Supplementary Appendix

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

Supplement to: Bao Y, Han J, Hu FB, et al. Association of nut consumption with total and cause-specific mortality. N Engl J Med 2013;369:2001-11. DOI: 10.1056/NEJMoa1307352

Supplementary Appendix

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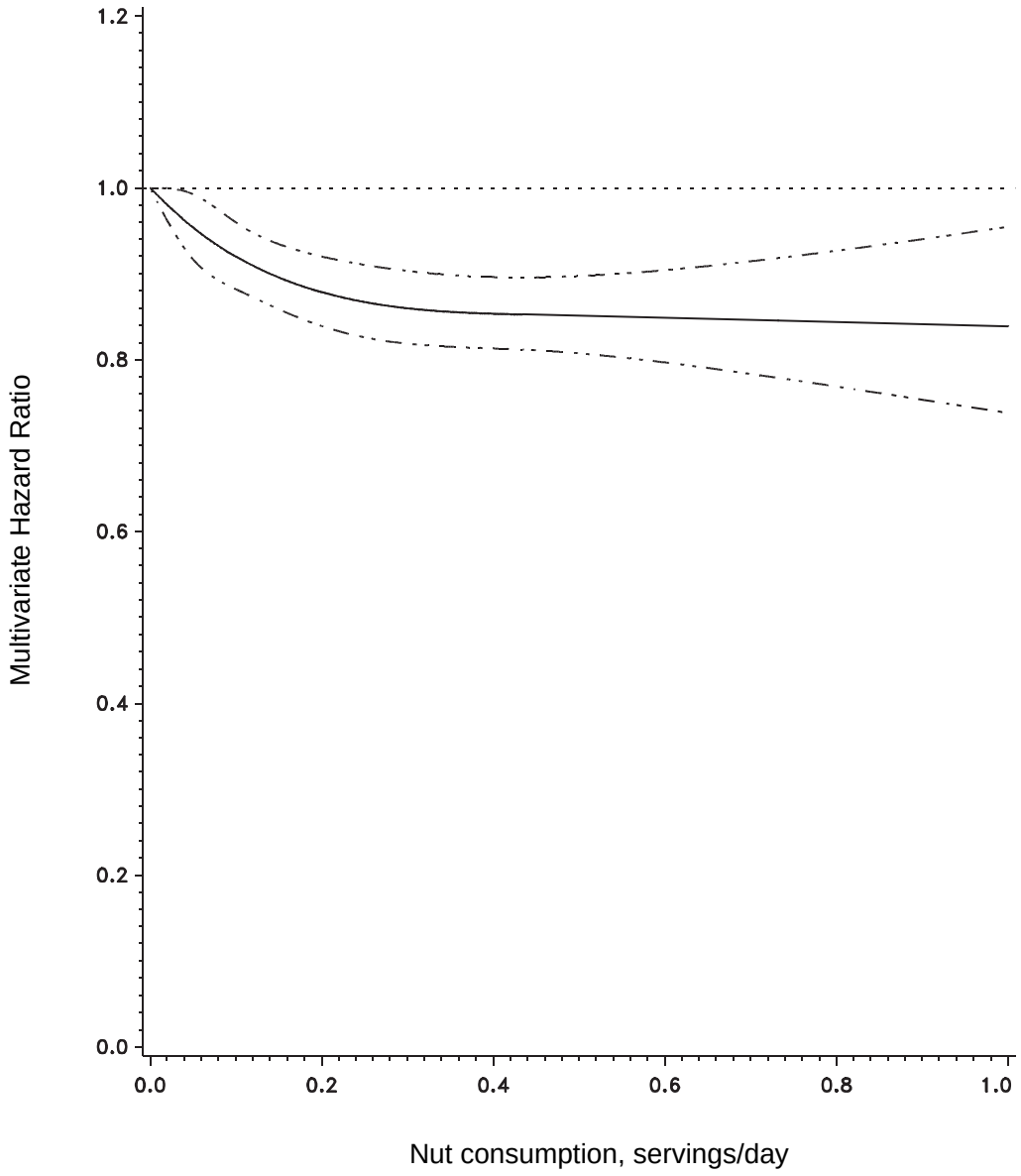
Author contributions

Ying Bao and Charles S. Fuchs designed the study. Jiali Han, Frank B. Hu, Edward L. Giovannucci, Meir J. Stampfer, Walter C. Willett, and Charles S. Fuchs gathered the data. Ying Bao analyzed the data. Ying Bao and Charles S. Fuchs vouch for the data and the analysis. Ying Bao wrote the first draft; and all the co-authors contributed to writing the paper. Ying Bao, Frank B. Hu, and Charles S. Fuchs provided funding support to the analysis. All the co-authors decided to publish the paper.

Figure S1. Nonparametric regression curve for the association between nut consumption and total mortality. A. Women. B. Men. Multivariate hazard ratios are calculated by restricted cubic spline regression adjusting for age (continuous), Caucasian (yes vs. no), body-mass index (<23, 23-24.9, 25-29.9, 30-34.9, ≥35 kg/m^2), physical activity (metabolic-equivalents/week, quintiles), smoking status (never, past, current 1-14 cigarettes/d, current 15-24 cigarettes/d, current ≥25 cigarettes/d), alcohol consumption (women: 0, 0.1-4.9, 5.0-14.9, ≥15 g/d; men: 0, 0.1-4.9, 5.0-29.9, ≥30 g/d), physical examination for screening purposes (yes vs. no), multivitamin use (yes vs. no), current aspirin use (yes vs. no), family history of diabetes mellitus (yes vs. no), family history of myocardial infarction (yes vs. no), family history of cancer (yes vs. no), history of diabetes mellitus (yes vs. no), history of hypertension (yes vs. no), history of hypercholesterolemia (yes vs. no), intake of total energy, red/processed meat, fruits, and vegetables (quintiles), and in women, menopausal status and hormone use (premenopausal, postmenopausal never users, postmenopausal past users, postmenopausal current users). Solid curve represents point estimates and dashed curves represent 95% confidence intervals.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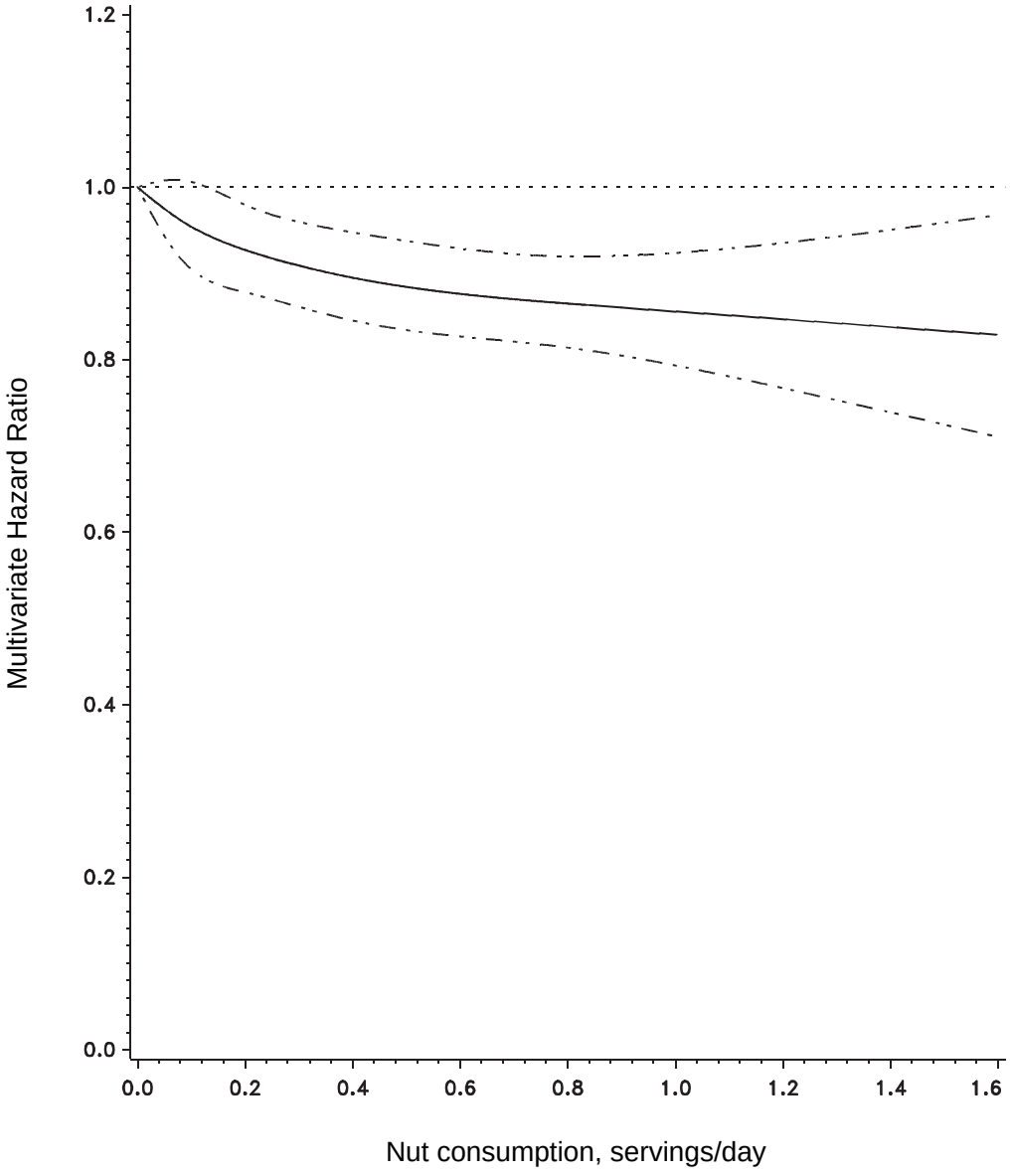
Nut consumption, servings/day

Figure S1 A.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Nut consumption, servings/day

Figure S1 B.

