Supplementary Materials

Exploring causal correlations between oily fish intake and multiple sclerosis: A two-sample Mendelian randomization study

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Supplementary Table 1. Information of the exposures and outcome datasets

No.	Section	Checklist item	Position
1	Title and abstract	Indicate MR as the study s design in the title and the abstract as a main purpose of the study	Title, Abstract
2	Background	Explain the scientific background and rationale for the reported study. Explain the exposure and a plausible potential causal relationship between exposure and outcome. Justify why MR is a helpful method to address the study question.	Introduction: paragraphs 1-2
3	Objectives	State specific objectives clearly, including prespecified causal hypotheses. State that MR is a method that intends to estimate causal effects.	Introduction: paragraphs 3-4
4a	Study design and data sourses	Setting: Describe the study design (two-sample MR) and the underlying population. Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection.	Method: Study design
4b		Participants: Report the eligibility criteria and the sources and methods of selection of participants. Report the sample size and whether a power or sample size calculations were carried out prior to the main analysis.	Method: Data sources, Table S2
4c		Describe measurement, quality control, and selection of genetic variants.	Method: Selection of instrumental variables in dietary habits
4d		For each exposure, outcome, and other relevant variables, describe methods of assessment and diagnostic criteria for diseases.	Methods: Data sources
4e		Provide details of ethics committee approval and participant informed consent, if relevant.	Methods: Outcome GWAS
5	Assumptions	Explicitly state the 3 core instrumental variable (IV) assumptions for the main analysis (relevance, independence, and exclusion restriction), as well assumptions for any additional or sensitivity analysis.	Methods: Study design and Sensitivity analyses Figure 1
6a	Statistical methods:	Describe how quantitative variables were handled in the analyses.	Methods: MR analysis
6b		Describe how genetic variants were handled in the analyses and, if applicable, how their weights were selected	
6c		Describe the MR estimator and related statistics. Detail the included covariates and, in case of 2-sample MR, whether the same covariate set was used for adjustment in the 2 samples.	
6d		Explain how missing data were addressed.	Method: Selection of instrumental variables in dietary habits
6e		Indicate how multiple testing was addressed (false discovery rate method)	Methods: Sensitivity analyses
7	Assessment of assumptions	Describe any methods or prior knowledge used to assess the assumptions or justify their validity	N/A
8	Sensitivity analyses and additional analyses	Describe any sensitivity analyses or additional analyses performed (eg, comparison of effect estimates from different approaches, independent replication, bias analytic techniques, validation of instruments, simulations).	Method: Sensitivity analyses
9a	Software and	Name statistical software and package(s), including version and settings used.	Methods: Sensitivity analyses
9b	preregistration	State whether the study protocol and details were preregistered (as well as when and where).	N/A

Three fundamental assumptions:
1. The instrument variables (IVs) must be associated with exposures;
2. The IVs must not be associated with any confounders such as age, sex, lifestyle;
3. The IVs must influence the outcomes only through expsoures and not through any direct or alternative pathways

Supplementary Table 1. Information of the exposures and outcome datasets (cont.)

No.	Section	Checklist item	Position
10a	Descriptive data	Report the numbers of individuals at each stage of included studies and reasons for exclusion. Use of a flow diagram.	Methods: Study design, Exposure GWAS and Outcome GWAS
10b		Report summary statistics for phenotypic exposure, outcomes, and other relevant variables (eg, means, SDs, proportions).	Table S1
10c		If the data sources include meta-analyses of previous studies, provide the assessments of heterogeneity across these studies.	N/A
10d		For 2-sample MR: i. Provide justification of the similarity of the genetic variant–exposure associations between the exposure and outcome samples. ii. Provide information on the number of individuals who overlap between the exposure and outcome studies.	Results, Table S2-3, Figure 3-4
11a	Main results	Report the associations between genetic variant and exposure and between genetic variant and outcome, preferably on an interpretable scale.	Results, Figure 3-4, Table S3
11b		Report MR estimates of the relationship between exposure and outcome and the measures of uncertainty from the MR analysis, on an interpretable scale, such as odds ratio or relative risk per SD difference.	Results, Figure 3-4, Table S4
11c		If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period.	N/A
11d		Consider plots to visualize results (eg, forest plot, scatterplot of associations between genetic variants and outcome vs between genetic variants and exposure).	Figures 2
12a	Assessment of	Report the assessment of the validity of the assumptions by removing confounders-related SNPs.	Results, Figure 3-4, Table S5-6
12b	assumptions	Report any additional statistics (eg, assessments of heterogeneity across genetic variants, such as I2, Q statistic).	
13a	Sensitivity analyses and	Report any sensitivity analyses to assess the robustness of the main results to violations of the assumptions.	Results, Figure 3-4, Table S4 and S6
13b	additional analyses	Report results from other sensitivity analyses or additional analyses	
13c		Report any assessment of the direction of the causal relationship.	
13d		When relevant, report and compare with estimates from other RCTs and meta-analyses.	N/A
13e		Consider additional plots to visualize results.	Figure 2
14	Key results	Summarize key results with reference to study objectives.	Discussion: paragraph 1
15	Limitations	Discuss limitations of the study, taking into account the validity of the IV assumptions, other sources of potential bias, and imprecision. Discuss both direction and magnitude of any potential bias and any efforts to address them.	Discussion: paragraph 5

