Supplementary Online Content

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This supplementary material has been provided by the authors to give readers additional information about their work.

eMethods.

Food Frequency Questionnaire (FFQ) Data Derivation Procedures

A unit or portion size for each food was specified, and participants were asked how often, on average, they had consumed that amount of food during the previous year. Response to all items was on a 9-point scale, ranging from 'never or less than once per month' to 'six or more times per day'. The selected frequency for each food item was converted to daily intake. Nutrient intake was calculated by multiplying the consumption frequency for each food by its nutrient content (for specified portions), and then nutrient intake from all foods were summed to ascertain total energy intake per day. Nutrient values were calculated using a computerized system developed for the dietary data of this study. The validity and reliability of this version of the FFQ in terms of nutrient and food consumption has been documented in detail both in this cohort and in another independent study in the United Kingdom.[1,2]

Assessment and Categorization of Covariates

Socio-demographic factors considered included age, sex, race/ethnicity (self-reported through predefined categories and analyzed as a binary variable – white versus non-white (South Asian, Black and other ethnic groups)), marital status (married/cohabiting versus others), socioeconomic status using occupational position (three categories: high, intermediate, and low representing income and status at work; in retired participants it was the occupational position at retirement), and education (five categories: less than primary school (up to age 11), lower secondary school (up to age 16), higher secondary school (up to age 18), university, and higher university degree).

Total energy intake (kcal/day) was estimated from the FFQ. Health behaviors included cigarette smoking status (categorized as current, ex-, and never smokers), alcohol consumption (number of alcoholic drinks consumed in the previous seven days, converted to units of alcohol consumed per week and categorized as "no/occasional alcohol consumption", "moderate alcohol consumption" (1-13.9 units/week in women, 1-20.9 units/week in men), and "heavy alcohol consumption" (≥14 units/week in women, ≥21 units/week in men)), and hours of moderate to vigorous physical activity per week.

Health related covariates included hypertension (systolic/diastolic blood pressure ≥140/90 mmHg or use of antihypertensive medication), dyslipidemia (total cholesterol ≥200 mg/dL or use of lipid lowering medication), type 2 diabetes (fasting glucose ≥7.0 mmol/L, reported doctor-diagnosed diabetes, or use of diabetes medication), body mass index (BMI; classified as: <20kg/m², 20-24.9kg/m², 25-29.9kg/m², ≥30kg/m²) all assessed at the clinical examination, cardiovascular disease (CVD; including coronary heart disease and stroke; identified using linkage to national hospital records), self-reported use of CVD medication (anti-platelets, diuretics, anti-hypertensive medication, lipid-lowering medication, anti-coagulants, and beta-blockers), and depressive symptoms (based on the four-item depression subscale of the General Health Questionnaire[3] (total score≥4 out of 12 points) or antidepressants use). Apolipoprotein E (APOE) haplotypes were assessed among 5304 participants of the 8225 included in the present study. Participants were classified as APOE ε4 non-carriers and APOE ε4 carriers for those with at least one ε4 allele.

Description of Sensitivity Analyses

Six sensitivity post-hoc analyses were undertaken to test the robustness of our findings.

1. Competing Risk of Death

The main analyses take into account the competing risk of mortality using cause-specific hazard models where persons who experience a competing event are censored at the time of the occurrence of the competing event, as recommended when the interest is in disease etiology.[4] In sensitivity analyses, we used Fine and Gray subdistribution hazard models[5] for competing-risk data which take an alternative approach to handling competing risk and is recommended when the interest is in developing clinical prediction models.[4]

2. Dementia With or Without History of CVD

Data on type of dementia were incomplete in the electronic health records, not allowing us to test the diet – dementia association according to subtypes of dementia, such as Alzheimer's disease. However, as complete history of CVD in our participants was available over the follow-up, we categorized dementia cases into dementia with and without a history of CVD (myocardial infarction or stroke). For each of these outcomes (the other being censored in the analysis at age of dementia diagnosis), we used Cox regression to examine associations with the dietary exposures.

3. Accounting for Missing Data

We used Inverse Probability Weighting (IPW) to ensure that the results were not influenced by missing data. We first estimated the probability of being included in the analytical sample (no missing data) using the following covariates in logistic regression: sociodemographic variables (age, sex, race/ethnicity, education, occupational position and marital status), health behaviors (smoking status, alcohol consumption, physical activity, and AHEI score), total energy intake, cardiometabolic risk factors (BMI, systolic and diastolic blood pressure, and cholesterol), depressive symptoms and chronic conditions (coronary heart disease, stroke, diabetes, chronic obstructive pulmonary disease, cancer), and dementia status over the follow-up, including interaction between dementia status and AHEI score. The inverse of these probabilities was used as weights in reanalysis using Cox regression models.

Both IPW and multiple imputation methods assume data to be missing at random. They yield similar results as demonstrated in the ARIC study that showed education to be similarly associated with cognitive decline whether missing data were accounted for using multiple imputation or IPW.[6] We chose to use IPW as we were able to specify the missing data process well due to availability of data on the AHEI score, and on socio-demographic and behavioral factors in 1991-1993, and health conditions over the entire follow-up ascertained via linkage to electronic health records. We chose not to use multiple imputation as it would have also imputed the primary exposure and artificially inflated the statistical power in the analyses.

4. Alternative Definition of Dementia

As dementia was ascertained from linkage to electronic health records it is likely to miss milder cases. In order to assess the robustness of our findings we used an alternative definition of "possible" dementia which also included cases defined by poor cognitive performance (<18 on the Mini Mental State Examination (MMSE) score or global cognitive scores <-2 standard deviations below the mean) using cognitive data from the1997-1999, 2002-2004, 2007-2009, 2012-2013, and 2015-2016 assessments. First record of "possible" dementia in any of these sources was set as the date of dementia for the Cox regression. Those free of "possible" dementia were censored at death or 31st of March 2017, whichever came first.

5. Association Between Dietary Exposures and Risk of Mortality

Diet has been shown to be associated with risk of mortality. In order to assess whether measures of diet quality and dietary patterns in this study were similarly associated with mortality, we examined the association between diet indices in 1991-1993, 1997-1999, and 2002-2004 and incidence mortality using Cox regression with data censored at date of death or end of follow-up (March 31st 2017) whichever came first.

6. Association Between the Mediterranean-Type Diet (Med-Diet) and Risk of Dementia

Finally, as the Mediterranean-type diet has been widely examined in relation to cognitive outcomes,[7] although not very common in the UK, we repeated the diet-dementia analyses by considering adherence to the Mediterranean diet according to the score (range, 0-9) proposed by Trichopoulou et al.[8] based on 9 components (vegetables, legumes, fruits and nuts, cereals, fish and seafood, meat and meat products, dairy products, moderate alcohol intake, and the ratio of monounsaturated fatty acids to saturated fatty acids). One point was assigned to persons whose consumption was at or above the sex-specific median of six components (vegetables, fruits/nuts, legumes, fish/seafood, cereals, and monounsaturated to saturated lipid ratio). For meat/meat products and dairy products 1 point was assigned when consumption was below the median value of these two components. For ethanol, one point was assigned only for moderate amounts of intake (5–25 g/day for women or 10–50 g/day for men).