Table S1. Categories for causes of death

Causes of death	ICD-8 code	ICD-9 code
Cancer	140-207	140-208
Cardiovascular disease	390-458	390-459
Heart disease	390-429 and 440-458	390-429 and 440-459
Stroke	430-438	430-438
Respiratory disease	460-519	460-519
Neurodegenerative disease	290, 340, 342, and 348	290, 332, 335, and 340
Infections	000-136	000-139
Kidney disease	580-593	580-593
Diabetes	250	250
All other causes	The rest of the ICD codes.	

Table S2. Time trends of nut consumption during follow-up

Median nut intake (servings/day)	1980	1984	1986	1990	1994	1998	2002	2006
Nurses' Health Study	0.07	0.07	0	0	0	0	0.07	0.07
Health Professionals Follow-up Study	--	--	0.13	0.13	0.13	0.13	0.13	0.14

Table S3. Characteristics of person-years by nut consumption among women and men separately*

	Frequency of nut consumption (28g serving)					
Characteristics	Never	< Once/week	Once/week	2-4 times/week	5-6 times/week	≥7 times/week
Nut intake (servings/day)	0	0.01-0.09	0.10-0.19	0.20-0.59	0.60-0.89	≥0.90
Women						
Age (year)	56.4±11.1†	59.5±10.8	60.1±10.8	61.1±10.7	60.5±11.0	58.2±11.1
Body-mass index (kg/m^2)	26.1±5.4	26.1±5.2	25.8±5.0	25.3±4.8	24.7±4.6	24.5±4.8
Physical activity (metabolic equivalents/week)	14.6±22.4	16.3±21.4	18.2±22.5	20.0±24.2	20.8±25.9	21.9±29.0
Current smoker (%)	19.9	15.2	13.6	13.4	13.3	14.8
Physical examination for screening purposes (%)	53.2	62.5	63.8	64.7	60.9	55.8
Postmenopausal (%)	60.5	66.2	67.1	68.0	65.4	63.4
Current menopausal hormone use (%)‡	26.4	33.2	34.9	35.1	33.2	30.9
Current multivitamin use (%)	43.2	50.0	53.5	56.9	58.1	55.9
Dietary intake						
Alcohol (g/day)	4.9±9.7	5.4±9.7	6.3±10.3	6.9±10.9	7.6±11.8	7.8±12.2
Red/processed meat (servings/day)	1.4±0.8	1.5±0.8	1.5±0.8	1.5±0.8	1.4±0.9	1.4±1.0
Fruit (servings/day)	2.0±1.3	2.1±1.1	2.3±1.2	2.5±1.2	2.7±1.4	2.7±1.6
Vegetables (servings/day)	2.2±1.2	2.6±1.2	2.8±1.2	3.0±1.3	3.1±1.4	2.9±1.5
Men						
Age (year)	60.9±11.5	62.8±10.8	62.0±10.9	63.2±10.9	64.7±10.8	64.5±11.0
Body-mass index (kg/m^2)	25.8±3.6	26.0±3.6	26.1±3.6	25.9±3.6	25.7±3.5	25.3±3.2
Physical activity (metabolic equivalents/ week)	28.1±36.5	32.7±38.7	34.6±40.5	36.8±41.2	37.6±42.6	39.1±44.6
Current smoker (%)	8.1	6.1	6.6	6.5	7.6	6.6
Physical examination for screening purposes (%)	45.4	55.0	53.3	55.5	53.6	52.9
Current multivitamin use (%)	39.3	46.9	46.3	49.4	50.9	49.0
Dietary intake						
Alcohol (g/day)	9.5±14.2	10.4±14.2	11.6±15.0	12.8±15.7	14.0±17.1	13.8±17.2
Red/processed meat (servings/day)	1.0±0.8	1.0±0.7	1.1±0.7	1.1±0.8	1.2±0.8	1.1±0.8
Fruit (servings/day)	2.2±1.5	2.3±1.3	2.4±1.4	2.6±1.5	2.8±1.6	3.0±1.8
Vegetables (servings/day)	2.9±1.6	3.0±1.5	3.2±1.5	3.4±1.6	3.6±1.7	3.7±1.8

*All variables (except age) are age-standardized.

†Mean±SD (for all such values).
‡Current menopausal hormone use among postmenopausal women.

Table S4. Cause-specific mortality by nut consumption among women and men separately*

Causes of death	Frequency of nut consumption (28g serving)					*P* for trend
	Never	< Once/week	Once/week	2-4 times/week	≥5 times/week	
Nut intake (servings/day)	0	0.01-0.09	0.10-0.19	0.20-0.59	≥0.60	
Women						
No. of person-years	390915	973667	384892	311509	74499	
All causes						
No. of deaths	3343	7486	2663	2169	539	
Age-adjusted hazard ratio (95% CI)	1.00	0.69 (0.66–0.71)	0.59 (0.56–0.62)	0.54 (0.51–0.57)	0.62 (0.57–0.68)	<0.001
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.94 (0.90–0.98)	0.88 (0.83–0.92)	0.85 (0.80–0.90)	0.84 (0.77–0.92)	<0.001
Cancer						
No. of deaths	1299	2990	1102	909	235	
Age-adjusted hazard ratio (95% CI)	1.00	0.74 (0.69–0.79)	0.67 (0.62–0.72)	0.63 (0.58–0.69)	0.75 (0.66–0.87)	<0.001
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.94 (0.88–1.01)	0.91 (0.84–0.99)	0.89 (0.82–0.98)	0.94 (0.82–1.09)	0.20
Cardiovascular disease						
No. of deaths	740	1382	475	391	98	
Age-adjusted hazard ratio (95% CI)	1.00	0.59 (0.54–0.64)	0.50 (0.44–0.56)	0.46 (0.41–0.52)	0.52 (0.42–0.64)	<0.001
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.85 (0.78–0.93)	0.82 (0.72–0.92)	0.82 (0.72–0.93)	0.82 (0.66–1.01)	0.04
Heart disease						
No. of deaths	550	1002	332	261	63	
Age-adjusted hazard ratio (95% CI)	1.00	0.57 (0.52–0.64)	0.47 (0.41–0.54)	0.41 (0.36–0.48)	0.45 (0.34–0.58)	<0.001
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.84 (0.76–0.94)	0.79 (0.68–0.90)	0.76 (0.65–0.88)	0.72 (0.55–0.94)	0.003
Stroke						

No. of deaths	190	380	143	130	35	
Age-adjusted hazard ratio (95% CI)	1.00	0.63 (0.53–0.75)	0.58 (0.47–0.72)	0.59 (0.47–0.74)	0.71 (0.50–1.02)	0.08
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.88 (0.74–1.05)	0.90 (0.72–1.13)	0.98 (0.77–1.24)	1.05 (0.73–1.52)	0.43
Respiratory disease						
No. of deaths	245	575	193	146	33	
Age-adjusted hazard ratio (95% CI)	1.00	0.69 (0.59–0.80)	0.56 (0.46–0.67)	0.47 (0.38–0.58)	0.49 (0.34–0.71)	<0.001
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.99 (0.84–1.15)	0.86 (0.71–1.04)	0.74 (0.60-0.92)	0.65 (0.45–0.94)	<0.001
Neurodegenerative disease						
No. of deaths	238	616	235	174	52	
Age-adjusted hazard ratio (95% CI)	1.00	0.71 (0.61–0.82)	0.63 (0.53–0.76)	0.51 (0.42–0.62)	0.72 (0.53–0.97)	<0.001
Multivariate-adjusted hazard ratio (95% CI)	1.00	1.07 (0.92–1.25)	1.04 (0.87–1.26)	0.88 (0.72–1.08)	0.95 (0.70–1.29)	0.15
Infections						
No. of deaths	43	108	34	26	6	
Age-adjusted hazard ratio (95% CI)	1.00	0.69 (0.49–0.99)	0.52 (0.33–0.82)	0.45 (0.28–0.73)	0.50 (0.21–1.17)	0.01
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.97 (0.68–1.40)	0.79 (0.49–1.25)	0.71 (0.43–1.18)	0.65 (0.28–1.56)	0.12
Kidney disease						
No. of deaths	44	88	28	25	6	
Age-adjusted hazard ratio (95% CI)	1.00	0.61 (0.42–0.88)	0.47 (0.29–0.75)	0.47 (0.29–0.77)	0.52 (0.22–1.21)	0.05
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.92 (0.63–1.33)	0.83 (0.51–1.35)	0.95 (0.57–1.60)	0.89 (0.37–2.11)	0.86
Diabetes						
No. of deaths	64	104	26	20	6	

