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Dietary patterns in midlife and cognitive impairment in late life: a prospective study in Chinese adults

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Description of supplemental materials:

Supplemental Figure 1 Participant flowchart

Supplemental Table 1 Relations of quartiles of dietary quality scores with SM-MMSE score

Supplemental Table 2 Stratified analyses: relations of quartiles of dietary quality scores with risk of cognitive impairment

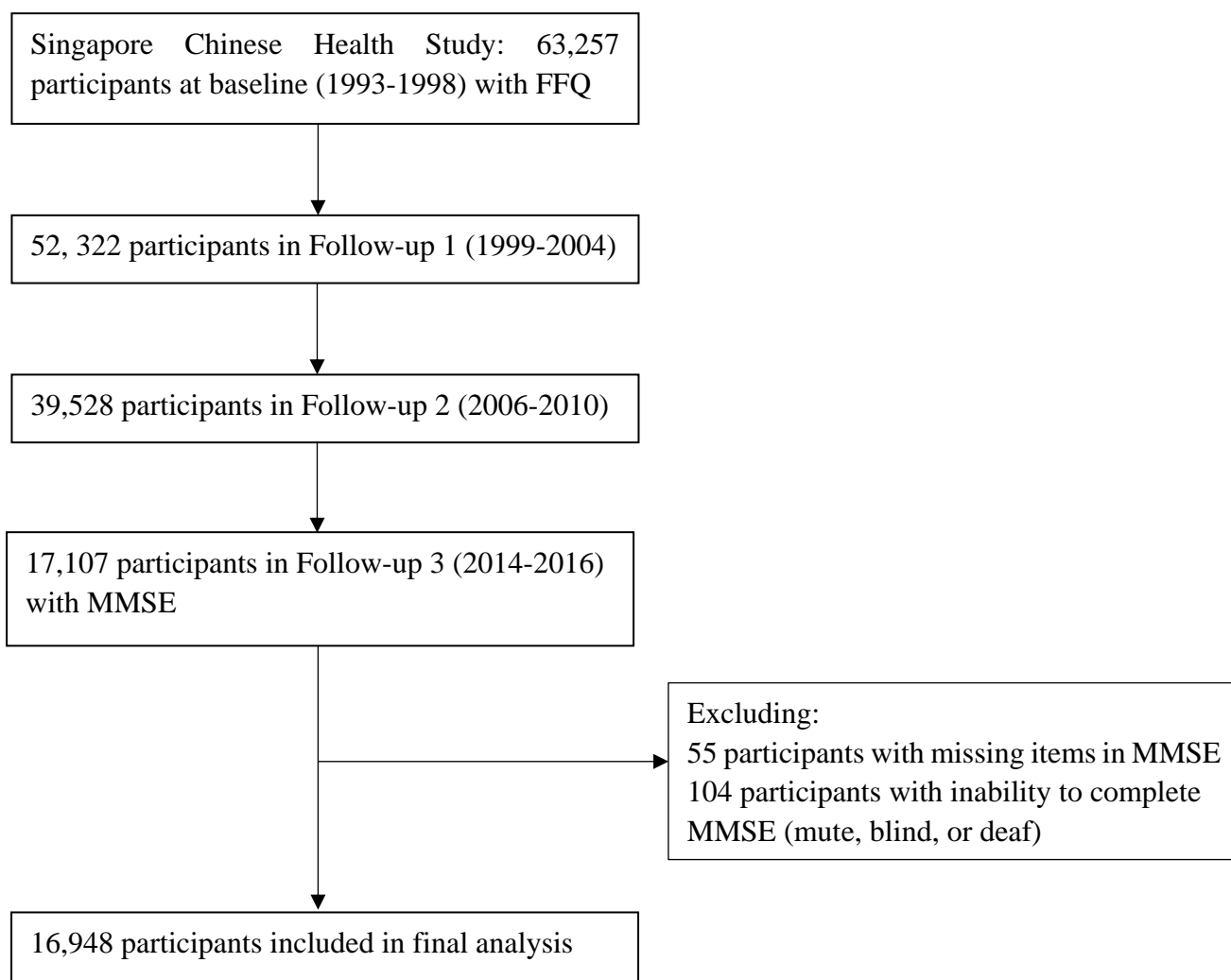
Supplemental Table 3 Stratified analyses: relations of quartiles of dietary quality scores with SM-MMSE score

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Supplemental Figure 1 Participant flowchart



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Supplemental Table 1 Relations of quartiles of dietary quality scores with SM-MMSE score¹

Dietary quality scores	Mean SM-MMSE score (95% CI) ²	β (95% CI)	<i>P</i> value	<i>P</i> -trend ³
aMED				<0.001
Q1	23.866 (23.573, 24.159)	Ref.		
Q2	24.023 (23.724, 24.322)	0.157 (0.026, 0.287)	0.02	
Q3	24.246 (23.947, 24.546)	0.380 (0.246, 0.515)	<0.001	
Q4	24.406 (24.107, 24.705)	0.540 (0.404, 0.676)	<0.001	
DASH				<0.001
Q1	23.822 (23.520, 24.124)	Ref.		
Q2	24.113 (23.811, 24.415)	0.291 (0.160, 0.422)	<0.001	
Q3	24.240 (23.936, 24.545)	0.418 (0.283, 0.554)	<0.001	
Q4	24.329 (24.025, 24.632)	0.507 (0.368, 0.645)	<0.001	
AHEI-2010				<0.001
Q1	23.857 (23.562, 24.152)	Ref.		
Q2	24.081 (23.783, 24.378)	0.224 (0.092, 0.356)	<0.001	
Q3	24.229 (23.932, 24.527)	0.372 (0.239, 0.506)	<0.001	
Q4	24.310 (24.013, 24.608)	0.454 (0.318, 0.589)	<0.001	
PDI				<0.001
Q1	23.917 (23.616, 24.219)	Ref.		
Q2	24.065 (23.763, 24.367)	0.148 (0.018, 0.278)	0.03	
Q3	24.237 (23.934, 24.541)	0.320 (0.186, 0.454)	<0.001	
Q4	24.241 (23.935, 24.547)	0.324 (0.182, 0.466)	<0.001	
hPDI				<0.001
Q1	23.918 (23.614, 24.221)	Ref.		
Q2	24.032 (23.729, 24.335)	0.115 (-0.020, 0.249)	0.09	
Q3	24.186 (23.884, 24.487)	0.268 (0.131, 0.405)	<0.001	
Q4	24.268 (23.963, 24.572)	0.350 (0.206, 0.494)	<0.001	

¹ Abbreviations: AHEI, alternative Healthy Eating Index; aMED, Alternate Mediterranean Diet score; CI, confidence interval; DASH, Dietary Approaches to Stop Hypertension; hPDI, healthful plant-based diet index; PDI, plant-based diet index; Q, quartile; SM-MMSE, Singapore Modified Mini-Mental State Examination.