eReferences

1. Brunner E, Stallone D, Juneja M, Bingham S, Marmot M. Dietary assessment in Whitehall II: comparison of 7 d diet diary and food-frequency questionnaire and validity against biomarkers. *Br J Nutr.* 2001;86(3):405-414.
2. Bingham SA, Gill C, Welch A, et al. Validation of dietary assessment methods in the UK arm of EPIC using weighed records, and 24-hour urinary nitrogen and potassium and serum vitamin C and carotenoids as biomarkers. *Int J Epidemiol.* 1997;26 Suppl 1:S137-S151.
3. Stansfeld SA, Head J, Marmot MG. Explaining social class differences in depression and well-being. *Soc Psychiatry Psychiatr Epidemiol*. 1998;33(1):1-9.
4. Austin PC, Lee DS, Fine JP. Introduction to the Analysis of Survival Data in the Presence of Competing Risks. *Circulation* 2016;133(6):601-609.
5. Fine JP, Gray RJ. A Proportional Hazards Model for the Subdistribution of a Competing Risk. *J Am Stat Assoc*. 1999;94:496-509.
6. Gottesman et al. Impact of differential attrition on the association of education with cognitive change over 20 years of follow-up: the ARIC neurocognitive study*. Am J Epidemiol*. 2014;179(8):956-966.
7. Wu L, Sun D. Adherence to Mediterranean diet and risk of developing cognitive disorders: An updated systematic review and meta-analysis of prospective cohort studies. *Scientific reports.* 2017;7:41317.
8. Trichopoulou A, Costacou T, Bamia C, Trichopoulos D. Adherence to a Mediterranean diet and survival in a Greek population. *The New England journal of medicine*. 2003;348(26):2599-2608.

eTable 1. Construction and Distribution of AHEI Scores in the 8225 Whitehall II Participants

Components of the Alternative Healthy Eating Index (AHEI)		Criteria for minimal scores	Criteria for maximal scores	AHEI score in 1991-1993		Cumulative mean AHEI score (1991-1993, 1997-1999, & 2002-2004)	
				Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)
Vegetables (serving /day)		0	≥5	5.9 (2.3)	6 (5-8)	6.3 (2.2)	6.0 (4.7-8)
Fruits (serving /day)		0	≥4	5.1 (2.8)	5 (3-7)	5.5 (2.6)	5.5 (3.5-7.7)
Whole grains (serving /day)	Men Women	0 0	5 6	3.4 (2.7) 3.7 (2.8)	3 (1-5) 3 (2-5)	3.2 (2.2) 3.5 (2.3)	2.6 (1.5-4.5) 1.6 (1.0-3.0)
Soda and fruit juice (serving /day)		≥1	0	3.6 (3.6)	2 (0-7)	3.5 (3.2)	3.0 (3.3-6.0)
Nuts and legumes (serving /day)		0	1	2.5 (2.7)	2 (1-3)	2.5 (2.5)	2.0 (0.7-3.7)
Processed /Red Meat (serving /day)		≥1.5	0	4.9 (2.8)	5 (3-7)	5.0 (2.6)	5.0 (3.0-7.0)
Trans Fat (% of energy)		Highest decile	Lowest decile	5.2 (3.3)	5 (2-8)	5.2 (2.9)	5.0 (3-7.7)
Long-chain (n-3) fats (mg/d)		0	250	7.9 (2.7)	10 (6-10)	7.9 (2.4)	8.7 (6.3-10)
PUFA[a] (% of energy)		≤2	≥10	3.9 (2.9)	3 (2-6)	3.7 (2.5)	3.3 (2.0-5.3)
Sodium (mg/d)		Highest decile	Lowest decile	5.1 (3.3)	5 (2-8)	5.1 (2.9)	5.0 (2.7-7.5)
Alcohol (serving/day)[b]	Men Women	≥3.5 ≥2.5	0.5–2.0 0.5–1.5	5.5 (4.0) 4.5 (3.6)	4 (2.5-10) 2.5 (2.5-10)	5.6 (3.5) 4.4 (3.0)	5.5 (2.5-10) 2.5 (2.5-6.3)
Total Score		0	110	52.7 (10.0)	52.5 (45.5-59.5)	53.3 (9.1)	53.2 (47.0-59.3)

Abbreviations: AHEI, Alternative Healthy Eating Index; IQR, Interquartile Range; PUFA, Polyunsaturated Fatty Acids; SD, Standard Deviation.

[a] PUFA does not include long-chain n-3 fats.

[b] Nondrinkers received a score of 2.5.

Each AHEI component contributed from 0 to 10 points to the total AHEI score. For each component, a score of 10 indicates that the recommendations were fully met, whereas a score of 0 represents the least healthy dietary behavior. All component were summed to obtain the total AHEI score (range, 0-110).

eTable 2. Food Groups Used for Factor Analyses to Identify Dietary Patterns

Foods or Food groups	Food items
Red Meat	Beef, beef burgers, pork, lamb
Poultry	Chicken or other poultry
Processed meats	Bacon, ham, corned beef, spam, luncheon meats, sausages
Organ meat	Liver
Fish	White fish, oily fish and shellfish
Refined grain	White bread and rolls, cream cracker, cheese biscuits, crisp bread, refined grain ready-to-eat cereals, white pasta, white rice
Whole grain	Brown bread and rolls, whole meal bread and rolls, whole meal pasta, brown rice, whole grain ready-to-eat cereals
Eggs	Eggs
Butter	Butter
Margarine	Margarines, spread
High fat dairy	Full cream milk, Channel Island milk, coffee whitener, single or clotted cream, cheese, ice cream
Low fat dairy	Skimmed milk, sterilized milk, dried milk, yoghurt, cottage cheese
Soya product	Soya milk, tofu, soya bean curd, soya meat, textures vegetable protein, vege-burger
Liqueurs/Spirits	Port, sherry, liqueurs, spirits
Wine	Wine
Beer	Beers, ciders
Hot drinks	Tea, regular coffee, decaffeinated coffee, cocoa, hot chocolate, chicory
Fruits	Apples, pears, oranges, mandarins, grapefruit, bananas, grapes, melon, peaches, plums, apricots, strawberries, raspberries, tinned fruit, dried fruits
Fruit juice	100 % real fruit juice
Leafy vegetables	Spinach, salads
Cruciferous vegetables	Broccoli, kales, Brussels sprouts, cabbage, cauliflower, coleslaw
Other vegetables	Carrots, marrow, zucchini, parsnip, leeks, mushroom, peppers onion, garlic
Tomatoes	Tomatoes
Peas and dried Legume	Beans, peas, baked beans, dried lentils
Soup	Vegetable soup, meat soup
Nuts	Peanuts, other nuts, peanut butter
Potatoes	Boiled, mashed potatoes, jacket potatoes, potato salad
Quiche/Pie	Quiche, meat pie
Pizza/Lasagna	Pizza, lasagna
Fried food	Chips or French fries, roast potatoes, fish fingers, fried fish in batter
Snacks	Crisps
Desserts/biscuits	Sweet biscuits, cakes, buns, pastries, fruits pies, tarts, crumbles, milk pudding, sponge puddings
Chocolate and sweets	Chocolate bars, sweets, toffees, sugar added to tea, coffee, jam, marmalade, honey
Sugar beverages	Fizzy soft drinks, fruit squash
Low calorie beverages	Low calorie soft drinks
Condiments	Sauce, tomato ketchup, pickles, marmites
Salad dressing	French vinaigrette, salad cream

eTable 3. Factor Loadings[a] (≥0.40)[b] on two Dietary Patterns Identified Using Principal Component Analysis

	1st Pattern : "Healthy food" dietary pattern	2nd Pattern : "Western - type" dietary pattern
Leafy vegetables	0.69	-
Other vegetables	0.66	-
Tomatoes	0.59	-
Fruits	0.52	-
Cruciferous vegetables	0.46	-
Salad Dressing	0.46	-
Fish	0.46	-
Fried food	-	0.56
Processed meats	-	0.54
Red Meat	-	0.46
Quiche/Pie	-	0.46
Condiments	-	0.44
Chocolates and sweets	-	0.42
High fat dairy	-	0.41
Refined grain	-	0.40