Age-adjusted hazard ratio (95% CI)	1.00	0.48 (0.35–0.65)	0.29 (0.18–0.45)	0.25 (0.15–0.42)	0.37 (0.16–0.84)	<0.001
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.86 (0.62–1.20)	0.68 (0.42–1.10)	0.70 (0.41–1.18)	0.83 (0.35–1.96)	0.34
Other causes						
No. of deaths	670	1623	570	478	103	
Age-adjusted hazard ratio (95% CI)	1.00	0.71 (0.65–0.77)	0.58 (0.52–0.65)	0.54 (0.48–0.61)	0.55 (0.45–0.68)	<0.001
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.96 (0.88–1.06)	0.86 (0.77–0.97)	0.86 (0.76–0.97)	0.75 (0.61–0.93)	<0.001
Men						
No. of person-years	130848	228338	217025	237617	89543	
All causes						
No. of deaths	1860	2801	2518	2843	1207	
Age-adjusted hazard ratio (95% CI)	1.00	0.74 (0.70–0.79)	0.76 (0.71–0.80)	0.69 (0.65–0.73)	0.68 (0.63–0.73)	<0.001
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.91 (0.85–0.96)	0.91 (0.86–0.97)	0.89 (0.83–0.94)	0.82 (0.76–0.88)	<0.001
Cancer						
No. of deaths	584	914	874	989	397	
Age-adjusted hazard ratio (95% CI)	1.00	0.78 (0.70–0.87)	0.84 (0.75–0.93)	0.78 (0.70–0.86)	0.74 (0.65–0.84)	0.001
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.91 (0.82–1.01)	0.98 (0.88–1.09)	0.95 (0.85–1.05)	0.86 (0.75–0.98)	0.09
Cardiovascular disease						
No. of deaths	615	837	749	825	359	
Age-adjusted hazard ratio (95% CI)	1.00	0.68 (0.61–0.76)	0.70 (0.63–0.78)	0.61 (0.55–0.68)	0.61 (0.54–0.70)	<0.001
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.82 (0.74–0.91)	0.83 (0.75–0.93)	0.77 (0.69–0.86)	0.73 (0.64–0.83)	<0.001
Heart disease						
No. of deaths	494	691	582	646	285	

Age-adjusted hazard ratio (95% CI)	1.00	0.70 (0.62–0.78)	0.66 (0.59–0.75)	0.59 (0.52–0.66)	0.60 (0.52–0.70)	<0.001
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.83 (0.74–0.94)	0.78 (0.69–0.88)	0.74 (0.66–0.84)	0.71 (0.61–0.83)	<0.001
Stroke						
No. of deaths	121	146	167	179	74	
Age-adjusted hazard ratio (95% CI)	1.00	0.60 (0.47–0.77)	0.80 (0.63–1.01)	0.67 (0.53–0.85)	0.64 (0.48–0.86)	0.09
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.74 (0.58–0.94)	0.97 (0.77–1.24)	0.88 (0.69–1.12)	0.78 (0.58–1.06)	0.39
Respiratory disease						
No. of deaths	131	194	186	209	89	
Age-adjusted hazard ratio (95% CI)	1.00	0.72 (0.58–0.90)	0.79 (0.63–0.99)	0.69 (0.56–0.87)	0.67 (0.51–0.88)	0.04
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.89 (0.71–1.11)	0.99 (0.78–1.24)	0.94 (0.75–1.18)	0.84 (0.64–1.11)	0.34
Neurodegenerative disease						
No. of deaths	89	172	145	170	78	
Age-adjusted hazard ratio (95% CI)	1.00	0.89 (0.68–1.15)	0.88 (0.68–1.15)	0.79 (0.61–1.02)	0.83 (0.61–1.13)	0.28
Multivariate-adjusted hazard ratio (95% CI)	1.00	1.23 (0.94–1.59)	1.20 (0.92–1.57)	1.17 (0.90–1.53)	1.01 (0.74–1.39)	0.42
Infections						
No. of deaths	26	55	39	42	18	
Age-adjusted hazard ratio (95% CI)	1.00	0.96 (0.60–1.53)	0.75 (0.46–1.24)	0.67 (0.41–1.10)	0.67 (0.36–1.24)	0.12
Multivariate-adjusted hazard ratio (95% CI)	1.00	1.28 (0.79–2.05)	0.96 (0.58–1.60)	0.91 (0.55–1.51)	0.84 (0.44–1.58)	0.23
Kidney disease						
No. of deaths	36	50	45	31	14	
Age-adjusted hazard ratio (95% CI)	1.00	0.65 (0.42–1.01)	0.66 (0.43–1.03)	0.35 (0.22–0.57)	0.37 (0.20–0.68)	<0.001

Multivariate-adjusted hazard ratio (95% CI)	1.00	0.84 (0.54–1.31)	0.91 (0.58–1.43)	0.52 (0.31–0.86)	0.49 (0.26–0.92)	0.008
Diabetes						
No. of deaths	15	25	13	22	9	
Age-adjusted hazard ratio (95% CI)	1.00	0.75 (0.39–1.43)	0.45 (0.21–0.94)	0.59 (0.31–1.15)	0.59 (0.26–1.36)	0.41
Multivariate-adjusted hazard ratio (95% CI)	1.00	1.32 (0.65–2.65)	0.76 (0.34–1.68)	1.02 (0.49–2.12)	0.85 (0.35–2.11)	0.57
Other causes						
No. of deaths	364	554	467	555	243	
Age-adjusted hazard ratio (95% CI)	1.00	0.77 (0.67–0.88)	0.71 (0.62–0.82)	0.69 (0.61–0.79)	0.72 (0.61–0.85)	0.009
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.95 (0.83–1.08)	0.88 (0.76–1.01)	0.91 (0.80–1.05)	0.87 (0.74–1.03)	0.21

*Multivariate analyses were adjusted for the same covariates as Figure S1.

Table S5. Sensitivity analyses of the association between nut consumption and total mortality*

Total mortality	Frequency of nut consumption (28g serving)						*P* for trend
	Never	< Once/week	Once/week	2-4 times/week	5-6 times/week	≥7 times/week	
Women							
Exclude diabetes mellitus at baseline and suspend updating after diagnosis of diabetes							
No. of person-years	381708	957629	378617	306579	43876	29068	
No. of deaths	3125	7124	2541	2073	325	192	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.93 (0.89–0.97)	0.86 (0.82–0.91)	0.84 (0.79–0.89)	0.89 (0.79–0.99)	0.81 (0.70–0.93)	<0.001
Exclude extreme BMIs (<18.5 or >40 kg/m^2)							
No. of person-years	377278	947811	375662	303673	43410	28677	
No. of deaths	3166	7177	2557	2095	321	196	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.93 (0.89–0.97)	0.87 (0.82–0.92)	0.85 (0.80–0.90)	0.88 (0.78–0.98)	0.79 (0.68–0.91)	<0.001
Exclude ever smokers							
No. of person-years	170958	445203	179076	141594	21171	13138	
No. of deaths	1256	2737	1005	861	135	73	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.92 (0.86–0.99)	0.88 (0.81–0.96)	0.90 (0.82–0.98)	0.87 (0.73–1.05)	0.73 (0.58–0.93)	0.008
Adjust for propensity score for nut intake							
No. of person-years	390915	973667	384892	311509	44677	29822	
No. of deaths	3343	7486	2663	2169	337	202	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.94 (0.90–0.98)	0.88 (0.83–0.92)	0.85 (0.80–0.90)	0.88 (0.78–0.98)	0.79 (0.68–0.91)	<0.001

Adjust for olive oil and Mediterranean Diet							
No. of person-years	390915	973667	384892	311509	44677	29822	
No. of deaths	3343	7486	2663	2169	337	202	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.96 (0.92–1.00)	0.91 (0.86–0.96)	0.89 (0.84–0.94)	0.91 (0.82–1.03)	0.81 (0.70–0.94)	<0.001
Adjust for total sodium intake							
No. of person-years	390915	973667	384892	311509	44677	29822	
No. of deaths	3343	7486	2663	2169	337	202	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.93 (0.89–0.97)	0.87 (0.83–0.92)	0.85 (0.80–0.90)	0.88 (0.79–0.99)	0.80 (0.69–0.92)	<0.001
Continue updating after diagnosis of chronic disease							
No. of person-years	367980	983453	393512	317686	44468	28383	
No. of deaths	2809	7858	2847	2223	295	168	
Multivariate-adjusted hazard ratio (95% CI)	1.00	1.00 (0.96–1.05)	0.94 (0.89–1.00)	0.88 (0.83–0.94)	0.84 (0.74–0.95)	0.79 (0.68–0.93)	<0.001
Continue updating with 2-year lag							
No. of person-years	348515	905628	355686	284207	40249	26147	
No. of deaths	2777	7560	2683	2134	290	159	
Multivariate-adjusted hazard ratio (95% CI)	1.00	1.01 (0.96–1.05)	0.94 (0.89–1.00)	0.91 (0.85–0.96)	0.86 (0.76–0.97)	0.81 (0.69–0.95)	<0.001
Men							
Exclude diabetes mellitus at baseline and suspend updating after							

diagnosis of diabetes							
No. of person-years	127722	224274	213325	232756	47910	38950	
No. of deaths	1726	2665	2381	2688	626	504	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.91 (0.86–0.97)	0.92 (0.86–0.97)	0.89 (0.84–0.95)	0.85 (0.78–0.93)	0.81 (0.74–0.90)	<0.001
Exclude extreme BMIs (<18.5 or >40 kg/m^2)							
No. of person-years	129751	227227	215685	236404	49093	39874	
No. of deaths	1830	2776	2489	2819	663	532	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.91 (0.86–0.97)	0.92 (0.86– 0.97)	0.89 (0.84–0.94)	0.84 (0.76–0.92)	0.80 (0.73–0.89)	<0.001
Exclude ever smokers							
No. of person-years	67183	118954	110535	118830	24456	19138	
No. of deaths	741	1230	1051	1204	266	223	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.99 (0.90–1.08)	0.96 (0.87–1.06)	0.94 (0.85–1.03)	0.79 (0.69–0.91)	0.79 (0.67–0.92)	<0.001
Adjust for propensity score for nut intake							
No. of person-years	130848	228338	217025	237617	49416	40127	
No. of deaths	1860	2801	2518	2843	671	536	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.91 (0.85–0.96)	0.91 (0.86–0.97)	0.89 (0.83–0.94)	0.83 (0.76–0.91)	0.80 (0.73–0.88)	<0.001
Adjust for olive oil and Mediterranean Diet							
No. of person-years	130848	228338	217025	237617	49416	40127	
No. of deaths	1860	2801	2518	2843	671	536	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.92 (0.86–0.97)	0.93 (0.87–0.99)	0.91 (0.85–0.97)	0.86 (0.78–0.94)	0.82 (0.74–0.91)	<0.001

