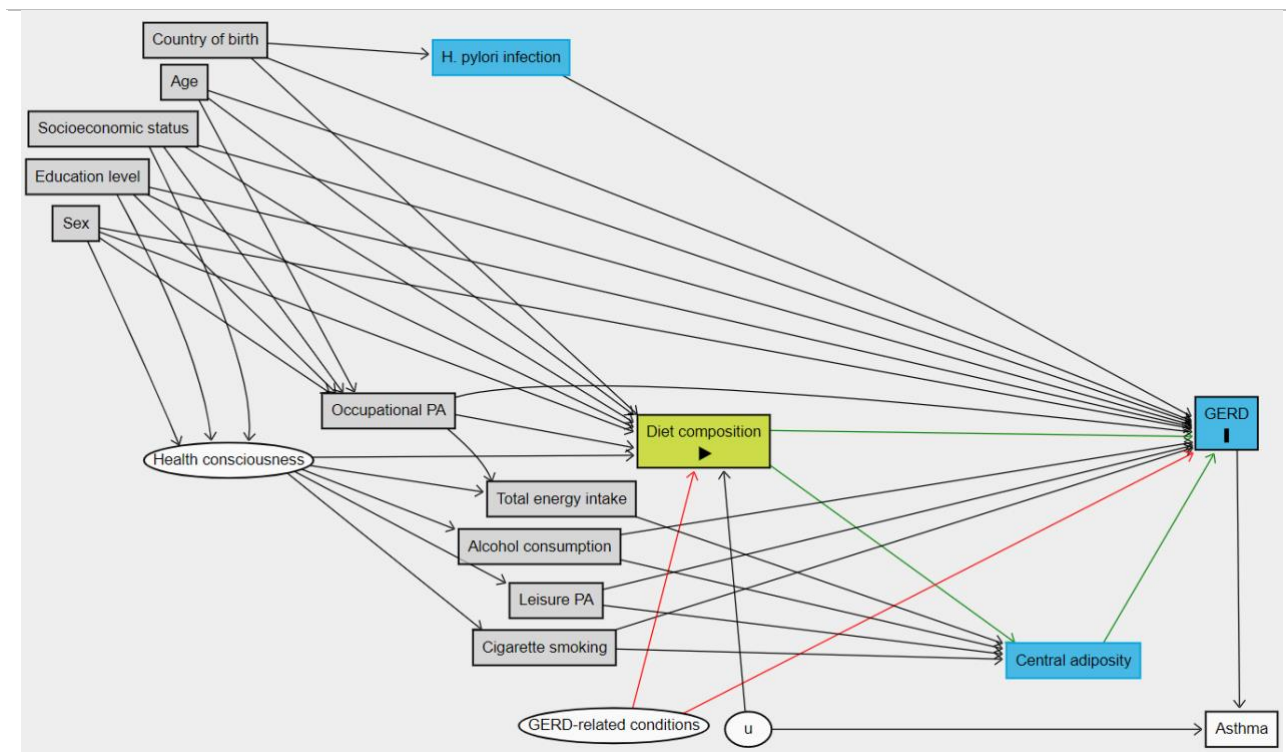


Diet and risk of developing gastroesophageal reflux disease in the Melbourne Collaborative Cohort Study (Supplementary materials)

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Supplementary Material 1 Causal assumptions underpinning the analysis of diet and risk of GERD.



Abbreviation: PA=physical activity

Increased age, adiposity, cigarette smoking and lower education level have been associated with increased risk of developing GERD in prospective studies.(1-3) Waist circumference appears to be of greater importance than body mass index (BMI).(4, 5) Leisure physical activity has been reported as associated with reduced risk of GERD, whereas occupational physical activity was associated with increased risk.(3, 6) Other potential risk factors include alcohol consumption and medical conditions including irritable bowel syndrome (IBS), inflammatory bowel disease (IBD) and asthma.(7-9) While GERD is a common condition globally, prevalence of GERD varies considerably across geographic locations, suggesting country of birth or ethnicity could influence the disease risk.(10) Overall, these factors could directly or indirectly influence the risk of GERD.

Adiposity

In our analysis, adiposity was considered both a possible intermediate on the causal pathway and a potential confounder. While it is more likely that diet has an effect on adiposity in early life, it is plausible that in midlife, adiposity affects diet. Because the temporal relationship between diet and adiposity was difficult to determine, waist circumference was not included in the primary analysis but included in a secondary analysis (Supplementary Table 5).

Asthma

While there is good evidence from the literature that GERD is an aggravating cofactor that could contribute to asthma development (11, 12), the use of asthma medication has also been associated with increased risk of GERD (13). A case-cohort study using the UK General Practice Research

Database found new diagnosis of asthma was associated with a subsequent diagnosis of GERD (RR=1.5; 95% CI=1.2-1.8), but also that GERD diagnosis was non-significantly associated with increased risk of subsequent asthma diagnosis (RR 1.2; 95% CI=0.9-1.6).(2) Another US longitudinal study reported people who were hospitalised due to GERD-related complications had an increased risk of subsequent hospitalisation due to asthma (RR 2.1; 95% CI 1.1-4.2).(14) Thus, while GERD appears to precede asthma in most circumstances, the reverse is also possible. A sensitivity analysis further adjusted for asthma was performed (Supplementary Table 6).

H. pylori infection

A meta-analysis of case-control studies reported a negative association between *H. pylori* infection and GERD (OR 0.75; 95% CI 0.65-0.87).(15) It is unclear whether *H. pylori* infection affects participants' diet at baseline. For our primary analysis, we assumed *H. pylori* infection does not affect diet at baseline.

H. pylori data were available for a subset of participants who were included in a nested case-control study that examined the association between *H. pylori* infection and risk of GERD (n=971). In a sensitivity analysis, we included all participants with available *H. pylori* data and compared whether further adjusting for *H. pylori* status changed the study results (Supplementary Table 7).

In addition, we examined whether *H. pylori* status was associated with diet at baseline. This was done by examining whether diet at baseline differed for *H. pylori* positive and *H. pylori* negative participants among GERD non-cases (n=588). Overall, baseline diet did not appear to differ substantially between *H. pylori* positive and *H. pylori* negative participants (Supplementary Table 12). *H. pylori* positive men had higher intake of protein compared with *H. pylori* negative men (5.0 g/d; 95% CI 1.0-9.1 g/d), such association was not observed in women (Supplementary Table 12).

Supplementary Table 1 Distribution of demographic and lifestyle factors of the eligible cohort comparing participants with and without complete GERD data

	Provided complete data		Total eligible	
	N=15597	(74.5)	N=20926	
Sex, N (%)				
Male	5935	(74.1)	8010	
Female	9662	(74.8)	12916	
Country of birth, N (%)				
Australia/New Zealand/Northern Europe	13835	(76.6)	18071	
Southern Europe	1762	(61.7)	2855	
SEIFA quintiles, N (%) ¹				
1 (most disadvantaged)	2067	(67.0)	3087	
2	2647	(67.8)	3902	
3	2582	(75.5)	3420	
4	3148	(77.2)	4079	
5	5153	(80.0)	6438	
Level of education, N (%)				
Primary school or less	1138	(57.6)	1974	
Some high/technical school	5787	(72.1)	8030	
Completed high/technical school	3455	(75.7)	4565	
Completed tertiary education	5217	(82.1)	6357	
Cigarette smoking, N (%)				
Never	9376	(76.0)	12336	
Former	4654	(75.7)	6152	
Current	1567	(64.3)	2438	
Alcohol consumption, N (%)				
Lifetime abstainers	3321	(70.3)	4726	
Ex-drinkers	1570	(75.8)	2071	
<20g/d	7554	(76.0)	9935	
20-39g/d	2085	(77.3)	2697	
>=40g/d	1067	(71.3)	1497	
Physical activity score quartiles, N (%)				
1 (least active)	3171	(71.9)	4409	
2	3114	(74.2)	4197	
3	4946	(73.0)	6775	
4	4366	(78.7)	5545	
Heavy lifting at work, N (%)				
No	13647	(74.6)	18288	
Yes	1950	(73.9)	2638	
			Complete	Missing
			N=15597	N=5329
Median age (IQR), years	49.2	(44.4, 54.4)	50.7	(45.2, 55.8)
Median total energy intake (IQR), kJ/d	8369.8	(6735.9, 10479.5)	8114.5	(6375.8, 10242.1)
Median waist circumference (IQR), cm	82	(72.8, 91.5)	84	(75.0, 94.0)
Median BMI (IQR), kg/m ²	25.5	(23.2, 28.3)	26.4	(23.8, 29.3)

¹SEIFA = Socio-Economic Indexes for Areas

Supplementary Table 2 Distribution of dietary factors of the eligible cohort comparing participants with and without complete GERD data