² The multivariable-adjusted model was adjusted for age at cognitive status measurement, year of baseline interview, sex, dialect group, marital status, and education level, smoking status, physical activity, sleep duration, body mass index, total energy intake, baseline history of hypertension, diabetes, cardiovascular disease, and cancer. Analyses for the DASH, PDI and hPDI indexes were additionally adjusted for alcohol drinking, and analyses for the aMED, DASH and AHEI-2010 were additionally adjusted for tea intake and coffee intake.

³ Tests for a linear trend were calculated by fitting median scores for quartiles as continuous variables in generalized linear models.

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Men	1.00	0.83 (0.69, 1.01)	0.72 (0.58, 0.88)	0.71 (0.57, 0.89)	<0.001	0.90 (0.83, 0.97)	
Women	1.00	0.86 (0.73, 1.02)	0.75 (0.63, 0.89)	0.72 (0.61, 0.86)	<0.001	0.89 (0.83, 0.95)	
Education level							0.85
No formal education	1.00	0.81 (0.63, 1.05)	0.62 (0.47, 0.82)	0.74 (0.56, 0.98)	0.01	0.88 (0.79, 0.98)	
Primary school	1.00	0.94 (0.78, 1.14)	0.80 (0.66, 0.97)	0.71 (0.58, 0.88)	<0.001	0.89 (0.83, 0.96)	
Secondary school or higher	1.00	0.75 (0.60, 0.93)	0.70 (0.56, 0.89)	0.69 (0.55, 0.87)	0.004	0.88 (0.82, 0.96)	
Body mass index							0.59
<23 kg/m ²	1.00	0.89 (0.74, 1.08)	0.81 (0.67, 0.99)	0.81 (0.67, 0.99)	0.03	0.93 (0.86, 0.99)	
≥23 kg/m ²	1.00	0.81 (0.68, 0.95)	0.67 (0.56, 0.80)	0.63 (0.53, 0.76)	<0.001	0.85 (0.80, 0.91)	
Baseline hypertension							0.32
No	1.00	0.85 (0.74, 0.98)	0.70 (0.61, 0.82)	0.68 (0.58, 0.79)	<0.001	0.87 (0.82, 0.92)	
Yes	1.00	0.82 (0.62, 1.09)	0.82 (0.62, 1.09)	0.85 (0.64, 1.13)	0.37	0.96 (0.86, 1.06)	
Baseline diabetes							0.16
No	1.00	0.85 (0.74, 0.96)	0.71 (0.62, 0.81)	0.69 (0.60, 0.79)	<0.001	0.87 (0.83, 0.92)	
Yes	1.00	0.78 (0.44, 1.39)	1.10 (0.63, 1.91)	1.08 (0.62, 1.88)	0.49	1.08 (0.90, 1.31)	
AHEI-2010							
Age at baseline							0.61
<55 years old	1.00	0.86 (0.71, 1.05)	0.86 (0.71, 1.04)	0.75 (0.61, 0.91)	0.005	0.89 (0.83, 0.95)	
≥55 years old	1.00	0.89 (0.75, 1.05)	0.75 (0.63, 0.89)	0.76 (0.64, 0.90)	<0.001	0.90 (0.84, 0.96)	
Sex							0.07
Men	1.00	0.77 (0.63, 0.95)	0.86 (0.70, 1.05)	0.79 (0.64, 0.97)	0.04	0.92 (0.85, 0.99)	
Women	1.00	0.94 (0.80, 1.11)	0.77 (0.65, 0.91)	0.73 (0.62, 0.87)	<0.001	0.88 (0.82, 0.94)	
Education level							0.79
No formal education	1.00	1.05 (0.82, 1.35)	0.74 (0.57, 0.97)	0.77 (0.57, 1.04)	0.02	0.86 (0.77, 0.96)	
Primary school	1.00	0.94 (0.78, 1.14)	0.86 (0.70, 1.04)	0.76 (0.62, 0.94)	0.006	0.91 (0.84, 0.98)	
Secondary school or higher	1.00	0.67 (0.53, 0.84)	0.76 (0.61, 0.95)	0.71 (0.57, 0.88)	0.01	0.89 (0.83, 0.97)	
Body mass index							0.43
<23 kg/m ²	1.00	0.84 (0.69, 1.01)	0.75 (0.62, 0.91)	0.80 (0.66, 0.97)	0.01	0.92 (0.86, 0.99)	