Adjust for total sodium intake							
No. of person-years	130848	228338	217025	237617	49416	40127	
No. of deaths	1860	2801	2518	2843	671	536	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.90 (0.85–0.96)	0.91 (0.86–0.97)	0.88 (0.83–0.94)	0.83 (0.76–0.91)	0.80 (0.72–0.88)	<0.001
Continue updating after diagnosis of chronic disease							
No. of person-years	119701	233103	217011	243788	50419	39350	
No. of deaths	1441	3045	2551	3030	666	496	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.97 (0.91–1.04)	0.95 (0.89–1.02)	0.91 (0.85–0.97)	0.85 (0.78–0.94)	0.83 (0.74–0.92)	<0.001
Continue updating with 2-year lag							
No. of person-years	111668	205988	192064	209516	42930	34281	
No. of deaths	1348	2709	2277	2680	613	449	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.98 (0.92–1.05)	0.96 (0.90–1.03)	0.94 (0.88–1.01)	0.91 (0.82–1.00)	0.86 (0.77–0.96)	0.001
Pooled†							
Exclude diabetes mellitus at baseline and suspend updating after diagnosis of diabetes							
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.92 (0.89–0.95)	0.89 (0.84–0.94)	0.86 (0.81–0.92)	0.87 (0.81–0.93)	0.81 (0.75–0.88)	<0.001
Exclude extreme BMIs (<18.5 or >40 kg/m^2)							
Multivariate-adjusted hazard	1.00	0.92 (0.89–0.96)	0.89 (0.85–0.94)	0.87 (0.83–0.91)	0.85 (0.79–0.91)	0.80 (0.74–0.87)	<0.001

ratio (95% CI)							
Exclude ever smokers							
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.95 (0.89–1.01)	0.92 (0.84–1.00)	0.92 (0.86–0.98)	0.82 (0.74–0.92)	0.77 (0.68–0.88)	<0.001
Adjust for propensity score for nut intake							
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.93 (0.89–0.96)	0.89 (0.86–0.93)	0.87 (0.83–0.90)	0.85 (0.79–0.91)	0.80 (0.73–0.86)	<0.001
Adjust for olive oil and Mediterranean Diet							
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.94 (0.90–0.99)	0.92 (0.88–0.95)	0.90 (0.86–0.93)	0.88 (0.82–0.95)	0.82 (0.76–0.89)	<0.001
Adjust for total sodium intake							
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.92 (0.89–0.96)	0.89 (0.85–0.93)	0.86 (0.83–0.90)	0.85 (0.79–0.91)	0.80 (0.74–0.87)	<0.001
Continue updating after diagnosis of chronic disease							
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.99 (0.96–1.03)	0.95 (0.91–0.99)	0.90 (0.86–0.94)	0.85 (0.79–0.91)	0.82 (0.75–0.89)	<0.001
Continue updating with 2-year lag							
Multivariate-adjusted hazard ratio (95% CI)	1.00	1.00 (0.96–1.04)	0.95 (0.91–0.99)	0.92 (0.88–0.96)	0.89 (0.82–0.96)	0.85 (0.77–0.93)	0.006

*Multivariate analyses were adjusted for the same covariates as Figure S1.

†Results from the multivariate model were combined using the random-effects model. *P* values for heterogeneity between women and men were > 0.05 for all categories of nut consumption.

Table S6. Array approach sensitivity analysis for unmeasured confounder. Scenario: Confounder decreases mortality, and is more prevalent in the exposed. The observed relative risk (ARR) was set as the upper confidence interval of the pooled hazard ratio for nut consumption and total mortality comparing 7 or more time a week vs never (RR=0.80; 95% CI=0.73–0.86). The association between the confounder and total mortality (RR_{CD}) was varied from 0.50 to 1.00. The prevalence of the cofounder was varied from 10% to 50%.

Notation:

ARR	Apparent (or observed) relative risk
RR_{CD}	Association between confounder and disease outcome
P_{C1}	Prevalence of confounder in the exposed
P_{C0}	Prevalence of confounder in the unexposed
$RR_{adjusted}$	Relative risk when adjusted for unmeasured confounder

$$RR_{adj.} = \frac{ARR}{\left[\frac{P_{C1}(RR_{CD}-1)+1}{P_{C0}(RR_{CD}-1)+1}\right]}$$

Explanation:
For example, an unidentified confounding variable with a relative risk for total mortality of 0.50 would need to have at least a 30% difference in prevalence between extreme categories of nut intake (50% in the 7 or more times per week group and 20% in the never group) to raise the upper 95% confidence limit for adjusted hazard ratio above 1.00. Alternatively, assuming a greater imbalance (40%) in the prevalence of an unmeasured confounder between extreme categories of nut intake (50% in the 7 or more times per week group and 10% in the never group), the unidentified confounder would still require a relative risk for mortality of 0.60 to raise the adjusted upper confidence interval above 1.00.

To compare with an established, strong protective factor of death—physical activity:
A review of 73 studies showed that the hazard ratio for death comparing extreme categories of physical activity was 0.67 in women and 0.71 in men.[1] In the present study, the difference in prevalence of high physical activity (quintile 5 in women, ≥27 MET-hours/week; quintile 5 in men, ≥53 MET-hours/week) between nut consumption of 7 or more times per week and the never group was 8.6% in women and 9.3% in men.

References:
1. Physical Activity Guidelines Advisory Committee report, 2010. Washington, D.C.: US Department of Health and Human Services.

ARR	RR_{CD}	P_{C1}	P_{C0}	$RR_{adjusted}$	P_{C0}	$RR_{adjusted}$	P_{C0}	$RR_{adjusted}$	P_{C0}	$RR_{adjusted}$	P_{C0}	$RR_{adjusted}$
0.86	0.50	0.10	0.10	0.86								
0.86	0.60	0.10	0.10	0.86								
0.86	0.70	0.10	0.10	0.86								
0.86	0.80	0.10	0.10	0.86								
0.86	0.90	0.10	0.10	0.86								
0.86	1.00	0.10	0.10	0.86								
0.86	0.50	0.20	0.10	0.91	0.20	0.86						
0.86	0.60	0.20	0.10	0.90	0.20	0.86						
0.86	0.70	0.20	0.10	0.89	0.20	0.86						
0.86	0.80	0.20	0.10	0.88	0.20	0.86						
0.86	0.90	0.20	0.10	0.87	0.20	0.86						
0.86	1.00	0.20	0.10	0.86	0.20	0.86						
0.86	0.50	0.30	0.10	0.96	0.20	0.91	0.30	0.86				
0.86	0.60	0.30	0.10	0.94	0.20	0.90	0.30	0.86				
0.86	0.70	0.30	0.10	0.92	0.20	0.89	0.30	0.86				
0.86	0.80	0.30	0.10	0.90	0.20	0.88	0.30	0.86				
0.86	0.90	0.30	0.10	0.88	0.20	0.87	0.30	0.86				
0.86	1.00	0.30	0.10	0.86	0.20	0.86	0.30	0.86				
0.86	0.50	0.40	0.10	1.02	0.20	0.97	0.30	0.91	0.40	0.86		
0.86	0.60	0.40	0.10	0.98	0.20	0.94	0.30	0.90	0.40	0.86		
0.86	0.70	0.40	0.10	0.95	0.20	0.92	0.30	0.89	0.40	0.86		
0.86	0.80	0.40	0.10	0.92	0.20	0.90	0.30	0.88	0.40	0.86		
0.86	0.90	0.40	0.10	0.89	0.20	0.88	0.30	0.87	0.40	0.86		
0.86	1.00	0.40	0.10	0.86	0.20	0.86	0.30	0.86	0.40	0.86		
0.86	0.50	0.50	0.10	1.09	0.20	1.03	0.30	0.97	0.40	0.92	0.50	0.86
0.86	0.60	0.50	0.10	1.03	0.20	0.99	0.30	0.95	0.40	0.90	0.50	0.86
0.86	0.70	0.50	0.10	0.98	0.20	0.95	0.30	0.92	0.40	0.89	0.50	0.86
0.86	0.80	0.50	0.10	0.94	0.20	0.92	0.30	0.90	0.40	0.88	0.50	0.86
0.86	0.90	0.50	0.10	0.90	0.20	0.89	0.30	0.88	0.40	0.87	0.50	0.86
0.86	1.00	0.50	0.10	0.86	0.20	0.86	0.30	0.86	0.40	0.86	0.50	0.86

Table S7. Array approach sensitivity analysis for unmeasured confounder. Scenario: Confounder increases mortality, and is less prevalent in the exposed. The observed relative risk (ARR) was set as the upper confidence interval of the pooled hazard ratio for nut consumption and total mortality comparing 7 or more time a week vs never (RR=0.80; 95% CI=0.73–0.86). The association between the confounder and total mortality (RR_{CD}) was varied from 1.00 to 3.50. The prevalence of the cofounder was varied from 10% to 50%.