	Complete N=15597		Missing N=5329	
Median absolute nutrient intake (IQR), g/d				
Total fat	78.1	(60.6, 99.2)	75.5	(57.7, 97.1)
Saturated fat	31.4	(23.7, 40.9)	29.8	(22.0, 39.9)
Monounsaturated fat	27.6	(21.5, 34.9)	27.1	(20.6, 34.7)
Polyunsaturated fat	11.7	(8.7, 15.9)	11.2	(8.2, 15.3)
Total protein	93.4	(76.0, 114.5)	91.7	(73.1, 114.2)
Total carbohydrate	234.8	(181.2, 300.6)	224.6	(172.4, 294.2)
Starch	116.1	(89.1, 148.4)	111.1	(85.2, 146.0)
Sugar	113.5	(82.0, 155.8)	107.2	(76.5, 152.2)
Total fibre	29.2	(23.0, 36.8)	27.7	(21.2, 35.3)
Vegetable/Fruit fibre	13.0	(9.3, 17.9)	12.5	(8.4, 17.4)
Cereal fibre	11.1	(8.1, 15.0)	10.3	(7.4, 14.1)
Median energy-adjusted nutrient intake (IQR), g/d				
Total fat	82.2	(74.0, 90.0)	81.9	(73.9, 90.1)
Saturated fat	33.2	(29.5, 36.9)	33.0	(29.3, 36.6)
Monounsaturated fat	28.9	(25.6, 32.0)	29.1	(25.7, 32.5)
Polyunsaturated fat	12.2	(10.1, 15.2)	12.0	(10.1, 14.8)
Total protein	96.5	(89.0, 104.8)	97.2	(89.3, 105.8)
Total carbohydrate	248.6	(229.1, 268.8)	248.9	(228.2, 269.4)
Starch	120.3	(106.3, 136.0)	120.3	(105.6, 137.2)
Sugar	123.5	(102.6, 145.6)	122.9	(101.7, 144.9)
Total fibre	29.9	(25.5, 34.9)	29.1	(24.4, 34.3)
Vegetable/Fruit fibre	13.3	(9.6, 17.8)	12.9	(9.0, 17.4)
Cereal fibre	11.5	(9.1, 14.2)	11.1	(8.7, 13.8)
Median glycaemic index (IQR)	48.8	(46.3, 51.6)	49.0	(46.3, 52.2)
Median food group (IQR), times/week				
Total meat	11.0	(8.5, 14.5)	11.0	(8.0, 15.0)
Red meat	7.0	(5.0, 10.0)	7.0	(5.0, 10.0)
Fish	1.5	(1.0, 2.0)	1.5	(1.0, 2.0)
Chicken	2.0	(1.0, 3.0)	1.5	(1.0, 3.0)
Processed meat	2.0	(1.5, 4.0)	2.0	(1.5, 4.0)
Total vegetable	35.0	(28.0, 49.0)	35.0	(21.0, 49.0)
Leafy vegetable	4.5	(2.5, 8.0)	4.0	(2.0, 7.5)
Cruciferous vegetable	3.5	(2.0, 6.0)	3.5	(1.5, 6.0)
Total fruit	21.0	(14.0, 35.0)	21.0	(14.0, 35.0)
Total dairy	36.0	(20.5, 49.5)	32.5	(18.5, 47.5)
High-fat/added-sugar discretionary food	6.7	(2.6, 11.6)	5.5	(2.1, 10.9)
Median food item (IQR), times/week				
Citrus	6.0	(2.0, 9.0)	4.5	(1.5, 8.5)
Tomato	3.0	(1.0, 3.0)	3.0	(0.5, 3.0)
Chocolate	0.5	(0.1, 3.0)	0.5	(0.1, 1.0)
Carbonated beverage	0.6	(0.1, 3.1)	0.6	(0.1, 3.1)
Tea	7.0	(0.5, 17.5)	7.0	(0.5, 17.5)
Coffee	17.5	(3.0, 17.5)	17.5	(3.0, 17.5)
Median dietary score (IQR)				
Mediterranean Diet Score	4.0	(3.0, 6.0)	4.0	(3.0, 5.0)
Alternate Healthy Eating Index-2010	65.0	(57.0, 72.0)	63.0	(55.0, 71.0)

Supplementary Table 3 Sex-specific odds ratios for food consumption and dietary patterns comparing cases (daily GERD symptoms) with non-cases (symptoms <1 day/week) – analysis further adjusted for waist circumference

	Women										
	Quintiles of consumption frequency, OR (95% CI)								Increase of one time/wk, OR (95% CI)	Test for trend, p-value	
	Quintile 2		Quintile 3		Quintile 4		Quintile 5				
Food group											
Total meat	1.05	(0.83, 1.32)	1.16	(0.92, 1.46)	1.12	(0.87, 1.44)	1.14	(0.87, 1.50)	1.01	(0.99, 1.03)	0.285
Red meat	1.04	(0.83, 1.30)	0.89	(0.71, 1.12)	0.84	(0.66, 1.08)	0.95	(0.73, 1.23)	0.99	(0.96, 1.01)	0.381
Fish	1.04	(0.82, 1.31)	0.99	(0.78, 1.27)	1.19	(0.94, 1.52)	1.35	(1.04, 1.74)	1.09	(1.02, 1.17)	0.007
Chicken	0.94	(0.74, 1.18)	0.99	(0.78, 1.27)	1.20	(0.96, 1.51)	1.39	(1.11, 1.74)	1.11	(1.05, 1.18)	<0.001
Processed meat	0.94	(0.75, 1.18)	1.01	(0.76, 1.33)	0.96	(0.78, 1.19)	1.04	(0.81, 1.32)	1.01	(0.96, 1.06)	0.740
Total vegetable	0.93	(0.72, 1.20)	0.88	(0.70, 1.09)	0.97	(0.73, 1.29)	1.06	(0.83, 1.35)	1.00	(1.00, 1.01)	0.368
Leafy vegetable	1.00	(0.80, 1.25)	0.80	(0.60, 1.07)	0.99	(0.77, 1.27)	1.06	(0.83, 1.34)	1.01	(0.98, 1.04)	0.574
Cruciferous vegetable	0.91	(0.70, 1.18)	1.12	(0.87, 1.45)	1.19	(0.93, 1.52)	1.40	(1.09, 1.79)	1.04	(1.02, 1.06)	0.001
Total fruit	0.81	(0.64, 1.02)	0.87	(0.69, 1.10)	0.83	(0.66, 1.05)	0.79	(0.61, 1.04)	1.00	(0.99, 1.00)	0.056
Total dairy	0.85	(0.67, 1.09)	0.81	(0.63, 1.05)	0.86	(0.67, 1.11)	0.81	(0.62, 1.04)	1.00	(0.99, 1.00)	0.166
High-fat/added-sugar discretionary food	0.97	(0.77, 1.23)	0.91	(0.71, 1.17)	0.92	(0.72, 1.19)	1.04	(0.80, 1.36)	1.00	(0.99, 1.02)	0.623
Food item											
Citrus	0.86	(0.69, 1.09)	0.91	(0.73, 1.13)	0.62	(0.48, 0.81)	0.68	(0.53, 0.88)	0.97	(0.95, 0.99)	0.001
Tomato	0.92	(0.72, 1.17)	0.82	(0.67, 1.01)	0.90	(0.68, 1.19)	0.93	(0.72, 1.21)	0.99	(0.96, 1.03)	0.620
Chocolate	0.95	(0.76, 1.17)	0.95	(0.75, 1.19)	0.94	(0.73, 1.22)	1.18	(0.89, 1.57)	1.02	(0.99, 1.07)	0.212
Carbonated beverage	0.94	(0.73, 1.20)	1.09	(0.85, 1.40)	1.37	(1.08, 1.73)	1.50	(1.22, 1.86)	1.07	(1.04, 1.10)	<0.001
Tea	0.71	(0.55, 0.93)	0.70	(0.54, 0.92)	0.86	(0.68, 1.07)	0.94	(0.74, 1.19)	1.00	(1.00, 1.01)	0.318
Coffee	0.95	(0.73, 1.23)	0.74	(0.57, 0.96)	0.87	(0.69, 1.10)	0.85	(0.65, 1.10)	1.00	(0.99, 1.00)	0.438
MDS		Score 4-6		Score 7-9					Increase of one score		
Score 0-3 [ref]	0.92	(0.77, 1.09)	0.88	(0.66, 1.18)					0.98	(0.93, 1.03)	0.427
AHEI-2010		Quintile 2		Quintile 3		Quintile 4		Quintile 5	Increase of one score		
Quintile 1 [ref]	0.98	(0.75, 1.27)	1.05	(0.81, 1.36)	1.05	(0.82, 1.36)	0.98	(0.75, 1.28)	1.00	(0.99, 1.01)	0.954

