Association Between Dietary Quality and Accelerated Aging: A Cross-Sectional Study of Two Cohorts

Table. S1 AHA Dietary Score

Food composition	Condition for scoring	Score
Fruit and vegetables	Daily intake	1
Fish	Daily intake	1
Salt	<6 g/d	1
Whole grain	Daily intake	1
Sugary drink	No or minimal intake	1
Total		5

Table. S2 Modified AHA Dietary Score

Food composition	Condition for scoring	Score
Fruit and vegetables	Daily intake	1
Fish	Daily intake	1
Salt	6-10 g/d	1
Whole grain	Daily intake	1
Sugary drink	No or minimal intake	1
Total		5

Table. S3 In the Kailuan cohort, participants were stratified according to AHA dietary scores at baseline.

	Overall	Score (0-2)	Score (3-5)	P-value
N		22807	10894	
Sex, n (%)				<0.001
Woman	9188 (27.3)	6487 (28.4)	2701 (24.8)	
Man	24513 (72.7)	16320 (71.6)	8193 (75.2)	
Age	57.29 (11.88)	57.22 (11.50)	57.43 (71.76)	0.675
Marriage, n (%)				0.981
Married	32086 (95.2)	1092 (4.8)	523 (4.8)	
Other	1615 (4.8)	21715 (95.2)	10371 (95.2)	
Income, n (%)				<0.001
High	5276 (15.7)	4213 (18.5)	1063 (9.8)	
Low	28425 (84.3)	18594 (81.5)	9831 (90.2)	
Smoke, n (%)				<0.001
Never	27641 (82.0)	3943 (17.3)	2117 (19.4)	

Current and past	6060 (18.0)	18864 (82.7)	8777 (80.6)	
Alcohol intake, n (%)				<0.001
No	20293 (60.2)	5981 (26.2)	7427 (68.2)	
Yes	13408 (39.8)	16826 (73.8)	3467 (31.8)	
Physical exercise, n (%)				<0.001
No	2314 (6.9)	1401 (6.1)	913 (8.4)	
Sometimes	26448 (78.5)	18349 (80.5)	8099 (74.3)	
Often	4939 (14.7)	3057 (13.4)	1882 (17.3)	
Sedentary lifestyle, n (%)				<0.001
No	24322 (72.2)	15818 (69.4)	8504 (78.1)	
Yes (>4 h/d)	9379 (27.8)	6989 (30.6)	2390 (21.9)	
Sleep duration, n (%)				<0.001
7-8 hours/day	23560 (69.9)	15608 (68.4)	7952 (73.0)	
<7 and >8 hours/day	10141 (30.1)	7199 (31.6)	2942 (27.0)	
Hypertension, n (%)				<0.001
No	28073 (83.3)	18198 (79.8)	9875 (90.6)	
Yes	5628 (16.7)	4609 (20.2)	1019 (9.4)	
Diabetes, n (%)				<0.001
No	32077 (95.2)	21485 (94.2)	10592 (97.2)	
Yes	1624 (4.8)	1322 (5.8)	302 (2.8)	
UA (mg/dl)	326.00 [272.20,386.00]	331.00 [277.00, 393.00]	315.00 [263.68, 373.00]	<0.001

Notes: Continuous variables were presented as mean ± standard deviation (SD). Continuous variables that were not normally distributed were expressed as the median [interquartile range]. Categorical variables were presented as numbers and percentages. Differences in normally and non-normally distributed baseline characteristics were compared using the chi-square test or t-test and Wilcoxon rank sum test, respectively. Income referred to the annual household income, which was divided into two groups based on the median: high and low.
Abbreviations: UA, Uric acid.

Table. S4 Baseline characteristics of NHANES cohort participants stratified by quartiles of HEI-2015 scores.