Notation:

ARR	Apparent (or observed) relative risk
RR_{CD}	Association between confounder and disease outcome
P_{C1}	Prevalence of confounder in the exposed
P_{C0}	Prevalence of confounder in the unexposed
$RR_{adjusted}$	Relative risk when adjusted for unmeasured confounder

$$RR_{adj.} = \frac{ARR}{\left[\frac{P_{C1}(RR_{CD}-1)+1}{P_{C0}(RR_{CD}-1)+1}\right]}$$

Explanation:
For example, an unidentified confounding variable with a relative risk for total mortality of 1.50 would need to have at least a 40% difference in prevalence between extreme categories of nut intake (10% in the 7 or more times per week group and 50% in the never group) to raise the upper 95% confidence limit for adjusted hazard ratio above 1.00. Alternatively, assuming a smaller imbalance (10%) in the prevalence of an unmeasured confounder between extreme categories of nut intake (10% in the 7 or more times per week group and 20% in the never group), the unidentified confounder would require a relative risk for mortality of at least 3.00 to raise the adjusted upper confidence interval above 1.00.

To compare with an established, strong risk factor of death—cigarette smoking:
The hazard ratio for death comparing current smokers to never smokers was 1.35-3.00 in women and 1.76-2.80 in men.[2,3] In the present study, the difference in prevalence of current smoking between nut consumption of 7 or more times per week and the never group was 5.1% in women and 1.5% in men.

References:

2. Jha P, Ramasundarahettige C, Landsman V, Rostron B, Thun M, Anderson RN, McAfee T, Peto R. 21st-century hazards of smoking and benefits of cessation in the United States. N Engl J Med. 2013;368(4):341-50.
3. Thun MJ, Carter BD, Feskanich D, Freedman ND, Prentice R, Lopez AD, Hartge P, Gapstur SM. 50-year trends in smoking-related mortality in the United States. N Engl J Med. 2013;368(4):351-64.

ARR	RR_{CD}	P_{C1}	P_{C0}	$RR_{adjusted}$	P_{C0}	$RR_{adjusted}$	P_{C0}	$RR_{adjusted}$	P_{C0}	$RR_{adjusted}$	P_{C0}	$RR_{adjusted}$
0.86	1.00	0.50	0.50	0.86								
0.86	1.50	0.50	0.50	0.86								
0.86	2.00	0.50	0.50	0.86								
0.86	2.50	0.50	0.50	0.86								
0.86	3.00	0.50	0.50	0.86								
0.86	3.50	0.50	0.50	0.86								
0.86	1.00	0.40	0.50	0.86	0.40	0.86						
0.86	1.50	0.40	0.50	0.90	0.40	0.86						
0.86	2.00	0.40	0.50	0.92	0.40	0.86						
0.86	2.50	0.40	0.50	0.94	0.40	0.86						
0.86	3.00	0.40	0.50	0.96	0.40	0.86						
0.86	3.50	0.40	0.50	0.97	0.40	0.86						
0.86	1.00	0.30	0.50	0.86	0.40	0.86	0.30	0.86				
0.86	1.50	0.30	0.50	0.93	0.40	0.90	0.30	0.86				
0.86	2.00	0.30	0.50	0.99	0.40	0.93	0.30	0.86				
0.86	2.50	0.30	0.50	1.04	0.40	0.95	0.30	0.86				
0.86	3.00	0.30	0.50	1.08	0.40	0.97	0.30	0.86				
0.86	3.50	0.30	0.50	1.11	0.40	0.98	0.30	0.86				
0.86	1.00	0.20	0.50	0.86	0.40	0.86	0.30	0.86	0.20	0.86		
0.86	1.50	0.20	0.50	0.98	0.40	0.94	0.30	0.90	0.20	0.86		
0.86	2.00	0.20	0.50	1.08	0.40	1.00	0.30	0.93	0.20	0.86		
0.86	2.50	0.20	0.50	1.16	0.40	1.06	0.30	0.96	0.20	0.86		
0.86	3.00	0.20	0.50	1.23	0.40	1.11	0.30	0.98	0.20	0.86		
0.86	3.50	0.20	0.50	1.29	0.40	1.15	0.30	1.00	0.20	0.86		
0.86	1.00	0.10	0.50	0.86	0.40	0.86	0.30	0.86	0.20	0.86	0.10	0.86
0.86	1.50	0.10	0.50	1.02	0.40	0.98	0.30	0.94	0.20	0.90	0.10	0.86
0.86	2.00	0.10	0.50	1.17	0.40	1.09	0.30	1.02	0.20	0.94	0.10	0.86
0.86	2.50	0.10	0.50	1.31	0.40	1.20	0.30	1.08	0.20	0.97	0.10	0.86
0.86	3.00	0.10	0.50	1.43	0.40	1.29	0.30	1.15	0.20	1.00	0.10	0.86
0.86	3.50	0.10	0.50	1.55	0.40	1.38	0.30	1.20	0.20	1.03	0.10	0.86

Table S8. Total and cause-specific mortality by type of nut consumption*

Causes of deaths	Frequency of nut consumption (28g serving)				*P* for trend
	Never	< Once/week	Once/week	≥2 times/week	
Nut intake (servings/day)	0	0.01-0.09	0.10-0.19	≥0.20	
Women					
No. of person-years					
Any nut	390915	973667	384892	386008	
Peanut	440789	585617	137443	117217	
Tree nut	530238	558224	110379	82225	
All causes					
Any nut					
No. of deaths	3343	7486	2663	2708	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.94 (0.90–0.98)	0.88 (0.83–0.92)	0.85 (0.80–0.89)	<0.001
Peanut					
No. of deaths	4263	4889	976	873	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.92 (0.88–0.96)	0.88 (0.82–0.94)	0.91 (0.84–0.98)	0.01
Tree nut					
No. of deaths	4800	4834	798	569	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.95 (0.92–1.00)	0.90 (0.83–0.97)	0.82 (0.75–0.90)	<0.001
Cancer					
Any nut					
No. of deaths	1299	2990	1102	1144	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.94 (0.88–1.01)	0.91 (0.84–0.99)	0.90 (0.83–0.98)	0.05
Peanut					
No. of deaths	1592	1911	398	367	
Multivariate-adjusted	1.00	0.94 (0.88–1.00)	0.93 (0.83–1.04)	0.97 (0.86–1.09)	0.69

hazard ratio (95% CI)					
Tree nut					
No. of deaths	1842	1866	334	226	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.95 (0.89–1.01)	0.96 (0.85–1.09)	0.83 (0.72–0.96)	0.02
Heart disease					
Any nut					
No. of deaths	550	1002	332	324	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.84 (0.76–0.94)	0.79 (0.68–0.90)	0.75 (0.65–0.87)	0.001
Peanut					
No. of deaths	630	615	130	98	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.89 (0.79–1.00)	0.91 (0.75–1.11)	0.81 (0.65–1.01)	0.07
Tree nut					
No. of deaths	737	563	113	60	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.83 (0.74–0.93)	1.00 (0.82–1.23)	0.73 (0.56–0.96)	0.04
Respiratory disease					
Any nut					
No. of deaths	245	575	193	179	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.98 (0.84–1.15)	0.86 (0.71–1.04)	0.72 (0.59–0.89)	<0.001
Peanut					
No. of deaths	350	371	67	67	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.89 (0.77–1.03)	0.73 (0.56–0.96)	0.79 (0.61–1.04)	0.06
Tree nut					
No. of deaths	359	409	46	41	
Multivariate-adjusted hazard ratio (95% CI)	1.00	1.11 (0.96–1.29)	0.72 (0.53–0.98)	0.82 (0.59–1.15)	0.09

Neurodegenerative disease					
Any nut					
No. of deaths	238	616	235	226	
Multivariate-adjusted hazard ratio (95% CI)	1.00	1.07 (0.92–1.25)	1.04 (0.87–1.26)	0.90 (0.74–1.09)	0.10
Peanut					
No. of deaths	369	461	88	65	
Multivariate-adjusted hazard ratio (95% CI)	1.00	1.08 (0.94–1.24)	1.03 (0.81–1.30)	0.91 (0.70–1.20)	0.48
Tree nut					
No. of deaths	423	465	48	47	
Multivariate-adjusted hazard ratio (95% CI)	1.00	1.06 (0.93–1.22)	0.65 (0.48–0.88)	0.81 (0.60–1.11)	0.05
Stroke					
Any nut					
No. of deaths	190	380	143	165	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.88 (0.74–1.05)	0.90 (0.72–1.13)	0.99 (0.80–1.24)	0.51
Peanut					
No. of deaths	243	258	55	59	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.92 (0.76–1.10)	0.94 (0.70–1.26)	1.18 (0.88–1.59)	0.22
Tree nut					
No. of deaths	285	249	41	40	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.87 (0.73–1.04)	0.84 (0.60–1.18)	1.09 (0.77–1.53)	0.71
Infections					
Any nut					
No. of deaths	43	108	34	32	
Multivariate-adjusted	1.00	0.97 (0.68–1.40)	0.79 (0.49–1.25)	0.70 (0.43–1.13)	0.10

hazard ratio (95% CI)					
Peanut					
No. of deaths	70	71	10	12	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.71 (0.51–1.00)	0.44 (0.22–0.88)	0.67 (0.36–1.26)	0.17
Tree nut					
No. of deaths	71	75	9	8	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.90 (0.64–1.27)	0.58 (0.29–1.18)	0.67 (0.32–1.43)	0.20
Kidney disease					
Any nut					
No. of deaths	44	88	28	31	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.92 (0.63–1.33)	0.82 (0.51–1.35)	0.94 (0.58–1.53)	0.10
Peanut					
No. of deaths	59	58	10	9	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.86 (0.59–1.25)	0.71 (0.36–1.40)	0.75 (0.37–1.54)	0.38
Tree nut					
No. of deaths	64	57	9	6	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.96 (0.66–1.39)	0.95 (0.46–1.94)	0.84 (0.35–1.98)	0.68
Diabetes					
Any nut					
No. of deaths	64	104	26	26	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.86 (0.62–1.20)	0.68 (0.42–1.10)	0.72 (0.45–1.17)	0.10
Peanut					
No. of deaths	67	55	13	9	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.76 (0.52–1.10)	1.08 (0.58–2.00)	0.98 (0.47–2.03)	0.93