Men											
	Quintiles of consumption frequency, OR (95% CI)								Increase of one time/wk, OR (95% CI)		Test for trend, p-value
	Quintile 2		Quintile 3		Quintile 4		Quintile 5				
Food group											
Total meat	0.80	(0.53, 1.21)	0.87	(0.59, 1.29)	0.92	(0.61, 1.38)	1.01	(0.68, 1.49)	1.01	(0.98, 1.04)	0.611
Red meat	1.11	(0.72, 1.70)	1.03	(0.69, 1.54)	0.99	(0.66, 1.47)	1.05	(0.71, 1.54)	1.00	(0.97, 1.04)	0.971
Fish	0.87	(0.61, 1.26)	1.00	(0.69, 1.45)	1.12	(0.78, 1.61)	1.20	(0.80, 1.79)	1.08	(0.97, 1.20)	0.172
Chicken	1.38	(0.99, 1.92)	1.23	(0.84, 1.81)	0.97	(0.66, 1.42)	1.18	(0.81, 1.73)	1.01	(0.91, 1.10)	0.985
Processed meat	1.24	(0.86, 1.79)	1.34	(0.88, 2.05)	0.88	(0.62, 1.23)	0.91	(0.66, 1.27)	0.97	(0.91, 1.02)	0.246
Total vegetable	0.99	(0.70, 1.39)	1.19	(0.88, 1.62)	1.30	(0.83, 2.05)	1.06	(0.70, 1.62)	1.00	(1.00, 1.01)	0.400
Leafy vegetable	0.93	(0.69, 1.26)	1.12	(0.76, 1.66)	0.91	(0.62, 1.32)	0.68	(0.45, 1.04)	0.96	(0.92, 1.01)	0.100
Cruciferous vegetable	1.19	(0.82, 1.73)	1.49	(1.03, 2.16)	1.32	(0.91, 1.91)	1.71	(1.16, 2.51)	1.05	(1.01, 1.08)	0.008
Total fruit	0.76	(0.55, 1.05)	0.66	(0.45, 0.96)	0.71	(0.49, 1.02)	0.59	(0.36, 0.95)	0.99	(0.98, 1.00)	0.015
Total dairy	0.69	(0.46, 1.03)	0.99	(0.68, 1.42)	1.03	(0.72, 1.49)	0.78	(0.52, 1.19)	1.00	(0.99, 1.01)	0.775
High-fat/added-sugar discretionary food	0.99	(0.66, 1.47)	0.99	(0.66, 1.47)	0.96	(0.64, 1.45)	1.12	(0.75, 1.69)	1.01	(0.99, 1.03)	0.454
Food item											
Citrus	0.75	(0.53, 1.05)	0.78	(0.56, 1.09)	0.53	(0.35, 0.79)	0.59	(0.39, 0.88)	0.96	(0.93, 0.99)	0.007
Tomato	0.78	(0.55, 1.11)	0.80	(0.59, 1.08)	0.93	(0.61, 1.43)	0.78	(0.49, 1.25)	0.98	(0.92, 1.04)	0.530
Chocolate	0.83	(0.58, 1.19)	1.11	(0.79, 1.56)	1.02	(0.70, 1.49)	0.90	(0.57, 1.43)	0.99	(0.94, 1.05)	0.836
Carbonated beverage	1.19	(0.81, 1.75)	1.45	(1.00, 2.10)	1.20	(0.83, 1.72)	1.43	(1.02, 2.00)	1.04	(1.00, 1.08)	0.044
Tea	0.99	(0.67, 1.48)	1.40	(0.95, 2.06)	1.06	(0.73, 1.54)	1.26	(0.84, 1.88)	1.00	(0.99, 1.02)	0.395
Coffee	0.99	(0.63, 1.57)	0.96	(0.62, 1.50)	0.87	(0.58, 1.31)	1.02	(0.66, 1.56)	1.00	(0.99, 1.01)	0.994
MDS		Score 4-6		Score 7-9					Increase of one score		
Score 0-3 [ref]	0.92	(0.69, 1.23)	1.14	(0.74, 1.76)					1.02	(0.94, 1.10)	0.640
AHEI-2010		Quintile 2		Quintile 3		Quintile 4		Quintile 5	Increase of one score		
Quintile 1 [ref]	1.08	(0.77, 1.50)	1.04	(0.73, 1.47)	1.15	(0.80, 1.65)	0.67	(0.42, 1.08)	0.99	(0.98, 1.01)	0.377

Supplementary Table 4 Test for interaction between dietary exposures and adiposity

	Waist circumference (by increment of 10cm) [^]			Body mass index (by increment of 5kg/m ²) [^]		
	Interaction term	95% CI	P value*	Interaction term	95% CI	P value*
Energy-adjusted nutrient intake, g/d						
Total fat	1.00	(1.00, 1.00)	0.703	1.00	(0.99, 1.00)	0.105
Saturated fat	1.00	(1.00, 1.01)	0.514	1.00	(0.99, 1.01)	0.907
Monounsaturated fat	1.00	(0.99, 1.00)	0.279	0.99	(0.97, 1.00)	0.020
Polyunsaturated fat	1.00	(0.99, 1.01)	0.575	0.99	(0.97, 1.00)	0.115
Total protein	1.00	(1.00, 1.00)	0.414	1.00	(0.99, 1.00)	0.228
Total carbohydrate	1.00	(1.00, 1.00)	0.653	1.00	(1.00, 1.00)	0.083
Starch	1.00	(1.00, 1.00)	0.711	1.00	(1.00, 1.00)	0.461
Sugar	1.00	(1.00, 1.00)	0.817	1.00	(1.00, 1.00)	0.275
Total fibre	1.00	(0.99, 1.01)	0.731	1.00	(0.99, 1.01)	0.728
Vegetable/Fruit fibre	1.00	(0.99, 1.00)	0.530	1.00	(0.99, 1.01)	0.582
Cereal fibre	1.01	(0.99, 1.02)	0.325	1.01	(0.99, 1.02)	0.342
Glycaemic index	0.99	(0.98, 1.01)	0.368	0.99	(0.97, 1.00)	0.178
Food group, times/wk						
Total meat	1.00	(0.98, 1.01)	0.404	0.99	(0.98, 1.01)	0.244
Red meat	1.00	(0.99, 1.01)	0.966	0.99	(0.97, 1.01)	0.310
Fish	0.96	(0.92, 1.00)	0.082	0.96	(0.91, 1.02)	0.226
Chicken	0.96	(0.93, 1.00)	0.070	0.97	(0.92, 1.03)	0.297
Processed meat	1.00	(0.97, 1.02)	0.724	1.00	(0.97, 1.03)	0.988
Total vegetable	1.00	(1.00, 1.00)	0.737	1.00	(0.99, 1.00)	0.195
Leafy vegetable	0.99	(0.97, 1.01)	0.154	0.99	(0.96, 1.01)	0.288
Cruciferous vegetable	1.01	(1.00, 1.02)	0.089	1.01	(0.99, 1.03)	0.265
Total fruit	1.00	(1.00, 1.00)	0.559	1.00	(0.99, 1.00)	0.971
Total dairy	1.00	(1.00, 1.00)	0.203	1.00	(1.00, 1.01)	0.073
High-fat/added-sugar discretionary food	1.00	(1.00, 1.01)	0.348	1.01	(1.00, 1.02)	0.210
Food item, times/wk						
Citrus	0.99	(0.98, 1.00)	0.107	0.99	(0.98, 1.01)	0.405
Tomato	0.98	(0.96, 1.00)	0.053	0.97	(0.94, 1.00)	0.065
Chocolate	1.00	(0.98, 1.02)	0.918	1.01	(0.97, 1.04)	0.686
Carbonated beverage	0.99	(0.98, 1.01)	0.461	1.00	(0.98, 1.03)	0.760
Tea	1.00	(1.00, 1.01)	0.451	1.01	(1.00, 1.01)	0.094
Coffee	1.00	(0.99, 1.00)	0.618	1.00	(0.99, 1.01)	0.792
Mediterranean Diet Score	1.01	(0.98, 1.04)	0.452	1.02	(0.98, 1.06)	0.414
Alternate Healthy Eating Index-2010	1.00	(1.00, 1.01)	0.747	1.00	(1.00, 1.01)	0.286

[^]By increment of approximately one standard deviation

*P value from the likelihood ratio test

Supplementary Table 5 Estimated odds ratios for dietary intakes comparing cases (daily GERD symptoms) with non-cases (symptoms <1 day/week) – analysis further adjusted for waist circumference

	Further adjusted for waist circumference					
	Men			Women		
	OR	95% CI	p-value	OR	95% CI	p-value
Energy-adjusted nutrient intake						
Total fat, 5g/d	1.05	(1.01, 1.09)	0.025	0.99	(0.97, 1.02)	0.722
Saturated fat, 5g/d	1.08	(0.99, 1.18)	0.067	0.95	(0.89, 1.02)	0.163
Monounsaturated fat, 5g/d	1.10	(1.00, 1.21)	0.041	1.01	(0.93, 1.08)	0.887
Polyunsaturated fat, 5g/d	1.10	(0.96, 1.25)	0.174	1.03	(0.94, 1.13)	0.464
Total protein, 5g/d	1.01	(0.97, 1.04)	0.762	1.01	(0.98, 1.04)	0.405
Total carbohydrate, 30g/d	0.90	(0.82, 0.98)	0.017	1.00	(0.93, 1.08)	0.967
Starch, 30g/d	0.84	(0.75, 0.95)	0.006	0.97	(0.88, 1.07)	0.543
Sugar, 30g/d	0.99	(0.91, 1.08)	0.878	1.02	(0.95, 1.09)	0.579
Total fibre, 5g/d	0.94	(0.87, 1.02)	0.122	0.98	(0.93, 1.04)	0.583
Vegetable/Fruit fibre, 5g/d	0.96	(0.87, 1.05)	0.336	1.00	(0.94, 1.06)	0.901
Cereal fibre, 5g/d	0.91	(0.80, 1.03)	0.145	0.98	(0.89, 1.07)	0.640
Glycaemic index, 1 unit	1.00	(0.97, 1.02)	0.789	1.01	(0.99, 1.02)	0.510

