

SUPPLEMENTAL MATERIAL

Data S1.

Supplemental Methods

Non-laboratory Framingham risk score

The following criteria have been used for the calculation of non-laboratory Framingham risk score: current and past smoking status was assessed based on questions “Do you smoke tobacco now?” and “In the past, how often have you smoked tobacco?”. For this analysis, smoking was grouped into a binary variable for current smokers (yes) and non-smokers (no and previously). Medication use for blood pressure was based on the question “Do you regularly take any of the following medications? (you can select more than one answer)”. They could answer with the following: I) Cholesterol-lowering medication, II) Blood pressure medication, III) Insulin, IV) None of the above, V) Do not know or prefer not to answer. Participants who selected “do not know” or “prefer not to answer” were excluded from this study. Participants were divided into those who used blood pressure medication or those who didn’t. Diabetes status was based on the question: “Has a doctor ever told you that you have diabetes?” and could answer with either “yes”, “no”, “do not know” or “prefer not to answer”. For the purpose of this study participants who selected “do not know” or “prefer not to answer” were excluded.

Table S1. Food groups used in dietary patterns.

	Food group	Food items included
Cereals (6 items)	1. Pasta, rice and cereals	White rice, couscous, white pasta
	2. Whole meal pasta, rice and cereals	Brown rice and whole meal pasta
	3. White bread	Sliced bread, baguette, bap, bread roll and other bread
	4. Whole meal bread	Whole meal sliced bread, whole meal baguette, whole meal bap, whole meal bread roll, mixed sliced bread, seeded sliced bread, mixed baguette, seeded baguette, mixed bap, seeded bap, mixed roll, seeded roll
	5. High fibre breakfast cereals	Whole wheat cereal, bran cereal, porridge, muesli, oat crunch, oatcakes
	6. Other breakfast cereals	Other cereal, plain cereal and sweet cereal
Dairy products (8 items)	7. Whole milk	Whole milk >3.6g fat per 100g
	8. Skimmed milk	Skimmed milk and semi skimmed milk >1g fat per 100g
	9. Other milk	Rice milk, oat milk and soy milk
	10. Cheese	Goat cheese, hard cheese, soft cheese, blue cheese, cheese spread, feta, mozzarella, other cheese

	11. Low fat cheese	Low fat hard cheese, low fat cheese spread and cottage cheese
	12. Yoghurt low fat	Low fat yogurt
	13. Yoghurt full fat	Full fat yogurt
	14. Ice cream, cream and dairy desserts	Cream, ice-cream, milk-based pudding, other milk based pudding, cheesecake
Fat spreads	15. Butter	Animal fat spread lower and normal fat
(5 items)	16. Margarine	Plant-based spread lower and normal fat
	17. Olive oil	Olive oil (drizzling/dunking)
	18. High-fat sauces	Cheese sauce, white sauce and gravy
	19. Low-fat sauces	Chutney, ketchup, brown sauce, tomato sauce
Meat and alternatives	20. Bacon and ham	Bacon, ham, sausages
(10 items)	21. Beef and veal	Beef and veal
	22. Non fried chicken, turkey pork and dishes	Poultry and pork
	23. Fried poultry	Breaded poultry, battered poultry
	24. Other meats	Other meat, offal
	25. White fish	White fish and tinned tuna
	26. Battered and fish products	Battered fish, breaded fish, sushi
	27. Oily fish	Oily fish

	28. Other seafood	Prawns, lobster, crab and shellfish
	29. Eggs and eggs dishes	Whole egg, omelet, scotch egg, other egg and egg sandwiches
	30. Meat alternatives	Vegetarian sausages/burger, other vegetarian alternatives, tofu and quorn
Fruit and Vegetables (6 items)	31. Vegetables raw and boiled	Side salad, beetroot, cabbage, kale, carrot, celery, courgette, cucumber, lettuce, fresh tomato, turnip, swede, watercress, vegetable in pieces, broccoli, butter squash, cauliflower, garlic, leek, onion, parsnip, sweet pepper, spinach, sprouts, tinned tomato, other vegetables, sweet potato, mushroom, sweet corn, olives
	32. Vegetables (mixed dishes)	Vegetable salad with mayo, hummus, guacamole,
	33. Legumes	Green bean, broad bean, pea, baked beans, pulses, corn
	34. Fruits	Apple, avocado, mixed fruit, banana, berry, cherry, grapefruit, grape, mango, melon, orange, satsuma, peach nectarine, pear, pineapple, plum, other fruit, prune and dried fruit
	35. Boiled and baked potato	Boiled baked potato and mashed potato
	36. Soups	Homemade pulse soup, homemade meat soup, homemade fish soup, homemade vegetables soup,

		homemade pasta soup, homemade other soup, canned pulse soup, canned meat soup, canned fish soup, canned vegetables soup, canned pasta soup, canned other soup
Nuts and seeds	37. Nuts and seeds	Unsalted peanuts, unsalted nuts, seeds,
	(1 item)	
Discretionary snack foods	38. Crisps, chips and savory snacks	Pizza, crisp, fried potato, cheesy biscuits, salted nuts, salted peanuts, crisp bread, Indian snacks
	(3 items)	
	39. Buns, cakes, pastries and fruit pies, puddings, biscuits	Fruit cake, scone, sponge pudding, crumble, danish, doughnut, pancake, cereal bar, chocolate covered biscuit and sweet biscuit
	40. Sugar, preserves and confectionery	Spreads like jam and honey, stewed fruit, dark chocolate, milk chocolate, other chocolate, chocolate covered raisins, white chocolate
Non-alcoholic beverages	41. Fruit juice	Orange juice, grapefruit juice, pure fruit and vegetable juice, fruit smoothie
	(5 items)	
	42. High sugar beverages	Fizzy drink, hot chocolate and dairy smoothie
	43. Soft drinks, diet	Low calorie drink and low-calorie hot chocolate
	44. Tea and Coffee	Cappuccino, green tea, herbal tea, other tea, espresso, other coffee, instant coffee, filtered coffee, latte, standard tea, rooibos tea

	45. Water	Water
Alcoholic	46. Spirits and liqueurs	Spirits and other alcohol
beverages	47. Wine	Red wine, rose wine, white wine and fortified wine
(3 items)	48. Beer and cider	Beer and cider

*Food groups were selected based on food groupings used the National Diet and Nutrition Survey (NDNS) from the UK and adapted according to their fat type of content. (39)

Table S2. Characteristics at baseline overall and according to tertiles of dietary patterns (n =12,706).