	Overall	**Q1**	**Q2**	**Q3**	**Q4**	***P-value***
n	9285	2331	2365	2329	2260	
Sex = Male (%)	4590 (49.4)	1237 (53.1)	1219 (51.5)	1134 (48.7)	1000 (44.2)	<0.001
Age (mean (SD))	49.83 (17.62)	45.24 (16.95)	48.44 (17.49)	50.84 (17.58)	54.97 (17.03)	<0.001
Education = low (%)	4819 (51.9)	1422 (61.0)	1270 (53.7)	1161 (49.8)	966 (42.7)	<0.001
Marry = Other (%)	4358 (46.9)	1214 (52.1)	1154 (48.8)	1044 (44.8)	946 (41.9)	<0.001

Income = low (%)	4646 (50.0)	1345 (57.7)	1214 (51.3)	1122 (48.2)	965 (42.7)	<0.001
DM (%)						0.575
Yes	1327 (14.3)	321 (13.8)	333 (14.1)	338 (14.5)	335 (14.8)	
No	7958 (84.7)	2010 (86.3)	1888 (85.9)	1991 (85.5)	1925 (85.2)	
Hypertension = yes (%)	3252 (35.0)	738 (31.7)	813 (34.4)	822 (35.3)	879 (38.9)	<0.001
UA (mean (SD))	5.51 (1.43)	5.56 (1.45)	5.54 (1.43)	5.52 (1.42)	5.43 (1.42)	0.015
Smoke (%)						<0.001
Current and past	2153 (23.2)	619 (26.6)	560 (23.7)	540 (23.2)	434 (19.2)	
Never	2345 (25.3)	536 (23.0)	583 (24.7)	603 (25.9)	623 (27.6)	
Unknown	4787 (51.6)	1176 (50.5)	1222 (51.7)	1186 (50.9)	1203 (53.2)	
Alcohol intake= yes (%)	5922 (63.8)	1459 (62.6)	1528 (64.6)	1495 (64.2)	1440 (63.7)	0.512
Physical activity (%)						<0.001
Often	1157 (12.5)	227 (9.7)	273 (11.5)	312 (13.4)	345 (15.3)	
Sometimes	3089 (33.3)	691 (29.7)	751 (31.7)	784 (33.6)	863 (38.2)	
No	5039 (54.3)	1413 (60.6)	1341 (56.7)	1233 (52.9)	1052 (46.5)	
Depression (%)						<0.001
No	7890 (85.0)	1912 (82.0)	1980 (83.7)	2007 (86.2)	1991 (88.1)	
Unknown	573 (6.2)	142 (6.1)	148 (6.3)	144 (6.2)	139 (6.2)	
Yes	822 (8.9)	277 (11.9)	237 (10.0)	178 (7.6)	130 (5.8)	
BMI (mean (SD))	29.08 (6.69)	29.73 (7.27)	29.30 (6.74)	28.95 (6.54)	28.30 (6.04)	<0.001
sleep <7/>8 hours/day (%)	4383 (47.2)	1211 (52.0)	1162 (49.1)	1039 (44.6)	971 (43.0)	<0.001

Notes: Continuous variables were presented as mean ± standard deviation (SD). Continuous variables that were not normally distributed were expressed as the median [interquartile range]. Categorical variables were presented as numbers and percentages. Differences in normally and non-normally distributed baseline characteristics were compared using the chi-square test or t-test and Wilcoxon rank sum test, respectively. Income referred to the annual household income, which was divided into two groups based on the median: high and low.
Abbreviations: DM, diabetes mellitus; UA, Uric acid (mg/dl); BMI, body mass index.

Table. S5 Association of food composition and accelerated aging in the AHA dietary score (Kailuan cohort, n=33701).

	Model A		Model B		Model C	
	OR (95% CI)	***P-value***	**OR (95% CI)**	***P-value***	**OR (95% CI)**	***P-value***
Component 1 (fruit and vegetables)	0.70 (0.64-0.75)	<0.001	0.66 (0.61-0.72)	<0.001	0.73 (0.67-0.79)	<0.001
Component 2 (fish)	1.14 (0.97-1.33)	0.117	0.98 (0.83-1.15)	0.784	1.11 (0.94-1.31)	0.194
Component 3 (salt)	1.28 (1.15-1.42)	<0.001	1.23 (1.11-1.37)	<0.001	1.18 (1.06-1.31)	0.003
Component 4 (whole grain)	0.69 (0.63-0.74)	<0.001	0.67 (0.61-0.73)	<0.001	0.72 (0.66-0.79)	<0.001
Component 5 (soft drink)	0.87 (0.81-0.93)	<0.001	0.81 (0.74-0.88)	<0.001	0.95(0.86-1.04)	0.276