Further adjusted for waist circumference											
	Quintiles of consumption frequency, OR (95% CI)								Increase of one time/wk, OR (95% CI)	Test for trend, p-value	
	Quintile 2		Quintile 3		Quintile 4		Quintile 5				
Food group											
Total meat	0.99	(0.81, 1.20)	1.10	(0.90, 1.34)	1.05	(0.85, 1.31)	1.10	(0.87, 1.37)	1.01	(0.99, 1.02)	0.350
Red meat	1.04	(0.85, 1.27)	0.92	(0.75, 1.11)	0.86	(0.70, 1.06)	0.95	(0.77, 1.18)	0.99	(0.97, 1.01)	0.393
Fish	0.99	(0.81, 1.20)	1.00	(0.82, 1.23)	1.15	(0.94, 1.41)	1.28	(1.03, 1.59)	1.08	(1.02, 1.15)	0.005
Chicken	1.06	(0.88, 1.28)	1.06	(0.86, 1.30)	1.13	(0.93, 1.37)	1.32	(1.09, 1.61)	1.08	(1.03, 1.14)	0.003
Processed meat	1.01	(0.83, 1.22)	1.05	(0.84, 1.33)	0.93	(0.78, 1.11)	0.96	(0.79, 1.16)	0.99	(0.96, 1.02)	0.547
Total vegetable	0.96	(0.78, 1.18)	0.98	(0.82, 1.18)	1.08	(0.85, 1.38)	1.09	(0.88, 1.34)	1.00	(1.00, 1.01)	0.246
Leafy vegetable	0.99	(0.83, 1.18)	0.92	(0.73, 1.16)	0.97	(0.79, 1.19)	0.98	(0.80, 1.20)	1.00	(0.97, 1.02)	0.824
Cruciferous vegetable	0.99	(0.80, 1.22)	1.23	(1.00, 1.52)	1.22	(1.00, 1.50)	1.48	(1.21, 1.82)	1.04	(1.02, 1.06)	<0.001
Total fruit	0.79	(0.66, 0.96)	0.80	(0.66, 0.98)	0.79	(0.65, 0.96)	0.73	(0.58, 0.93)	0.99	(0.99, 1.00)	0.014
Total dairy	0.81	(0.66, 0.99)	0.86	(0.70, 1.05)	0.91	(0.75, 1.12)	0.80	(0.64, 0.99)	1.00	(0.99, 1.00)	0.170
High-fat/added-sugar discretionary food	0.97	(0.79, 1.19)	0.93	(0.75, 1.15)	0.94	(0.76, 1.16)	1.08	(0.87, 1.35)	1.01	(1.00, 1.02)	0.300
Food item											
Citrus	0.84	(0.69, 1.02)	0.87	(0.72, 1.04)	0.60	(0.48, 0.75)	0.66	(0.53, 0.82)	0.97	(0.95, 0.98)	<0.001
Tomato	0.88	(0.72, 1.07)	0.83	(0.70, 0.98)	0.92	(0.73, 1.16)	0.90	(0.72, 1.12)	0.99	(0.96, 1.02)	0.523
Chocolate	0.91	(0.76, 1.09)	0.98	(0.82, 1.18)	0.96	(0.78, 1.19)	1.10	(0.87, 1.40)	1.02	(0.99, 1.05)	0.280
Carbonated beverage	1.00	(0.82, 1.23)	1.16	(0.95, 1.43)	1.28	(1.05, 1.56)	1.45	(1.21, 1.73)	1.05	(1.03, 1.08)	<0.001
Tea	0.78	(0.63, 0.97)	0.88	(0.71, 1.09)	0.91	(0.75, 1.10)	1.02	(0.83, 1.25)	1.00	(1.00, 1.01)	0.177
Coffee	0.95	(0.76, 1.19)	0.81	(0.64, 1.01)	0.87	(0.71, 1.06)	0.89	(0.71, 1.10)	1.00	(0.99, 1.00)	0.443
MDS		Score 4-6		Score 7-9					Increase of one score		
Score 0-3 [ref]	0.92	(0.79, 1.07)	0.93	(0.73, 1.19)					0.99	(0.95, 1.03)	0.563
AHEI-2010		Quintile 2		Quintile 3		Quintile 4		Quintile 5	Increase of one score		
Quintile 1 [ref]	1.02	(0.83, 1.25)	1.06	(0.86, 1.30)	1.11	(0.91, 1.37)	0.92	(0.74, 1.16)	1.00	(0.99, 1.01)	0.810

Supplementary Table 6 Estimated odds ratios for dietary intakes comparing cases (daily GERD symptoms) with non-cases (symptoms <1 day/week) – analysis further adjusted for asthma

	Further adjusted for asthma					
	Men			Women		
	OR	95% CI	p-value	OR	95% CI	p-value
Energy-adjusted nutrient intake						
Total fat, 5g/d	1.05	(1.01, 1.09)	0.017	1.00	(0.97, 1.03)	0.748
Saturated fat, 5g/d	1.09	(1.00, 1.19)	0.049	0.96	(0.90, 1.02)	0.176
Monounsaturated fat, 5g/d	1.11	(1.01, 1.22)	0.027	1.01	(0.94, 1.08)	0.864
Polyunsaturated fat, 5g/d	1.09	(0.96, 1.25)	0.178	1.04	(0.95, 1.13)	0.456
Total protein, 5g/d	1.01	(0.97, 1.05)	0.658	1.02	(0.99, 1.05)	0.307
Total carbohydrate, 30g/d	0.89	(0.82, 0.97)	0.011	1.00	(0.93, 1.07)	0.951
Starch, 30g/d	0.84	(0.74, 0.94)	0.004	0.97	(0.88, 1.07)	0.563
Sugar, 30g/d	0.99	(0.91, 1.08)	0.858	1.01	(0.95, 1.08)	0.665
Total fibre, 5g/d	0.93	(0.86, 1.01)	0.086	0.98	(0.93, 1.04)	0.502
Vegetable/Fruit fibre, 5g/d	0.95	(0.87, 1.05)	0.307	0.99	(0.94, 1.05)	0.831
Cereal fibre, 5g/d	0.90	(0.79, 1.02)	0.100	0.98	(0.89, 1.07)	0.614
Glycaemic index, 1 unit	1.00	(0.97, 1.02)	0.780	1.01	(0.99, 1.03)	0.432

Further adjusted for asthma											
	Quintiles of consumption frequency, OR (95% CI)								Increase of one time/wk, OR (95% CI)	Test for trend, p-value	
	Quintile 2		Quintile 3		Quintile 4		Quintile 5				
Food group											
Total meat	1.00	(0.82, 1.22)	1.12	(0.92, 1.37)	1.08	(0.87, 1.35)	1.13	(0.90, 1.41)	1.01	(0.99, 1.03)	0.222
Red meat	1.05	(0.86, 1.28)	0.93	(0.77, 1.14)	0.89	(0.72, 1.09)	0.97	(0.79, 1.20)	0.99	(0.97, 1.01)	0.542
Fish	1.00	(0.82, 1.21)	1.01	(0.83, 1.24)	1.17	(0.96, 1.43)	1.30	(1.05, 1.61)	1.09	(1.03, 1.15)	0.004
Chicken	1.07	(0.88, 1.29)	1.07	(0.87, 1.31)	1.14	(0.94, 1.39)	1.35	(1.11, 1.63)	1.08	(1.03, 1.14)	0.002
Processed meat	1.02	(0.84, 1.23)	1.07	(0.85, 1.35)	0.94	(0.79, 1.12)	0.98	(0.80, 1.19)	0.99	(0.96, 1.03)	0.678
Total vegetable	0.96	(0.78, 1.17)	0.98	(0.82, 1.17)	1.07	(0.84, 1.36)	1.08	(0.87, 1.32)	1.00	(1.00, 1.01)	0.299
Leafy vegetable	0.98	(0.82, 1.17)	0.91	(0.72, 1.14)	0.96	(0.78, 1.18)	0.97	(0.80, 1.19)	1.00	(0.97, 1.02)	0.783
Cruciferous vegetable	0.97	(0.79, 1.20)	1.23	(1.00, 1.51)	1.21	(0.99, 1.48)	1.46	(1.19, 1.80)	1.04	(1.02, 1.06)	0.000
Total fruit	0.79	(0.65, 0.95)	0.80	(0.65, 0.98)	0.79	(0.65, 0.96)	0.73	(0.57, 0.92)	0.99	(0.99, 1.00)	0.012
Total dairy	0.80	(0.65, 0.99)	0.86	(0.70, 1.06)	0.92	(0.75, 1.12)	0.80	(0.64, 1.00)	1.00	(0.99, 1.00)	0.193
High-fat/added-sugar discretionary food	0.98	(0.80, 1.20)	0.93	(0.75, 1.15)	0.94	(0.76, 1.16)	1.08	(0.86, 1.35)	1.01	(0.99, 1.02)	0.333
Food item											
Citrus	0.85	(0.70, 1.02)	0.88	(0.74, 1.06)	0.60	(0.48, 0.75)	0.67	(0.54, 0.83)	0.97	(0.95, 0.98)	<0.001
Tomato	0.88	(0.72, 1.07)	0.84	(0.71, 0.99)	0.92	(0.73, 1.16)	0.91	(0.73, 1.14)	0.99	(0.96, 1.02)	0.569
Chocolate	0.91	(0.76, 1.09)	0.99	(0.82, 1.19)	0.97	(0.79, 1.19)	1.11	(0.87, 1.41)	1.02	(0.99, 1.05)	0.263
Carbonated beverage	1.01	(0.82, 1.23)	1.18	(0.96, 1.44)	1.30	(1.07, 1.59)	1.50	(1.25, 1.78)	1.06	(1.03, 1.08)	<0.001
Tea	0.78	(0.62, 0.96)	0.87	(0.70, 1.08)	0.90	(0.74, 1.09)	1.00	(0.82, 1.23)	1.00	(1.00, 1.01)	0.235
Coffee	0.96	(0.76, 1.20)	0.81	(0.64, 1.01)	0.89	(0.73, 1.09)	0.91	(0.73, 1.13)	1.00	(0.99, 1.00)	0.644
MDS	Score 4-6		Score 7-9		Increase of one score						
Score 0-3 [ref]	0.91	(0.79, 1.06)	0.94	(0.73, 1.19)							
AHEI-2010	Quintile 2		Quintile 3		Quintile 4		Quintile 5		Increase of one score		
Quintile 1 [ref]	1.02	(0.83, 1.25)	1.05	(0.85, 1.29)	1.09	(0.89, 1.34)	0.90	(0.72, 1.13)	1.00	(0.99, 1.01)	0.612