Characteristics	All (n=12,706)	Tertiles of DP1			Tertiles of DP2		
		T1	T2	T3	T1	T2	T3
Age (years), mean (\pm SD)	55.0 (7.4)	55.1 (7.2)	55.0 (7.4)	54.9 (7.5)	54.9 (7.4)	54.9 (7.4)	55.3 (7.4)
Female, n (%)	6,753 (53.1)	2,069 (48.8)	2,386 (56.3)	2,298 (54.2)	2,271 (53.5)	2,392 (56.4)	2,090 (49.3)
Townsend deprivation index, n (%)							
Low	5,169 (40.6)	1,746 (41.2)	1,755 (41.4)	1,668 (39.3)	1,729 (40.7)	1,743 (41.1)	1,697 (40.0)
Medium	4,402 (34.6)	1,472 (34.7)	1,456 (34.3)	1,474 (34.8)	1,424 (33.6)	1,491 (35.1)	1,487 (35.1)
High	3,155 (24.8)	1,024 (24.1)	1,031 (24.3)	1,100 (25.9)	1,089 (25.7)	1,008 (23.8)	1,058 (24.9)
Ethnicity, n (%)							
White	12,407 (97.8)	4,122 (97.4)	4,122 (97.9)	4,141 (98.0)	4,081 (96.6)	4,156 (98.2)	4,170 (98.6)
Mixed	239 (1.9)	92 (2.2)	72 (1.7)	75 (1.8)	122 (2.9)	64 (1.5)	53 (1.2)
Other	44 (0.3)	17 (0.4)	18 (0.4)	9 (0.2)	23 (0.5)	14 (0.3)	7 (0.2)

Smoking, n (%)							
Yes	693 (94.6)	234 (5.5)	220 (5.2)	239 (5.6)	189 (4.5)	200 (4.7)	304 (7.2)
No	12,033 (5.4)	4,008 (94.5)	4,022 (94.8)	4,003 (94.4)	4,053 (95.5)	4,042 (95.3)	3,938 (92.8)
Physical Activity [†] , n (%)							
Light	2,666 (21.0)	817 (19.2)	895 (21.1)	954 (22.5)	750 (17.7)	934 (22.0)	982 (23.1)
Moderate	6,878 (54.0)	2,267 (53.4)	2,343 (55.2)	2,268 (53.5)	2,349 (55.4)	2,277 (53.7)	2,252 (53.1)
Vigorous	3,182 (25.0)	1,158 (27.3)	1,004 (23.7)	1,020 (24.0)	1,143 (26.9)	1,031 (24.3)	1,008 (23.8)
BMI category [‡] , n (%)							
Underweight/normal weight	5,481 (43.1)	1,757 (41.4)	1,861 (43.9)	1,863 (43.9)	1,902 (44.8)	1,809 (42.6)	1,770 (41.7)
Overweight	5,311 (41.7)	1,851 (43.6)	1,755 (41.4)	1,705 (40.2)	1,746 (41.2)	1,770 (41.7)	1,795 (42.3)
Obesity	1,934 (15.2)	634 (14.9)	626 (14.8)	674 (15.9)	594 (14.0)	663 (15.6)	677 (16.0)

* SD, standard deviation; BMI, Body Mass Index.

[†] Physical activity: light (total MET-hour a week < 10), moderate (total MET-hour a week ≥10 and <50) and vigorous (total MET-hour a week >50)

[‡] Underweight/normal weight (BMI <25 kg/m²), Overweight (BMI ≥25 kg/m² and <30 kg/m²), Obesity (BMI ≥30 kg/m²)

Table S3. Baseline characteristics of the participants included in the analysis (n =12,706) vs excluded (n =489,799).

Characteristics	Included (n=12,706)	Excluded (n =489,799)
Age (years), mean (\pm SD)	55.0 (7.4)	56.6 (8.1)
Female, n (%)	6,741 (53.1)	266,617 (54.4)
Townsend deprivation index, n (%)		
Low	5,160 (40.6)	162,204 (33.2)
Medium	4,392 (34.6)	162,799 (33.3)
High	3,154 (24.8)	164,132 (33.5)
Ethnicity, n (%)		
White	12,287 (97.8)	460,269 (94.5)
Mixed	238 (1.9)	22,235 (4.6)
Other	45 (0.3)	4,514 (0.9)
Smoking, n (%)		
Yes	698 (5.5)	52,283 (10.7)
No	12,008 (94.5)	437,496 (89.3)
Physical Activity [†] , n (%)		
Light	2,659 (20.9)	112,537 (23.0)
Moderate	6,873 (54.1)	245,798 (50.2)
Vigorous	3,174 (25.0)	131,444 (26.8)
BMI category [‡] , n (%)		
Underweight/normal weight	5,484 (43.1)	159,547 (32.8)
Overweight	5,303 (41.7)	206,799 (42.5)
Obesity	1,919 (15.2)	120,308 (24.7)

Framingham risk score	13.1 (8.73)	15.3 (9.31)
Systolic blood pressure	135.0 (17.9)	137.9 (18.7)
Diastolic blood pressure	81.3 (10.0)	82.2 (10.2)

*SD, standard deviation; BMI, Body Mass Index.

† Physical activity: light (total MET-hour a week < 10), moderate (total MET-hour a week ≥ 10 and <50) and vigorous (total MET-hour a week >50)

‡ Underweight/normal weight (BMI <25 kg/m²), Overweight (BMI ≥ 25 kg/m² and <30 kg/m²), Obesity (BMI ≥ 30 kg/m²)

Table S4. Intakes of response variables and five highest loading direct and inverse food groups across tertiles of dietary patterns (n =12,706).

Food groups	Factor loading	Consumers (%)	Tertiles of dietary pattern											
			Tertile 1				Tertile 2				Tertile 3			
			Mean	SD	Median	IQR	Mean	SD	Median	IQR	Mean	SD	Median	IQR
Dietary pattern 1														
Response variables														
SFA (%E/day)	-	-	9.55	2.25	9.50	8.01, 11.1	11.6	2.30	11.5	10.0, 13.1	13.2	2.71	13.0	11.3, 14.9
PUFA (%E/day)	-	-	4.61	1.06	4.52	3.89, 5.25	5.48	1.11	5.40	4.70, 6.20	6.56	1.59	6.37	5.44, 7.47
MUFA (%E/day)	-	-	9.32	1.74	9.30	8.18, 10.4	11.2	1.57	11.1	10.2, 12.2	13.1	1.9	12.9	11.8, 14.2
Direct associations														
(g/day)														
Nuts and seeds	0.36	46.5	2.05	4.53	0	0, 2.25	3.47	6.36	0	0, 4.5	8.38	13.9	2.00	0, 11.0
Vegetables and mixed dishes	0.29	23.6	2.27	6.74	0	0, 0	4.08	10.3	0	0, 0	10.6	20.6	0	0, 13.0
Butter	0.28	50.3	3.30	5.74	0	0, 5.00	5.50	7.52	1.67	0, 9.33	9.25	10.6	6.0	0, 15.5
Eggs and egg dishes	0.27	46.1	12.07	21.6	0	0, 16.7	18.6	27.9	0	0, 30.0	31.4	41.6	16.7	0, 50.0