Tree nut					
No. of deaths	81	46	9	8	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.68 (0.46–1.00)	0.98 (0.48–2.02)	1.15 (0.54–2.48)	0.71
Other causes					
Any nut					
No. of deaths	670	1623	570	581	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.96 (0.88–1.06)	0.86 (0.77–0.97)	0.84 (0.75–0.94)	<0.001
Peanut					
No. of deaths	883	1089	205	187	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.91 (0.83–0.99)	0.80 (0.69–0.94)	0.87 (0.74–1.03)	0.08
Tree nut					
No. of deaths	938	1104	189	133	
Multivariate-adjusted hazard ratio (95% CI)	1.00	1.02 (0.93–1.09)	0.93 (0.79–1.09)	0.83 (0.69–1.00)	0.03
Men					
No. of person-years					
Any nut	130848	228338	217025	327160	
Peanut	188628	378300	148422	176957	
Tree nut	269600	386733	123226	110694	
All causes					
Any nut					
No. of deaths	1860	2801	2518	4050	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.91 (0.85–0.96)	0.91 (0.86–0.97)	0.87 (0.82–0.92)	<0.001
Peanut					
No. of deaths	2631	4382	1713	2286	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.91 (0.87–0.96)	0.93 (0.88–0.99)	0.86 (0.82–0.92)	<0.001

Tree nut					
No. of deaths	3616	4543	1433	1387	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.94 (0.90–0.98)	0.95 (0.89–1.01)	0.84 (0.78–0.89)	<0.001
Cancer					
Any nut					
No. of deaths	584	914	874	1386	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.90 (0.81–1.00)	0.97 (0.87–1.08)	0.92 (0.83–1.02)	0.37
Peanut					
No. of deaths	843	1444	600	798	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.91 (0.83–0.99)	1.00 (0.89–1.11)	0.93 (0.84–1.03)	0.56
Tree nut					
No. of deaths	1204	1537	493	459	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.91 (0.84–0.98)	0.95 (0.85–1.06)	0.82 (0.73–0.92)	0.002
Heart disease					
Any nut					
No. of deaths	494	691	582	931	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.83 (0.74–0.94)	0.78 (0.69–0.88)	0.73 (0.65–0.82)	<0.001
Peanut					
No. of deaths	673	1045	399	523	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.84 (0.76–0.93)	0.83 (0.73–0.94)	0.74 (0.66–0.84)	<0.001
Tree nut					
No. of deaths	928	1055	321	327	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.85 (0.77–0.93)	0.85 (0.74–0.97)	0.76 (0.67–0.87)	<0.001

Respiratory disease					
Any nut					
No. of deaths	131	194	186	298	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.89 (0.71–1.11)	0.99 (0.78–1.24)	0.91 (0.73–1.13)	0.58
Peanut					
No. of deaths	186	315	126	166	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.94 (0.78–1.13)	1.03 (0.81–1.30)	0.87 (0.70–1.08)	0.23
Tree nut					
No. of deaths	247	332	102	106	
Multivariate-adjusted hazard ratio (95% CI)	1.00	1.03 (0.86–1.22)	1.00 (0.79–1.27)	0.94 (0.74–1.20)	0.54
Neurodegenerative disease					
Any nut					
No. of deaths	89	172	145	248	
Multivariate-adjusted hazard ratio (95% CI)	1.00	1.23 (0.94–1.59)	1.20 (0.92–1.57)	1.12 (0.87–1.44)	0.85
Peanut					
No. of deaths	136	250	109	148	
Multivariate-adjusted hazard ratio (95% CI)	1.00	1.11 (0.90–1.38)	1.27 (0.98–1.64)	1.11 (0.87–1.42)	0.62
Tree nut					
No. of deaths	172	285	86	91	
Multivariate-adjusted hazard ratio (95% CI)	1.00	1.37 (1.13–1.67)	1.22 (0.93–1.59)	1.09 (0.83–1.42)	0.81
Stroke					
Any nut					
No. of deaths	121	146	167	253	
Multivariate-adjusted	1.00	0.74 (0.58–0.94)	0.97 (0.77–1.24)	0.85 (0.68–1.07)	0.67

hazard ratio (95% CI)					
Peanut					
No. of deaths	172	271	94	141	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.89 (0.73–1.08)	0.82 (0.64–1.07)	0.81 (0.65–1.03)	0.14
Tree nut					
No. of deaths	212	278	94	87	
Multivariate-adjusted hazard ratio (95% CI)	1.00	1.02 (0.85–1.23)	1.11 (0.86–1.42)	0.90 (0.69–1.17)	0.39
Infections					
Any nut					
No. of deaths	26	55	39	60	
Multivariate-adjusted hazard ratio (95% CI)	1.00	1.28 (0.79–2.05)	0.96 (0.58–1.60)	0.89 (0.55–1.44)	0.19
Peanut					
No. of deaths	42	79	30	28	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.98 (0.67–1.45)	0.90 (0.55–1.46)	0.68 (0.42–1.12)	0.09
Tree nut					
No. of deaths	52	79	27	20	
Multivariate-adjusted hazard ratio (95% CI)	1.00	1.13 (0.79–1.63)	1.17 (0.73–1.89)	0.76 (0.44–1.31)	0.25
Kidney disease					
Any nut					
No. of deaths	36	50	45	45	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.84 (0.54–1.31)	0.91 (0.58–1.43)	0.51 (0.32–0.80)	0.001
Peanut					
No. of deaths	54	70	28	21	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.76 (0.52–1.09)	0.82 (0.51–1.31)	0.39 (0.23–0.66)	<0.001

Tree nut					
No. of deaths	67	63	25	17	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.74 (0.52–1.06)	1.00 (0.62–1.62)	0.58 (0.33–1.00)	0.09
Diabetes					
Any nut					
No. of deaths	15	25	13	31	
Multivariate-adjusted hazard ratio (95% CI)	1.00	1.31 (0.65–2.64)	0.76 (0.34–1.68)	0.97 (0.49–1.93)	0.67
Peanut					
No. of deaths	24	31	13	15	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.84 (0.47–1.51)	0.89 (0.43–1.84)	0.63 (0.31–1.28)	0.23
Tree nut					
No. of deaths	28	31	11	12	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.95 (0.54–1.66)	1.12 (0.53–2.37)	0.89 (0.42–1.89)	0.81
Other causes					
Any nut					
No. of deaths	364	554	467	798	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.94 (0.83–1.08)	0.88 (0.76–1.01)	0.90 (0.79–1.03)	0.24
Peanut					
No. of deaths	501	877	314	446	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.97 (0.87–1.09)	0.90 (0.78–1.04)	0.92 (0.81–1.05)	0.24
Tree nut					
No. of deaths	706	883	274	268	
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.96 (0.87–1.07)	0.94 (0.81–1.08)	0.86 (0.74–1.00)	0.05
Pooled†					

All causes					
Any nut					
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.93 (0.90–0.96)	0.89 (0.86–0.93)	0.86 (0.82–0.89)	<0.001
Peanut					
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.92 (0.89–0.95)	0.91 (0.85–0.96)	0.88 (0.84–0.93)	<0.001
Tree nut					
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.95 (0.92–0.98)	0.93 (0.87–0.98)	0.83 (0.79–0.88)	<0.001
Cancer					
Any nut					
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.93 (0.88–0.98)	0.93 (0.87–1.00)	0.91 (0.85–0.97)	0.05
Peanut					
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.93 (0.88–0.98)	0.96 (0.89–1.04)	0.94 (0.88–1.02)	0.48
Tree nut					
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.93 (0.88–0.98)	0.96 (0.88–1.04)	0.83 (0.76–0.90)	<0.001
Heart disease					
Any nut					
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.84 (0.77–0.91)	0.78 (0.71–0.86)	0.74 (0.68–0.81)	<0.001
Peanut					
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.86 (0.80–0.93)	0.85 (0.77–0.95)	0.76 (0.68–0.84)	<0.001
Tree nut					
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.84 (0.78–0.90)	0.90 (0.77–1.06)	0.76 (0.67–0.85)	<0.001
Respiratory disease					