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≥ 23 kg/m ²	1.00	0.90 (0.76, 1.07)	0.83 (0.70, 0.98)	0.70 (0.59, 0.84)	<0.001	0.87 (0.81, 0.93)	
Baseline hypertension							0.64
No	1.00	0.91 (0.79, 1.05)	0.82 (0.70, 0.94)	0.77 (0.66, 0.89)	<0.001	0.89 (0.85, 0.94)	
Yes	1.00	0.75 (0.57, 0.99)	0.75 (0.57, 0.98)	0.70 (0.53, 0.92)	0.01	0.90 (0.81, 1.00)	
Baseline diabetes							0.23
No	1.00	0.88 (0.78, 1.01)	0.79 (0.69, 0.90)	0.73 (0.64, 0.84)	<0.001	0.89 (0.84, 0.93)	
Yes	1.00	0.75 (0.43, 1.31)	0.90 (0.53, 1.54)	1.06 (0.62, 1.78)	0.63	1.00 (0.83, 1.21)	
PDI							
Age at baseline							0.25
<55 years old	1.00	0.75 (0.62, 0.90)	0.65 (0.53, 0.79)	0.75 (0.61, 0.92)	0.002	0.90 (0.84, 0.97)	
≥ 55 years old	1.00	0.99 (0.84, 1.16)	0.84 (0.71, 1.00)	0.88 (0.73, 1.06)	0.08	0.95 (0.89, 1.01)	
Sex							0.69
Men	1.00	0.85 (0.70, 1.04)	0.68 (0.55, 0.85)	0.76 (0.61, 0.94)	0.005	0.90 (0.83, 0.97)	
Women	1.00	0.88 (0.76, 1.03)	0.80 (0.68, 0.94)	0.86 (0.72, 1.02)	0.04	0.95 (0.89, 1.01)	
Education level							0.83
No formal education	1.00	0.94 (0.74, 1.20)	0.77 (0.59, 1.02)	0.91 (0.67, 1.24)	0.26	0.95 (0.85, 1.06)	
Primary school	1.00	0.91 (0.75, 1.09)	0.75 (0.62, 0.92)	0.73 (0.59, 0.91)	0.001	0.88 (0.82, 0.95)	
Secondary school or higher	1.00	0.77 (0.61, 0.96)	0.74 (0.59, 0.93)	0.84 (0.67, 1.06)	0.19	0.96 (0.89, 1.05)	
Body mass index							0.18
<23 kg/m ²	1.00	0.76 (0.63, 0.91)	0.70 (0.58, 0.85)	0.81 (0.67, 0.99)	0.02	0.94 (0.87, 1.01)	
≥ 23 kg/m ²	1.00	0.97 (0.82, 1.15)	0.80 (0.67, 0.96)	0.82 (0.68, 0.99)	0.01	0.92 (0.86, 0.98)	
Baseline hypertension							0.41
No	1.00	0.83 (0.72, 0.95)	0.74 (0.64, 0.85)	0.76 (0.65, 0.89)	<0.001	0.92 (0.87, 0.98)	
Yes	1.00	1.02 (0.79, 1.33)	0.80 (0.60, 1.07)	1.04 (0.78, 1.40)	0.94	0.93 (0.84, 1.03)	
Baseline diabetes							0.98
No	1.00	0.87 (0.77, 0.99)	0.75 (0.66, 0.86)	0.82 (0.72, 0.95)	0.001	0.93 (0.88, 0.98)	
Yes	1.00	0.92 (0.56, 1.49)	0.77 (0.46, 1.27)	0.75 (0.43, 1.31)	0.24	0.89 (0.73, 1.08)	
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Age at baseline								0.02
<55 years old	1.00	0.96 (0.79, 1.15)	0.73 (0.59, 0.89)	0.78 (0.63, 0.96)	0.005	0.90 (0.83, 0.96)		
≥55 years old	1.00	0.82 (0.68, 0.98)	0.95 (0.79, 1.13)	0.78 (0.65, 0.94)	0.04	0.94 (0.88, 1.01)		
Sex								0.44
Men	1.00	0.85 (0.70, 1.02)	0.78 (0.64, 0.96)	0.70 (0.56, 0.88)	0.001	0.90 (0.83, 0.97)		
Women	1.00	0.93 (0.78, 1.12)	0.93 (0.78, 1.12)	0.85 (0.71, 1.02)	0.08	0.94 (0.89, 1.01)		
Education level								0.66
No formal education	1.00	0.99 (0.74, 1.32)	0.96 (0.72, 1.28)	0.86 (0.64, 1.16)	0.28	0.94 (0.85, 1.05)		
Primary school	1.00	0.85 (0.70, 1.04)	0.82 (0.67, 1.00)	0.73 (0.59, 0.90)	0.004	0.91 (0.84, 0.98)		
Secondary school or higher	1.00	0.86 (0.69, 1.08)	0.85 (0.68, 1.06)	0.79 (0.63, 1.00)	0.06	0.93 (0.85, 1.01)		
Body mass index								0.36
<23 kg/m ²	1.00	0.82 (0.68, 1.00)	0.89 (0.74, 1.09)	0.83 (0.68, 1.02)	0.15	0.95 (0.89, 1.03)		
≥23 kg/m ²	1.00	0.92 (0.78, 1.10)	0.82 (0.68, 0.98)	0.74 (0.61, 0.89)	<0.001	0.90 (0.84, 0.96)		
Baseline hypertension								0.39
No	1.00	0.90 (0.78, 1.04)	0.83 (0.72, 0.97)	0.79 (0.67, 0.92)	0.002	0.92 (0.87, 0.97)		
Yes	1.00	0.79 (0.59, 1.06)	0.93 (0.70, 1.23)	0.76 (0.57, 1.02)	0.14	0.94 (0.85, 1.04)		
Baseline diabetes								0.46
No	1.00	0.89 (0.78, 1.02)	0.85 (0.74, 0.98)	0.79 (0.69, 0.91)	0.001	0.92 (0.88, 0.97)		
Yes	1.00	0.60 (0.33, 1.07)	0.82 (0.48, 1.40)	0.65 (0.37, 1.14)	0.25	0.95 (0.78, 1.15)		

¹Abbreviations: AHEI, alternative Healthy Eating Index; aMED, Alternate Mediterranean Diet score; DASH, Dietary Approaches to Stop Hypertension; hPDI, healthful plant-based diet index; PDI, plant-based diet index; Q, quartile; SD, standard deviation.

²The multivariable-adjusted model was adjusted for age at cognitive status measurement, year of baseline interview, sex, dialect group, marital status, and education level, smoking status, physical activity, sleep duration, body mass index, total energy intake, baseline history of hypertension, diabetes, cardiovascular disease, and cancer. Analyses for the DASH, PDI and hPDI indexes were additionally adjusted for alcohol drinking, and analyses for the aMED, DASH and AHEI-2010 were additionally adjusted for tea intake and coffee intake.