Buns, cakes and pastries	0.24	88.7	40.1	34.5	32.5	14.0, 60.0	53.6	40.9	45	24.0, 76.5	66.5	49.9	58.3	30, 90.2
Inverse associations														
(g/d/day)														
Fruits	-0.25	93.5	294	166	223	135, 334	192	128	175	100, 266	163	125	143	70.4, 230
Legumes	-0.25	61.0	24.4	32.1	16.3	0, 35.0	21.0	26.2	13	0, 33.3	21.1	27.2	11.7	0, 33.7
Beer and cider	-0.22	33.1	240	268	0	0, 287	123	268	0	0, 143	89.7	219	0	0, 71.7
Wine	-0.21	58.2	151	178	87.5	0, 250	103	134	58.3	0, 175	79.1	115	21.9	0, 125
Yoghurt low fat	-0.21	47.1	46.4	55.8	31.3	0, 78.1	31.9	43.9	0	0, 62.5	22.1	37.2	0	0, 31.2
Dietary pattern 2														
Response variables														
SFA (%E/day)	-		9.53	2.23	9.51	7.98, 11.0	11.1	2.17	11.1	9.65, 12.5	13.7	2.42	13.5	12.0, 15.2
PUFA (%E/day)	-		6.53	1.62	6.42	5.38, 7.49	5.30	1.20	5.24	4.49, 6.05	4.82	1.08	4.74	4.08, 5.47
MUFA (%E/day)	-		11.3	2.58	11.20	9.58, 12.9	10.9	2.30	10.9	9.46, 12.4	11.4	2.11	11.4	10.0, 12.8
Direct associations														
(g/day)														
Butter	0.37	50.3	2.42	4.92	0	0, 3.20	4.76	6.78	0	0, 7.5	10.9	10.6	8.75	0, 17.5
High-fat cheese	0.34	67.1	8.54	11.2	5.00	0, 13.3	12.2	12.5	10.0	0, 20.0	22.7	19.2	20.0	10, 33.3

Ice cream and dairy desert	0.27	47.1	13.6	25.5	0	0, 20.0	21.7	31.1	0	0, 37.5	39.1	47.3	25.0	0, 60.0
Beef and veal	0.24	50.7	16.8	27.3	0	0, 30.0	27.6	32.8	20.0	0, 48.0	40.8	40.4	40.0	0, 60.0
Buns, cakes and pastries	0.21	88.7	41.9	37.7	34	14.0, 60.7	51.6	39.8	44.0	23.3, 72.2	66.7	48.9	59.6	30.1, 91.3
Inverse associations														
(g/day)														
Nuts and seeds	-0.36	46.5	9.21	14.1	3.00	0, 13.3	2.76	5.33	0	0, 3.00	1.94	4.29	0	0, 2.00
Vegetables and mixed dishes	-0.26	23.6	10.8	20.4	0	0, 13.0	4.07	10.1	0	0, 0	2.09	7.19	0	0, 0
Vegetables raw and boiled	-0.20	95.3	213	145	185	111, 288	167	112	150	85.5, 228	148	105	130	72.0, 204
Margarine	-0.19	51.6	7.34	8.47	5	0, 12.0	5.07	6.65	2.45	0, 8.50	3.39	5.77	0	0, 5.00
Meat alternatives	-0.18	8.70	8.87	26.5	0	0, 0	2.72	12.0	0	0, 0	1.51	8.72	0	0, 0

* %E, percentage of total energy; SFA, saturated fatty acids; PUFA, polyunsaturated fatty acids; MUFA, monounsaturated fatty acids.

Table S5. Intakes of response variables and five highest loading direct and inverse food groups by sex (n =12,706).

Food groups	Consume rs (%) ‡	All (n=12,706)		Males (n=5,965)		Females (n=6,741)		B (95% CI) †	P value†
		Mean ± SD	Median (IQR)	Mean ± SD	Median (IQR)	Mean ± SD	Median (IQR)		
Response variables									
SFA (%E/day)	-	11.4 ± 2.84	11.3 (9.45, 13.3)	11.4 ± 2.84	11.3 (9.42, 13.2)	11.5 ± 2.85	11.4 (9.51, 13.3)	-0.11 (-0.21, -0.01)	0.027
PUFA (%E/day)	-	5.56 ± 1.51	5.36 (4.50, 6.40)	5.42 ± 1.46	5.22 (4.41, 6.24)	5.67 ± 1.54	5.47 (4.59, 6.54)	-0.23 (-0.29, -0.18)	<0.001
MUFA (%E/day)	-	11.2 ± 2.35	11.2 (9.68, 12.7)	11.2 ± 2.32	11.1 (9.61, 12.6)	11.3 ± 2.37	11.2 (9.76, 12.7)	-0.13 (-0.21, -0.04)	0.003
Dietary pattern 1									
Direct associations									
(g/day)									
Nuts and seeds	46.5	0 ± 9.64	0 (0, 4.84)	4.57 ± 10.1	0 (0, 4.50)	4.73 ± 9.22	0.50 (0, 5.00)	0.11 (0.05, 0.17)	<0.001
Vegetables and mixed dishes	23.6	5.68 ± 14.3	0 (0, 0)	5.08 ± 13.7	0 (0, 0)	6.20 ± 14.8	0 (0, 6.5)	0.06 (0.01, 0.11)	0.049
Butter	50.3	6.02 ± 8.56	1.50 (0, 10.0)	6.80 ± 9.60	0 (0, 11.0)	5.33 ± 7.48	1.75 (0, 8.52)	0.28 (0.24, 0.32)	<0.001
Eggs and egg dishes	46.1	20.7 ± 32.5	0 (0, 33.3)	21.5 ± 33.6	0 (0, 33.3)	19.9 ± 31.4	0 (0, 30.0)	0.04 (0.01, 0.08)	0.017
Buns, cakes and pastries	88.7	53.3 ± 43.5	44.5 (21.7, 76.0)	58.0 ± 46.9	49.1 (23.7, 82.7)	49.2 ± 39.9	41.7 (20.0, 69.6)	0.16 (0.13, 0.19)	<0.001