[a] Factor loadings from orthogonal rotation (Varimax rotation function in SAS software; version 9.4, SAS Institute Inc, Cary, North Carolina) represent the correlation between the factors and individual items from food group.
[b] Values < 0.40 were not listed in order to simplify interpretation of factors.
Dietary patterns were identified using principal component analysis (the factor procedure in SAS software). Scores for the "*Healthy food*" and "*Western-type"* patterns were not correlated with each other (Spearman correlation coefficient $r = 0.02$).
To assess the validity of the dietary patterns using food grouping (eTable 2), we also undertook the principal component analyses using individual food items and the results were comparable. The reproducibility of dietary pattern scores was assessed by repeating factor analyses at the three phases of dietary data collection. Similar dietary patterns were obtained in 1991-1993, 1997-1999 and 2002-2004, showing consistency in dietary patterns across three assessments of our study population. Pearson correlation coefficients between scores at the different waves ranged from 0.58 to 0.64 for the "*Healthy food*" pattern and from 0.62 to 0.70 for the "*Western-type"* pattern.

eTable 4. Comparison of Characteristics of Participants Included and Excluded From the Analyses

	Included (N=8225)	Excluded (N=2083)	P[b]
	N[a] (%)	N[a] (%)	
Baseline (1985-1988) characteristics			
Age, M(SD)	44.8 (6.0)	45.3 (6.2)	<0.001
Women	2539 (30.9)	874 (42.0)	<0.001
Non-white	770 (9.4)	357 (17.1)	<0.001
Less than secondary school diploma	3789 (46.1)	1110 (53.3)	<0.001
Low occupational position	1362 (16.6)	733 (36.5)	<0.001
Married/cohabiting	6204 (75.4)	1431 (68.8)	<0.001
Incident events			
Incident dementia up to March 2017	344 (4.2)	119 (5.7)	0.003

Abbreviations: M, Mean; SD, Standard Deviation.
[a] N (%), otherwise stated. Estimates are calculated among those with non-missing values (values were missing for 4 participants for marital status).
[b] P for heterogeneity were assessed using Chi square test for dichotomous variables and linear regression for the continuous variable age.

eTable 5. Association Between Dietary Exposures and Incidence of Dementia, Detailed Adjustment Models[a]

	Diet in 1991-1993 N cases/Total N=344/8225 Median follow-up=24.8 (IQR, 24.2-25.1) years			Diet in 1997-1999 N cases/Total N=204/5242 Median follow-up=19.1 (IQR, 18.6-19.4) years			Diet in 2002-2004 N cases/Total N=192/5534 Median follow-up=13.5 (IQR, 13.1-14.0) years		
	Adjusted for age, sex, race/ ethnicity and energy intake	+ socio-demographic and behavioral factors[b]	+ health factors[c]	Adjusted for age, sex, race/ ethnicity and energy intake	+ socio-demographic and behavioral factors[b]	+ health factors[c]	Adjusted for age, sex, race/ ethnicity and energy intake	+ socio-demographic and behavioral factors[b]	+ health factors[c]
	HR (95%CI)	HR (95%CI)	HR (95%CI)	HR (95%CI)	HR (95%CI)	HR (95%CI)	HR (95%CI)	HR (95%CI)	HR (95%CI)
AHEI tertiles[d]									
Worst	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Intermediate	0.93 (0.72, 1.20)	0.96 (0.74, 1.25)	0.95 (0.73, 1.23)	0.92 (0.66, 1.29)	0.95 (0.68, 1.35)	0.98 (0.69, 1.38)	0.77 (0.55, 1.08)	0.80 (0.57, 1.12)	0.81 (0.58, 1.15)
Best	0.90 (0.69, 1.17)	0.95 (0.73, 1.25)	0.93 (0.71, 1.22)	0.91 (0.65, 1.28)	0.95 (0.67, 1.34)	0.95 (0.67, 1.35)	0.69 (0.48, 0.97)	0.72 (0.50, 1.02)	0.73 (0.51, 1.05)
Per 1 SD (10-point) increment	*0.95 (0.85,1.06)*	*0.97 (0.87, 1.09)*	*0.97 (0.87, 1.08)*	*0.95 (0.82, 1.09)*	*0.97 (0.84, 1.12)*	*0.97 (0.83, 1.12)*	*0.85 (0.73, 0.98)*	*0.86 (0.75, 0.99)*	*0.87 (0.75, 1.00)*
Healthy food pattern tertiles[e]									
Worst	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Intermediate	0.98 (0.75, 1.28)	1.04 (0.79, 1.37)	1.01 (0.77, 1.34)	0.90 (0.64, 1.26)	0.93 (0.66, 1.32)	0.95 (0.67, 1.35)	0.79 (0.56, 1.12)	0.86 (0.60, 1.22)	0.88 (0.61, 1.25)
Best	0.93 (0.70, 1.23)	1.01 (0.76, 1.35)	0.97 (0.73, 1.30)	0.78 (0.54, 1.13)	0.83 (0.56, 1.21)	0.83 (0.56, 1.22)	0.63 (0.43, 0.93)	0.69 (0.47, 1.03)	0.70 (0.47, 1.05)
Per 1 SD increment	*0.93 (0.82, 1.04)*	*0.95 (0.85, 1.07)*	*0.93 (0.83, 1.05)*	*0.84 (0.71, 0.99)*	*0.86 (0.73, 1.03)*	*0.86 (0.72, 1.02)*	*0.86 (0.73, 1.02)*	*0.90 (0.76, 1.07)*	*0.90 (0.76, 1.07)*
Western-type pattern tertiles[f]									
Worst	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Intermediate	0.84 (0.63, 1.13)	0.88 (0.66, 1.19)	0.86 (0.64, 1.16)	0.80 (0.54, 1.19)	0.83 (0.56, 1.24)	0.80 (0.53, 1.19)	0.79 (0.54, 1.16)	0.74 (0.51, 1.07)	0.81 (0.55, 1.19)
Best	0.96 (0.68, 1.36)	1.04 (0.73, 1.48)	1.00 (0.70, 1.43)	0.93 (0.59, 1.47)	1.01 (0.63, 1.61)	0.96 (0.60, 1.54)	0.78 (0.49, 1.24)	0.81 (0.51, 1.29)	0.80 (0.50, 1.28)
Per 1 SD decrement	*0.95 (0.81, 1.12)*	*0.99 (0.83, 1.17)*	*0.99 (0.83, 1.17)*	*1.00 (0.80, 1.24)*	*1.05 (0.84, 1.32)*	*1.03 (0.82, 1.30)*	*0.88 (0.71, 1.09)*	*0.91 (0.73, 1.13)*	*0.89 (0.71, 1.12)*

Abbreviations: AHEI, Alternative Healthy Eating Aging; BMI, Body Mass Index; CI, Confidence Interval; CVD, Cardiovascular Disease; HR, Hazard Ratio; IQR, Interquartile Range; SD, Standard Deviation.

[a] HRs and their 95%CI were estimated using Cox regression models.

[b] Additionally adjusted for education, occupational position, marital status, smoking status, physical activity and alcohol consumption (apart for AHEI as alcohol is one of the components of the score).

[c] Additionally adjusted for hypertension, diabetes, BMI, dyslipidemia, depressive symptoms, CVD, and CVD medication.

[d] Worst (lowest) tertile of the AHEI reflects poor adherence to the AHEI and Best (highest) tertile a healthier diet. In 1991-1993, the Worst tertile of AHEI corresponds to 22.0 to 48.0 points, Intermediate tertile to 48.5 to 57.0 points and Best tertile to 57.5 to 91.0 points. In 1997-1999, the Worst tertile corresponds to 21.0 to 49.5 points, Intermediate tertile to 50.0 to 58.0 points and Best tertile to 58.5 to 92.0 points. In 2002-2004, the Worst tertile corresponds to 19.5 to 49.5 points, Intermediate tertile to 50.0 to 58.5 points and Best tertile to 59.0 to 94.0 points.