Notes: Data are presented as odds ratios (95% confidence intervals). Model A: unadjusted; Model B: adjusted for sex (men/women), marriage (married/other), income (low/high), smoke (no/current and past), alcohol intake (yes/no), sedentary lifestyle(yes/no), physical activity(no/sometimes/often), and sleep duration(7-8 hours/ <7 or >8 hours); Model C: additionally adjusted for diabetes and hypertension based on Model B. OR, odds ratio; CI, confidence interval; P-value, probability.

Table. S6 Association between salt intake and accelerated aging (Kailuan cohort, n=33701)

		Model A		Model B		Model C	
	Case/N	**OR (95% CI)**	***P-value***	**OR (95% CI)**	***P-value***	**OR (95% CI)**	***P-value***
6-10 g/d	2683/28157	Ref.		Ref.		Ref.	
<6 g/d	451/3587	1.34 (1.21-1.49)	<0.001	1.28 (1.15-1.43)	<0.001	1.22 (1.09-1.36)	<0.001
>10 g/d	294/1957	1.65 (1.45-1.88)	<0.001	1.48 (1.30-1.69)	<0.001	1.34 (1.17-1.54)	<0.001

Notes: Data are presented as odds ratios (95% confidence intervals). Model A: unadjusted; Model B: adjusted for sex (men/women), marriage (married/other), income (low/high), smoke (no/current and past), alcohol intake (yes/no), sedentary lifestyle(yes/no), physical activity(no/sometimes/often), and sleep duration(7-8 hours/ <7 or >8 hours); Model C: additionally adjusted for diabetes and hypertension based on Model B. OR, odds ratio; CI, confidence interval; *P-value*, probability.

Table. S7 Stratified Analysis of the association between HEI-2015 dietary scores and accelerated aging in the NHANES Cohort

		Case/N	OR (95%CI)	p for interaction
Sex				0.033
Men				
	Q2	344/1219	1.17 (0.89,1.54)	
	Q3	243/1134	0.67 (0.48,0.94)	
	Q4	203/1000	0.62 (0.43,0.88)	
Women				
	Q2	252/1146	1.02 (0.73,1.40)	
	Q3	230/1195	0.88 (0.62,1.25)	
	Q4	202/1260	0.70 (0.49,1.02)	
Age				0.168
<65				
	Q2	381/1833	1.06 (0.84,1.35)	
	Q3	293/1734	0.73 (0.54,0.99)	
	Q4	209/1502	0.56 (0.39,0.80)	
≧65				
	Q2	215/532	1.28 (0.93,1.78)	
	Q3	180/595	0.92 (0.62,1.36)	
	Q4	196/758	0.90 (0.68,1.20)	
Marriage				0.194
married				
	Q2	275/1211	1.20 (0.87,1.65)	
	Q3	233/1285	0.84 (0.56,1.25)	
	Q4	215/1314	0.61 (0.43,0.86)	
Other				
	Q2	321/1154	1.02 (0.77,1.33)	
	Q3	240/1044	0.72 (0.51,1.01)	
	Q4	190/946	0.77 (0.55,1.07)	
Income				0.082
Low				
	Q2	430/1546	1.01 (0.8,1.29)	
	Q3	330/1478	0.72 (0.55,0.95)	
	Q4	263/1269	0.64 (0.5,0.82)	
High				
	Q2	166/819	1.3 (0.87,1.94)	