Any nut					
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.95 (0.84–1.08)	0.91 (0.78–1.06)	0.81 (0.65–1.01)	0.21
Peanut					
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.91 (0.81–1.02)	0.87 (0.63–1.22)	0.84 (0.71–0.99)	0.04
Tree nut					
Multivariate-adjusted hazard ratio (95% CI)	1.00	1.07 (0.96–1.20)	0.86 (0.63–1.19)	0.90 (0.74–1.09)	0.15
Neurodegenerative disease					
Any nut					
Multivariate-adjusted hazard ratio (95% CI)	1.00	1.11 (0.97–1.26)	1.09 (0.94–1.27)	0.98 (0.80–1.22)	0.21
Peanut					
Multivariate-adjusted hazard ratio (95% CI)	1.00	1.09 (0.97–1.22)	1.13 (0.92–1.39)	1.02 (0.84–1.24)	0.94
Tree nut					
Multivariate-adjusted hazard ratio (95% CI)	1.00	1.19 (0.93–1.53)	0.89 (0.48–1.66)	0.95 (0.71–1.26)	0.27
Stroke					
Any nut					
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.82 (0.70–0.97)	0.94 (0.79–1.10)	0.92 (0.79–1.08)	0.93
Peanut					
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.90 (0.79–1.03)	0.87 (0.71–1.06)	0.97 (0.67–1.40)	0.98
Tree nut					
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.94 (0.81–1.10)	0.99 (0.76–1.28)	0.96 (0.78–1.19)	0.62
Infections					
Any nut					

Multivariate-adjusted hazard ratio (95% CI)	1.00	1.07 (0.80–1.43)	0.86 (0.61–1.21)	0.79 (0.56–1.11)	0.04
Peanut					
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.83 (0.60–1.14)	0.66 (0.33–1.32)	0.68 (0.46–1.00)	0.03
Tree nut					
Multivariate-adjusted hazard ratio (95% CI)	1.00	1.00 (0.78–1.29)	0.87 (0.44–1.72)	0.73 (0.47–1.14)	0.10
Kidney disease					
Any nut					
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.89 (0.67–1.18)	0.87 (0.62–1.21)	0.69 (0.38–1.26)	0.24
Peanut					
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.81 (0.62–1.05)	0.78 (0.53–1.15)	0.52 (0.27–0.98)	0.01
Tree nut					
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.84 (0.65–1.08)	0.99 (0.66–1.47)	0.64 (0.40–1.03)	0.10
Diabetes					
Any nut					
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.95 (0.67–1.33)	0.70 (0.47–1.06)	0.80 (0.54–1.18)	0.21
Peanut					
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.78 (0.57–1.07)	0.99 (0.62–1.59)	0.78 (0.47–1.30)	0.40
Tree nut					
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.76 (0.55–1.04)	1.05 (0.62–1.76)	1.01 (0.59–1.73)	0.95
Other causes					
Any nut					
Multivariate-adjusted	1.00	0.96 (0.89–1.03)	0.87 (0.79–0.95)	0.87 (0.79–0.94)	0.05

hazard ratio (95% CI)					
Peanut					
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.93 (0.87–1.00)	0.85 (0.76–0.95)	0.90 (0.81–1.00)	0.05
Tree nut					
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.99 (0.93–1.06)	0.93 (0.84–1.04)	0.85 (0.76–0.95)	0.004

*In women, follow-up is 1980-2010 for total nut and 1986-2010 for peanut and tree nut. In men, follow-up is 1986-2010 for total nut, peanut, and tree nut. Multivariate analyses were adjusted for the same covariates as Figure S1.

†Results from the multivariate model were combined using the random-effects model. *P* values for heterogeneity between women and men were > 0.05 for all categories of nut consumption, except for the first two categories of neurodegenerative disease.

Table S9. Subgroup analysis of association between nut consumption and total mortality*

Subgroups	Frequency of nut consumption (28g serving)				*P* for trend	*P* for interaction‡
	Never	< Once/week	Once/week	≥2 times/week		
Nut intake (servings/day)	0	0.01-0.09	0.10-0.19	≥0.20		
Women						
All women						
No. of person-years	390915	973667	384892	386008		
No. of deaths	3343	7486	2663	2708		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.94 (0.90–0.98)	0.88 (0.83–0.92)	0.85 (0.80–0.89)	<0.001	
Age						0.09
<60 yr						
No. of person-years	247281	496898	184859	175662		
No. of deaths	655	1039	353	308		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.89 (0.80–0.98)	0.83 (0.72–0.95)	0.74 (0.65–0.86)	<0.001	
≥60 yr						
No. of person-years	143634	476770	200033	210346		
No. of deaths	2688	6447	2310	2400		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.95 (0.90–0.99)	0.89 (0.84–0.94)	0.87 (0.82–0.92)	<0.001	
Body-mass index						0.05
<25 kg/m^2						
No. of person-years	200928	481567	197379	218096		
No. of deaths	1688	3922	1521	1630		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.96 (0.90–1.01)	0.93 (0.87–1.00)	0.88 (0.82–0.95)	<0.001	
25 to <30 kg/m^2						
No. of person-years	114572	303193	119957	112632		
No. of deaths	941	2091	679	678		

Multivariate-adjusted hazard ratio (95% CI)	1.00	0.92 (0.85–1.00)	0.80 (0.73–0.89)	0.79 (0.72–0.88)	<0.001	
≥30 kg/m^2						
No. of person-years	75415	188907	67556	55280		
No. of deaths	714	1473	463	400		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.92 (0.83–1.00)	0.84 (0.74–0.95)	0.84 (0.74–0.96)	0.01	
Physical activity						0.52
Below median						
No. of person-years	257318	553983	201240	189103		
No. of deaths	2543	5330	1775	1729		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.94 (0.89–0.98)	0.87 (0.82–0.93)	0.85 (0.79–0.90)	<0.001	
Above median						
No. of person-years	133598	419684	183652	196905		
No. of deaths	800	2156	888	979		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.92 (0.85–1.00)	0.88 (0.80–0.97)	0.85 (0.77–0.94)	0.005	
Smoking status						0.06
Never						
No. of person-years	170958	445203	179076	175903		
No. of deaths	1256	2737	1005	1069		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.93 (0.87–0.99)	0.89 (0.81–0.96)	0.89 (0.81–0.97)	0.02	
Ever						
No. of person-years	219957	528465	205816	210104		
No. of deaths	2087	4749	1658	1639		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.94 (0.89–0.99)	0.87 (0.81–0.93)	0.82 (0.77–0.88)	<0.001	
Alcohol consumption						0.22

Non-drinker						
No. of person-years	221380	468332	167174	166787		
No. of deaths	2637	5256	1758	1772		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.94 (0.90–0.99)	0.88 (0.83–0.94)	0.85 (0.80–0.91)	<0.001	
Drinker						
No. of person-years	169535	505335	217718	219221		
No. of deaths	706	2230	905	936		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.90 (0.83–0.98)	0.85 (0.77–0.94)	0.83 (0.74–0.91)	0.002	
Physical examination for screening purposes						0.51
No						
No. of person-years	183983	355348	133910	133658		
No. of deaths	2404	4603	1614	1641		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.96 (0.91–1.01)	0.90 (0.85–0.96)	0.87 (0.81–0.93)	<0.001	
Yes						
No. of person-years	206932	618319	250982	252350		
No. of deaths	939	2883	1049	1067		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.88 (0.82–0.95)	0.83 (0.75–0.91)	0.80 (0.73–0.88)	<0.001	
Multivitamin use						0.76
No						
No. of person-years	242722	531176	191538	174387		
No. of deaths	1810	3483	1182	1024		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.93 (0.88–0.99)	0.91 (0.85–0.99)	0.83 (0.77–0.90)	<0.001	
Yes						
No. of person-years	148193	442491	193354	211621		

No. of deaths	1533	4003	1481	1684		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.93 (0.88–0.99)	0.85 (0.79–0.91)	0.85 (0.79–0.91)	<0.001	
Red/processed meat consumption						0.04
Below median						
No. of person-years	204503	488241	185162	194062		
No. of deaths	1799	3851	1330	1344		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.93 (0.87–0.98)	0.87 (0.81–0.93)	0.80 (0.74–0.86)	<0.001	
Above median						
No. of person-years	186412	485426	199730	191946		
No. of deaths	1544	3635	1333	1364		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.95 (0.89–1.01)	0.89 (0.83–0.96)	0.90 (0.83–0.97)	0.01	
Fruit consumption						0.41
Below median						
No. of person-years	231410	517246	176502	148254		
No. of deaths	1931	3686	1122	993		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.90 (0.85–0.96)	0.82 (0.76–0.89)	0.81 (0.75–0.88)	<0.001	
Above median						
No. of person-years	159505	456421	208390	237754		
No. of deaths	1412	3800	1541	1715		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.98 (0.92–1.04)	0.94 (0.87–1.01)	0.89 (0.83–0.96)	<0.001	
Vegetable consumption						0.52
Below median						
No. of person-years	257457	507488	165675	142537		
No. of deaths	2135	3692	1087	980		

Multivariate-adjusted hazard ratio (95% CI)	1.00	0.91 (0.86–0.96)	0.85 (0.79–0.92)	0.85 (0.78–0.91)	<0.001	
Above median						
No. of person-years	133458	466179	219217	243470		
No. of deaths	1208	3794	1576	1728		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.97 (0.91–1.03)	0.90 (0.84–0.98)	0.86 (0.80–0.93)	<0.001	
Menopausal status and hormone use						0.12
Premenopausal						
No. of person-years	183068	327702	120057	113419		
No. of deaths	1816	3268	1119	1139		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.96 (0.91–1.02)	0.91 (0.84–0.98)	0.89 (0.83–0.97)	0.004	
Postmenopausal never users						
No. of person-years	87300	212494	79045	80498		
No. of deaths	635	1474	500	468		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.89 (0.81–0.98)	0.85 (0.76–0.96)	0.79 (0.70–0.90)	0.001	
Postmenopausal past users						
No. of person-years	63424	215954	93481	98784		
No. of deaths	677	1991	751	802		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.97 (0.83–1.14)	0.89 (0.74–1.06)	0.83 (0.69–1.00)	0.01	
Postmenopausal current users						
No. of person-years	57123	217517	92309	93306		
No. of deaths	215	753	293	299		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.88 (0.81–0.96)	0.82 (0.73–0.91)	0.79 (0.71–0.88)	<0.001	