[e] Higher scores (Best (highest) tertile) on the "Healthy food" pattern indicate greater intake of vegetables, fruits and fish (range -2.6 to 12.7 over the three assessments). In 1991-1993, the Worst (lowest) tertile of "Healthy food" pattern correspond to -2.3 to -0.5, Intermediate tertile to -0.5 to 0.3 and Best tertile to 0.3 to 11.0. In 1997-1999, the Worst tertile corresponds to -2.6 to -0.5, Intermediate tertile to -0.5 to 0.3 and Best tertile to 0.3 to 7.0. In 2002-2004, the Worst tertile corresponds to -2.3 to -0.5, Intermediate tertile to -0.5 to 0.3 and Best tertile to 0.3 to 12.7. Results are reported for 1 SD increment indicating better diet.

[f] Higher scores (Worst (highest) tertile) on the "Western-type" pattern indicate greater intake of fried food, processed and red meat, pies, chocolate and sweets, high-fat dairy products, and refined grains (range -2.7 to 7.3 over the three assessments). In 1991-1993, the Best (lowest) tertile of "Western-type" pattern correspond to -2.5 to -0.5, Intermediate tertile to -0.5 to 0.3 and Worst tertile to 0.3 to 7.3. In 1997-1999, the Best tertile corresponds to -2.7 to -0.5, Intermediate tertile to -0.5 to 0.3 and the Worst tertile to 0.3 to 4.7. In 2002-2004, the Best tertile corresponds to -2.7 to -0.5, Intermediate tertile to -0.5 to 0.3 and the Worst tertile to 0.3 to 4.6. Results are reported for 1 SD decrement indicating better diet.

eTable 6. Association Between Dietary Exposures and Incidence of Dementia, Additional Adjustment for APOE ε4 Genotype

	Diet in 1991-1993 N cases/Total N= 200/5304	Diet in 1997-1999 N cases/Total N= 151/4105	Diet in 2002-2004 N cases/Total N= 170/4880
	HR[a] (95%CI)	HR[a] (95%CI)	HR[a] (95%CI)
AHEI tertiles[b]			
Worst	1 (ref)	1 (ref)	1 (ref)
Intermediate	1.11 (0.80, 1.55)	1.04 (0.69, 1.56)	0.84 (0.58, 1.20)
Best	0.83 (0.57, 1.20)	1.15 (0.77, 1.72)	0.77 (0.53, 1.12)
Per 1 SD (10-point) increment	*0.93 (0.80, 1.07)*	*1.05 (0.88, 1.25)*	*0.90 (0.77, 1.04)*
Healthy food pattern tertiles[b]			
Worst	1 (ref)	1 (ref)	1 (ref)
Intermediate	1.05 (0.74, 1.51)	0.95 (0.63, 1.43)	0.95 (0.65, 1.38)
Best	0.92 (0.62, 1.36)	0.83 (0.53, 1.31)	0.64 (0.42, 0.99)
Per 1 SD increment	*0.88 (0.74, 1.05)*	*0.79 (0.64, 0.97)*	*0.87 (0.72, 1.04)*
Western-type pattern tertiles[b]			
Worst	1 (ref)	1 (ref)	1 (ref)
Intermediate	0.80 (0.55, 1.17)	0.75 (0.46, 1.20)	0.74 (0.49, 1.12)
Best	0.78 (0.49, 1.24)	1.01 (0.59, 1.74)	0.90 (0.55, 1.45)
Per 1 SD decrement	*0.91 (0.73, 1.13)*	*0.99 (0.77, 1.28)*	*0.90 (0.72, 1.13)*

Abbreviations: AHEI, Alternative Healthy Eating Aging; BMI, Body Mass Index; CI, Confidence Interval; CVD, Cardiovascular Disease; HR, Hazard Ratio; SD, Standard Deviation.

[a] HRs and their 95%CI were estimated using Cox regression models adjusted for age, sex, race/ethnicity, energy intake, education, occupational position, marital status, smoking status, physical activity, alcohol consumption (apart for the AHEI score results as alcohol is one of the components of the score), hypertension, diabetes, BMI, dyslipidemia, depressive symptoms, CVD, CVD medication, and APOEε4.

[b] Values and interpretation of dietary exposure tertiles the same as in eTable 5.

eTable 7. Association Between Mean AHEI Score (1991-1993, 1997-1999, 2002-2004) and Incidence of Dementia (Follow-up From 2002-2004 to 2017; N Cases/ Total N=353/8268)[a]

		Adjusted for age, sex, race/ethnicity and energy intake	+ socio-demographic and behavioral factors[b]	+ health factors[c]
AHEI tertiles	AHEI score range	HR (95%CI)	HR (95%CI)	HR (95%CI)
Worst	22.0 to 49.0	1 (ref)	1 (ref)	1 (ref)
Intermediate	49.2 to 57.0	0.73 (0.56, 0.94)	0.78 (0.60, 1.01)	0.79 (0.61, 1.03)
Best	57.2 to 86.0	0.81 (0.63, 1.04)	0.88 (0.68, 1.14)	0.89 (0.68, 1.15)
Per 10-point increment	*22.0 to 86.0*	*0.88 (0.78, 1.01)*	*0.92 (0.82, 1.04)*	*0.92 (0.82, 1.04)*

Abbreviations: AHEI, Alternative Healthy Eating Aging; BMI, Body Mass Index; CI, Confidence Interval; CVD, Cardiovascular Disease; HR, Hazard Ratio.

[a] HRs and their 95%CI were estimated using Cox regression models. Mean AHEI score was calculated on 3 measures of AHEI in 4074 participants, on 2 measures of AHEI in 2205 participants, and on 1 measure in 1989 participants.

[b] Additionally adjusted for education, occupational position, marital status, smoking status, and physical activity assessed in 2002-2004.

[c] Additionally adjusted for hypertension, diabetes, BMI, dyslipidemia, depressive symptoms, CVD, and CVD medication assessed in 2002-2004.

eTable 8. Association Between Dietary Exposures in 1991-1993 and Cognitive Function in 1997-1999 and 18 Years Later in Fully Adjusted Models (N=6961)

		Global cognitive z-score in 1997-1999	Global cognitive z-score 18 years later
	Dietary score range	Mean (95%CI)[a]	Mean (95%CI)[a]
AHEI tertiles			
Worst	22.0 to 48.0	0.00 (-0.04, 0.03)	-0.78 (-0.82, -0.75)
Intermediate	48.5 to 57.0	0.01 (-0.02, 0.04)	-0.74 (-0.77, -0.71)
Best	57.5 to 91.0	0.00 (-0.04, 0.03)	-0.75 (-0.79, -0.72)
Healthy food pattern tertiles			
Worst	-2.3 to -0.5	-0.01 (-0.05, 0.02)	-0.73 (-0.77, -0.70)
Intermediate	-0.5 to 0.3	0.03 (-0.01, 0.06)	-0.74 (-0.77, -0.71)
Best	0.3 to 11.0	-0.01 (-0.05, 0.02)	-0.80 (-0.83, -0.76)
Western-type pattern tertiles			
Worst	0.3 to 7.3	-0.02 (-0.06, 0.02)	-0.80 (-0.84, -0.76)
Intermediate	-0.5 to 0.3	0.02 (-0.01, 0.05)	-0.73 (-0.76, -0.69)
Best	-2.5 to -0.5	0.01 (-0.03, 0.04)	-0.75 (-0.79, -0.71)