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Supplementary Table 1. Information of the exposures and outcome datasets (cont.)

No.	Section	Checklist item	Position
16a	Interpretation	Meaning: Give a cautious overall interpretation of results in the context of their limitations and in comparison with other studies.	Discussion: paragraphs 2-4
16b		Mechanism: Discuss underlying biological mechanisms that could drive a potential causal relationship between the investigated exposure and the outcome, and whether the gene-environment equivalence assumption is reasonable. Use causal language carefully, clarifying that IV estimates may provide causal effects only under certain assumptions.	
16c		Clinical relevance: Discuss whether the results have clinical or public policy relevance, and to what extent they inform effect sizes of possible interventions.	
17		Discuss the generalizability of the study results (a) to other populations, (b) across other exposure periods/timings, and (c) across other levels of exposure.	
18	Funding	Describe sources of funding and the role offunders in the present study.	
19	Data and data sharing	Provide the data used to perform all analyses or report where and how the data can be accessed, and reference these sources in the article.	Availability of data and materials (Table S7)
20	Conflicts of interest	All authors should declare all potential conflicts of interest.	

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1. The instrument variables (IVs) must be associated with exposures;
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Supplementary Table 2. Detailed information of the studies and datasets used in the present study

Variable	SNPs (Number)	N	R^2 (%)	F	Consortium	Source
Exposure variables: dietary habits traits						
Processed meat intake	12	461981	0.09	36.16	UK biobank	IEU OpenGWAS project (ukb-b-6324)
Pork intake	7	460162	0.05	33.49	UK biobank	IEU OpenGWAS project (ukb-b-5640)
Lamb/mutton intake	19	460006	0.15	36.73	UK biobank	IEU OpenGWAS project (ukb-b-14179)
Poultry intake	4	461900	0.03	31.93	UK biobank	IEU OpenGWAS project (ukb-b-8006)
Beef intake	4	461053	0.04	41.06	UK biobank	IEU OpenGWAS project (ukb-b-2862)
Non-oily fish intake	7	460880	0.06	36.86	UK biobank	IEU OpenGWAS project (ukb-b-17627)
Oily fish intake	38	460443	0.38	46.18	UK biobank	IEU OpenGWAS project (ukb-b-2209)
Tea intake	25	447485	0.25	45.35	UK biobank	IEU OpenGWAS project (ukb-b-6066)
Coffee intake	20	428860	0.20	43.210	UK biobank	IEU OpenGWAS project (ukb-b-5237)
Alcoholic drinks per week	18	335394	0.18	33.14	GWAS and Sequencing Consortium of Alcohol and Nicotine use	IEU OpenGWAS project (ieu-b-73)
Alcohol intake frequency	56	462346	0.50	41.09	UK biobank	IEU OpenGWAS project (ukb-b-5779)
Water intake	22	427588	0.18	34.92	UK biobank	IEU OpenGWAS project (ukb-b-14898)
Hot drink temperature	37	457873	0.34	41.79	UK biobank	IEU OpenGWAS project (ukb-b-14203)
Cereal intake	16	441640	0.14	37.32	UK biobank	IEU OpenGWAS project (ukb-b-15926)
Bread intake	16	452236	0.15	43.26	UK biobank	IEU OpenGWAS project (ukb-b-11348)
Dried fruit intake	21	421764	0.18	36.61	UK biobank	IEU OpenGWAS project (ukb-b-16576)
Fresh fruit intake	30	446462	0.31	45.890	UK biobank	IEU OpenGWAS project (ukb-b-3881)
Salad/raw vegetable intake	7	435435	0.06	34.45	UK biobank	IEU OpenGWAS project (ukb-b-1996)
Cooked vegetable intake	9	448651	0.07	34.27	UK biobank	IEU OpenGWAS project (ukb-b-8089)
Salt intake	65	462630	0.82	49.18	UK biobank	IEU OpenGWAS project (ukb-b-8121)
Cheese intake	34	451486	0.27	35.83	UK biobank	IEU OpenGWAS project (ukb-b-1489)
Outcome variable						
Multiple sclerosis	NA	47,429 cases and 68,374 controls	NA	NA	International Multiple Sclerosis Genetics Consortium	IEU OpenGWAS project (ieu-b-18)

