammatory drug use, statin use, and nutritional supplement use, and BMI. The Multivariable (MV) - adjusted models for GL additionally adjusted for total fat, total protein, dietary fiber.

† We tested for interaction using the likelihood ratio test, comparing the full (with dietary score x BMI terms) and reduced models (without interaction terms). P values for interaction for each dietary index were as follows: EDIH = 0.0001; EDIP = <0.0001; GI = 0.0001; GL = <0.0001.

‡ P values for linear trend across dietary index quintiles were calculated using the dietary indices entered into the models as continuous variables. Models for linear trend were adjusted for all covariates listed in the corresponding models in footnote *.

§ Lower EDIP indicates anti-inflammatory dietary patterns while higher EDIP scores indicate proinflammatory patterns. Lower EDIH indicates low insulinemic dietary patterns whereas higher scores indicate hyperinsulinemic patterns, low GI or GL scores reflect low glycemic diets whereas higher scores reflect hyperglycemic diets. GI/GL scores were calculated using total carbohydrates.

Table S13. Hazard ratios (95% CI) for the associations of dietary patterns with risk of developing type 2 diabetes in subgroups defined by body mass index categories^{*,†,§}

	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	P-trend [‡]
Normal weight women (BMI: 18.5 -24.9 kg/m²)						
Cases/noncases	745/6577	683/6112	617/5648	548/4808	452/3670	
Empirical dietary index for hyperinsulinemic (EDIH) score	1 (Ref)	0.98 (0.82, 1.18)	0.87 (0.72, 1.05)	1.00 (0.83, 1.21)	1.10 (0.90, 1.35)	0.39
Cases/noncases	685/6011	591/5903	590/5561	614/5226	565/4114	
Empirical dietary inflammatory pattern (EDIP) score	1 (Ref)	0.90 (0.74, 1.09)	0.95 (0.79, 1.15)	1.00 (0.83, 1.20)	1.21 (1.00, 1.47)	0.04
Cases/noncases	675/5754	672/5836	625/5380	567/5100	506/4745	
Glycemic index (GI) (Total Carbohydrates)	1 (Ref)	1.00 (0.83, 1.21)	0.97 (0.81, 1.17)	0.95 (0.78, 1.15)	1.02 (0.84, 1.24)	0.71
Cases/noncases	528/4878	572/5179	607/5459	651/5691	687/5608	
Glycemic load (GL) (Total Carbohydrates)	1 (Ref)	1.04 (0.85, 1.27)	0.98 (0.80, 1.21)	1.02 (0.82, 1.27)	1.15 (0.91, 1.46)	0.06
Overweight women (BMI: 25 -29.9 kg/m²)						
Cases/noncases	687/4110	728/4249	743/4332	818/4491	820/4104	
Empirical dietary index for hyperinsulinemic (EDIH) score	1 (Ref)	0.98 (0.82, 1.16)	1.14 (0.96, 1.35)	1.16 (0.98, 1.37)	1.41 (1.20, 1.67)	0.002
Cases/noncases	692/4314	762/4288	730/4406	758/4249	854/4029	
Empirical dietary inflammatory pattern (EDIP) score	1 (Ref)	1.23 (1.04, 1.46)	1.20 (1.01, 1.43)	1.38 (1.16, 1.64)	1.52 (1.29, 1.80)	<.0001
Cases/noncases	754/4287	744/4175	764/4316	777/4312	757/4196	
Glycemic index (GI) (Total Carbohydrates)	1 (Ref)	0.99 (0.83, 1.16)	1.01 (0.86, 1.20)	0.98 (0.83, 1.15)	0.99 (0.84, 1.17)	0.42
Cases/noncases	733/4210	774/4338	792/4340	758/4316	739/4082	
Glycemic load (GL) (Total Carbohydrates)	1 (Ref)	0.96 (0.82, 1.13)	0.94 (0.79, 1.12)	0.97 (0.81, 1.17)	0.93 (0.76, 1.13)	0.70
Obese women (BMI: ≥30 kg/m²)						
Cases/noncases	470/1746	535/2064	664/2349	837/2869	1360/3961	
Empirical dietary index for hyperinsulinemic (EDIH) score	1 (Ref)	1.08 (0.90, 1.31)	0.96 (0.80, 1.15)	1.01 (0.85, 1.21)	1.14 (0.97, 1.35)	0.0015
Cases/noncases	566/2089	591/2232	698/2394	825/2673	1186/3601	
Empirical dietary inflammatory pattern (EDIP) score	1 (Ref)	0.94 (0.79, 1.13)	0.99 (0.84, 1.17)	1.14 (0.97, 1.35)	1.21 (1.04, 1.41)	<.0001
Cases/noncases	653/2204	677/2273	737/2539	862/2746	937/3227	
Glycemic index (GI) (Total Carbohydrates)	1 (Ref)	1.10 (0.93, 1.30)	1.08 (0.92, 1.27)	1.04 (0.89, 1.23)	1.05 (0.90, 1.23)	0.75
Cases/noncases	956/3061	764/2743	702/2476	681/2244	763/2465	
Glycemic load (GL) (Total Carbohydrates)	1 (Ref)	0.91 (0.79, 1.06)	1.00 (0.86, 1.16)	0.96 (0.81, 1.13)	1.01 (0.86, 1.20)	0.78