³SD values are as follows: 1.67 for aMED, 4.33 for DASH, 7.32 for AHEI-2010, 5.76 for PDI, and 5.60 for hPDI.

⁴Tests for a linear trend were calculated by fitting median scores for quartiles as continuous variables in logistic regression models.

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Men	Ref.	0.166 (-0.016, 0.348)	0.306 (0.110, 0.502)	0.389 (0.177, 0.601)	<0.001	0.133 (0.060, 0.206)	-0.150 (-0.162, -0.137)
Women	Ref.	0.377 (0.190, 0.564)	0.482 (0.295, 0.668)	0.567 (0.381, 0.753)	<0.001	0.200 (0.133, 0.266)	-0.211 (-0.222, -0.200)
Education level							0.15
No formal education	Ref.	0.502 (0.155, 0.849)	0.790 (0.425, 1.155)	0.926 (0.543, 1.310)	<0.001	0.351 (0.210, 0.492)	-0.252 (-0.273, -0.231)
Primary school	Ref.	0.215 (0.007, 0.423)	0.419 (0.206, 0.632)	0.441 (0.218, 0.664)	<0.001	0.181 (0.102, 0.261)	-0.182 (-0.195, -0.169)
Secondary school or higher	Ref.	0.236 (0.064, 0.408)	0.198 (0.022, 0.374)	0.295 (0.121, 0.470)	0.004	0.079 (0.018, 0.140)	-0.147 (-0.159, -0.136)
Body mass index							0.79
<23 kg/m ²	Ref.	0.253 (0.067, 0.439)	0.311 (0.120, 0.501)	0.382 (0.189, 0.575)	<0.001	0.135 (0.066, 0.203)	-0.175 (-0.187, -0.164)
≥23 kg/m ²	Ref.	0.317 (0.132, 0.503)	0.510 (0.318, 0.702)	0.614 (0.415, 0.814)	<0.001	0.223 (0.151, 0.295)	-0.196 (-0.208, -0.184)
Baseline hypertension							0.31
No	Ref.	0.280 (0.136, 0.424)	0.432 (0.284, 0.581)	0.536 (0.384, 0.688)	<0.001	0.195 (0.140, 0.249)	-0.186 (-0.195, -0.176)
Yes	Ref.	0.334 (0.013, 0.655)	0.357 (0.032, 0.682)	0.370 (0.033, 0.706)	0.06	0.122 (0.002, 0.242)	-0.190 (-0.209, -0.171)
Baseline diabetes							0.76
No	Ref.	0.290 (0.156, 0.423)	0.420 (0.283, 0.558)	0.519 (0.377, 0.660)	<0.001	0.186 (0.135, 0.236)	-0.188 (-0.196, -0.179)
Yes	Ref.	0.296 (-0.417, 1.009)	0.386 (-0.326, 1.097)	0.214 (-0.498, 0.925)	0.65	0.076 (-0.165, 0.317)	-0.168 (-0.208, -0.127)
AHEI-2010							
Age at baseline							0.44
<55 years old	Ref.	0.189 (0.041, 0.337)	0.283 (0.134, 0.432)	0.396 (0.246, 0.547)	<0.001	0.145 (0.091, 0.198)	-0.138 (-0.156, -0.120)
≥55 years old	Ref.	0.254 (0.003, 0.506)	0.497 (0.243, 0.752)	0.505 (0.243, 0.768)	<0.001	0.206 (0.111, 0.301)	-0.211 (-0.233, -0.189)
Sex							0.004
Men	Ref.	0.354 (0.164, 0.545)	0.233 (0.037, 0.429)	0.359 (0.161, 0.556)	0.001	0.126 (0.058, 0.193)	-0.148 (-0.161, -0.136)
Women	Ref.	0.115 (-0.066, 0.296)	0.437 (0.257, 0.617)	0.493 (0.308, 0.678)	<0.001	0.203 (0.135, 0.271)	-0.210 (-0.221, -0.199)
Education level							0.21
No formal education	Ref.	0.140 (-0.202, 0.481)	0.747 (0.394, 1.100)	0.835 (0.438, 1.233)	<0.001	0.354 (0.208, 0.501)	-0.250 (-0.271, -0.229)
Primary school	Ref.	0.170 (-0.037, 0.378)	0.269 (0.056, 0.482)	0.409 (0.191, 0.626)	<0.001	0.172 (0.094, 0.250)	-0.181 (-0.194, -0.168)
Secondary school or higher	Ref.	0.359 (0.183, 0.535)	0.281 (0.109, 0.452)	0.329 (0.162, 0.496)	0.001	0.096 (0.039, 0.154)	-0.147 (-0.158, -0.136)
Body mass index							0.67
<23 kg/m ²	Ref.	0.184 (-0.001, 0.368)	0.330 (0.143, 0.516)	0.343 (0.155, 0.531)	<0.001	0.140 (0.074, 0.207)	-0.174 (-0.186, -0.163)