SNP, Single nucleotide polymorphisms

Supplementary Table 3. The details on the 21 dietary habits

IEU GWAS id	Exposure or outcome	definition	Source/Detailed Description/Results
ukb-b-6324	Processed meat intake	ACE touchscreen question "How often do you eat processed meats (such as bacon, ham, sausages, meat pies, kebabs, burgers, chicken nuggets)?" If the participant activated the Help button they were shown the message: Please provide an average considering your intake over the last year. If you are unsure, please provide an estimate or select Do not know. Options include:(1) never (2) once a week (3) less than once a week (4) 2-4 times a week (5) 5-6 time a week (6) once or more daily (7) do not know (8) prefer not to answer.	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1349
ukb-b-5640	Pork intake	ACE touchscreen question "How often do you eat pork? (Do not count processed meats such as bacon or ham)" If the participant activated the help button they were shown the message: Please provide an average considering your intake over the last year. If you are unsure, please provide an estimate or select Do not know. Options include:(1) never (2) once a week (3) less than once a week (4) 2-4 times a week (5)5-6 time a week (6) once or more daily (7) do not know (8) prefer not to answer.	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1389
ukb-b-14179	Lamb/mutton intake	ACE touchscreen question "How often do you eat lamb/mutton? (Do not count processed meats)" If the participant activated the Help button they were shown the message: Please provide an average considering your intake over the last year. If you are unsure, please provide an estimate or select Do not know. Options include:(1) never (2) once a week (3) less than once a week (4) 2-4 times a week (5) 5-6 time a week (6) once or more daily (7) do not know (8) prefer not to answer.	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1379
ukb-b-8006	Poultry intake	ACE touchscreen question "How often do you eat chicken, turkey or other poultry? (Do not count processed meats)" If the participant activated the Help button they were shown the message: Please provide an average considering your intake over the last year. If you are unsure, please provide an estimate or select Do not know. Poultry include fowl (e.g. chicken, turkey, quail), waterfowl (e.g. duck, goose) and game (e.g. pheasant). Options include:(1) never (2) once a week (3) less than once a week (4) 2-4 times a week (5)5-6 time a week (6) once or more daily (7) do not know (8) prefer not to answer.	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1359
ukb-b-2862	Beef intake	ACE touchscreen question "How often do you eat beef? (Do not count processed meats)" If the participant activated the Help button they were shown the message: Please provide an average considering your intake over the last year. If you are unsure, please provide an estimate or select Do not know. Options include:(1) never (2) once a week (3) less than once a week (4) 2-4 times a week (5) 5-6 time a week (6) once or more daily (7) do not know (8) prefer not to answer.	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1369

The data used in our study were primarily processed by the UK Biobank and FinnGen Biobank in 2018 by the MRC Integrative Epidemiology Unit (IEU) at the University of Bristol. UK Biobank and FinnGen Biobank data may also be partially updated. Therefore, the data on their official website and the IEU data may not exactly match. More information about exposures and outcomes can be found at the websites indicated in the table. Answer: Not applicable

Supplementary Table 3. The details on the 21 dietary habits (cont.)