Abbreviations: AHEI, Alternative Healthy Eating Aging; BMI, Body Mass Index; CI, Confidence Interval; CVD, Cardiovascular Disease.
[a] Mean global cognitive z-score (standardized z-scores based on mean and standard deviation from cognitive tests in 1997-1999) estimated using the MARGINS command in Stata software following linear mixed-effect models adjusted for age, sex, race/ethnicity, energy intake, education, occupational position, marital status, smoking status, physical activity, alcohol consumption (apart for the AHEI score results for which alcohol is one of the components), hypertension, diabetes, BMI, dyslipidemia, depressive symptoms, CVD, CVD medication, time since 1997-1999, interactions between all the covariates with time, time squared, and the interaction between age and time squared.

eTable 9. Association Between Dietary Exposures in 1997-1999 and Cognitive Decline From 1997-1999 to 2015-2016 in Fully Adjusted Models (N=4956)

		Difference in global cognitive z-score in 1997-1999	Difference in 18-year cognitive decline
	Dietary score range	Beta (95%CI)[a]	Beta (95%CI)[a]
AHEI tertiles			
Worst	21.0 to 49.5	0 (ref)	0 (ref)
Intermediate	50.0 to 58.0	0.04 (-0.02, 0.09)	0.02 (-0.03, 0.07)
Best	58.5 to 92.0	-0.01 (-0.06, 0.04)	0.01 (-0.04, 0.07)
Per 1 SD (10-point) increment	*21.0 to 92.0*	*-0.01 (-0.03, 0.01)*	*0.00 (-0.02, 0.02)*
Healthy food pattern tertiles			
Worst	-2.1 to -0.5	0 (ref)	0 (ref)
Intermediate	-0.5 to 0.3	0.05 (0.01, 0.11)	-0.04 (-0.09, 0.01)
Best	0.3 to 7.0	0.04 (-0.02, 0.10)	-0.03 (-0.09, 0.03)
Per 1 SD increment	*-2.1 to 7.0*	*0.01 (-0.01, 0.04)*	*-0.02 (-0.05, 0.00)*
Western-type pattern tertiles			
Worst	0.3 to 4.7	0 (ref)	0 (ref)
Intermediate	-0.5 to 0.3	0.03 (-0.03, 0.09)	0.03 (-0.02, 0.09)
Best	-2.7 to -0.5	0.00 (-0.07, 0.07)	-0.01 (-0.08, 0.06)
Per 1 SD decrement	*-2.7 to 4.7*	*0.01 (-0.03, 0.04)*	*0.00 (-0.03, 0.03)*

Abbreviations: AHEI, Alternative Healthy Eating Aging; BMI, Body Mass Index; CI, Confidence Interval; CVD, Cardiovascular Disease; SD, Standard Deviation.

[a] Beta (standardized) and their 95%CI were estimated using linear mixed models. Estimates for cognitive performance in 1997-1999 correspond to the Beta of the variables at the intercept and those for cognitive decline correspond to the interaction of the variables with time (rescaled to correspond to 18 years). Models were adjusted for age, sex, race/ethnicity, energy intake, education, occupational position, marital status, smoking status, physical activity, alcohol consumption (apart for the AHEI score results for which alcohol is one of the components), hypertension, diabetes, BMI, dyslipidemia, depressive symptoms, CVD, CVD medication, time since 1997-1999, interactions between all the covariates with time, time squared, and the interaction between age and time squared.

eTable 10. Association Between Dietary Exposures and Incidence of Dementia Using Fine and Gray Model for Competing Risk of Mortality[a]

	Diet in 1991-1993 N cases/Total N=344/8225 Median follow-up=24.8 (IQR, 24.2-25.1) years			Diet in 1997-1999 N cases/Total N=204/5242 Median follow-up=19.1 (IQR, 18.6-19.4) years			Diet in 2002-2004 N cases/Total N=192/5534 Median follow-up=13.5 (IQR, 13.1-14.0) years		
	Adjusted for age, sex, race/ ethnicity and energy intake	**+ socio-demographic and behavioral factors[b]**	**+ health factors[c]**	**Adjusted for age, sex, race/ ethnicity and energy intake**	**+ socio-demographic and behavioral factors[b]**	**+ health factors[c]**	**Adjusted for age, sex, race/ ethnicity and energy intake**	**+ socio-demographic and behavioral factors[b]**	**+ health factors[c]**
	HR (95%CI)	HR (95%CI)	HR (95%CI)	HR (95%CI)	HR (95%CI)	HR (95%CI)	HR (95%CI)	HR (95%CI)	HR (95%CI)
AHEI tertiles[d]									
Worst	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Intermediate	0.99 (0.76, 1.27)	1.01 (0.78, 1.31)	1.00 (0.77, 1.30)	0.95 (0.68, 1.32)	0.97 (0.69, 1.36)	0.98 (0.70, 1.39)	0.77 (0.55, 1.08)	0.79 (0.57, 1.11)	0.81 (0.58, 1.14)
Best	0.96 (0.74, 1.25)	1.00 (0.76, 1.30)	0.98 (0.75, 1.29)	0.95 (0.68, 1.32)	0.98 (0.70, 1.38)	0.98 (0.69, 1.38)	0.71 (0.50, 1.01)	0.74 (0.52, 1.06)	0.76 (0.53, 1.09)
Per 1 SD (10-point) increment	*0.98 (0.88,1.09)*	*1.00 (0.90,1.11)*	*0.99 (0.89, 1.11)*	*0.97 (0.84,1.12)*	*0.98 (0.85,1.14)*	*0.98 (0.85, 1.12)*	*0.87 (0.76, 1.00)*	*0.89 (0.77, 1.02)*	*0.89 (0.78, 1.03)*
Healthy food pattern tertiles[d]									
Worst	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Intermediate	1.05 (0.80, 1.37)	1.10 (0.84, 1.45)	1.07 (0.82, 1.41)	0.92 (0.65, 1.30)	0.94 (0.66, 1.34)	0.96 (0.68, 1.37)	0.82 (0.58, 1.15)	0.88 (0.62, 1.25)	0.90 (0.63, 1.29)
Best	0.99 (0.75, 1.31)	1.05 (0.79, 1.41)	1.02 (0.76, 1.36)	0.81 (0.56, 1.18)	0.85 (0.58, 1.26)	0.85 (0.57, 1.25)	0.65 (0.44, 0.95)	0.71 (0.47, 1.07)	0.72 (0.48, 1.09)
Per 1 SD increment	*0.95 (0.85, 1.06)*	*0.97 (0.87, 1.08)*	*0.95 (0.85, 1.06)*	*0.86 (0.73, 1.01)*	*0.87 (0.74, 1.03)*	*0.87 (0.74, 1.02)*	*0.87 (0.69, 1.09)*	*0.90 (0.72, 1.14)*	*0.91 (0.72, 1.15)*
Western-type pattern tertiles[d]									
Worst	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Intermediate	0.89 (0.66, 1.20)	0.92 (0.68, 1.24)	0.90 (0.66, 1.21)	0.87 (0.59, 1.28)	0.90 (0.61, 1.33)	0.87 (0.58, 1.29)	0.81 (0.55, 1.21)	0.85 (0.57, 1.25)	0.84 (0.57, 1.24)
Best	1.02 (0.72, 1.46)	1.07 (0.74, 1.53)	1.03 (0.72, 1.48)	0.98 (0.61, 1.57)	1.05 (0.66, 1.67)	1.03 (0.64, 1.64)	0.82 (0.52, 1.28)	0.85 (0.54, 1.33)	0.85 (0.54, 1.35)
Per 1 SD decrement	*1.01 (0.86, 1.18)*	*1.03 (0.88, 1.21)*	*1.03 (0.88, 1.21)*	*1.03 (0.80, 1.31)*	*1.07 (0.84, 1.36)*	*1.06 (0.83, 1.36)*	*0.90 (0.72, 1.12)*	*0.92 (0.74, 1.15)*	*0.93 (0.74, 1.16)*

Abbreviations: AHEI, Alternative Healthy Eating Aging; BMI, Body Mass Index; CI, Confidence Interval; CVD, Cardiovascular Disease; HR, Hazard Ratio; IQR, Interquartile Range; SD, Standard Deviation.