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≥23 kg/m ²	Ref.	0.261 (0.072, 0.449)	0.406 (0.216, 0.596)	0.555 (0.360, 0.750)	<0.001	0.204 (0.134, 0.273)		-0.194 (-0.206, -0.182)
Baseline hypertension							0.93	
No	Ref.	0.203 (0.058, 0.348)	0.352 (0.205, 0.499)	0.425 (0.276, 0.575)	<0.001	0.170 (0.117, 0.223)		-0.184 (-0.193, -0.175)
Yes	Ref.	0.305 (-0.013, 0.622)	0.455 (0.139, 0.772)	0.568 (0.247, 0.889)	<0.001	0.190 (0.074, 0.307)		-0.190 (-0.209, -0.171)
Baseline diabetes							0.60	
No	Ref.	0.207 (0.073, 0.341)	0.374 (0.239, 0.510)	0.447 (0.309, 0.585)	<0.001	0.173 (0.123, 0.222)		-0.186 (-0.194, -0.178)
Yes	Ref.	0.497 (-0.206, 1.201)	0.271 (-0.431, 0.973)	0.521 (-0.175, 1.217)	0.244	0.180 (-0.063, 0.424)		-0.168 (-0.209, -0.128)
PDI								
Age at baseline							0.55	
<55 years old	Ref.	0.133 (-0.014, 0.280)	0.282 (0.131, 0.433)	0.301 (0.142, 0.459)	<0.001	0.118 (0.062, 0.175)		-0.137 (-0.155, -0.119)
≥55 years old	Ref.	0.139 (-0.106, 0.384)	0.330 (0.077, 0.583)	0.308 (0.034, 0.582)	0.011	0.110 (0.014, 0.207)		-0.212 (-0.234, -0.190)
Sex							0.83	
Men	Ref.	0.178 (-0.021, 0.377)	0.397 (0.193, 0.601)	0.391 (0.180, 0.602)	<0.001	0.151 (0.077, 0.224)		-0.148 (-0.160, -0.135)
Women	Ref.	0.127 (-0.043, 0.298)	0.260 (0.083, 0.437)	0.280 (0.088, 0.471)	0.002	0.101 (0.033, 0.170)		-0.210 (-0.221, -0.198)
Education level							0.36	
No formal education	Ref.	0.159 (-0.174, 0.493)	0.405 (0.048, 0.762)	0.208 (-0.204, 0.620)	0.116	0.105 (-0.037, 0.247)		-0.249 (-0.270, -0.228)
Primary school	Ref.	0.157 (-0.046, 0.361)	0.396 (0.182, 0.610)	0.462 (0.233, 0.691)	<0.001	0.170 (0.089, 0.251)		-0.180 (-0.193, -0.167)
Secondary school or higher	Ref.	0.131 (-0.044, 0.307)	0.147 (-0.028, 0.321)	0.208 (0.030, 0.386)	0.026	0.077 (0.014, 0.140)		-0.147 (-0.158, -0.135)
Body mass index							0.75	
<23 kg/m ²	Ref.	0.101 (-0.080, 0.283)	0.255 (0.067, 0.443)	0.234 (0.037, 0.432)	0.009	0.086 (0.015, 0.156)		-0.174 (-0.185, -0.163)
≥23 kg/m ²	Ref.	0.195 (0.010, 0.381)	0.374 (0.183, 0.566)	0.404 (0.199, 0.608)	<0.001	0.154 (0.082, 0.226)		-0.193 (-0.205, -0.181)
Baseline hypertension							0.76	
No	Ref.	0.180 (0.037, 0.323)	0.335 (0.188, 0.482)	0.377 (0.220, 0.533)	<0.001	0.133 (0.078, 0.189)		-0.184 (-0.193, -0.174)
Yes	Ref.	0.043 (-0.269, 0.356)	0.272 (-0.056, 0.600)	0.120 (-0.220, 0.460)	0.346	0.079 (-0.040, 0.199)		-0.188 (-0.207, -0.169)
Baseline diabetes							0.74	
No	Ref.	0.160 (0.028, 0.293)	0.327 (0.190, 0.464)	0.320 (0.175, 0.466)	<0.001	0.122 (0.071, 0.174)		-0.185 (-0.194, -0.177)
Yes	Ref.	-0.081 (-0.712, 0.549)	0.174 (-0.480, 0.829)	0.367 (-0.334, 1.069)	0.276	0.119 (-0.131, 0.370)		-0.168 (-0.208, -0.127)
hPDI								

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Age at baseline								0.53
<55 years old	Ref.	0.059 (-0.088, 0.206)	0.260 (0.108, 0.413)	0.227 (0.067, 0.388)	0.001	0.109 (0.053, 0.165)		-0.137 (-0.156, -0.119)
≥55 years old	Ref.	0.174 (-0.092, 0.441)	0.217 (-0.051, 0.485)	0.499 (0.220, 0.777)	<0.001	0.154 (0.056, 0.252)		-0.213 (-0.235, -0.191)
Sex								0.15
Men	Ref.	0.130 (-0.054, 0.315)	0.378 (0.183, 0.573)	0.299 (0.085, 0.514)	<0.001	0.133 (0.059, 0.206)		-0.149 (-0.161, -0.136)
Women	Ref.	0.053 (-0.139, 0.246)	0.157 (-0.036, 0.351)	0.326 (0.128, 0.523)	<0.001	0.125 (0.056, 0.193)		-0.210 (-0.222, -0.199)
Education level								0.02
No formal education	Ref.	-0.206 (-0.588, 0.177)	0.015 (-0.374, 0.405)	0.442 (0.040, 0.844)	0.009	0.195 (0.053, 0.337)		-0.250 (-0.272, -0.229)
Primary school	Ref.	0.214 (0.001, 0.426)	0.426 (0.209, 0.644)	0.424 (0.191, 0.656)	<0.001	0.163 (0.082, 0.245)		-0.181 (-0.194, -0.168)
Secondary school or higher	Ref.	0.109 (-0.060, 0.277)	0.150 (-0.023, 0.324)	0.159 (-0.019, 0.338)	0.078	0.060 (-0.002, 0.122)		-0.147 (-0.158, -0.136)
Body mass index								0.12
<23 kg/m ²	Ref.	0.204 (0.018, 0.390)	0.217 (0.025, 0.409)	0.264 (0.063, 0.465)	0.013	0.101 (0.030, 0.171)		-0.175 (-0.186, -0.163)
≥23 kg/m ²	Ref.	0.018 (-0.175, 0.212)	0.314 (0.117, 0.511)	0.427 (0.221, 0.633)	<0.001	0.164 (0.092, 0.236)		-0.195 (-0.206, -0.183)
Baseline hypertension								0.46
No	Ref.	0.129 (-0.018, 0.276)	0.299 (0.148, 0.450)	0.352 (0.193, 0.510)	<0.001	0.144 (0.089, 0.200)		-0.184 (-0.194, -0.175)
Yes	Ref.	0.039 (-0.292, 0.370)	0.136 (-0.194, 0.466)	0.330 (-0.012, 0.673)	0.042	0.094 (-0.024, 0.212)		-0.189 (-0.208, -0.170)
Baseline diabetes								0.71
No	Ref.	0.111 (-0.025, 0.248)	0.271 (0.131, 0.412)	0.333 (0.186, 0.480)	<0.001	0.132 (0.080, 0.183)		-0.186 (-0.195, -0.178)
Yes	Ref.	0.087 (-0.638, 0.812)	0.110 (-0.593, 0.813)	0.539 (-0.184, 1.261)	0.128	0.152 (-0.093, 0.398)		-0.169 (-0.209, -0.128)