Supplementary Table 7 **Estimated odds ratios for dietary intakes comparing cases (daily GERD symptoms) with non-cases (symptoms <1 day/week) - analysis further adjusted for H. pylori infection status**

	Primary analysis (For participants with H. Pylori data, n=971)					
	Men			Women		
	OR	95% CI	p-value	OR	95% CI	p-value
Energy-adjusted nutrient intake						
Total fat, 5g/d	1.05	(0.96, 1.14)	0.287	1.00	(0.93, 1.07)	0.960
Saturated fat, 5g/d	1.07	(0.89, 1.29)	0.477	0.96	(0.83, 1.10)	0.537
Monounsaturated fat, 5g/d	1.13	(0.92, 1.39)	0.250	1.04	(0.88, 1.23)	0.621
Polyunsaturated fat, 5g/d	1.16	(0.86, 1.57)	0.332	1.01	(0.82, 1.24)	0.941
Total protein, 5g/d	1.02	(0.94, 1.10)	0.689	1.03	(0.96, 1.10)	0.405
Total carbohydrate, 30g/d	0.89	(0.74, 1.08)	0.239	0.98	(0.84, 1.16)	0.852
Starch, 30g/d	0.79	(0.61, 1.03)	0.083	0.79	(0.64, 0.98)	0.033
Sugar, 30g/d	1.02	(0.84, 1.23)	0.844	1.11	(0.96, 1.28)	0.177
Total fibre, 5g/d	0.97	(0.81, 1.15)	0.706	1.03	(0.91, 1.17)	0.674
Vegetable/Fruit fibre, 5g/d	1.05	(0.87, 1.28)	0.599	1.06	(0.93, 1.22)	0.372
Cereal fibre, 5g/d	0.84	(0.66, 1.07)	0.167	0.88	(0.71, 1.09)	0.236
Glycaemic index, 1 unit	0.95	(0.89, 1.01)	0.126	0.96	(0.92, 1.00)	0.039
	Further adjusted for H. Pylori status (For participants with H. Pylori data, n=971)					
	Men			Women		
	OR	95% CI	p-value	OR	95% CI	p-value
Energy-adjusted nutrient intake						
Total fat, 5g/d	1.05	(0.96, 1.14)	0.287	1.00	(0.93, 1.07)	0.960
Saturated fat, 5g/d	1.07	(0.89, 1.29)	0.478	0.96	(0.83, 1.10)	0.537
Monounsaturated fat, 5g/d	1.13	(0.92, 1.39)	0.251	1.04	(0.88, 1.23)	0.621
Polyunsaturated fat, 5g/d	1.16	(0.86, 1.57)	0.332	1.01	(0.82, 1.24)	0.945
Total protein, 5g/d	1.02	(0.94, 1.10)	0.688	1.03	(0.96, 1.10)	0.405
Total carbohydrate, 30g/d	0.89	(0.74, 1.08)	0.239	0.98	(0.84, 1.16)	0.853
Starch, 30g/d	0.79	(0.61, 1.03)	0.083	0.79	(0.64, 0.98)	0.033
Sugar, 30g/d	1.02	(0.84, 1.23)	0.843	1.11	(0.96, 1.28)	0.177
Total fibre, 5g/d	0.97	(0.81, 1.15)	0.708	1.03	(0.90, 1.16)	0.685
Vegetable/Fruit fibre, 5g/d	1.05	(0.87, 1.28)	0.601	1.06	(0.93, 1.22)	0.378
Cereal fibre, 5g/d	0.84	(0.66, 1.07)	0.169	0.88	(0.71, 1.09)	0.234
Glycaemic index, 1 unit	0.95	(0.89, 1.01)	0.125	0.96	(0.92, 1.00)	0.040

Primary analysis (For participants with H. Pylori data, n=971)											
	Quintiles of consumption frequency, OR (95% CI)								Increase of one time/wk, OR (95% CI)	Test for trend, p- value	
	Quintile 2		Quintile 3		Quintile 4		Quintile 5				
Food group											
Total meat	1.38	(0.91, 2.11)	1.45	(0.94, 2.25)	1.50	(0.92, 2.43)	1.33	(0.81, 2.18)	1.02	(0.98, 1.05)	0.367
Red meat	1.27	(0.83, 1.94)	1.32	(0.87, 2.01)	1.31	(0.84, 2.03)	1.09	(0.68, 1.74)	1.01	(0.96, 1.06)	0.774
Fish	0.75	(0.49, 1.15)	0.97	(0.62, 1.50)	1.15	(0.73, 1.82)	0.96	(0.61, 1.53)	1.03	(0.92, 1.16)	0.613
Chicken	0.98	(0.66, 1.47)	1.54	(0.99, 2.41)	1.26	(0.84, 1.91)	1.65	(1.08, 2.51)	1.14	(1.02, 1.26)	0.016
Processed meat	1.28	(0.85, 1.94)	1.26	(0.77, 2.08)	1.07	(0.74, 1.56)	0.87	(0.56, 1.35)	0.96	(0.88, 1.04)	0.320
Total vegetable	0.79	(0.51, 1.22)	0.87	(0.60, 1.28)	1.45	(0.87, 2.40)	1.23	(0.78, 1.93)	1.01	(1.00, 1.02)	0.068
Leafy vegetable	1.27	(0.86, 1.86)	1.16	(0.71, 1.89)	1.28	(0.82, 1.99)	1.43	(0.93, 2.22)	1.04	(0.99, 1.10)	0.139
Cruciferous vegetable	0.74	(0.47, 1.14)	1.18	(0.76, 1.83)	1.22	(0.81, 1.85)	1.33	(0.87, 2.04)	1.04	(1.00, 1.08)	0.042
Total fruit	1.22	(0.82, 1.83)	1.14	(0.76, 1.71)	0.80	(0.52, 1.24)	1.35	(0.81, 2.24)	1.00	(0.99, 1.02)	0.511
Total dairy	0.57	(0.37, 0.90)	0.77	(0.50, 1.19)	0.82	(0.53, 1.28)	1.00	(0.63, 1.58)	1.00	(0.99, 1.01)	0.566
High-fat/added-sugar discretionary food	0.97	(0.62, 1.52)	0.86	(0.55, 1.35)	0.96	(0.61, 1.50)	1.21	(0.75, 1.95)	1.01	(0.99, 1.03)	0.271
Food item											
Citrus	0.93	(0.61, 1.43)	1.09	(0.73, 1.63)	0.74	(0.46, 1.19)	0.95	(0.60, 1.49)	0.99	(0.96, 1.03)	0.677
Tomato	0.73	(0.48, 1.11)	0.77	(0.53, 1.11)	0.87	(0.52, 1.46)	0.77	(0.48, 1.26)	0.99	(0.93, 1.05)	0.667
Chocolate	1.12	(0.76, 1.67)	1.07	(0.72, 1.60)	1.32	(0.83, 2.08)	1.48	(0.90, 2.43)	1.06	(0.99, 1.13)	0.096
Carbonated beverage	0.95	(0.63, 1.45)	1.20	(0.78, 1.84)	1.23	(0.80, 1.90)	1.10	(0.75, 1.61)	1.01	(0.96, 1.07)	0.596
Tea	0.53	(0.33, 0.85)	0.70	(0.44, 1.11)	0.74	(0.48, 1.13)	0.77	(0.49, 1.19)	1.00	(0.99, 1.01)	0.925
Coffee	0.96	(0.59, 1.58)	0.74	(0.46, 1.21)	1.04	(0.67, 1.60)	1.11	(0.68, 1.79)	1.01	(0.99, 1.02)	0.299
MDS		Score 4-6		Score 7-9					Increase of one score		
Score 0-3 [ref]	1.22	(0.88, 1.69)	1.35	(0.82, 2.22)					1.04	(0.95, 1.13)	0.408
AHEI-2010		Quintile 2		Quintile 3		Quintile 4		Quintile 5	Increase of one score		
Quintile 1 [ref]	0.80	(0.51, 1.25)	0.93	(0.60, 1.46)	1.19	(0.76, 1.85)	0.83	(0.52, 1.35)	1.00	(0.98, 1.02)	0.936