* EDIP, EDIH, GI, and GL scores were adjusted for total energy intake using the residual method. The Multivariable (MV)-adjusted models for EDIP, EDIH, GI and GL were adjusted for age, hypertension, type 2 diabetes family history, hormone use, physical activity, education, race/ethnicity, pack-years of smoking, high cholesterol, WHI study arms, nonsteroidal anti-inflammatory drug use, statin use, and nutritional supplement use, and BMI. The Multivariable (MV)-adjusted models for GL additionally adjusted for total fat, total protein, and dietary fiber.

† We tested for interaction using the likelihood ratio test, comparing the full (with dietary score x BMI terms) and reduced models (without interaction terms). P values for interaction for each dietary index were as follows: EDIH = 0.13; EDIP = 0.03; GI = 0.07; GL = 0.54.

‡ P values for linear trend across dietary index quintiles were calculated using the dietary indices entered into the models as continuous variables. Models for linear trend were adjusted for all covariates listed in the corresponding models in footnote *.

§ Lower EDIP indicates anti-inflammatory dietary patterns while higher EDIP scores indicate proinflammatory patterns. Lower EDIH indicates low insulinemic dietary patterns whereas higher scores indicate hyperinsulinemic patterns, low GI/GL scores reflect low glycemic diets whereas higher scores reflect hyperglycemic diets. GI/GL scores were calculated using total carbohydrates.