IEU GWAS id	Exposure or outcome	definition	Source/Detailed Description/Results
ukb-b-17627	Non-oily fish intake	ACE touchscreen question "How often do you eat other types of fish? (e.g. cod, tinned tuna, haddock)" If the participant activated the Help button they were shown the message: Please provide an average considering your intake over the last year. If you are unsure, please provide an estimate or select Do not know. Options include:(1) never (2) once a week (3) less than once a week (4) 2-4 times a week (5) 5-6 time a week (6) once or more daily (7) do not know (8) prefer not to answer.	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1339
ukb-b-2209	Oily fish intake	ACE touchscreen question "How often do you eat oily fish? (e.g. sardines, salmon, mackerel, herring)" If the participant activated the Help button they were shown the message: Please provide an average considering your intake over the last year. If you are unsure, please provide an estimate or select Do not know. Oily fish include: Salmon Anchovies, Trout Swordfish, Mackerel Bloater, Herring Cacha, Sardines Carp, Pilchards Hilsa, Kipper Jack fish, Eel Katla, Whitebait Orange roughy, Tuna (fresh only) Pangas, Sprats. Options include:(1) never (2) once a week (3) less than once a week (4) 2-4 times a week (5) 5-6 time a week (6) once or more daily (7) do not know (8) prefer not to answer.	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1329
ukb-b-6066	Tea intake	ACE touchscreen question "How many cups of tea do you drink each DAY? (Include black and green tea)" The following checks were performed: If answer < 0 then rejected If answer > 99 then rejected If answer > 20 then participant asked to confirm If the participant activated the Help button they were shown the message: Please provide an average considering your intake over the last year. If you are unsure, please provide an estimate or select Do not know.	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1488

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Supplementary Table 3. The details on the 21 dietary habits (cont.)

IEU GWAS id	Exposure or outcome	definition	Source/Detailed Description/Results
ukb-b-5237	Coffee intake	ACE touchscreen question "How many cups of coffee do you drink each DAY? (Include decaffeinated coffee)" The following checks were performed: If answer < 0 then rejected If answer > 99 then rejected If answer > 10 then participant asked to confirm If the participant activated the Help button they were shown the message: Please provide an average considering your intake over the last year. If you are unsure, please provide an estimate or select Do not know.	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1498
ieu-b-73	Alcoholic drinks per week	1. Defined as the average number of drinks a participant reported drinking each week, aggregated across all types of alcohol. If a study recorded binned response ranges (e.g., 1-4 drinks per week,5-10 drinks per week) we used the midpoint of the range. For example, if an individual reported 1-5 drinks per week, we assume they drank 2.5 drinks per week on average. 2. This was measured in a variety of ways. a. In the past week, how many alcoholic beverages did you have? b. Thinking about the past year, on the average how many drinks did you have each week? 3. This phenotype was left-anchored at 1 and log-transformed prior to analysis, in order to prevent outliers from having undue leverage on analyses.	N/A
ukb-b-5779	Alcohol intake frequency	ACE touchscreen question "About how often do you drink alcohol?" If the participant activated the Help button they were shown the message: If this varies a lot, please provide an average considering your intake over the last year. Options include: (1) Daily or almost daily (2) Three or four times a week (3) Once or twice a week (4) One to three times a month (5) Special occasions only (6) Never (7) Prefer not to answer	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1558

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Supplementary Table 3. The details on the 21 dietary habits (cont.)

IEU GWAS id	Exposure or outcome	definition	Source/Detailed Description/Results
ukb-b-14898	Water intake	ACE touchscreen question "How many glasses of water do you drink each DAY? " The following checks were performed: If answer < 0 then rejected If answer > 99 then rejected If answer > 10 then participant asked to confirm If the participant activated the Help button they were shown the message: Please provide an average considering your intake over the last year. If you are unsure, please provide an estimate or select Do not know.	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1528
ukb-b-14203	Hot drink temperature	ACE touchscreen question "How do you like your hot drinks? " The following checks were performed: If answer < 0 then rejected If answer > 99 then rejected If answer > 20 then participant asked to confirm If the participant activated the Help button they were shown the message: Please provide an average considering your intake over the last year. If you are unsure, please provide an estimate or select Do not know.	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1518
ukb-b-15926	Cereal intake	ACE touchscreen question "How many bowls of cereal do you eat a WEEK?" The following checks were performed: If answer < 0 then rejected If answer > 99 then rejected If answer > 14 then participant asked to confirm If the participant activated the Help button they were shown the message: Please provide an average considering your intake over the last year. If you are unsure, please provide an estimate or select Do not know.	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1458

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Supplementary Table 3. The details on the 21 dietary habits (cont.)