¹Abbreviations: AHEI, alternative Healthy Eating Index; aMED, Alternate Mediterranean Diet score; DASH, Dietary Approaches to Stop Hypertension; hPDI, healthful plant-based diet index; PDI, plant-based diet index; Q, quartile; SD, standard deviation.

²The multivariable-adjusted model was adjusted for age at cognitive status measurement, year of baseline interview, sex, dialect group, marital status, and education level, smoking status, physical activity, sleep duration, body mass index, total energy intake, baseline history of hypertension, diabetes, cardiovascular disease, and cancer. Analyses for the DASH, PDI and hPDI indexes were additionally adjusted for alcohol drinking, and analyses for the aMED, DASH and AHEI-2010 were additionally adjusted for tea intake and coffee intake.

³SD values are as follows: 1.67 for aMED, 4.33 for DASH, 7.32 for AHEI-2010, 5.76 for PDI, and 5.60 for hPDI.

⁴Tests for a linear trend were calculated by fitting median scores for quartiles as continuous variables in generalized linear models.

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Supplemental Table 4 Sensitivity analyses: relations of quartiles of dietary quality scores with risk of cognitive impairment¹

Diet quality scores	Sensitivity analysis 1 ²	Sensitivity analysis 2 ³	Sensitivity analysis 3 ⁴	Sensitivity analysis 4 ⁵	Sensitivity analysis 5 ⁶	Sensitivity analysis 6 ⁷
aMED						
Q1	1.00	1.00	1.00	1.00	1.00	1.00
Q2	0.80 (0.71, 0.92)	0.85 (0.75, 0.96)	0.86 (0.76, 0.97)	0.85 (0.75, 0.96)	0.86 (0.76, 0.97)	0.90 (0.81, 1.00)
Q3	0.69 (0.59, 0.80)	0.75 (0.66, 0.86)	0.76 (0.67, 0.87)	0.76 (0.66, 0.86)	0.76 (0.67, 0.87)	0.76 (0.68, 0.86)
Q4	0.60 (0.51, 0.71)	0.66 (0.58, 0.76)	0.68 (0.60, 0.78)	0.68 (0.59, 0.78)	0.68 (0.59, 0.77)	0.67 (0.60, 0.76)
<i>P</i> -trend ⁸	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
DASH						
Q1	1.00	1.00	1.00	1.00	1.00	1.00
Q2	0.82 (0.72, 0.94)	0.85 (0.74, 0.96)	0.84 (0.74, 0.96)	0.85 (0.75, 0.96)	0.83 (0.74, 0.95)	0.79 (0.71, 0.88)
Q3	0.72 (0.63, 0.83)	0.72 (0.63, 0.82)	0.73 (0.64, 0.83)	0.74 (0.65, 0.84)	0.72 (0.63, 0.82)	0.77 (0.68, 0.86)
Q4	0.70 (0.61, 0.80)	0.72 (0.63, 0.82)	0.71 (0.62, 0.81)	0.72 (0.63, 0.82)	0.70 (0.61, 0.80)	0.69 (0.61, 0.77)
<i>P</i> -trend ⁸	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
AHEI-2010						
Q1	1.00	1.00	1.00	1.00	1.00	1.00
Q2	0.88 (0.77, 1.00)	0.89 (0.78, 1.01)	0.88 (0.77, 1.00)	0.88 (0.78, 1.00)	0.87 (0.77, 0.99)	0.82 (0.73, 0.91)
Q3	0.80 (0.70, 0.91)	0.80 (0.70, 0.91)	0.80 (0.71, 0.91)	0.80 (0.71, 0.91)	0.79 (0.70, 0.90)	0.77 (0.69, 0.86)
Q4	0.74 (0.65, 0.85)	0.76 (0.66, 0.86)	0.76 (0.67, 0.87)	0.76 (0.67, 0.87)	0.75 (0.66, 0.86)	0.70 (0.62, 0.78)
<i>P</i> -trend ⁸	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
PDI						
Q1	1.00	1.00	1.00	1.00	1.00	1.00
Q2	0.86 (0.76, 0.98)	0.87 (0.77, 0.98)	0.88 (0.78, 0.99)	0.87 (0.77, 0.99)	0.88 (0.78, 1.00)	0.87 (0.78, 0.97)
Q3	0.75 (0.65, 0.85)	0.75 (0.66, 0.86)	0.76 (0.67, 0.87)	0.75 (0.66, 0.86)	0.76 (0.67, 0.86)	0.78 (0.70, 0.87)
Q4	0.81 (0.70, 0.93)	0.81 (0.71, 0.93)	0.84 (0.73, 0.96)	0.83 (0.72, 0.95)	0.83 (0.73, 0.95)	0.79 (0.70, 0.89)
<i>P</i> -trend ⁸	<0.001	<0.001	0.002	0.001	0.002	<0.001
hPDI						

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Q1	1.00	1.00	1.00	1.00	1.00	1.00
Q2	0.90 (0.79, 1.03)	0.89 (0.78, 1.01)	0.88 (0.77, 1.00)	0.88 (0.77, 1.00)	0.87 (0.77, 1.00)	0.90 (0.81, 1.01)
Q3	0.84 (0.74, 0.97)	0.85 (0.74, 0.97)	0.86 (0.76, 0.98)	0.86 (0.75, 0.98)	0.86 (0.75, 0.98)	0.81 (0.72, 0.91)
Q4	0.79 (0.68, 0.91)	0.78 (0.68, 0.90)	0.80 (0.69, 0.91)	0.79 (0.69, 0.91)	0.78 (0.68, 0.90)	0.76 (0.68, 0.86)
<i>P</i> -trend ⁸	<0.001	<0.001	0.002	0.001	<0.001	<0.001

¹ Abbreviations: AHEI, alternative Healthy Eating Index; aMED, Alternate Mediterranean Diet score; DASH, Dietary Approaches to Stop Hypertension; hPDI, healthful plant-based diet index; PDI, plant-based diet index; Q, quartile; SM-MMSE, Singapore-modified version of Mini-Mental State Examination.