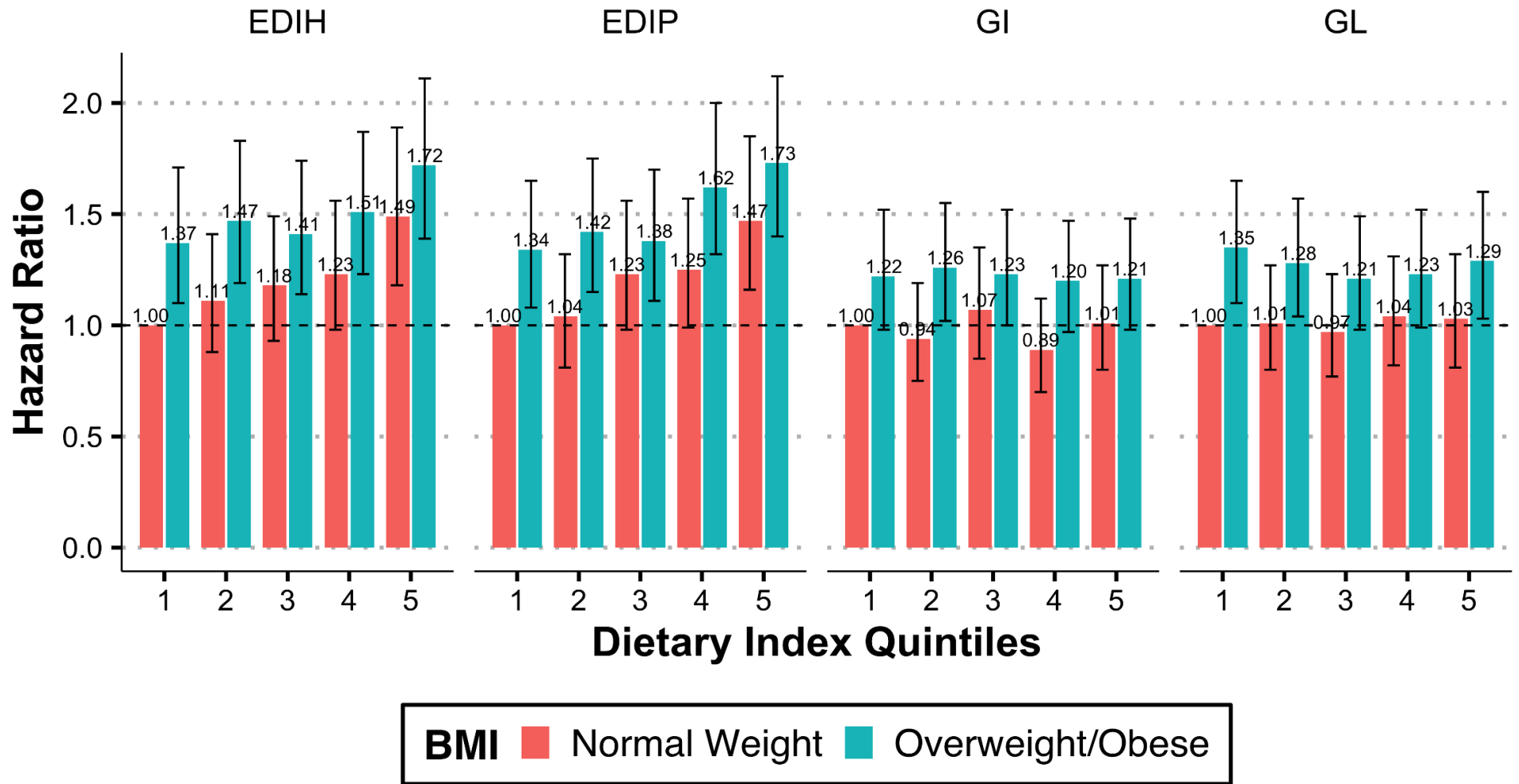


Figure S1. Joint associations of dietary patterns and body mass index (BMI) with risk of type 2 diabetes. Whiskers indicate 95%CI. Bars show HRs from Cox PH regression analyses comparing other categories to quintile 1–normal weight of each diet as reference. All analyses were adjusted for age, hypertension, type 2 diabetes family history, hormone use, physical activity, education, race, pack-years of smoking, high cholesterol, WHI study arms, nonsteroidal anti-inflammatory drug use, statin use, nutritional supplement use, and BMI (continuous). The GL (total carbohydrates) was additionally adjusted for total fat, total protein, dietary fiber.