Inverse associations									
(g/d/day)									
Fruits	93.5	201 ± 145	177 (100, 275)	192 ± 145	166 (88.5, 268)	210 ± 145	187 (108, 281)	-0.10 (-0.13, -0.07)	<0.001
Legumes	61.0	22.3 ± 28.7	13.5 (0, 33.7)	24.1 ± 30.7	16.2 (0, 35.0)	20.7 ± 26.7	11.7 (0, 32.0)	0.11 (0.07, 0.15)	<0.001
Beer and cider	33.1	150 ± 335	0 (0, 143)	277 ± 438	71.7 (0, 382)	39.8 ± 129	0 (0, 0)	0.78 (0.73, 0.84)	<0.001
Wine	58.2	111 ± 148	58.3 (0, 175)	158 ± 158	43.7 (0, 175)	107 ± 138	60.0 (0, 175)	0.13 (0.09, 0.17)	<0.001
Yoghurt low fat	47.1	33.4 ± 47.3	0 (0, 62.5)	42.3 ± 42.3	0 (0, 41.7)	39.0 ± 50.6	20.8 (0, 62.5)	-0.07 (-0.10, -0.03)	<0.001
Dietary pattern 2									
Direct associations									
(g/day)									
Butter	50.3	6.02 ± 8.56	1.50 (0, 10.0)	6.80 ± 9.60	0 (0, 11.0)	5.33 ± 7.48	1.75 (0, 8.52)	0.28 (0.24, 0.32)	<0.001
High-fat cheese	67.1	14.5 ± 15.9	10.0 (0, 20.0)	15.3 ± 17.0	10.0 (0, 21.2)	13.8 ± 14.8	10.0 (0, 20.0)	0.11 (0.08, 0.14)	<0.001
Ice cream and dairy desert	47.1	24.7 ± 37.2	0 (0, 40.0)	26.4 ± 39.6	0 (0, 40.0)	23.1 ± 35.0	0 (0, 40.0)	0.16 (0.12, 0.20)	<0.001
Beef and veal	50.7	28.5 ± 35.4	15.0 (0, 60.0)	32.1 ± 37.6	30 (0, 60.0)	25.3 ± 33.0	0 (0, 40.0)	0.07 (0.05, 0.10)	<0.001
Buns, cakes and pastries	88.7	53.3 ± 43.5	44.5 (21.7, 76.0)	58.0 ± 46.9	49.1 (23.7, 82.7)	49.2 ± 39.9	41.7 (20.0, 69.6)	0.16 (0.13, 0.19)	<0.001

Inverse associations									
(g/day)									
Nuts and seeds	46.5	0 ± 9.64	0 (0, 4.84)	4.57 ± 10.1	0 (0, 4.50)	4.73 ± 9.22	0.50 (0, 5.00)	0.11 (0.05, 0.17)	<0.001
Vegetables and mixed dishes	23.6	5.68 ± 14.3	0 (0, 0)	5.08 ± 13.7	0 (0, 0)	6.20 ± 14.8	0 (0, 6.5)	0.06 (0.01, 0.11)	0.049
Vegetables raw and boiled	95.3	176 ± 125	153 (87.9, 238)	153 ± 117	131 (71.5, 206)	196 ± 128	175 (105, 263)	-0.27 (-0.29, -0.24)	<0.001
Margarine	51.6	5.28 ± 7.24	1.75 (0, 8.75)	7.1 ± 8.5	4.39 (0, 12.0)	3.68 ± 5.41	0 (0, 6.20)	0.42 (0.39, 0.46)	<0.001
Meat alternatives	8.70	4.38 ± 17.8	0 (0, 0)	3.96 ± 17.7	0 (0, 0)	4.76 ± 17.9	0 (0, 0)	0.10 (0.02, 0.18)	0.011

*%E, percentage of total energy; SFA, saturated fatty acids; PUFA, polyunsaturated fatty acids; MUFA, monounsaturated fatty acids.

† P value, beta coefficient and 95% confidence interval for linear regression analysis for dietary components differences between males and females adjusted for age, smoking status and BMI.

‡ % of non-zero consumers for each food group.

Table S6. Energy and nutrient intake across tertiles of dietary patterns (n =12,706).

	Tertiles of dietary pattern					
	Tertile 1		Tertile 2		Tertile 3	
	Mean	SD	Mean	SD	Mean	SD
Dietary pattern 1						
Total energy (kj/day)	8,400	1,900	8,379	1,861	9,098	1,968
Carbohydrate (%E/day)	52.9	7.64	50.4	6.39	47.1	6.48
Protein (%E/day)	16.1	3.02	16.2	2.95	15.9	2.96
Total fat (%E/day)	25.9	3.96	31.1	3.23	36.1	4.12
Animal fat (%E/day)	14.1	3.89	17.5	4.26	20.5	5.56
Vegetable fat (%E/day)	11.8	3.52	13.6	3.84	15.6	4.91
Trans fat (%E/day)	0.43	0.16	0.51	0.18	0.58	0.20
Omega-3 (g/day)	1.67	0.68	1.93	0.71	2.39	0.83
Omega-6 (g/day)	8.85	3.16	10.4	3.23	13.6	4.47
Energy density (kj/g/day)	5.83	1.23	6.45	1.31	7.07	1.41
Fiber (g/day)	18.2	5.86	17.5	5.28	18.2	5.58
Dietary pattern 2						
Total energy (kj/day)	8,563	1,943	8,272	1,848	9,042	1,947
Carbohydrate (%E/day)	50.9	7.48	50.6	7.28	48.9	6.87
Protein (%E/day)	16.4	3.11	16.2	2.99	15.6	2.76
Total fat (%E/day)	30.0	5.91	30.1	5.39	32.9	5.01
Animal fat (%E/day)	14.3	4.62	17.1	4.36	20.8	4.73
Vegetable fat (%E/day)	15.8	4.90	13.1	3.80	12.2	3.61
Trans fat (%E/day)	0.40	0.16	0.49	0.16	0.63	0.18
Omega-3 (g/day)	2.28	0.90	1.87	0.72	1.84	0.69
Omega-6 (g/day)	12.8	4.71	10.1	3.61	10.0	3.44
Energy density (kj/g/day)	6.01	1.31	6.36	1.35	6.99	1.44

Fiber (g/day)	20.1	6.03	17.1	5.05	16.8	5.03
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*%E, percentage of total energy intake, kj, kilojoules, g, grams; SD, standard deviation.

Table S7. Energy and nutrient intake by sex (n =12,706).