² Sensitivity analysis 1 (n=16213): Analysis of excluding 735 participants with baseline cardiovascular disease or cancer. The multivariable-adjusted model was adjusted for age at cognitive status measurement, year of baseline interview, sex, dialect group, marital status, and education level, smoking status, physical activity, sleep duration, body mass index, total energy intake, baseline history of hypertension, diabetes. Analyses for the DASH, PDI and hPDI indexes were additionally adjusted for alcohol drinking, and analyses for the aMED, DASH and AHEI-2010 were additionally adjusted for tea intake and coffee intake.

³ Sensitivity analysis 2 (n=16948): Analysis of adjusting for incident hypertension, diabetes, cardiovascular disease and cancer events. The multivariable-adjusted model was adjusted for age at cognitive status measurement, year of baseline interview, sex, dialect group, marital status, and education level, smoking status, physical activity, sleep duration, body mass index, total energy intake, incident hypertension, diabetes, cardiovascular disease and cancer events during the follow-up period. Analyses for the DASH, PDI and hPDI indexes were additionally adjusted for alcohol drinking, and analyses for the aMED, DASH and AHEI-2010 were additionally adjusted for tea intake and coffee intake.

⁴ Sensitivity analysis 3 (n=16948): Analysis of adjusting for age at baseline instead of age at the cognitive status measurement. The multivariable-adjusted model was adjusted for age at baseline, year of baseline interview, sex, dialect group, marital status, and education level, smoking status, physical activity, sleep duration, body mass index, total energy intake, baseline history of hypertension, diabetes, cardiovascular disease, and cancer. Analyses for the DASH, PDI and hPDI indexes were additionally adjusted for alcohol drinking, and analyses for the aMED, DASH and AHEI-2010 were additionally adjusted for tea intake and coffee intake.

⁵ Sensitivity analysis 4 (n=16948): Analysis of adjusting for housing type at follow-up 3. The multivariable-adjusted model was adjusted for age at cognitive status measurement, year of baseline interview, sex, dialect group, marital status, and education level, housing type, smoking status, physical activity, sleep duration, body mass index, total energy intake, baseline history of hypertension, diabetes, cardiovascular disease, and cancer. Analyses for the DASH, PDI and hPDI indexes were additionally adjusted for alcohol drinking, and

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analyses for the aMED, DASH and AHEI-2010 were additionally adjusted for tea intake and coffee intake.

⁶ Sensitivity analysis 5 (n=16736): Analysis of excluding 212 participants who had unrealistic daily energy intake at baseline. Unrealistic daily energy intake was defined as <700 or >3700 kcal/day for men and <600 or >3000 kcal/day. The multivariable-adjusted model was adjusted for age at cognitive status measurement, year of baseline interview, sex, dialect group, marital status, and education level, smoking status, physical activity, sleep duration, body mass index, total energy intake, baseline history of hypertension, diabetes, cardiovascular disease, and cancer. Analyses for the DASH, PDI and hPDI indexes were additionally adjusted for alcohol drinking, and analyses for the aMED, DASH and AHEI-2010 were additionally adjusted for tea intake and coffee intake.

⁷ Sensitivity analysis 6 (n=16948): Analysis of using the SM-MMSE cut-off point of 23/24. The multivariable-adjusted model was adjusted for age at cognitive status measurement, year of baseline interview, sex, dialect group, marital status, and education level, smoking status, physical activity, sleep duration, body mass index, total energy intake, baseline history of hypertension, diabetes, cardiovascular disease, and cancer. Analyses for the DASH, PDI and hPDI indexes were additionally adjusted for alcohol drinking, and analyses for the aMED, DASH and AHEI-2010 were additionally adjusted for tea intake and coffee intake.

⁸ *P* values for trend test were calculated by fitting median scores for quartiles as continuous variables in logistic regression models.

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Supplemental Table 5 Baseline characteristics of study participants in different scenarios