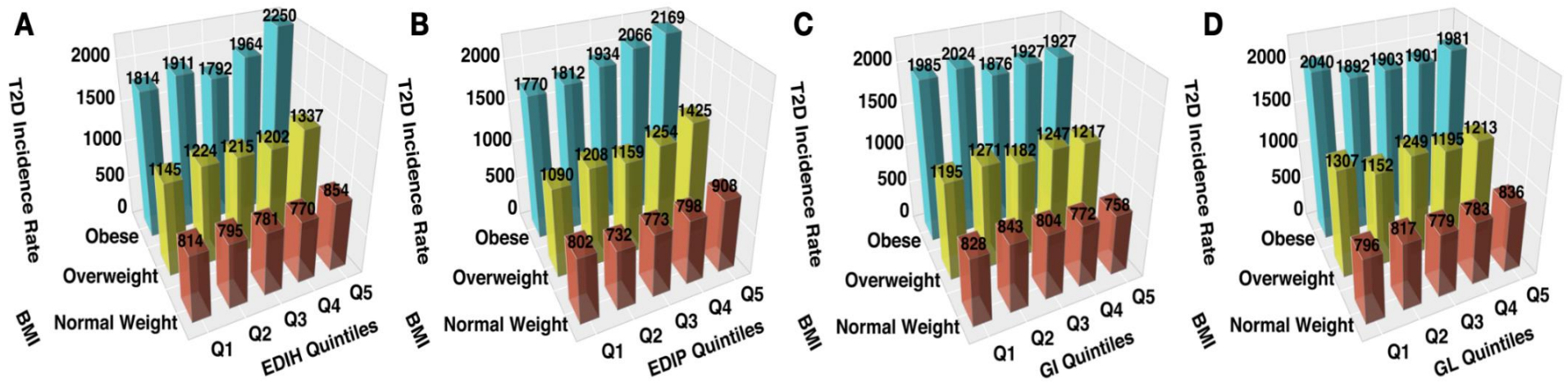


Figure S2. Type 2 diabetes incidence rate per 100,000 person-years by BMI categories (A=EDIH, Empirical Dietary Index for hyperinsulinemia; B=EDIP, Empirical Dietary Inflammatory Pattern; C=GI, Glycemic Index; D=GL, Glycemic Load). AA: African American; EA: European American; HP: Hispanic American; OA: Other American. Each dietary score was adjusted for total energy intake, baseline age, hypertension, type 2 diabetes family history, hormone use, physical activity, education, race, pack-years of smoking, high cholesterol, WHI study arms, nonsteroidal anti-inflammatory drug use, statin use, and nutritional supplement use, and BMI (continuous). The GL (calculated using total carbohydrates) was additionally adjusted for total fat, total protein, dietary fiber.

Table S14. Hazard ratios (95% CI) for the associations of dietary patterns with risk of developing type 2 diabetes in subgroups defined by race/ethnicity^{*,†,§}