	Q3	143/851	0.9 (0.59,1.35)	
	Q4	142/991	0.81 (0.53,1.26)	
Smoke			<0.001	
Never				
	Q2	436/1805	1.15 (0.89,1.48)	
	Q3	344/1789	0.86 (0.64,1.15)	
	Q4	313/1826	0.74 (0.58,0.94)	
Current and past				
	Q2	160/560	0.99 (0.66,1.50)	
	Q3	129/540	0.52 (0.35,0.77)	
	Q4	92/434	0.46 (0.27,0.79)	
Alcohol intake				0.321
No				
	Q2	254/837	1.17 (0.85,1.59)	
	Q3	202/834	0.69 (0.48,1.02)	
	Q4	200/820	0.76 (0.52,1.10)	
Yes				
	Q2	342/1528	1.04 (0.81,1.34)	
	Q3	271/1495	0.81 (0.58,1.12)	
	Q4	205/1440	0.61 (0.43,0.87)	
Physical activity				0.637
No				
	Q2	408/1341	1.06 (0.79,1.43)	
	Q3	328/1233	0.72 (0.55,0.94)	
	Q4	260/1052	0.71 (0.53,0.94)	
Sometimes				
	Q2	162/751	1.33 (1.01,1.76)	
	Q3	118/784	0.87 (0.63,1.21)	
	Q4	117/863	0.65 (0.45,0.95)	
Often				
	Q2	26/273	0.91 (0.44,1.89)	
	Q3	37/312	0.94 (0.43,2.06)	
	Q4	28/345	0.64 (0.25,1.61)	
Sleep duration				0.343
7-8 h				
	Q2	268/1203	1.15 (0.86,1.54)	
	Q3	238/1290	0.83 (0.59,1.16)	
	Q4	203/1289	0.72 (0.51,0.99)	
<7h/>8h				
	Q2	328/1162	1.07 (0.84,1.37)	
	Q3	235/1039	0.71 (0.48,1.06)	
	Q4	202/971	0.62 (0.43,0.90)	
Depress				0.553
No				

	Q2	479/1980	1.11 (0.9,1.38)	
	Q3	394/2007	0.76 (0.58,1.01)	
	Q4	341/1991	0.66 (0.51,0.87)	
Yes				
	Q2	85/237	0.92 (0.42,2.01)	
	Q3	48/178	0.57 (0.36,0.91)	
	Q4	32/130	0.56 (0.26,1.23)	
Hypertension				0.254
No				
	Q2	273/1552	1.10 (0.86,1.39)	
	Q3	222/1507	0.80 (0.55,1.15)	
	Q4	170/1381	0.62 (0.45,0.84)	
Yes				
	Q2	323/813	1.13 (0.81,1.59)	
	Q3	251/822	0.73 (0.52,1.02)	
	Q4	235/879	0.72 (0.54,0.96)	
DM				0.002
No				
	Q2	380/2032	1.19 (0.94,1.50)	
	Q3	293/1991	0.81 (0.60,1.09)	
	Q4	248/1925	0.70 (0.52,0.93)	
Yes				
	Q2	216/333	0.79 (0.50,1.26)	
	Q3	180/338	0.60 (0.40,0.88)	
	Q4	157/335	0.56 (0.37,0.86)	