	All (n=12,706)		Males (n=5,965)		Females (n=6,741)		P value [†]
	Mean	SD	Mean	SD	Mean	SD	
Total energy (kj/day)	8626	1937	9365	1988	7980	1638	<0.001
Carbohydrate (%E/day)	50.1	7.27	49.7	7.27	50.5	7.24	<0.001
Protein (%E/day)	16.1	2.98	15.7	2.80	16.4	3.09	<0.001
Total fat (%E/day)	31.0	5.62	30.7	5.58	31.3	5.64	<0.001
Animal fat (%E/day)	17.4	5.30	17.3	5.32	17.4	5.29	0.017
Vegetable fat (%E/day)	16.7	4.43	13.4	4.40	13.9	4.44	<0.001
Trans fat (%E/day)	0.51	0.19	0.50	0.19	0.51	0.20	0.001
Omega-3 (g/day)	2.00	0.80	2.09	0.83	1.93	0.77	<0.001
Omega-6 (g/day)	11.0	4.18	11.7	4.41	10.4	3.87	<0.001
Energy density (kj/g/day)	6.45	1.43	6.82	1.41	6.13	1.35	<0.001
Fiber (g/day)	18.0	5.58	18.5	5.86	17.6	5.29	<0.001

* %E, percentage of total energy intake, kj, kilojoules, g, grams; SD, standard deviation.

[†] P value for linear regression analysis for dietary components differences between males and females adjusted for age, smoking status and BMI.

Table S8. Changes in markers of CVD risk overall and stratified by sex per 1 unit increase in dietary patterns score after excluding energy misreporters from the analysis (n =8,470).

	All (n=8,470)				Males (n=3,769)				Females (n=4,701)			
	Dietary Pattern 1		Dietary Pattern 2		Dietary Pattern 1		Dietary Pattern 2		Dietary Pattern 1		Dietary Pattern 2	
	β -coef	95% CI	β -coef	95% CI	β -coef	95% CI	β -coef	95% CI	β -coef	95% CI	β -coef	95% CI
Framingham risk												
score^s												
Model 1	0.07	-0.11, 0.25	0.02	-0.13, 0.18	0.16	-0.15, 0.47	-0.08	-0.33, 0.17	-0.03	-0.23, 0.18	0.14	-0.04, 0.32
Model 2	-0.03	-0.21, 0.15	0.05	-0.10, 0.20	-0.05	-0.34, 0.24	-0.01	-0.24, 0.23	-0.03	-0.23, 0.18	0.15	-0.02, 0.32
Systolic blood												
pressure^s												
Model 1	0.22	-0.16, 0.60	0.33	0.01, 0.65	0.43	-0.09, 0.95	0.47	0.05, 0.90	-0.01	-0.56, 0.55	0.15	-0.33, 0.63
Model 3	-0.34	-0.68, -0.01	-0.02	-0.29, 0.26	-0.30	-0.76, 0.16	0.05	-0.32, 0.41	-0.39	-0.88, 0.10	-0.05	-0.48, 0.37
Diastolic blood												
pressure^s												
Model 1	0.19	-0.02, 0.41	0.16	-0.02, 0.34	0.38	0.07, 0.69	0.18	-0.07, 0.43	0.01	-0.30, 0.30	0.14	-0.12, 0.40
Model 3	-0.09	-0.28, 0.10	0.11	-0.04, 0.27	-0.05	-0.32, 0.22	0.14	-0.07, 0.40	-0.15	-0.43, 0.11	0.10	-0.13, 0.33

Cardiac index^{||}

Model 1	-0.03	-0.05, -0.01	-0.01	-0.03, 0.01	-0.02	-0.04, -0.01	-0.02	-0.03, -0.01	-0.03	-0.07, 0.01	-0.01	-0.03, 0.03
Model 3	-0.03	-0.04, -0.01	-0.01	-0.03, 0.01	-0.02	-0.04, -0.01	-0.02	-0.03, -0.01	-0.03	-0.06, -0.01	0.01	-0.01, 0.02

LV ejection**fraction^{||}**

Model 1	0.06	-0.10, 0.21	-0.16	-0.29, -0.03	-0.02	-0.23, 0.20	-0.19	-0.37, -0.01	0.13	-0.08, 0.35	-0.12	-0.30, 0.07
Model 3	0.01	-0.12, 0.13	-0.15	-0.27, -0.02	-0.02	-0.20, 0.16	-0.13	-0.27, -0.02	0.06	-0.11, 0.23	-0.12	-0.27, 0.03

Carotid IMT^{||}

Model 1	-1.26	-3.89, 1.44	2.68	0.51, 4.84	-2.49	-6.36, 1.87	3.95	0.74, 7.16	-0.53	-3.87, 2.81	1.23	-1.58, 4.05
Model 3	-1.52	-4.19, 1.14	1.92	-0.23, 4.08	-1.81	-5.95, 2.32	3.03	-0.17, 6.23	-1.03	-4.36, 2.29	0.59	-2.20, 3.38

Augmentation**index^{||}**

Model 1	0.12	-0.08, 0.31	0.01	-0.15, 0.18	0.12	-0.13, 0.36	0.04	-0.17, 0.25	0.12	-0.18, 0.42	-0.03	-0.29, 0.23
Model 3	0.06	-0.13, 0.25	-0.10	-0.26, 0.07	0.11	-0.14, 0.35	-0.07	-0.28, 0.14	0.02	-0.28, 0.31	-0.15	-0.41, 0.11

*SD, standard deviation; LV, left ventricular; IMT, intima medial thickness. Values in bold represent statistically significant associations.