Further adjusted for H. pylori status (For those with H. Pylori data, n=971)											
	Quintiles of consumption frequency, OR (95% CI)								Increase of one time/wk, OR (95% CI)	Test for trend, p- value	
	Quintile 2		Quintile 3		Quintile 4		Quintile 5				
Food group											
Total meat	1.38	(0.91, 2.11)	1.45	(0.94, 2.25)	1.50	(0.92, 2.43)	1.33	(0.81, 2.18)	1.02	(0.98, 1.06)	0.384
Red meat	1.27	(0.83, 1.94)	1.32	(0.87, 2.02)	1.31	(0.84, 2.04)	1.09	(0.68, 1.74)	1.01	(0.96, 1.06)	0.761
Fish	0.75	(0.49, 1.15)	0.97	(0.62, 1.50)	1.15	(0.73, 1.82)	0.96	(0.61, 1.53)	1.04	(0.92, 1.19)	0.509
Chicken	0.98	(0.65, 1.47)	1.54	(0.99, 2.41)	1.26	(0.84, 1.91)	1.65	(1.08, 2.51)	1.12	(1.02, 1.24)	0.024
Processed meat	1.28	(0.85, 1.94)	1.26	(0.77, 2.08)	1.07	(0.74, 1.56)	0.87	(0.56, 1.35)	0.96	(0.88, 1.04)	0.276
Total vegetable	0.79	(0.51, 1.22)	0.87	(0.60, 1.27)	1.45	(0.87, 2.40)	1.23	(0.78, 1.92)	1.01	(1.00, 1.02)	0.068
Leafy vegetable	1.27	(0.87, 1.87)	1.15	(0.71, 1.88)	1.28	(0.82, 1.99)	1.44	(0.93, 2.23)	1.04	(0.99, 1.09)	0.138
Cruciferous vegetable	0.74	(0.48, 1.14)	1.18	(0.76, 1.83)	1.23	(0.81, 1.86)	1.33	(0.87, 2.04)	1.04	(1.00, 1.08)	0.033
Total fruit	1.22	(0.82, 1.83)	1.14	(0.76, 1.71)	0.80	(0.52, 1.24)	1.35	(0.81, 2.25)	1.00	(0.99, 1.02)	0.523
Total dairy	0.57	(0.37, 0.90)	0.77	(0.50, 1.19)	0.82	(0.53, 1.28)	1.00	(0.63, 1.58)	1.00	(0.99, 1.01)	0.561
High-fat/added-sugar discretionary food	0.97	(0.62, 1.52)	0.86	(0.55, 1.35)	0.96	(0.61, 1.50)	1.21	(0.75, 1.95)	1.01	(0.99, 1.03)	0.263
Food item											
Citrus	0.93	(0.61, 1.43)	1.09	(0.73, 1.63)	0.74	(0.46, 1.19)	0.94	(0.60, 1.49)	0.99	(0.96, 1.03)	0.711
Tomato	0.73	(0.48, 1.10)	0.77	(0.53, 1.11)	0.87	(0.52, 1.46)	0.78	(0.48, 1.26)	0.98	(0.92, 1.04)	0.562
Chocolate	1.12	(0.76, 1.67)	1.07	(0.72, 1.60)	1.32	(0.83, 2.09)	1.48	(0.90, 2.43)	1.05	(0.99, 1.12)	0.104
Carbonated beverage	0.96	(0.63, 1.45)	1.20	(0.78, 1.85)	1.24	(0.80, 1.91)	1.10	(0.75, 1.61)	1.01	(0.96, 1.07)	0.622
Tea	0.53	(0.33, 0.85)	0.70	(0.44, 1.11)	0.74	(0.48, 1.13)	0.77	(0.49, 1.19)	1.00	(0.99, 1.01)	0.927
Coffee	0.96	(0.58, 1.58)	0.74	(0.46, 1.21)	1.04	(0.67, 1.60)	1.11	(0.68, 1.79)	1.01	(0.99, 1.02)	0.294
MDS		Score 4-6		Score 7-9					Increase of one score		
Score 0-3 [ref]	1.22	(0.88, 1.68)	1.35	(0.82, 2.22)					1.04	(0.95, 1.13)	0.404
AHEI-2010		Quintile 2		Quintile 3		Quintile 4		Quintile 5	Increase of one score		
Quintile 1 [ref]	0.80	(0.51, 1.26)	0.94	(0.60, 1.47)	1.19	(0.77, 1.86)	0.83	(0.52, 1.35)	1.00	(0.99, 1.02)	0.907

Supplementary Table 8 **Estimated odds ratios for dietary intakes comparing cases (daily GERD symptoms) with non-cases (symptoms <1 day/week) – analysis excluding cases with symptom onset within five years from baseline**

	Exclude GERD cases with onset <5yr from baseline					
	Men			Women		
	OR	95% CI	p-value	OR	95% CI	p-value
Energy-adjusted nutrient intake						
Total fat, 5g/d	1.06	(1.02, 1.11)	0.005	0.99	(0.96, 1.03)	0.691
Saturated fat, 5g/d	1.11	(1.01, 1.21)	0.030	0.95	(0.89, 1.02)	0.170
Monounsaturated fat, 5g/d	1.15	(1.04, 1.27)	0.006	1.00	(0.93, 1.09)	0.908
Polyunsaturated fat, 5g/d	1.13	(0.98, 1.30)	0.096	1.03	(0.93, 1.13)	0.594
Total protein, 5g/d	1.02	(0.99, 1.07)	0.220	1.01	(0.98, 1.04)	0.589
Total carbohydrate, 30g/d	0.85	(0.77, 0.93)	0.001	1.01	(0.93, 1.09)	0.814
Starch, 30g/d	0.82	(0.72, 0.93)	0.003	0.97	(0.87, 1.07)	0.523
Sugar, 30g/d	0.96	(0.87, 1.05)	0.382	1.03	(0.96, 1.10)	0.461
Total fibre, 5g/d	0.94	(0.86, 1.02)	0.149	0.99	(0.93, 1.05)	0.684
Vegetable/Fruit fibre, 5g/d	0.96	(0.87, 1.06)	0.436	1.00	(0.94, 1.06)	0.952
Cereal fibre, 5g/d	0.91	(0.80, 1.05)	0.196	0.97	(0.88, 1.07)	0.536
Glycaemic index, 1 unit	1.00	(0.97, 1.03)	0.933	1.00	(0.99, 1.02)	0.629

Exclude GERD cases with onset <5yr from baseline											
	Quintiles of consumption frequency, OR (95% CI)								Increase of one time/wk, OR (95% CI)	Test for trend, p-value	
	Quintile 2		Quintile 3		Quintile 4		Quintile 5				
Food group											
Total meat	0.99	(0.80, 1.22)	1.08	(0.88, 1.34)	1.05	(0.83, 1.32)	1.18	(0.93, 1.49)	1.01	(1.00, 1.03)	0.144
Red meat	1.01	(0.82, 1.25)	0.88	(0.72, 1.08)	0.87	(0.70, 1.08)	0.93	(0.74, 1.17)	0.99	(0.97, 1.01)	0.381
Fish	0.99	(0.81, 1.23)	1.00	(0.81, 1.25)	1.18	(0.95, 1.46)	1.35	(1.07, 1.69)	1.10	(1.04, 1.17)	0.002
Chicken	1.06	(0.86, 1.29)	1.02	(0.81, 1.27)	1.22	(1.00, 1.50)	1.37	(1.12, 1.68)	1.10	(1.04, 1.16)	0.001
Processed meat	1.01	(0.83, 1.24)	0.94	(0.72, 1.21)	0.93	(0.77, 1.12)	0.98	(0.79, 1.20)	0.99	(0.96, 1.03)	0.765
Total vegetable	1.04	(0.84, 1.29)	1.04	(0.87, 1.26)	1.04	(0.80, 1.35)	1.11	(0.89, 1.39)	1.00	(1.00, 1.01)	0.392
Leafy vegetable	1.02	(0.85, 1.23)	0.97	(0.76, 1.23)	0.96	(0.77, 1.20)	0.97	(0.78, 1.20)	0.99	(0.97, 1.02)	0.672
Cruciferous vegetable	1.01	(0.81, 1.26)	1.18	(0.95, 1.48)	1.22	(0.98, 1.51)	1.54	(1.24, 1.91)	1.04	(1.02, 1.06)	<0.001
Total fruit	0.78	(0.64, 0.95)	0.77	(0.62, 0.95)	0.80	(0.65, 0.98)	0.74	(0.58, 0.95)	0.99	(0.99, 1.00)	0.027
Total dairy	0.85	(0.68, 1.05)	0.88	(0.71, 1.09)	0.98	(0.79, 1.21)	0.80	(0.64, 1.01)	1.00	(0.99, 1.00)	0.252
High-fat/added-sugar discretionary food	0.97	(0.78, 1.20)	0.97	(0.78, 1.21)	0.93	(0.74, 1.16)	1.05	(0.83, 1.33)	1.00	(0.99, 1.01)	0.548
Food item											
Citrus	0.83	(0.68, 1.02)	0.88	(0.73, 1.08)	0.63	(0.50, 0.80)	0.69	(0.55, 0.87)	0.97	(0.96, 0.99)	<0.001
Tomato	0.90	(0.73, 1.10)	0.84	(0.70, 1.01)	0.93	(0.73, 1.19)	0.86	(0.68, 1.10)	0.98	(0.95, 1.02)	0.335
Chocolate	0.90	(0.74, 1.09)	0.92	(0.76, 1.12)	0.95	(0.77, 1.19)	1.10	(0.86, 1.42)	1.02	(0.99, 1.06)	0.228
Carbonated beverage	0.95	(0.77, 1.19)	1.15	(0.93, 1.43)	1.30	(1.05, 1.60)	1.47	(1.22, 1.77)	1.06	(1.03, 1.09)	<0.001
Tea	0.71	(0.57, 0.90)	0.81	(0.65, 1.02)	0.85	(0.70, 1.04)	0.93	(0.76, 1.15)	1.00	(1.00, 1.01)	0.472
Coffee	0.92	(0.72, 1.17)	0.82	(0.65, 1.05)	0.89	(0.72, 1.11)	0.89	(0.71, 1.13)	1.00	(0.99, 1.00)	0.650
MDS		Score 4-6		Score 7-9					Increase of one score		
Score 0-3 [ref]	0.87	(0.74, 1.02)	0.90	(0.69, 1.16)					0.98	(0.93, 1.02)	0.311
AHEI-2010		Quintile 2		Quintile 3		Quintile 4		Quintile 5	Increase of one score		
Quintile 1 [ref]	1.09	(0.87, 1.35)	1.13	(0.90, 1.41)	1.16	(0.93, 1.44)	0.95	(0.74, 1.21)	1.00	(0.99, 1.01)	0.893