IEU GWAS id	Exposure or outcome	definition	Source/Detailed Description/Results
ukb-b-11348	Bread intake	ACE touchscreen question "How many slices of bread do you eat each WEEK?" The following checks were performed: If answer < 0 then rejected If answer > 250 then rejected If answer > 50 then participant asked to confirm If the participant activated the Help button they were shown the message: For other types of bread: - one bread roll = 2 slices - one pitta bread = 2 slices	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1438
ukb-b-16576	Dried fruit intake	ACE touchscreen question "About how many pieces of DRIED fruit would you eat per DAY? (Count one prune, one dried apricot, 10 raisins as one piece; put 0 if you do not eat any)" The following checks were performed: If answer > 100 then rejected If the participant activated the Help button they were shown the message: Please provide an average considering your intake over the last year. If you are unsure, please provide an estimate or select Do not know.	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1319
ukb-b-3881	Fresh fruit intake	ACE touchscreen question "About how many pieces of FRESH fruit would you eat per DAY? (Count one apple, one banana, 10 grapes etc as one piece; put 0 if you do not eat any)" The following checks were performed: If answer > 50 then rejected If the participant activated the Help button they were shown the message: Please provide an average considering your intake over the last year. If you are unsure, please provide an estimate or select Do not know.	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1309

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Supplementary Table 3. The details on the 21 dietary habits (cont.)

IEU GWAS id	Exposure or outcome	definition	Source/Detailed Description/Results
ukb-b-1996	Salad / raw vegetable intake	ACE touchscreen question "On average how many heaped tablespoons of SALAD or RAW vegetables would you eat per DAY? (Include lettuce, tomato in sandwiches; put 0 if you do not eat any)" The following checks were performed: If answer > 50 then rejected If the participant activated the Help button they were shown the message: Please provide an average considering your intake over the last year. If you are unsure, please provide an estimate or select Do not know. If you have less than one tablespoon a day select Less than one.	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1299
ukb-b-8089	Cooked vegetable intake	ACE touchscreen question "On average how many heaped tablespoons of COOKED vegetables would you eat per DAY? (Do not include potatoes; put 0 if you do not eat any)" The following checks were performed: If answer > 50 then rejected If the participant activated the Help button they were shown the message: Please provide an average considering your intake over the last year. If you are unsure, please provide an estimate or select Do not know. If you have less than one tablespoon a day select Less than one.	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1289
ukb-b-8121	Salt intake	ACE touchscreen question "Do you add salt to your food? (Do not include salt used in cooking)" If the participant activated the Help button they were shown the message: Please provide an average considering your intake over the last year. If you are unsure, please provide an estimate or select Do not know. Options include:(1) never/rarely (2) sometimes (3) usually (4) always (5) prefer not to answer.	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1478

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Supplementary Table 3. The details on the 21 dietary habits (cont.)

IEU GWAS id	Exposure or outcome	definition	Source/Detailed Description/Results
ukb-b-1489	Cheese intake	ACE touchscreen question "How often do you eat cheese? (Include cheese in pizzas, quiches, cheese sauce etc)" If the participant activated the Help button they were shown the message: Please provide an average considering your intake over the last year. If you are unsure, please provide an estimate or select Do not know. Options include:(1) never (2) once a week (3) less than once a week (4) 2-4 times a week (5) 5-6 time a week (6) once or more daily (7) do not know (8) prefer not to answer.	https://biobank.ctsu.ox.ac.uk/crystal/field.cgi?id=1408

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Supplementary Table 4. Instrumental variables were selected at the significance threshold of 5×10^{-8}