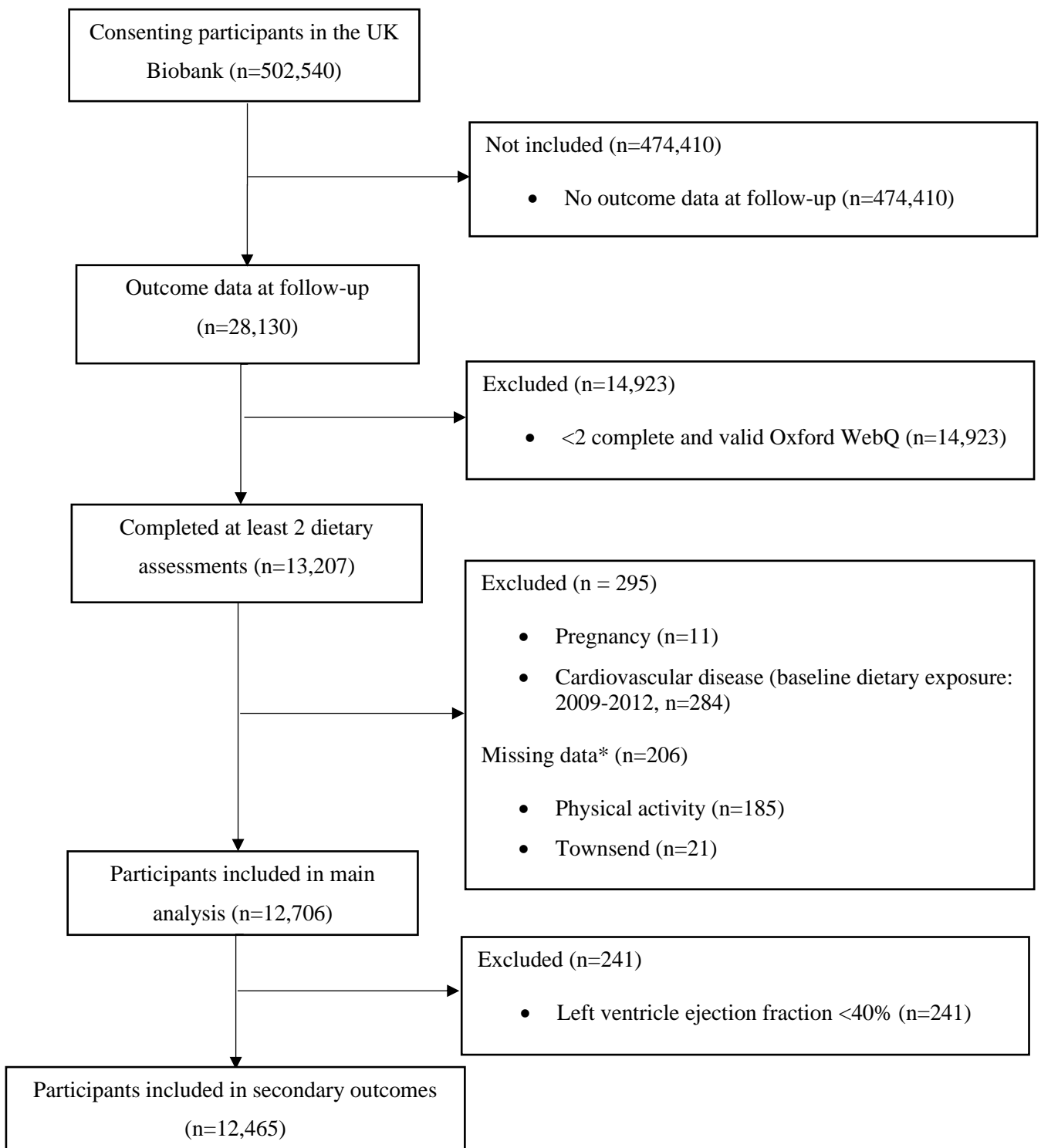
† Secondary outcome analyses included 12,486 individuals.

‡ Model 1: analysis adjusted for age and sex (except when used to stratify). Model 2: analysis adjusted for Model 1 plus Townsend deprivation index, physical activity, follow-up time and energy misreporting. Model 3: analysis adjusted for Model 2 plus BMI, smoking status and blood pressure medication use.

§ Regression coefficients from linear regression analyses represent change in outcome from baseline (2006-2010) to follow-up (2014-2020) per 1 unit increase in dietary pattern scores. Dietary pattern 1 scores ranged from -3.41 to 6.68 and dietary pattern 2 scores ranged from -5.89 to 5.03.

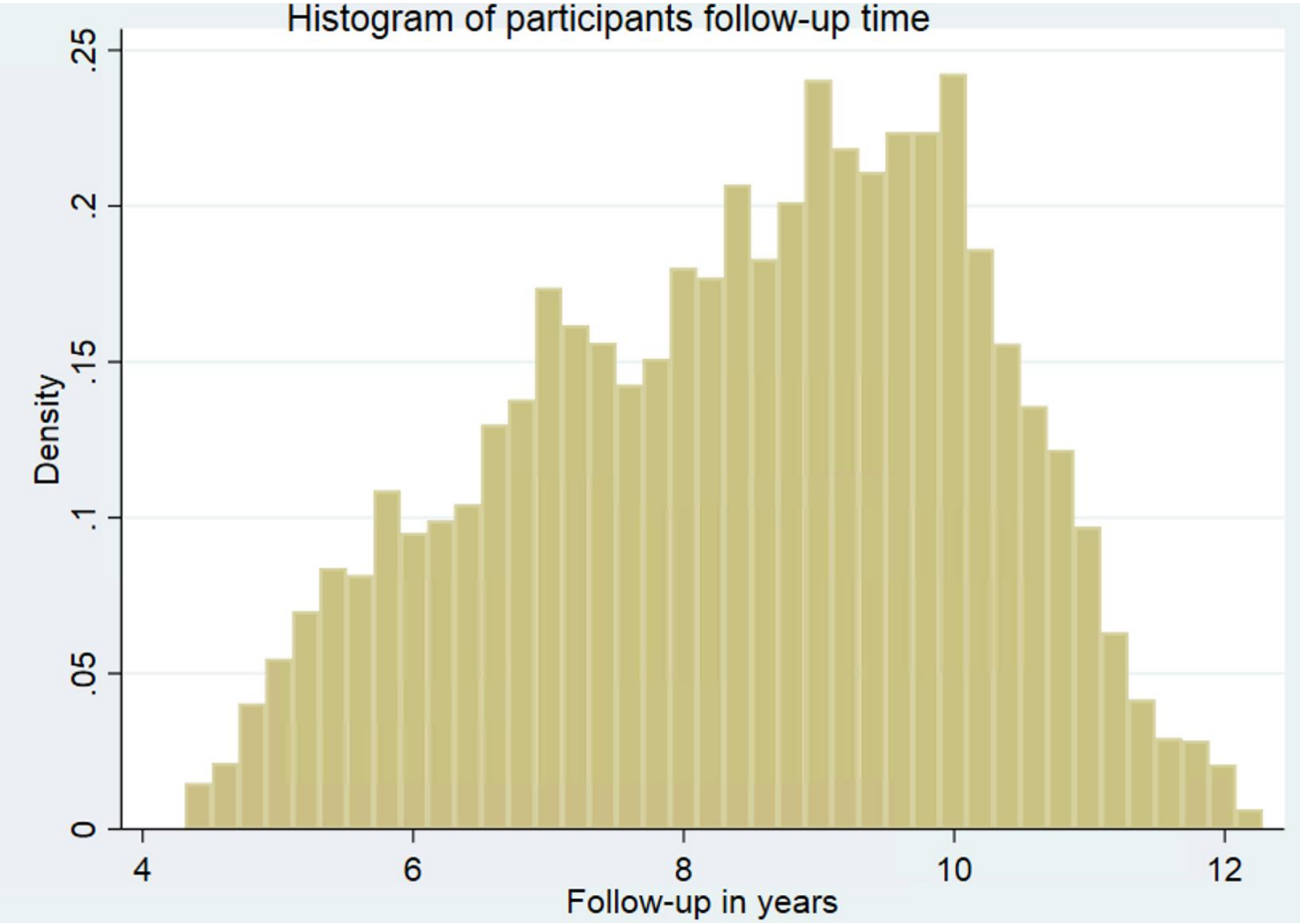
|| Regression coefficients from linear regression analyses represent values for the outcome at follow-up (2014-2020) per 1 unit increase in dietary pattern scores. Dietary pattern 1 scores ranged from -3.41 to 6.68 and dietary pattern 2 scores ranged from -5.89 to 5.03.