Supplementary Table 9 Estimated odds ratios for dietary intakes comparing cases (daily GERD symptoms) with non-cases (symptoms <1 day/week) – analysis excluding participants who reported following special diets at baseline

	Restricted to those not following special diets at baseline						
	OR	Men			Women		
		95% CI	p-value	OR	95% CI	p-value	
Energy-adjusted nutrient intake							
Total fat, 5g/d	1.05	(1.01, 1.10)	0.023	1.00	(0.97, 1.04)	0.920	
Saturated fat, 5g/d	1.10	(1.01, 1.21)	0.039	0.96	(0.89, 1.04)	0.336	
Monounsaturated fat, 5g/d	1.11	(1.01, 1.23)	0.035	1.02	(0.94, 1.11)	0.570	
Polyunsaturated fat, 5g/d	1.07	(0.93, 1.23)	0.352	1.05	(0.95, 1.17)	0.334	
Total protein, 5g/d	1.00	(0.96, 1.05)	0.867	1.00	(0.96, 1.04)	0.956	
Total carbohydrate, 30g/d	0.90	(0.81, 0.99)	0.025	1.00	(0.92, 1.09)	0.943	
Starch, 30g/d	0.84	(0.74, 0.96)	0.009	0.94	(0.84, 1.05)	0.275	
Sugar, 30g/d	1.00	(0.91, 1.09)	0.945	1.03	(0.96, 1.11)	0.375	
Total fibre, 5g/d	0.93	(0.85, 1.01)	0.096	0.96	(0.90, 1.03)	0.283	
Vegetable/Fruit fibre, 5g/d	0.94	(0.85, 1.05)	0.262	1.00	(0.93, 1.06)	0.885	
Cereal fibre, 5g/d	0.92	(0.80, 1.05)	0.233	0.92	(0.83, 1.03)	0.165	
Glycaemic index, 1 unit	1.00	(0.97, 1.03)	0.985	1.01	(0.99, 1.03)	0.290	

Restricted to those not following special diets at baseline											
	Quintiles of consumption frequency, OR (95% CI)								Increase of one time/wk, OR (95% CI)	Test for trend, p- value	
	Quintile 2		Quintile 3		Quintile 4		Quintile 5				
Food group											
Total meat	0.94	(0.75, 1.18)	1.11	(0.89, 1.39)	1.06	(0.83, 1.35)	1.08	(0.84, 1.40)	1.01	(0.99, 1.03)	0.361
Red meat	1.08	(0.86, 1.36)	0.92	(0.73, 1.15)	0.93	(0.73, 1.17)	1.03	(0.81, 1.31)	1.00	(0.98, 1.02)	0.986
Fish	1.01	(0.82, 1.25)	1.02	(0.81, 1.28)	1.19	(0.95, 1.49)	1.17	(0.91, 1.51)	1.06	(0.99, 1.13)	0.114
Chicken	1.11	(0.90, 1.36)	1.18	(0.94, 1.48)	1.12	(0.90, 1.40)	1.27	(1.01, 1.58)	1.06	(1.00, 1.12)	0.062
Processed meat	1.16	(0.94, 1.44)	1.16	(0.90, 1.50)	1.00	(0.82, 1.23)	1.10	(0.88, 1.36)	1.01	(0.97, 1.05)	0.699
Total vegetable	0.91	(0.73, 1.14)	0.93	(0.76, 1.13)	1.08	(0.83, 1.41)	1.07	(0.85, 1.36)	1.00	(1.00, 1.01)	0.295
Leafy vegetable	0.92	(0.75, 1.11)	0.79	(0.61, 1.03)	1.04	(0.83, 1.29)	0.91	(0.72, 1.14)	1.00	(0.97, 1.02)	0.753
Cruciferous vegetable	1.00	(0.79, 1.26)	1.18	(0.94, 1.49)	1.15	(0.92, 1.44)	1.43	(1.14, 1.79)	1.04	(1.01, 1.06)	0.001
Total fruit	0.82	(0.66, 1.00)	0.79	(0.63, 0.99)	0.78	(0.62, 0.97)	0.78	(0.60, 1.02)	0.99	(0.99, 1.00)	0.056
Total dairy	0.70	(0.55, 0.88)	0.77	(0.61, 0.97)	0.92	(0.73, 1.15)	0.77	(0.60, 0.98)	1.00	(0.99, 1.00)	0.318
High-fat/added-sugar discretionary food	0.97	(0.77, 1.23)	0.97	(0.76, 1.24)	0.92	(0.72, 1.18)	1.13	(0.88, 1.46)	1.01	(1.00, 1.02)	0.188
Food item											
Citrus	0.85	(0.69, 1.06)	0.92	(0.75, 1.14)	0.65	(0.51, 0.83)	0.69	(0.54, 0.89)	0.97	(0.96, 0.99)	0.001
Tomato	0.87	(0.70, 1.07)	0.81	(0.67, 0.97)	0.89	(0.69, 1.17)	0.87	(0.67, 1.12)	0.98	(0.95, 1.02)	0.355
Chocolate	0.96	(0.79, 1.18)	0.94	(0.76, 1.16)	0.96	(0.76, 1.22)	1.11	(0.85, 1.45)	1.02	(0.98, 1.05)	0.331
Carbonated beverage	1.00	(0.80, 1.25)	1.12	(0.89, 1.41)	1.26	(1.01, 1.57)	1.46	(1.20, 1.77)	1.06	(1.03, 1.08)	<0.001
Tea	0.80	(0.62, 1.02)	0.93	(0.73, 1.18)	0.95	(0.76, 1.18)	1.08	(0.86, 1.36)	1.01	(1.00, 1.01)	0.094
Coffee	0.95	(0.73, 1.22)	0.80	(0.62, 1.03)	0.88	(0.70, 1.11)	0.90	(0.70, 1.15)	1.00	(0.99, 1.01)	0.671
MDS											
Score 0-3 [ref]	Score 4-6		Score 7-9						Increase of one score		
	0.92	(0.78, 1.09)	0.96	(0.73, 1.26)					0.99	(0.94, 1.04)	0.671
AHEI-2010											
Quintile 1 [ref]	Quintile 2		Quintile 3		Quintile 4		Quintile 5		Increase of one score		
	1.06	(0.85, 1.32)	1.00	(0.80, 1.26)	1.04	(0.83, 1.31)	0.78	(0.60, 1.02)	0.99	(0.99, 1.00)	0.133

Supplementary Table 10 Estimated odds ratios for dietary intakes comparing cases (daily GERD symptoms) with non-cases (symptoms <1 day/week) – complete case (unweighted) analysis

	Complete case (unweighted) analysis					
	Men			Women		
	OR	95% CI	p-value	OR	95% CI	p-value
Energy-adjusted nutrient intake						
Total fat, 5g/d	1.05	(1.01, 1.09)	0.016	1.00	(0.97, 1.03)	0.837
Saturated fat, 5g/d	1.09	(1.00, 1.18)	0.052	0.96	(0.90, 1.02)	0.174
Monounsaturated fat, 5g/d	1.11	(1.01, 1.22)	0.026	1.01	(0.94, 1.09)	0.761
Polyunsaturated fat, 5g/d	1.10	(0.96, 1.25)	0.161	1.04	(0.95, 1.14)	0.370
Total protein, 5g/d	1.01	(0.97, 1.05)	0.637	1.02	(0.99, 1.05)	0.296
Total carbohydrate, 30g/d	0.89	(0.82, 0.97)	0.010	0.99	(0.93, 1.07)	0.864
Starch, 30g/d	0.84	(0.75, 0.95)	0.005	0.97	(0.88, 1.07)	0.554
Sugar, 30g/d	0.99	(0.91, 1.07)	0.766	1.01	(0.95, 1.08)	0.739
Total fibre, 5g/d	0.93	(0.86, 1.01)	0.099	0.98	(0.93, 1.04)	0.550
Vegetable/Fruit fibre, 5g/d	0.95	(0.87, 1.05)	0.326	1.00	(0.94, 1.06)	0.905
Cereal fibre, 5g/d	0.90	(0.80, 1.02)	0.111	0.97	(0.89, 1.07)	0.590
Glycaemic index, 1 unit	1.00	(0.97, 1.02)	0.816	1.01	(0.99, 1.03)	0.446