[a] HRs and their 95%CI were estimated using Fine and Gray subdistribution hazard models to account for competing risk of mortality.

[b] Additionally adjusted for education, occupational position, marital status, smoking status, physical activity and alcohol consumption (apart for the AHEI score results as alcohol is one of the components of the score).

[c] Additionally adjusted for hypertension, diabetes, BMI, dyslipidemia, depressive symptoms, CVD, and CVD medication.

[d] Values and interpretation of dietary exposure tertiles the same as in eTable 5.

eTable 11. Association Between Dietary Exposures and Incidence of Dementia With and Without History of Cardiovascular Disease (CVD)[a]

	Diet in 1991-1993			Diet in 1997-1999			Diet in 2002-2004		
	Adjusted for age, sex, race/ ethnicity and energy intake	+ socio-demographic and behavioral factors[b]	+ health factors[c]	Adjusted for age, sex, race/ ethnicity and energy intake	+ socio-demographic and behavioral factors[b]	+ health factors[c]	Adjusted for age, sex, race/ ethnicity and energy intake	+ socio-demographic and behavioral factors[b]	+ health factors[c]
	HR (95%CI)	HR (95%CI)	HR (95%CI)	HR (95%CI)	HR (95%CI)	HR (95%CI)	HR (95%CI)	HR (95%CI)	HR (95%CI)
DEMENTIA WITH HISTORY OF CVD[d]									
AHEI									
Per 1 SD (10-point) increment	0.94 (0.74,1.18)	1.02 (0.80, 1.29)	0.99 (0.78, 1.25)	0.89 (0.65, 1.21)	0.96 (0.70, 1.31)	0.93 (0.67, 1.28)	0.80 (0.58, 1.09)	0.83 (0.61, 1.12)	0.89 (0.65, 1.20)
Healthy food pattern									
Per 1 SD increment	0.90 (0.70, 1.16)	1.00 (0.78, 1.27)	0.93 (0.73, 1.20)	0.66 (0.45, 0.97)	0.72 (0.49, 1.07)	0.70 (0.47, 1.03)	0.58 (0.39, 0.87)	0.60 (0.39, 0.91)	0.55 (0.36, 0.85)
Western-type pattern									
Per 1 SD decrement	1.01 (0.71, 1.44)	1.11 (0.78, 1.58)	1.08 (0.76, 1.55)	0.72 (0.45, 1.16)	0.82 (0.51, 1.32)	0.76 (0.47, 1.23)	0.88 (0.55, 1.41)	0.96 (0.60, 1.54)	0.98 (0.60, 1.59)
DEMENTIA WITH NO HISTORY OF CVD[e]									
AHEI									
Per 1 SD (10-point) increment	0.96 (0.85,1.08)	0.96 (0.85, 1.09)	0.96 (0.85, 1.09)	0.97 (0.82, 1.14)	0.97 (0.82, 1.14)	0.98 (0.83, 1.16)	0.86 (0.73, 1.01)	0.87 (0.74, 1.02)	0.87 (0.74, 1.02)
Healthy food pattern									
Per 1 SD increment	0.94 (0.82, 1.07)	0.94 (0.82, 1.08)	0.93 (0.81, 1.07)	0.89 (0.74, 1.08)	0.90 (0.75, 1.09)	0.90 (0.75, 1.09)	0.94 (0.79, 1.13)	0.98 (0.82, 1.18)	1.00 (0.84, 1.21)
Western-type pattern									
Per 1 SD decrement	0.93 (0.78, 1.13)	0.95 (0.79, 1.15)	0.96 (0.79, 1.16)	1.09 (0.85, 1.40)	1.13 (0.87, 1.45)	1.12 (0.87, 1.46)	0.88 (0.69, 1.12)	0.89 (0.69, 1.13)	0.89 (0.69, 1.14)

Abbreviations: AHEI, Alternative Healthy Eating Aging; BMI, Body Mass Index; CI, Confidence Interval; CVD, Cardiovascular Disease; HR, Hazard Ratio; SD, Standard Deviation.

[a] For each of these outcomes (the other being censored in the analysis at age of dementia diagnosis), HRs and their 95%CI were estimated using Cox regression models.

[b] Additionally adjusted for education, occupational position, marital status, smoking status, physical activity and alcohol consumption (apart for the AHEI score results as alcohol is one of the components of the score).

[c] Additionally adjusted for hypertension, diabetes, BMI, dyslipidemia, depressive symptoms, CVD, and CVD medication.

[d] N cases=75 for analysis with diet in 1991-1993, 44 for analysis with diet in 1997-1999, 41 for analysis with diet in 2002-2004.

[e] N cases=269 for analysis with diet in 1991-1993, 160 for analysis with diet in 1997-1999, 151 for analysis with diet in 2002-2004.

eTable 12. Association Between Dietary Exposures and Incidence of Dementia Using Inverse Probability Weighting to Take Missing Data Into Account[a]

		Diet in 1997-1999				Diet in 2002-2004		
		Adjusted for age, sex, race/ ethnicity and energy intake	**+ socio-demographic and behavioral factors[b]**	**+ health factors[c]**		**Adjusted for age, sex, race/ ethnicity and energy intake**	**+ socio-demographic and behavioral factors[b]**	**+ health factors[c]**
		HR (95%CI)	HR (95%CI)	HR (95%CI)		HR (95%CI)	HR (95%CI)	HR (95%CI)
AHEI tertiles[d]								
Worst		1 (ref)	1 (ref)	1 (ref)		1 (ref)	1 (ref)	1 (ref)
Intermediate		0.94 (0.64, 1.37)	1.00 (0.69, 1.46)	1.03 (0.70, 1.51)		0.79 (0.55, 1.13)	0.82 (0.58, 1.17)	0.84 (0.59, 1.20)
Best		0.86 (0.60, 1.22)	0.93 (0.65, 1.34)	0.92 (0.63, 1.33)		0.73 (0.51, 1.07)	0.78 (0.54, 1.13)	0.82 (0.56, 1.19)
Per 1 SD (10- point) increment		*0.90 (0.76, 1.06)*	*0.93 (0.79, 1.10)*	*0.93 (0.79, 1.09)*		*0.86 (0.74, 1.01)*	*0.89 (0.7, 1.03)*	*0.90 (0.77, 1.04)*
Healthy food pattern tertiles[d]								
Worst		1 (ref)	1 (ref)	1 (ref)		1 (ref)	1 (ref)	1 (ref)
Intermediate		0.86 (0.58, 1.26)	0.91 (0.62, 1.34)	0.92 (0.62, 1.36)		0.83 (0.58, 1.20)	0.92 (0.64, 1.34)	0.94 (0.64, 1.38)
Best		0.70 (0.47, 1.06)	0.78 (0.52, 1.19)	0.78 (0.51, 1.19)		0.71 (0.48, 1.07)	0.81 (0.52, 1.25)	0.83 (0.53, 1.28)
Per 1 SD increment		*0.80 (0.66, 0.97)*	*0.84 (0.70, 1.02)*	*0.83 (0.69, 1.01)*		*0.90 (0.72, 1.13)*	*0.96 (0.77, 1.18)*	*0.96 (0.78, 1.19)*
Western-type pattern tertiles[d]								
Worst		1 (ref)	1 (ref)	1 (ref)		1 (ref)	1 (ref)	1 (ref)
Intermediate		0.66 (0.44, 1.00)	0.70 (0.46, 1.05)	0.64 (0.40, 1.00)		0.79 (0.52, 1.19)	0.85 (0.57, 1.28)	0.85 (0.56, 1.27)
Best		0.70 (0.42, 1.17)	0.80 (0.48, 1.31)	0.73 (0.44, 1.22)		0.75 (0.46, 1.21)	0.81 (0.50, 1.30)	0.80 (0.49, 1.31)
Per 1 SD decrement		*0.87 (0.65, 1.17)*	*0.94 (0.72, 1.25)*	*0.91 (0.68, 1.22)*		*0.89 (0.70, 1.13)*	*0.94 (0.74, 1.19)*	*0.94 (0.74, 1.19)*

Abbreviations: AHEI, Alternative Healthy Eating Aging; BMI, Body Mass Index; CI, Confidence Interval; CVD, Cardiovascular Disease; HR, Hazard Ratio; SD, Standard Deviation.