Figure S1. Flow diagram of subjects included in the analysis of the UK Biobank.

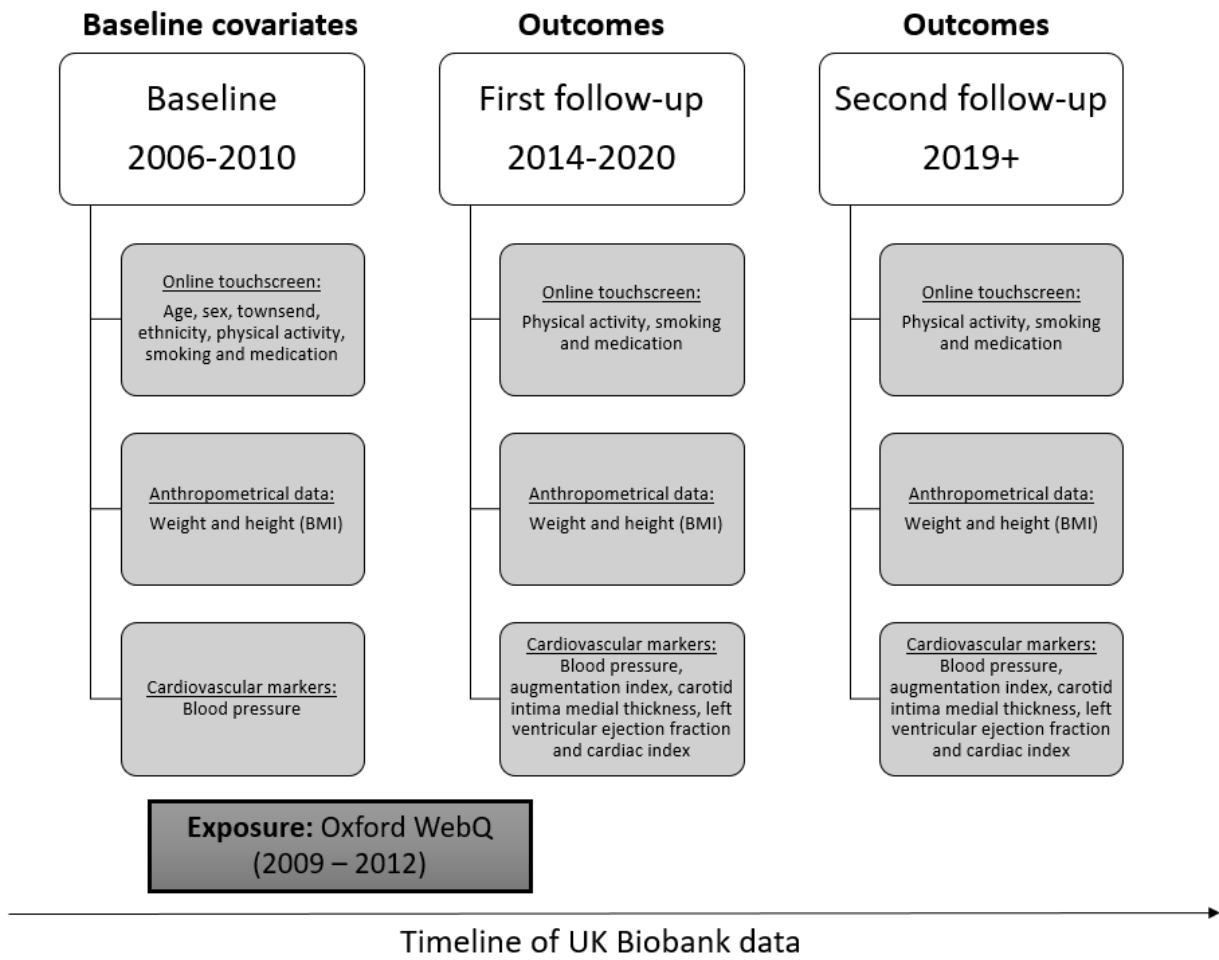


*Excluded due to missing data or reported “don’t know” or “prefer not to answer”. The total number excluded represents being excluded for any combination of variables.

Figure S2. Panel A: Histogram of participants follow-up in years. Panel B: Diagram showing exposure, covariate and outcome timepoints used in this study.