Men						
All men						
No. of person-years	130848	228338	217025	327160		
No. of deaths	1860	2801	2518	4050		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.91 (0.85–0.96)	0.91 (0.86–0.97)	0.87 (0.82–0.92)	<0.001	
Age						0.11
<60 yr						
No. of person-years	62157	93840	94141	120456		
No. of deaths	163	188	207	285		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.79 (0.63–0.98)	0.86 (0.69–1.06)	0.90 (0.73–1.10)	0.90	
≥60 yr						
No. of person-years	68691	134498	122885	206703		
No. of deaths	1697	2613	2311	3765		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.92 (0.86–0.97)	0.92 (0.86–0.98)	0.86 (0.81–0.92)	<0.001	
Body-mass index						0.32
<25 kg/m^2						
No. of person-years	75211	116220	110612	174137		
No. of deaths	1436	2088	1863	3070		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.97 (0.91–1.04)	0.97 (0.90–1.04)	0.93 (0.87–0.99)	0.02	
25 to <30 kg/m^2						
No. of person-years	44707	89080	85204	123955		
No. of deaths	326	564	487	763		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.76 (0.66–0.88)	0.74 (0.64–0.86)	0.71 (0.62–0.81)	0.001	
≥30 kg/m^2						
No. of person-years	10931	23038	21210	29068		

No. of deaths	98	149	168	217		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.65 (0.50–0.85)	0.84 (0.65–1.10)	0.68 (0.52–0.87)	0.07	
Physical activity						0.10
Below median						
No. of person-years	76315	116561	106062	149434		
No. of deaths	1338	1948	1698	2617		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.93 (0.87–1.00)	0.95 (0.88–1.02)	0.89 (0.83–0.96)	0.004	
Above median						
No. of person-years	54533	111777	110963	177726		
No. of deaths	522	853	820	1433		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.83 (0.74–0.92)	0.82 (0.73–0.92)	0.79 (0.71–0.88)	0.004	
Smoking status						0.53
Never						
No. of person-years	67183	118954	110535	162424		
No. of deaths	741	1230	1051	1693		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.99 (0.90–1.08)	0.96 (0.87–1.06)	0.89 (0.82–0.98)	0.002	
Ever						
No. of person-years	63665	109384	106490	164736		
No. of deaths	1119	1571	1467	2357		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.85 (0.79–0.92)	0.89 (0.82–0.96)	0.85 (0.79–0.92)	0.008	
Alcohol consumption						0.08
Non-drinker						
No. of person-years	63332	87113	79208	114305		
No. of deaths	1268	1697	1455	2329		
Multivariate-adjusted	1.00	0.95 (0.88–1.02)	0.93 (0.86–1.01)	0.90 (0.84–0.97)	0.007	

hazard ratio (95% CI)						
Drinker						
No. of person-years	67516	141225	137818	212855		
No. of deaths	592	1104	1063	1721		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.79 (0.72–0.88)	0.84 (0.75–0.93)	0.78 (0.71–0.86)	0.002	
Physical examination for screening purposes						0.37
No						
No. of person-years	70194	98996	98852	141256		
No. of deaths	1394	1930	1710	2732		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.93 (0.86–0.99)	0.90 (0.84–0.97)	0.88 (0.82–0.94)	0.001	
Yes						
No. of person-years	60654	129343	118173	185904		
No. of deaths	466	871	808	1318		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.84 (0.75–0.94)	0.91 (0.81–1.03)	0.82 (0.74–0.92)	0.01	
Multivitamin use						0.24
No						
No. of person-years	78766	118042	114665	158810		
No. of deaths	1065	1399	1271	1937		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.89 (0.82–0.97)	0.91 (0.84–0.99)	0.87 (0.81–0.95)	0.01	
Yes						
No. of person-years	52082	110297	102360	168350		
No. of deaths	795	1402	1247	2113		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.90 (0.82–0.98)	0.90 (0.83–0.99)	0.85 (0.78–0.92)	<0.001	
Red/processed meat consumption						0.74

Below median						
No. of person-years	72900	122775	103365	153357		
No. of deaths	999	1418	1180	1826		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.87 (0.80–0.94)	0.91 (0.83–0.99)	0.84 (0.77–0.91)	0.001	
Above median						
No. of person-years	57948	105563	113660	173803		
No. of deaths	861	1383	1338	2224		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.95 (0.87–1.03)	0.92 (0.84–1.01)	0.89 (0.82–0.97)	0.01	
Fruit consumption						0.11
Below median						
No. of person-years	78016	126100	111631	139491		
No. of deaths	999	1380	1155	1573		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.91 (0.84–0.99)	0.95 (0.87–1.03)	0.90 (0.83–0.98)	0.10	
Above median						
No. of person-years	52833	102239	105394	187669		
No. of deaths	861	1421	1363	2477		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.89 (0.82–0.97)	0.88 (0.80–0.96)	0.83 (0.77–0.90)	<0.001	
Vegetable consumption						0.65
Below median						
No. of person-years	79379	128391	109971	137760		
No. of deaths	1124	1517	1195	1607		
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.91 (0.84–0.99)	0.91 (0.84–0.99)	0.86 (0.80–0.93)	0.001	
Above median						
No. of person-years	51469	99948	107055	189400		
No. of deaths	736	1284	1323	2443		

Multivariate-adjusted hazard ratio (95% CI)	1.00	0.90 (0.82–0.99)	0.91 (0.83–1.00)	0.87 (0.80–0.95)	0.01	
Pooled†						
All participants						
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.93 (0.90–0.96)	0.89 (0.86–0.93)	0.86 (0.82–0.89)	<0.001	
Age						0.86
<60 yr						
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.87 (0.79–0.95)	0.84 (0.75–0.93)	0.80 (0.67–0.96)	0.35	
≥60 yr						
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.94 (0.90–0.97)	0.90 (0.86–0.94)	0.86 (0.83–0.90)	<0.001	
Body-mass index						0.04
<25 kg/m^2						
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.96 (0.92–1.01)	0.95 (0.91–1.00)	0.91 (0.86–0.96)	0.003	
25 to <30 kg/m^2						
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.85 (0.70–1.02)	0.78 (0.72–0.85)	0.76 (0.68–0.84)	<0.001	
≥30 kg/m^2						
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.79 (0.57–1.10)	0.84 (0.75–0.94)	0.78 (0.63–0.96)	0.002	
Physical activity						0.94
Below median						
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.93 (0.90–0.97)	0.91 (0.84–0.98)	0.87 (0.82–0.92)	0.004	
Above median						
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.88 (0.79–0.98)	0.85 (0.79–0.92)	0.82 (0.77–0.88)	<0.001	

Smoking status						0.61
Never						
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.95 (0.90–1.00)	0.92 (0.85–1.00)	0.89 (0.84–0.95)	<0.001	
Ever						
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.90 (0.82–0.99)	0.88 (0.83–0.92)	0.83 (0.79–0.88)	0.01	
Alcohol consumption						0.83
Non-drinker						
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.94 (0.91–0.98)	0.90 (0.85–0.95)	0.87 (0.83–0.92)	0.002	
Drinker						
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.85 (0.75–0.96)	0.84 (0.78–0.91)	0.80 (0.75–0.86)	<0.001	
Physical examination for screening purposes						0.55
No						
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.95 (0.91–0.99)	0.90 (0.86–0.95)	0.87 (0.83–0.92)	<0.001	
Yes						
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.87 (0.81–0.92)	0.86 (0.78–0.95)	0.81 (0.75–0.87)	<0.001	
Multivitamin use						0.96
No						
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.92 (0.88–0.96)	0.91 (0.86–0.96)	0.85 (0.81–0.90)	0.01	
Yes						
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.92 (0.88–0.97)	0.87 (0.82–0.93)	0.85 (0.80–0.90)	<0.001	

Red/processed meat consumption						0.22
Below median						
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.90 (0.85–0.96)	0.88 (0.83–0.93)	0.82 (0.77–0.86)	0.004	
Above median						
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.95 (0.90–1.00)	0.90 (0.85–0.96)	0.90 (0.85–0.95)	<0.001	
Fruit consumption						0.89
Below median						
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.91 (0.86–0.95)	0.88 (0.77–1.01)	0.85 (0.77–0.95)	0.08	
Above median						
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.94 (0.86–1.03)	0.91 (0.86–0.97)	0.86 (0.81–0.92)	<0.001	
Vegetable consumption						0.75
Below median						
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.91 (0.87–0.96)	0.88 (0.82–0.94)	0.85 (0.81–0.90)	<0.001	
Above median						
Multivariate-adjusted hazard ratio (95% CI)	1.00	0.94 (0.88–1.01)	0.91 (0.85–0.96)	0.86 (0.82–0.91)	<0.001	

*Multivariate analyses were adjusted for the same covariates as Figure S1.

†Results from the multivariate model were combined using the random-effects model. *P* values for heterogeneity between women and men were > 0.05 for all categories of nut consumption.

‡For separate analysis of women and men, *P* values for interactions were calculated using the likelihood-ratio test comparing Cox proportional-hazards models with and without cross-product terms for each level of stratifying variables, with nut consumption as a median trend variable. For the pooled analysis, *P* values for interactions were calculated using the Q statistic comparing the subgroup-specific pooled multivariate hazard ratios for nut consumption as a median trend variable.