[a] HRs and their 95%CI were estimated using inverse-probability weighted Cox regression models.

[b] Additionally adjusted for education, occupational position, marital status, smoking status, physical activity and alcohol consumption (apart for the AHEI score results as alcohol is one of the components of the score).

[c] Additionally adjusted for hypertension, diabetes, BMI, dyslipidemia, depressive symptoms, CVD, and CVD medication.

[d] Values and interpretation of dietary exposure tertiles the same as in eTable 5.

eTable 13. Association Between Dietary Exposures and Incidence of "Possible" Dementia Defined as low Cognitive Performance or Electronic Record of Dementia Diagnosis[a]

	Diet in 1991-1993 N cases/Total N=785/8225 Median follow-up=24.8 (IQR, 24.2-25.2) years			Diet in 1997-1999 N cases/Total N=439/5208 Median follow-up=19.0 (IQR, 18.5-19.4) years			Diet in 2002-2004 N cases/Total N=382/5413 Median follow-up=13.5 (IQR, 13.0-14.0) years		
	Adjusted for age, sex, race/ ethnicity and energy intake	**+ socio-demographic and behavioral factors[b]**	**+ health factors[c]**	**Adjusted for age, sex, race/ ethnicity and energy intake**	**+ socio-demographic and behavioral factors[b]**	**+ health factors[c]**	**Adjusted for age, sex, race/ ethnicity and energy intake**	**+ socio-demographic and behavioral factors[b]**	**+ health factors[c]**
	HR (95%CI)	HR (95%CI)	HR (95%CI)	HR (95%CI)	HR (95%CI)	HR (95%CI)	HR (95%CI)	HR (95%CI)	HR (95%CI)
AHEI tertiles[d]									
Worst	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Intermediate	0.89 (0.75, 1.06)	0.98 (0.83, 1.17)	0.99 (0.83, 1.18)	0.75 (0.59, 0.95)	0.82 (0.64, 1.04)	0.84 (0.66, 1.07)	0.85 (0.67, 1.09)	0.92 (0.72, 1.18)	0.94 (0.74, 1.21)
Best	0.88 (0.74, 1.04)	1.01 (0.85, 1.20)	1.02 (0.85, 1.21)	0.88 (0.70, 1.10)	1.00 (0.80, 1.26)	1.04 (0.82, 1.31)	0.75 (0.58, 0.96)	0.88 (0.68, 1.13)	0.91 (0.70, 1.17)
Per 1 SD (10-point) increment	*0.93 (0.87,1.00)*	*1.00 (0.93,1.07)*	*1.00 (0.93, 1.08)*	*0.94 (0.85,1.03)*	*0.99 (0.90,1.10)*	*1.01 (0.91, 1.11)*	*0.90 (0.81, 0.99)*	*0.96 (0.86, 1.06)*	*0.97 (0.88, 1.07)*
Healthy food pattern tertiles[d]									
Worst	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Intermediate	0.87 (0.73, 1.04)	1.01 (0.84, 1.21)	1.01 (0.84, 1.21)	0.79 (0.63, 1.00)	0.89 (0.71, 1.13)	0.91 (0.72, 1.16)	0.68 (0.53, 0.87)	0.83 (0.64, 1.08)	0.85 (0.65, 1.10)
Best	0.80 (0.67, 0.96)	0.97 (0.80, 1.17)	0.95 (0.79, 1.15)	0.71 (0.55, 0.91)	0.89 (0.69, 1.15)	0.90 (0.69, 1.16)	0.70 (0.53, 0.91)	0.95 (0.72, 1.26)	0.96 (0.72, 1.26)
Per 1 SD increment	*0.91 (0.85, 0.99)*	*0.97 (0.90, 1.05)*	*0.96 (0.89, 1.03)*	*0.84 (0.75, 0.94)*	*0.93 (0.83, 1.04)*	*0.93 (0.83, 1.04)*	*0.91 (0.81, 1.02)*	*1.03 (0.92, 1.15)*	*1.02 (0.91, 1.14)*
Western-type pattern tertiles[d]									
Worst	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Intermediate	0.81 (0.66, 0.99)	0.86 (0.72, 1.08)	0.88 (0.72, 1.08)	0.86 (0.66, 1.12)	0.97 (0.74, 1.27)	0.94 (0.72, 1.24)	0.86 (0.64, 1.14)	0.96 (0.72, 1.28)	0.93 (0.69, 1.25)
Best	0.72 (0.57, 0.91)	0.88 (0.70, 1.12)	0.89 (0.70, 1.13)	0.74 (0.54, 1.01)	0.92 (0.67, 1.27)	0.93 (0.67, 1.28)	0.87 (0.62, 1.22)	1.07 (0.76, 1.50)	1.06 (0.75, 1.49)
Per 1 SD decrement	*0.86 (0.77, 0.96)*	*0.97 (0.87, 1.09)*	*0.98 (0.88, 1.10)*	*0.86 (0.74, 1.00)*	*1.01 (0.87, 1.17)*	*1.02 (0.87, 1.18)*	*0.94 (0.80, 1.10)*	*1.07 (0.91, 1.25)*	*1.07 (0.92, 1.26)*

Abbreviations: AHEI, Alternative Healthy Eating Aging; BMI, Body Mass Index; CI, Confidence Interval; CVD, Cardiovascular Disease; HR, Hazard Ratio; IQR, Interquartile Range; SD, Standard Deviation.

[a] "Possible" dementia included cases identified by electronic health records and by poor cognitive performance (<18 on the Mini Mental State Examination (MMSE) score or global cognitive scores <-2 standard deviations below the mean) from the cognitive assessments in 1997-1999, 2002-2004, 2007-2009, 2012-2013, and 2015-2016. First record of "possible" dementia in any of these sources was set as the date of dementia for the Cox regression. Those free of "possible" dementia were censored at death or 31st of March 2017, whichever came first. HRs and their 95%CI were estimated using Cox regression models.

[b] Additionally adjusted for education, occupational position, marital status, smoking status, physical activity, and alcohol consumption (apart for the AHEI score results as alcohol is one of the components of the score).

[c] Additionally adjusted for hypertension, diabetes, BMI, dyslipidemia, depressive symptoms, CVD, and CVD medication.