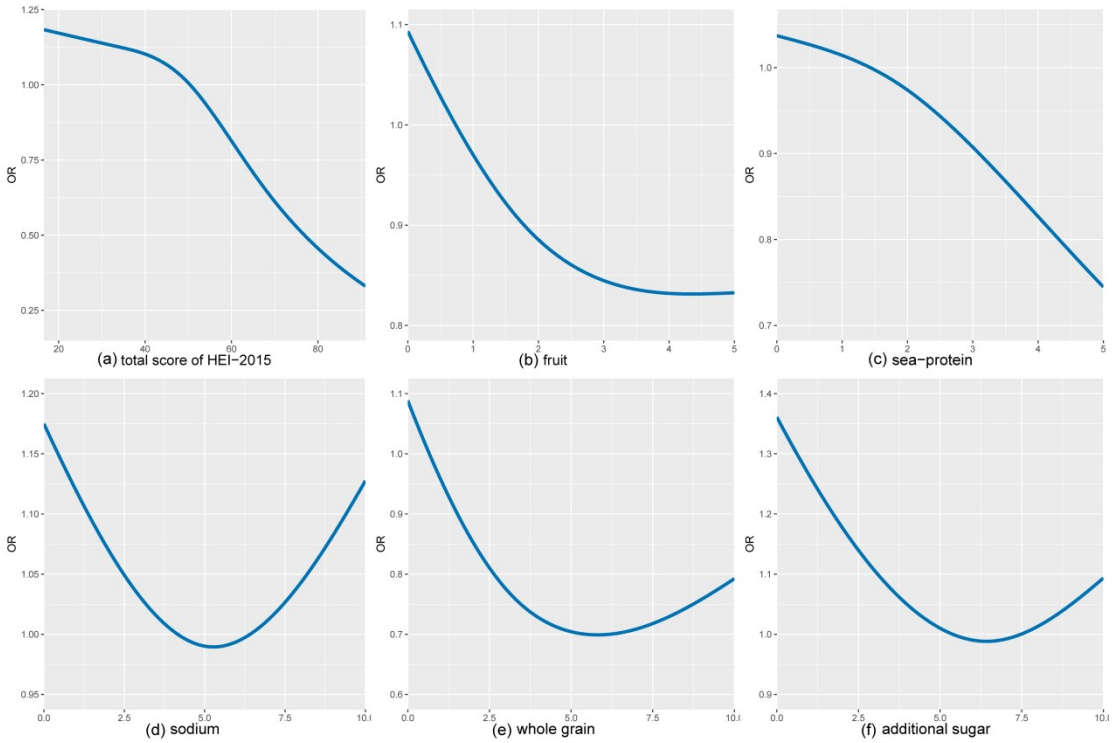
Notes: Participants were categorized into four groups based on HEI-2015 dietary score quartile intervals, Q1,Q2,Q3, and Q4. Q1 served as the reference group when performing stratified analyses. All models were adjusted for adjusted for sex (men/women), marriage (married/other), income (low/high), smoke (no/current and past), alcohol intake (yes/no), physical activity(no/sometimes/often), sleep duration(7-8 hours/ <7 or >8 hours), BMI, diabetes, hypertension, and depression. If the factor was subgroup stratified, it was not adjusted.

Table. S8 Association between AHA dietary scores and accelerated aging (Kailuan cohort)

		Model A		Model B		Model C	
	Case/N	**OR (95% CI)**	***P-value***	**OR (95% CI)**	***P-value***	**OR (95% CI)**	***P-value***
Score							
0-2	2553/22807	reference		reference		reference	
3-5	935/10894	0.74 (0.69-0.81)	<0.001	0.72(0.66-0.79)	<0.001	0.81(0.74-0.89)	<0.001
Score							
0	1251/10596	reference		reference		reference	
1	943/8691	0.91 (0.83-0.99)	0.038	0.82 (0.74-0.90)	<0.001	0.88 (0.79-0.98)	0.015
2	359/3520	0.85 (0.75-0.96)	0.009	0.73(0.64-0.83)	<0.001	0.79 (0.69-0.91)	0.001
3	757/9377	0.66 (0.60-0.72)	<0.001	0.58 (0.52-0.65)	<0.001	0.70 (0.62-0.78)	0.001
4	175/1497	0.99 (0.81,1.17)	0.896	0.81 (0.68-0.97)	0.025	0.90 (0.75-1.08)	0.275
5	3/20	1.32 (0.31-3.93)	0.659	1.29 (0.30-3.93)	0.684	1.60 (0.37-4.90)	0.461

Notes: Data are presented as hazard ratios (95% confidence intervals). Model A: unadjusted; Model B: adjusted for sex (men/women), marriage (married/other), income (low/high), smoke (no/current and past), alcohol intake (yes/no), sedentary lifestyle(yes/no), physical activity(no/sometimes/often), and sleep duration(7-8 hours/ <7 or >8 hours); Model C: additionally adjusted for diabetes and hypertension based on Model B. OR, odds ratio; CI, confidence interval; *P-value*, probability.

Figure. S1 Association of food composition and accelerated aging in the AHA dietary score (NHANES cohort, n=9285)



Notes: HEI-2015, Healthy Eating Index-2015; OR, odds ratio.