	Quintiles of consumption frequency, OR (95% CI)								Increase of one time/week, OR (95% CI)	Test for trend, p-value	
	Quintile 2		Quintile 3		Quintile 4		Quintile 5				
Food group											
Total meat	1.00	(0.82, 1.22)	1.12	(0.92, 1.37)	1.08	(0.87, 1.34)	1.14	(0.91, 1.43)	1.01	(0.99, 1.03)	0.186
Red meat	1.05	(0.86, 1.28)	0.93	(0.77, 1.13)	0.88	(0.72, 1.09)	0.98	(0.79, 1.21)	0.99	(0.97, 1.01)	0.567
Fish	0.99	(0.81, 1.20)	1.00	(0.82, 1.23)	1.17	(0.96, 1.43)	1.30	(1.05, 1.61)	1.09	(1.03, 1.15)	0.003
Chicken	1.06	(0.88, 1.28)	1.06	(0.86, 1.31)	1.15	(0.94, 1.39)	1.35	(1.12, 1.64)	1.09	(1.03, 1.14)	0.001
Processed meat	1.02	(0.84, 1.23)	1.08	(0.85, 1.36)	0.94	(0.79, 1.12)	0.98	(0.81, 1.19)	0.99	(0.96, 1.03)	0.697
Total vegetable	0.96	(0.78, 1.18)	0.98	(0.82, 1.18)	1.08	(0.85, 1.37)	1.09	(0.89, 1.35)	1.00	(1.00, 1.01)	0.234
Leafy vegetable	0.98	(0.82, 1.18)	0.92	(0.73, 1.15)	0.97	(0.79, 1.19)	0.98	(0.80, 1.19)	1.00	(0.97, 1.02)	0.822
Cruciferous vegetable	0.98	(0.80, 1.21)	1.23	(1.00, 1.51)	1.22	(1.00, 1.49)	1.48	(1.21, 1.82)	1.04	(1.02, 1.06)	<0.001
Total fruit	0.79	(0.66, 0.95)	0.80	(0.65, 0.98)	0.79	(0.65, 0.96)	0.73	(0.58, 0.93)	0.99	(0.99, 1.00)	0.014
Total dairy	0.81	(0.66, 0.99)	0.85	(0.69, 1.04)	0.90	(0.74, 1.11)	0.79	(0.63, 0.98)	1.00	(0.99, 1.00)	0.127
High-fat/added-sugar discretionary food	0.97	(0.80, 1.19)	0.92	(0.75, 1.14)	0.93	(0.75, 1.15)	1.07	(0.86, 1.33)	1.00	(0.99, 1.01)	0.370
Food item											
Citrus	0.84	(0.69, 1.02)	0.87	(0.72, 1.05)	0.60	(0.48, 0.74)	0.66	(0.53, 0.82)	0.97	(0.95, 0.98)	<0.001
Tomato	0.88	(0.72, 1.07)	0.83	(0.70, 0.98)	0.93	(0.73, 1.17)	0.91	(0.73, 1.14)	0.99	(0.96, 1.02)	0.578
Chocolate	0.91	(0.76, 1.09)	0.99	(0.82, 1.19)	0.96	(0.78, 1.19)	1.10	(0.87, 1.40)	1.02	(0.99, 1.05)	0.282
Carbonated beverage	1.00	(0.82, 1.23)	1.18	(0.96, 1.45)	1.31	(1.07, 1.59)	1.50	(1.26, 1.78)	1.06	(1.03, 1.08)	<0.001
Tea	0.77	(0.62, 0.96)	0.86	(0.70, 1.07)	0.90	(0.74, 1.08)	1.00	(0.82, 1.22)	1.00	(1.00, 1.01)	0.235
Coffee	0.95	(0.76, 1.19)	0.80	(0.64, 1.01)	0.88	(0.72, 1.07)	0.90	(0.72, 1.12)	1.00	(0.99, 1.00)	0.538
MDS	Score 4-6		Score 7-9						Increase of per score		
Score 0-3 [ref]	0.92	(0.79, 1.06)	0.93	(0.73, 1.18)					0.99	(0.95, 1.03)	0.536
AHEI-2010	Quintile 2		Quintile 3		Quintile 4		Quintile 5		Increase of per score		
Quintile 1 [ref]	1.02	(0.83, 1.25)	1.05	(0.85, 1.29)	1.10	(0.89, 1.34)	0.90	(0.72, 1.13)	1.00	(0.99, 1.01)	0.624

Supplementary Table 11 Estimated odds ratios for dietary intakes comparing cases (GERD symptoms ≥ 1 day/week) with non-cases (symptoms < 1 day/week)

	Men			Women		
	OR	95% CI	p-value	OR	95% CI	p-value
Energy-adjusted nutrient intake						
Total fat, 5g/d	1.01	(0.99, 1.03)	0.398	1.00	(0.98, 1.02)	0.731
Saturated fat, 5g/d	1.01	(0.96, 1.06)	0.676	0.97	(0.92, 1.01)	0.129
Monounsaturated fat, 5g/d	1.03	(0.97, 1.09)	0.310	1.03	(0.98, 1.09)	0.196
Polyunsaturated fat, 5g/d	1.02	(0.94, 1.11)	0.603	1.04	(0.98, 1.11)	0.178
Total protein, 5g/d	1.00	(0.97, 1.02)	0.715	1.03	(1.01, 1.05)	0.005
Total carbohydrate, 30g/d	0.98	(0.93, 1.03)	0.427	0.97	(0.92, 1.02)	0.170
Starch, 30g/d	0.91	(0.85, 0.98)	0.014	1.01	(0.95, 1.08)	0.706
Sugar, 30g/d	1.03	(0.98, 1.08)	0.285	0.97	(0.92, 1.01)	0.158
Total fibre, 5g/d	0.94	(0.89, 0.99)	0.012	0.98	(0.94, 1.02)	0.324
Vegetable/Fruit fibre, 5g/d	0.95	(0.90, 1.01)	0.092	0.98	(0.94, 1.02)	0.419
Cereal fibre, 5g/d	0.93	(0.86, 1.00)	0.038	0.99	(0.92, 1.06)	0.724
Glycaemic index, 1 unit	1.00	(0.99, 1.02)	0.656	1.00	(0.99, 1.01)	0.824

	Quintiles of consumption frequency, OR (95% CI)								Increase of one time/wk, OR (95% CI)	Test for trend, p-value	
	Quintile 2		Quintile 3		Quintile 4		Quintile 5				
Food group											
Total meat	1.13	(0.99, 1.29)	1.11	(0.97, 1.27)	1.09	(0.94, 1.26)	1.21	(1.04, 1.40)	1.01	(1.00, 1.02)	0.037
Red meat	1.11	(0.97, 1.27)	1.08	(0.95, 1.23)	1.01	(0.88, 1.15)	1.00	(0.87, 1.16)	1.00	(0.98, 1.01)	0.550
Fish	0.99	(0.87, 1.13)	0.99	(0.87, 1.13)	1.10	(0.96, 1.26)	1.14	(0.99, 1.32)	1.04	(1.01, 1.09)	0.025
Chicken	1.11	(0.98, 1.26)	1.07	(0.93, 1.22)	1.17	(1.02, 1.33)	1.36	(1.19, 1.54)	1.08	(1.05, 1.12)	0.000
Processed meat	1.08	(0.95, 1.23)	1.17	(1.00, 1.36)	1.04	(0.93, 1.17)	0.99	(0.87, 1.13)	0.99	(0.97, 1.02)	0.572
Total vegetable	0.96	(0.84, 1.10)	0.97	(0.86, 1.09)	0.97	(0.83, 1.15)	1.00	(0.87, 1.15)	1.00	(1.00, 1.00)	0.897
Leafy vegetable	0.96	(0.85, 1.08)	0.99	(0.85, 1.15)	0.95	(0.83, 1.08)	0.92	(0.81, 1.06)	0.99	(0.97, 1.01)	0.242
Cruciferous vegetable	1.07	(0.94, 1.23)	1.10	(0.96, 1.27)	1.05	(0.91, 1.19)	1.28	(1.12, 1.47)	1.02	(1.01, 1.03)	0.001
Total fruit	0.88	(0.78, 1.00)	0.86	(0.75, 0.98)	0.82	(0.72, 0.93)	0.76	(0.65, 0.89)	0.99	(0.99, 1.00)	0.001
Total dairy	0.94	(0.82, 1.08)	0.94	(0.82, 1.08)	0.98	(0.85, 1.12)	0.95	(0.82, 1.10)	1.00	(1.00, 1.00)	0.721
High-fat/added-sugar discretionary food	1.05	(0.92, 1.20)	0.99	(0.86, 1.14)	0.97	(0.84, 1.12)	1.00	(0.86, 1.16)	1.00	(0.99, 1.01)	0.698
Food item											
Citrus	0.91	(0.80, 1.04)	0.93	(0.82, 1.06)	0.79	(0.68, 0.91)	0.78	(0.67, 0.90)	0.98	(0.97, 0.99)	0.000
Tomato	1.00	(0.88, 1.14)	0.93	(0.83, 1.04)	0.97	(0.83, 1.13)	0.90	(0.77, 1.05)	0.99	(0.97, 1.01)	0.154
Chocolate	1.00	(0.89, 1.13)	1.06	(0.93, 1.20)	1.05	(0.91, 1.20)	1.10	(0.94, 1.30)	1.01	(0.99, 1.03)	0.225
Carbonated beverage	0.95	(0.83, 1.08)	1.14	(1.00, 1.31)	1.17	(1.03, 1.34)	1.26	(1.12, 1.42)	1.04	(1.02, 1.05)	0.000
Tea	0.87	(0.75, 1.00)	0.93	(0.80, 1.07)	0.92	(0.81, 1.05)	1.02	(0.89, 1.17)	1.00	(1.00, 1.01)	0.224
Coffee	0.97	(0.83, 1.13)	0.90	(0.77, 1.04)	1.00	(0.87, 1.14)	1.02	(0.87, 1.18)	1.00	(1.00, 1.01)	0.325
MDS		Score 4-6		Score 7-9					Increase of one score		
Score 0-3 [ref]	0.91	(0.82, 1.01)	0.96	(0.82, 1.12)					0.99	(0.96, 1.02)	0.467
AHEI-2010		Quintile 2		Quintile 3		Quintile 4		Quintile 5	Increase of one score		
Quintile 1 [ref]	0.93	(0.82, 1.07)	1.01	(0.88, 1.15)	1.00	(0.87, 1.14)	0.88	(0.76, 1.02)	1	(0.99, 1.00)	0.235

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