Exposure	SNP	Chromosome	Effect allele	Reference allele	Exposure			Outcome		
					Beta	SE	*P*	Beta	SE	*P*
Processed meat intake	rs10454812	5	C	A	-0.020	0.003	6.70E-09	0.023	0.029	0.440
Processed meat intake	rs11887120	2	T	C	0.012	0.002	3.10E-08	0.001	0.017	0.939
Processed meat intake	rs11894162	2	T	C	0.012	0.002	1.10E-08	-0.004	0.017	0.818
Processed meat intake	rs3762621	2	T	C	-0.015	0.003	3.60E-08	0.009	0.021	0.686
Processed meat intake	rs4077924	2	C	T	0.012	0.002	4.50E-08	-0.044	0.018	0.015
Processed meat intake	rs4240672	8	A	G	0.017	0.002	3.00E-16	-0.014	0.017	0.402
Processed meat intake	rs6484504	11	C	T	0.015	0.002	4.40E-11	0.006	0.019	0.755
Processed meat intake	rs6765179	3	A	G	-0.013	0.002	1.80E-08	0.011	0.018	0.533
Processed meat intake	rs6786550	3	C	T	0.012	0.002	2.10E-08	0.004	0.017	0.815
Processed meat intake	rs6961970	7	A	C	-0.014	0.002	9.50E-09	-0.023	0.021	0.266
Processed meat intake	rs8096167	18	C	T	-0.015	0.003	4.70E-08	-0.046	0.022	0.033
Processed meat intake	rs9809856	3	G	A	0.013	0.002	2.50E-10	-0.004	0.016	0.794
Pork intake	rs10972033	9	T	G	0.009	0.001	1.30E-09	0.026	0.017	0.124
Pork intake	rs11211124	1	C	T	-0.010	0.002	1.40E-08	-0.016	0.020	0.408
Pork intake	rs2387807	12	T	C	-0.015	0.003	4.10E-08	0.033	0.029	0.262
Pork intake	rs36124222	18	C	T	0.008	0.002	2.10E-08	-0.004	0.018	0.823
Pork intake	rs3964074	16	C	T	-0.009	0.001	1.60E-09	-0.023	0.016	0.169
Pork intake	rs4146837	15	T	C	0.009	0.001	4.00E-09	-0.006	0.017	0.718
Pork intake	rs9973426	2	G	A	0.011	0.002	1.00E-08	0.048	0.021	0.024
Lamb/mutton intake	rs12634740	3	G	T	-0.010	0.002	2.80E-09	0.027	0.019	0.147
Lamb/mutton intake	rs136548	22	T	C	0.010	0.002	2.90E-10	0.019	0.017	0.245
Lamb/mutton intake	rs139237013	2	A	G	0.019	0.003	1.80E-09	0.079	0.082	0.335
Lamb/mutton intake	rs17270057	19	C	T	0.013	0.002	4.30E-08	0.012	0.026	0.634
Lamb/mutton intake	rs1958801	14	G	A	-0.009	0.002	3.20E-08	-0.030	0.018	0.097
Lamb/mutton intake	rs2222760	2	A	G	-0.009	0.002	2.80E-08	0.012	0.019	0.543
Lamb/mutton intake	rs2678900	2	G	T	0.010	0.001	9.90E-12	0.011	0.016	0.502
Lamb/mutton intake	rs2926119	16	A	C	0.008	0.001	4.40E-08	-0.001	0.016	0.941
Lamb/mutton intake	rs3105056	13	C	T	-0.012	0.002	1.80E-12	0.028	0.018	0.126
Lamb/mutton intake	rs3964074	16	C	T	-0.008	0.001	3.20E-08	-0.023	0.016	0.169
Lamb/mutton intake	rs4272399	8	A	C	-0.009	0.002	4.50E-09	-0.005	0.017	0.768
Lamb/mutton intake	rs4489752	11	T	G	0.014	0.002	2.80E-12	-0.004	0.022	0.857
Lamb/mutton intake	rs55813438	16	A	G	-0.011	0.002	4.70E-11	0.018	0.020	0.351
Lamb/mutton intake	rs56394517	1	G	A	-0.014	0.002	3.20E-08	0.009	0.027	0.728
Lamb/mutton intake	rs62398404	6	T	C	0.013	0.002	4.00E-09	0.006	0.025	0.825
Lamb/mutton intake	rs660880	1	A	G	-0.009	0.001	6.80E-10	0.025	0.016	0.129

Beta:beta coefficient;SE = standard error;SNP, Single-nucleotide polymorphism

Supplementary Table 4. Instrumental variables were selected at the significance threshold of 5×10^{-8} (cont.)