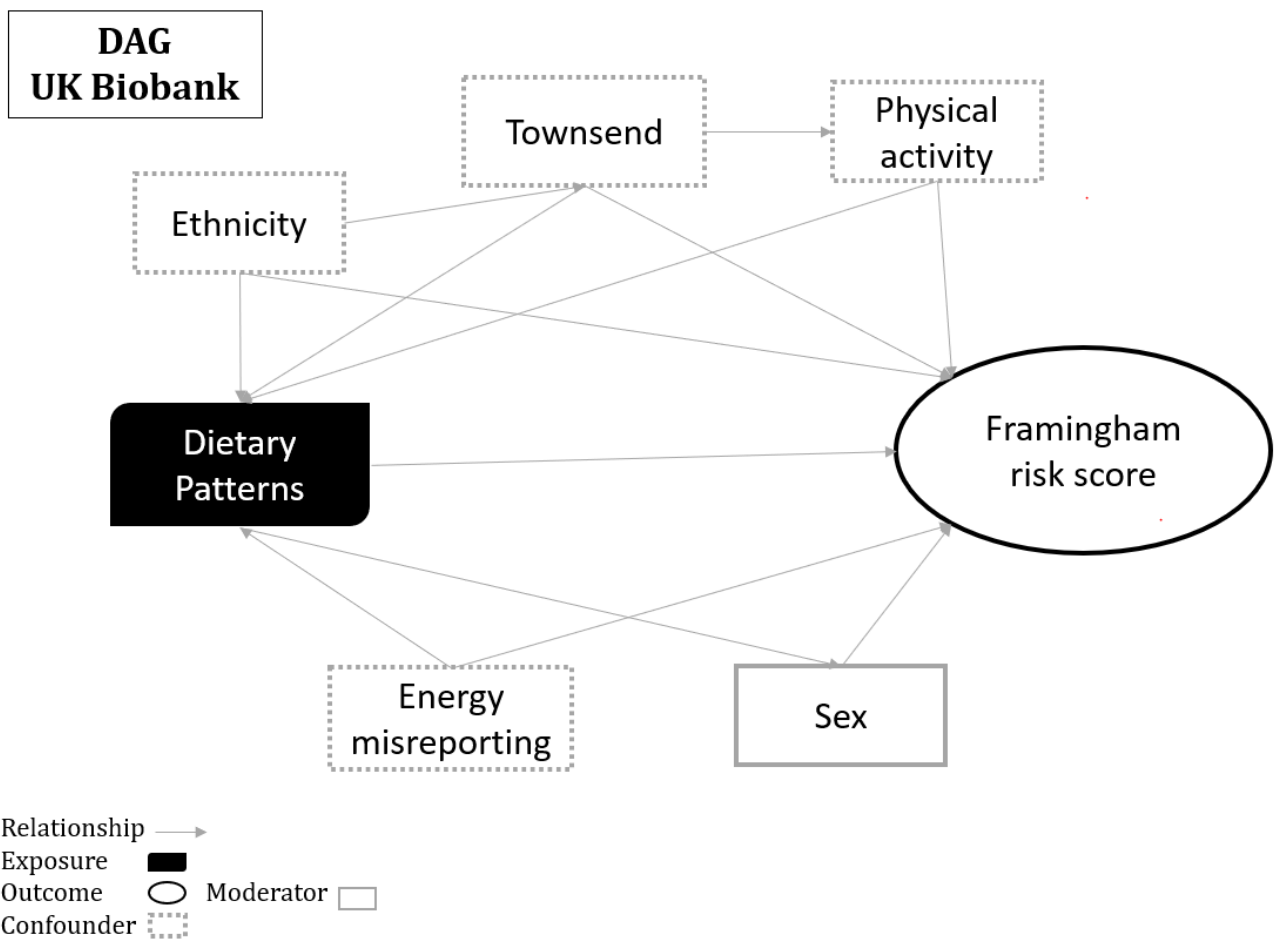


Panel A.



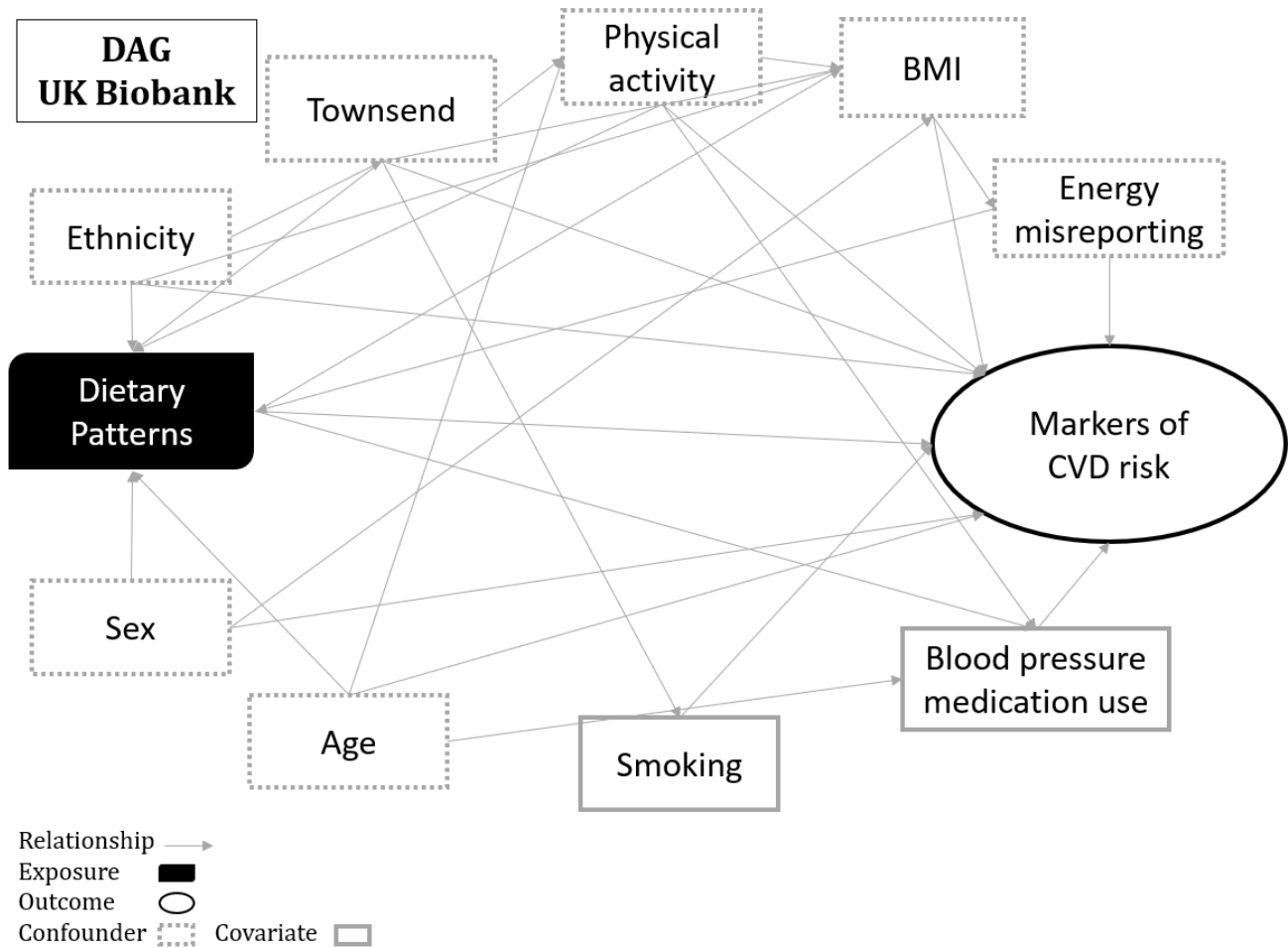
Panel B.

Figure S3. Directed Acyclic Graph (DAG) of the relationship between dietary patterns and Framingham risk score.



This graph represents the relationship between the exposure, dietary patterns based on SFA, PUFA, MUFA and the primary outcome Framingham risk score. The graph includes the causal pathway as well as possible moderators, mediators, confounders and covariates. Energy misreporting, physical activity, ethnicity and Townsend deprivation index were considered as confounders as they can influence both exposure and outcome. Sex was considered a moderator as it can influence the strength of the associations between exposure and outcome.

Figure S4. Directed Acyclic Graph (DAG) of the relationship between dietary patterns and markers of cardiovascular disease (CVD) risk.



This graph represents the relationship between the exposure, dietary patterns based on SFA, PUFA, MUFA and the secondary outcomes cardiovascular health markers. The graph includes the causal pathway as well as possible moderators, mediators, confounders and covariates. Body mass index (BMI), energy misreporting, physical activity, ethnicity, sex and age were considered as confounders as they can influence both exposure and outcome. Lastly, smoking and blood pressure medication use were considered to be covariates as they only influence the outcome

Figure S5. Factor loadings of the 48 food groups for dietary patterns 1 and 2.