[d] Values and interpretation of dietary exposure tertiles the same as in eTable 5.

eTable 14. Association Between Dietary Exposures and Mortality[a]

	Diet in 1991-1993 N cases/Total N=1358/8217 Median follow-up=24.8 (IQR, 24.3-25.2) years			Diet in 1997-1999 N cases/Total N=737/5238 Median follow-up=19.1 (IQR, 18.7-19.4) years			Diet in 2002-2004 N cases/Total N=649/5529 Median follow-up=13.5 (IQR, 13.0-13.9) years		
	Adjusted for age, sex, race/ ethnicity and energy intake	**+ socio-demographic and behavioral factors[b]**	**+ health factors[c]**	**Adjusted for age, sex, race/ ethnicity and energy intake**	**+ socio-demographic and behavioral factors[b]**	**+ health factors[c]**	**Adjusted for age, sex, race/ ethnicity and energy intake**	**+ socio-demographic and behavioral factors[b]**	**+ health factors[c]**
	HR (95%CI)	HR (95%CI)	HR (95%CI)	HR (95%CI)	HR (95%CI)	HR (95%CI)	HR (95%CI)	HR (95%CI)	HR (95%CI)
AHEI tertiles[d]									
Worst	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Intermediate	0.74 (0.65, 0.84)	0.79 (0.69, 0.90)	0.80 (0.70, 0.90)	0.87 (0.73, 1.04)	0.94 (0.79, 1.13)	0.97 (0.82, 1.16)	0.96 (0.80, 1.16)	1.00 (0.84, 1.21)	1.04 (0.87, 1.25)
Best	0.72 (0.63, 0.82)	0.80 (0.70, 0.91)	0.81 (0.71, 0.93)	0.77 (0.65, 0.93)	0.71 (0.67, 1.02)	0.87 (0.72, 1.04)	0.74 (0.61, 0.90)	0.79 (0.65, 0.96)	0.83 (0.68, 1.01)
Per 1 SD (10-point) increment	*0.85 (0.81, 0.90)*	*0.90 (0.85, 0.95)*	*0.90 (0.85, 0.95)*	*0.89 (0.82, 0.96)*	*0.93 (0.86, 1.00)*	*0.94 (0.87, 1.01)*	*0.84 (0.78, 0.91)*	*0.86 (0.80, 0.93)*	*0.88 (0.81, 0.95)*
Healthy food pattern tertiles[d]									
Worst	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Intermediate	0.74 (0.65, 0.85)	0.81 (0.70, 0.92)	0.78 (0.68, 0.89)	0.90 (0.75, 1.08)	0.96 (0.80, 1.16)	0.96 (0.80, 1.16)	0.83 (0.68, 1.00)	0.88 (0.72, 1.08)	0.88 (0.72, 1.07)
Best	0.79 (0.68, 0.90)	0.89 (0.77, 1.02)	0.84 (0.73, 0.97)	0.81 (0.67, 0.99)	0.90 (0.74, 1.10)	0.89 (0.73, 1.09)	0.85 (0.69, 1.04)	0.91 (0.74, 1.13)	0.88 (0.71, 1.09)
Per 1 SD increment	*0.90 (0.85, 0.96)*	*0.95 (0.89, 1.01)*	*0.92 (0.87, 0.98)*	*0.93 (0.86, 1.02)*	*0.98 (0.90, 1.06)*	*0.96 (0.89, 1.05)*	*0.97 (0.89, 1.06)*	*1.01 (0.92, 1.10)*	*0.98 (0.90, 1.08)*
Western-type pattern tertiles[d]									
Worst	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Intermediate	0.77 (0.67, 0.89)	0.87 (0.75, 1.00)	0.86 (0.74, 1.00)	0.66 (0.54, 0.81)	0.70 (0.57, 0.86)	0.70 (0.57, 0.86)	0.73 (0.59, 0.90)	0.77 (0.62, 0.95)	0.76 (0.62, 0.94)
Best	0.75 (0.63, 0.90)	0.89 (0.75, 1.07)	0.89 (0.74, 1.06)	0.75 (0.59, 0.95)	0.84 (0.66, 1.07)	0.83 (0.65, 1.06)	0.67 (0.52, 0.86)	0.71 (0.55, 0.92)	0.70 (0.54, 0.91)
Per 1 SD decrement	*0.78 (0.72, 0.84)*	*0.85 (0.78, 0.93)*	*0.86 (0.79, 0.93)*	*0.84 (0.75, 0.93)*	*0.89 (0.80, 1.00)*	*0.89 (0.79, 0.99)*	*0.83 (0.74, 0.93)*	*0.86 (0.77, 0.97)*	*0.86 (0.76, 0.97)*

Abbreviations: AHEI, Alternative Healthy Eating Aging; BMI, Body Mass Index; CI, Confidence Interval; CVD, Cardiovascular Disease; HR, Hazard Ratio; SD, Standard Deviation.

[a] HRs and their 95%CI were estimated using Cox regression models.

[b] Additionally adjusted for education, occupational position, marital status, smoking status, physical activity and alcohol consumption (apart for the AHEI score results as alcohol is one of the components of the score).

[c] Additionally adjusted for hypertension, diabetes, BMI, dyslipidemia, depressive symptoms, CVD, and CVD medication.

[d] Values and interpretation of dietary exposure tertiles the same as in eTable 5.

eTable 15. Association Between the Mediterranean Diet Score and Incidence of Dementia[a]

	Diet in 1991-1993 N cases/Total N=344/8225 Median follow-up=24.8 (IQR, 24.2-25.1) years			Diet in 1997-1999 N cases/Total N=204/5242 Median follow-up=19.1 (IQR, 18.6-19.4) years			Diet in 2002-2004 N cases/Total N=192/5534 Median follow-up=13.5 (IQR, 13.1-14.0) years		
	Adjusted for age, sex, race/ ethnicity and energy intake	**+ socio-demographic and behavioral factors[b]**	**+ health factors[c]**	**Adjusted for age, sex, race/ ethnicity and energy intake**	**+ socio-demographic and behavioral factors[b]**	**+ health factors[c]**	**Adjusted for age, sex, race/ ethnicity and energy intake**	**+ socio-demographic and behavioral factors[b]**	**+ health factors[c]**
	HR (95%CI)	HR (95%CI)	HR (95%CI)	HR (95%CI)	HR (95%CI)	HR (95%CI)	HR (95%CI)	HR (95%CI)	HR (95%CI)
Mediterranean diet tertiles[d]									
Worst	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)	1 (ref)
Intermediate	1.02 (0.79, 1.32)	1.06 (0.81, 1.38)	1.06 (0.81, 1.37)	0.82 (0.59, 1.15)	0.82 (0.58, 1.15)	0.80 (0.57, 1.13)	0.83 (0.59, 1.18)	0.86 (0.61, 1.22)	0.85 (0.60, 1.21)
Best	1.13 (0.85, 1.49)	1.20 (0.90, 1.60)	1.18 (0.89, 1.57)	0.86 (0.60, 1.24)	0.88 (0.61, 1.28)	0.87 (0.60, 1.27)	0.82 (0.56, 1.21)	0.87 (0.59, 1.29)	0.87 (0.59, 1.29)
Per 1 SD increment	*1.04 (0.93,1.16)*	*1.07 (0.97, 1.19)*	*1.06 (0.95, 1.18)*	*0.95 (0.82, 1.09)*	*0.96 (0.83, 1.11)*	*0.96 (0.83, 1.12)*	*0.90 (0.78, 1.04)*	*0.92 (0.79, 1.07)*	*0.93 (0.80, 1.08)*

Abbreviations: BMI, Body Mass Index; CI, Confidence Interval; CVD, Cardiovascular Disease; HR, Hazard Ratio; SD, Standard Deviation.

[a] HRs and their 95%CI were estimated using Cox regression models.

[b] Additionally adjusted for education, occupational position, marital status, smoking status, and physical activity.

[c] Additionally adjusted for hypertension, diabetes, BMI, dyslipidemia, depressive symptoms, CVD, and CVD medication.

[d] Worst tertile (lowest) reflects poor adherence to the Mediterranean diet and Best tertile (highest) better adherence. The Worst tertile of the Mediterranean diet corresponds to 0 to 3 points, Intermediate tertile to 4 to 5 points and Best tertile to 6 to 9 points. One SD increment corresponds to 1.6-point increment in the Mediterranean Diet score.