Exposure	SNP	Chromosome	Effect allele	Reference allele	Exposure			Outcome		
					Beta	SE	*P*	Beta	SE	*P*
Lamb/mutton intake	rs673696	11	T	C	0.016	0.003	3.70E-09	0.039	0.030	0.184
Lamb/mutton intake	rs6829572	4	A	G	0.008	0.001	1.20E-08	-0.014	0.016	0.379
Lamb/mutton intake	rs7447465	5	C	T	0.010	0.002	2.00E-10	-0.028	0.017	0.099
Poultry intake	rs2965200	19	A	G	-0.010	0.002	4.20E-08	0.006	0.018	0.727
Poultry intake	rs7829800	8	G	A	0.011	0.002	3.70E-09	-0.004	0.018	0.827
Poultry intake	rs9923768	16	A	G	0.011	0.002	1.60E-08	-0.014	0.017	0.397
Poultry intake	rs9997448	4	T	C	-0.010	0.002	2.70E-08	-0.037	0.017	0.030
Beef intake	rs1105388	1	T	C	-0.011	0.002	1.30E-09	0.002	0.018	0.935
Beef intake	rs4676964	3	T	C	0.013	0.002	9.60E-15	-0.021	0.017	0.215
Beef intake	rs7791463	7	A	G	0.010	0.002	2.40E-08	-0.003	0.017	0.833
Beef intake	rs784251	18	T	C	-0.010	0.002	1.70E-09	0.030	0.016	0.065
Non-oily fish intake	rs11680516	2	C	T	0.012	0.002	1.40E-09	0.016	0.021	0.445
Non-oily fish intake	rs16822430	2	C	T	0.012	0.002	1.40E-09	-0.017	0.020	0.378
Non-oily fish intake	rs17317920	7	G	A	0.009	0.002	2.80E-08	0.011	0.017	0.513
Non-oily fish intake	rs35287743	12	T	G	-0.018	0.003	3.60E-12	-0.008	0.035	0.818
Non-oily fish intake	rs3799077	6	G	T	-0.011	0.002	1.00E-09	-0.009	0.018	0.610
Non-oily fish intake	rs6957745	7	C	T	-0.012	0.002	1.80E-09	0.020	0.022	0.369
Non-oily fish intake	rs7148387	14	G	A	-0.009	0.002	1.70E-08	0.021	0.017	0.197
Oily fish intake	rs10061973	5	T	G	-0.011	0.002	1.50E-08	-0.002	0.016	0.887
Oily fish intake	rs10076975	5	C	T	0.011	0.002	1.10E-08	-0.042	0.017	0.013
Oily fish intake	rs11767283	7	G	A	0.018	0.002	2.50E-14	-0.005	0.026	0.850
Oily fish intake	rs11859365	16	C	A	0.023	0.002	9.40E-25	0.005	0.019	0.803
Oily fish intake	rs1201289	3	G	T	-0.011	0.002	4.40E-08	-0.009	0.017	0.576
Oily fish intake	rs12663865	6	A	G	0.013	0.002	1.10E-08	0.003	0.019	0.876
Oily fish intake	rs17050031	2	T	C	-0.012	0.002	3.50E-10	0.019	0.016	0.251
Oily fish intake	rs1876245	3	C	T	0.015	0.002	5.00E-15	-0.078	0.017	0.000
Oily fish intake	rs1951286	14	G	T	-0.015	0.002	3.00E-13	0.017	0.017	0.317
Oily fish intake	rs2374424	11	G	A	-0.011	0.002	4.90E-09	0.004	0.017	0.830
Oily fish intake	rs2827161	21	G	T	0.011	0.002	3.20E-08	-0.021	0.016	0.208
Oily fish intake	rs28533540	15	A	G	0.015	0.002	2.80E-14	-0.009	0.016	0.587
Oily fish intake	rs2952140	17	T	C	-0.011	0.002	2.50E-08	-0.062	0.016	0.000
Oily fish intake	rs303817	12	G	A	0.014	0.002	8.00E-10	-0.015	0.019	0.436
Oily fish intake	rs3124402	13	G	A	-0.022	0.002	1.90E-24	0.027	0.018	0.139
Oily fish intake	rs35287743	12	T	G	-0.028	0.003	7.00E-21	-0.008	0.035	0.818
Oily fish intake	rs4002471	19	T	C	-0.019	0.002	1.50E-23	-0.060	0.017	0.000

Beta:beta coefficient;SE = standard error;SNP, Single-nucleotide polymorphism

Supplementary Table 4. Instrumental variables were selected at the significance threshold of 5×10^{-8} (cont.)