Dietary index quintiles	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	P-trend [‡]
African American						
Cases/noncases	94/423	96/508	129/657	206/881	361/1241	..
Empirical dietary index for hyperinsulinemic (EDIH) score	1(Ref)	1.27 (0.83, 1.93)	0.94 (0.63, 1.41)	1.15 (0.79, 1.66)	1.28 (0.90, 1.83)	0.04
Cases/noncases	80/318	75/429	128/604	205/866	398/1493	..
Empirical dietary inflammatory pattern (EDIP) score	1(Ref)	0.84 (0.52, 1.34)	1.02 (0.67, 1.57)	1.23 (0.83, 1.82)	1.14 (0.78, 1.66)	0.08
Cases/noncases	114/471	114/447	137/618	192/789	329/1385	..
Glycemic index (GI)	1(Ref)	1.32 (0.90, 1.93)	0.84 (0.58, 1.23)	1.04 (0.73, 1.48)	1.05 (0.76, 1.47)	0.82
Cases/noncases	184/601	184/653	161/717	150/768	207/971	..
Glycemic load (GL)	1(Ref)	0.96 (0.70, 1.32)	0.95 (0.68, 1.34)	0.87 (0.62, 1.23)	0.84 (0.59, 1.18)	0.49
European Americans						
Cases/noncases	1715/11554	1714/11309	1764/10945	1829/10400	2072/9561	..
Empirical dietary index for hyperinsulinemic (EDIH) score	1(Ref)	1.01 (0.94, 1.09)	1.06 (0.99, 1.14)	1.07 (1.00, 1.16)	1.23 (1.14, 1.32)	<.0001
Cases/noncases	1795/11875	1815/11641	1804/11193	1831/10410	1849/8650	..
Empirical dietary inflammatory pattern (EDIP) score	1(Ref)	1.03 (0.96, 1.10)	1.03 (0.96, 1.11)	1.12 (1.04, 1.21)	1.27 (1.18, 1.37)	<.0001
Cases/noncases	1800/11054	1828/11111	1855/10886	1856/10586	1755/10132	..
Glycemic index (GI)	1(Ref)	1.01 (0.94, 1.09)	1.00 (0.92, 1.06)	1.01 (0.94, 1.09)	1.04 (0.97, 1.12)	0.25
Cases/noncases	1890/10979	1782/10863	1791/10761	1795/10713	1836/10453	..
Glycemic load (GL)	1(Ref)	1.01 (0.94, 1.09)	1.09 (1.01, 1.18)	1.06 (0.98, 1.16)	1.05 (0.96, 1.14)	0.06
Hispanic/Latinx						
Cases/noncases	43/317	66/333	81/405	106/483	164/596	..
Empirical dietary index for hyperinsulinemic (EDIH) score	1(Ref)	0.97 (0.50, 1.89)	1.32 (0.71, 2.46)	1.64 (0.89, 3.01)	2.09 (1.19, 3.68)	0.0055
Cases/noncases	30/173	32/237	59/331	93/471	246/922	..
Empirical dietary inflammatory pattern (EDIP) score	1(Ref)	0.93 (0.37, 2.35)	1.72 (0.77, 3.84)	2.33 (1.08, 5.01)	2.44 (1.20, 4.97)	0.0029
Cases/noncases	116/480	86/415	86/405	87/424	85/410	..
Glycemic index (GI)	1(Ref)	0.95 (0.59, 1.54)	1.00 (0.61, 1.64)	0.71 (0.44, 1.17)	1.04 (0.64, 1.69)	0.93
Cases/noncases	118/439	103/444	90/420	75/415	74/416	..
Glycemic load (GL)	1(Ref)	0.84 (0.52, 1.38)	0.87 (0.51, 1.49)	0.75 (0.40, 1.41)	1.16 (0.66, 2.04)	0.10
Other race/ethnic groups						
Cases/noncases	92/461	112/561	104/614	126/668	135/569	..
Empirical dietary index for hyperinsulinemic (EDIH) score	1(Ref)	1.31 (0.85, 2.01)	1.10 (0.70, 1.73)	1.39 (0.91, 2.13)	1.23 (0.80, 1.89)	0.12
Cases/noncases	76/352	69/401	82/498	139/684	203/938	..
Empirical dietary inflammatory pattern (EDIP) score	1(Ref)	0.81 (0.48, 1.38)	0.84 (0.50, 1.41)	1.28 (0.80, 2.05)	1.26 (0.81, 1.96)	0.01
Cases/noncases	113/551	116/582	109/603	129/636	102/501	..
Glycemic index (GI)	1(Ref)	1.09 (0.72, 1.65)	0.86 (0.57, 1.31)	1.15 (0.77, 1.72)	1.06 (0.69, 1.62)	0.86
Cases/noncases	96/392	103/567	119/640	126/657	125/617	..
Glycemic load (GL)	1(Ref)	0.90 (0.57, 1.43)	0.93 (0.58, 1.48)	0.98 (0.61, 1.58)	0.90 (0.53, 1.53)	0.98

^{*}EDIP, EDIH, GI, and GL scores were adjusted for total energy intake using the residual method. The Multivariable (MV)-adjusted models for EDIP, EDIH, GI and GL were adjusted for age, hypertension, type 2 diabetes family history, hormone use, physical activity, education, race/ethnicity, pack-years of smoking, high cholesterol, WHI study arms, nonsteroidal anti-inflammatory drug use, statin use, and nutritional supplement use, and BMI. The Multivariable (MV) - adjusted models for GL additionally adjusted for total fat, total protein, dietary fiber.

[†]We tested for interaction using the likelihood ratio test, comparing the full (with dietary score x race/ethnicity interaction terms) and reduced models (without interaction terms). P values for interaction for each dietary index were as follows: EDIH = 0.12, EDIP = 0.13, GL = 0.16, GI = 0.04.

[‡]P values for linear trend across dietary index quintiles were calculated using the dietary indices entered into the models as continuous variables. Models for linear trend were adjusted for all covariates listed in the corresponding models in footnote *.

[§]Lower EDIP indicates anti-inflammatory dietary patterns while higher EDIP scores indicate proinflammatory patterns. Lower EDIH indicates low insulinemic dietary patterns whereas higher scores indicate hyperinsulinemic patterns, low GI/GL scores reflect low glycemic diets whereas higher scores reflect hyperglycemic diets. GI/GL scores were calculated using total carbohydrates.

APPENDIX – Long List of Women’s Health Initiative Investigators

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