Variables	Baseline	Follow-up 1 visit	Follow-up 2 visit	Follow-up 3 visit	Individuals who did not participated in the follow-up 3 visit	Individuals who did not participated in the follow-up 3 visit for reasons other than death
N	63257	52322	39528	17107	46150	28002
Age at baseline, mean \pm SD, y	56.5 \pm 8.0	55.8 \pm 7.7	54.8 \pm 7.3	53.1 \pm 6.3	57.8 \pm 8.2	55.0 \pm 7.4
Body mass index, mean \pm SD, kg/m ²	23.1 \pm 3.3	23.1 \pm 3.3	23.1 \pm 3.2	23.1 \pm 3.2	23.1 \pm 3.3	23.1 \pm 3.2
aMED score, mean \pm SD	4.0 \pm 1.7	4.0 \pm 1.7	4.1 \pm 1.7	4.2 \pm 1.7	3.9 \pm 1.7	4.0 \pm 1.7
DASH score, mean \pm SD	24.1 \pm 4.3	24.2 \pm 4.3	24.3 \pm 4.3	24.5 \pm 4.3	24.0 \pm 4.3	24.1 \pm 4.3
AHEI-2010 score, mean \pm SD	50.0 \pm 7.3	50.2 \pm 7.3	50.3 \pm 7.3	50.8 \pm 7.3	49.7 \pm 7.3	50.0 \pm 7.3
PDI score, mean \pm SD	39.8 \pm 5.8	39.9 \pm 5.8	40.1 \pm 5.8	40.4 \pm 5.8	39.6 \pm 5.8	39.9 \pm 5.8
hPDI score, mean \pm SD	45.4 \pm 5.6	45.4 \pm 5.6	45.4 \pm 5.6	45.6 \pm 5.6	45.3 \pm 5.6	45.3 \pm 5.6
Sex (%)						
Male	27954 (44.2)	22233 (42.5)	16487 (41.7)	7000 (40.9)	20954 (45.4)	10902 (38.9)
Female	35303 (55.8)	30089 (57.5)	23041 (58.3)	10107 (59.1)	25196 (54.6)	17100 (61.1)
Dialect (%)						
Cantonese	29284 (46.3)	25322 (48.4)	19286 (48.8)	8518 (49.8)	20766 (45.0)	13148 (47.0)
Hokkiens	33973 (53.7)	27000 (51.6)	20242 (51.2)	8589 (50.2)	25384 (55.0)	14854 (53.0)
Marital status (%)						
Married	52638 (83.2)	44082 (84.3)	33867 (85.7)	15148 (88.5)	37490 (81.2)	23397 (83.6)
Separated/divorced	1205 (1.9)	957 (1.8)	702 (1.8)	256 (1.5)	949 (2.1)	618 (2.2)
Widowed	6934 (11.0)	5322 (10.2)	3486 (8.8)	1059 (6.2)	5875 (12.7)	2846 (10.2)
Never married	2480 (3.9)	1961 (3.7)	1473 (3.7)	644 (3.8)	1836 (4.0)	1141 (4.1)
Education level (%)						
No formal education	17333 (27.4)	13477 (25.8)	9434 (23.9)	3230 (18.9)	14103 (30.6)	7532 (26.9)
Primary School	28050 (44.3)	23355 (44.6)	17683 (44.7)	7669 (44.8)	20381 (44.2)	12102 (43.2)
Secondary school or higher	17874 (28.3)	15490 (29.6)	12411 (31.4)	6208 (36.3)	11666 (25.3)	8368 (29.9)

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Smoking status (%)						
Never smokers	43930 (69.4)	37572 (71.8)	29226 (73.9)	13287 (77.7)	30643 (66.4)	20974 (74.9)
Former smokers	6993 (11.1)	5461 (10.4)	3879 (9.8)	1569 (9.2)	5424 (11.8)	2540 (9.1)
Current smokers	12334 (19.5)	9289 (17.8)	6423 (16.2)	2251 (13.2)	10083 (21.8)	4488 (16.0)
Alcohol drinking (%)						
<Weekly	55946 (88.4)	46315 (88.5)	34937 (88.4)	15136 (88.5)	40810 (88.4)	24875 (88.8)
Weekly	5106 (8.1)	4286 (8.2)	3382 (8.6)	1495 (8.7)	3611 (7.8)	2293 (8.2)
Daily	2205 (3.5)	1721 (3.3)	1209 (3.1)	476 (2.8)	1729 (3.7)	834 (3.0)
Tea intake (%)						
None	26156 (41.3)	21253 (40.6)	15827 (40.0)	6520 (38.1)	19636 (42.5)	11622 (41.5)
Monthly	7618 (12.0)	6391 (12.2)	4864 (12.3)	2097 (12.3)	5521 (12.0)	3482 (12.4)
Weekly	15392 (24.3)	12920 (24.7)	9931 (25.1)	4476 (26.2)	10916 (23.7)	6869 (24.5)
Daily	14091 (22.3)	11758 (22.5)	8906 (22.5)	4014 (23.5)	10077 (21.8)	6029 (21.5)
Coffee intake (%)						
None/less than daily	18816 (29.7)	15468 (29.6)	11726 (29.7)	5207 (30.4)	13609 (29.5)	8208 (29.3)
1 cup/day	22803 (36.0)	18950 (36.2)	14244 (36.0)	6219 (36.4)	16584 (35.9)	10077 (36.0)
≥2 cup/day	21638 (34.2)	17904 (34.2)	13558 (34.3)	5681 (33.2)	15957 (34.6)	9717 (34.7)
Physical activity (%)						
<0.5 hours/week	42467 (67.1)	34648 (66.2)	25887 (65.5)	10828 (63.3)	31639 (68.6)	18844 (67.3)
0.5-3.9 hours/week	12776 (20.2)	10935 (20.9)	8518 (21.5)	3979 (23.3)	8797 (19.1)	5727 (20.5)
≥4 hours/week	8014 (12.7)	6739 (12.9)	5123 (13.0)	2300 (13.4)	5714 (12.4)	3431 (12.3)
Sleep duration (%)						
<6 h/day	6155 (9.7)	4934 (9.4)	3605 (9.1)	1412 (8.3)	4743 (10.3)	2568 (9.2)
6-8 h/day	52702 (83.3)	43987 (84.1)	33549 (84.9)	14758 (86.3)	37944 (82.2)	23655 (84.5)
>8 h/day	4400 (7.0)	3401 (6.5)	2374 (6.0)	937 (5.5)	3463 (7.5)	1779 (6.4)
Comorbidities						
Baseline hypertension (%)	15054 (23.8)	11931 (22.8)	8442 (21.4)	3315 (19.4)	11739 (25.4)	5948 (21.2)
Baseline diabetes (%)	5696 (9.0)	4040 (7.7)	2568 (6.5)	844 (4.9)	4852 (10.5)	1708 (6.1)

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Baseline cardiovascular disease (%)	3401 (5.4)	2314 (4.4)	1367 (3.5)	427 (2.5)	2974 (6.4)	969 (3.5)
Baseline cancer (%)	1936 (3.1)	1274 (2.4)	820 (2.1)	325 (1.9)	1611 (3.5)	541 (1.9)

¹ Values are means \pm SD for continuous and percentages for categorical variables. Abbreviations: AHEI, alternative Healthy Eating Index; aMED, Alternate Mediterranean Diet score; DASH, Dietary Approaches to Stop Hypertension; hPDI, Healthy Diet Indicator; PDI, plant-based diet index; SD, standard deviation.