Exposure	SNP	Chromosome	Effect allele	Reference allele	Exposure			Outcome		
					Beta	SE	*P*	Beta	SE	*P*
Oily fish intake	rs4278546	11	G	A	0.013	0.002	9.30E-11	-0.024	0.017	0.151
Oily fish intake	rs4510068	17	T	G	-0.013	0.002	4.00E-11	-0.009	0.038	0.820
Oily fish intake	rs45501495	1	T	C	0.016	0.002	3.70E-12	-0.029	0.019	0.128
Oily fish intake	rs4869859	6	C	T	0.014	0.002	3.10E-13	-0.012	0.016	0.461
Oily fish intake	rs4982738	14	A	G	0.011	0.002	3.50E-08	-0.022	0.022	0.329
Oily fish intake	rs552234	9	A	G	-0.012	0.002	1.10E-09	0.008	0.016	0.629
Oily fish intake	rs55930451	2	T	C	-0.017	0.003	2.90E-08	0.088	0.027	0.001
Oily fish intake	rs55985303	2	A	G	0.013	0.002	6.60E-09	0.017	0.019	0.377
Oily fish intake	rs59355765	18	T	C	-0.016	0.003	4.70E-10	-0.023	0.022	0.299
Oily fish intake	rs6033437	20	A	C	0.012	0.002	1.70E-08	-0.020	0.019	0.297
Oily fish intake	rs6059844	20	G	A	0.011	0.002	9.20E-09	0.033	0.016	0.043
Oily fish intake	rs6089753	20	T	C	-0.012	0.002	1.80E-09	0.001	0.018	0.965
Oily fish intake	rs61882686	11	A	C	0.020	0.003	8.00E-09	-0.023	0.030	0.459
Oily fish intake	rs6465487	7	G	A	-0.012	0.002	2.70E-10	0.018	0.017	0.281
Oily fish intake	rs7243428	18	G	A	-0.013	0.002	1.50E-08	-0.005	0.019	0.788
Oily fish intake	rs7254235	19	G	A	-0.011	0.002	4.30E-08	-0.012	0.017	0.465
Oily fish intake	rs9597870	13	G	T	-0.013	0.002	1.10E-08	0.012	0.019	0.541
Oily fish intake	rs9606833	22	C	T	0.017	0.002	2.70E-14	-0.064	0.020	0.001
Oily fish intake	rs973526	1	T	C	-0.012	0.002	2.50E-09	-0.016	0.017	0.345
Oily fish intake	rs9841174	3	C	T	0.015	0.002	8.50E-14	0.008	0.017	0.648
Oily fish intake	rs9889161	16	T	G	-0.013	0.002	2.80E-11	0.013	0.017	0.442
Tea intake	rs10741694	11	C	T	0.015	0.002	7.90E-12	0.040	0.017	0.018
Tea intake	rs10752269	10	A	G	-0.013	0.002	1.30E-09	-0.007	0.016	0.646
Tea intake	rs10764990	10	A	G	-0.012	0.002	1.90E-08	-0.017	0.017	0.312
Tea intake	rs1156588	2	G	A	-0.015	0.003	2.90E-09	-0.014	0.020	0.467
Tea intake	rs11587444	1	G	A	0.014	0.002	1.00E-10	-0.046	0.017	0.007
Tea intake	rs12591786	15	T	C	-0.018	0.003	3.70E-10	0.006	0.023	0.786
Tea intake	rs13282783	8	T	C	-0.014	0.002	7.90E-09	-0.004	0.019	0.823
Tea intake	rs1481012	4	G	A	-0.026	0.003	5.30E-15	0.004	0.027	0.874
Tea intake	rs17245213	11	A	G	-0.015	0.003	2.00E-08	-0.004	0.021	0.863
Tea intake	rs17576658	13	A	G	-0.013	0.002	4.10E-08	0.014	0.020	0.491
Tea intake	rs17685	7	A	G	0.023	0.002	1.60E-22	-0.019	0.019	0.315
Tea intake	rs2117137	3	G	A	0.013	0.002	1.70E-09	-0.014	0.017	0.395
Tea intake	rs2351187	10	A	G	0.013	0.002	1.60E-08	-0.009	0.017	0.612
Tea intake	rs2645929	13	G	A	-0.015	0.003	3.50E-08	0.015	0.021	0.495

Beta:beta coefficient;SE = standard error;SNP, Single-nucleotide polymorphism

Supplementary Table 4. Instrumental variables were selected at the significance threshold of 5×10^{-8} (cont.)

Exposure	SNP	Chromosome	Effect allele	Reference allele	Exposure			Outcome		
					Beta	SE	*P*	Beta	SE	*P*
Tea intake	rs4808193	19	C	T	0.015	0.002	1.70E-11	-0.002	0.018	0.928
Tea intake	rs4817505	21	C	T	0.015	0.002	4.20E-12	-0.019	0.017	0.270
Tea intake	rs56188862	1	C	T	-0.016	0.002	4.30E-13	0.016	0.017	0.347
Tea intake	rs57462170	3	A	G	0.019	0.003	1.90E-08	-0.003	0.027	0.896
Tea intake	rs57631352	19	G	A	-0.013	0.002	1.70E-08	0.029	0.018	0.106
Tea intake	rs6829	13	T	C	-0.012	0.002	3.70E-08	-0.051	0.017	0.002
Tea intake	rs72797284	5	G	A	-0.017	0.002	7.00E-13	-0.012	0.018	0.499
Tea intake	rs7757102	6	G	A	-0.012	0.002	3.10E-08	0.009	0.016	0.569
Tea intake	rs9624470	22	A	G	0.025	0.002	1.30E-31	-0.021	0.017	0.202
Tea intake	rs9648476	7	A	G	0.013	0.002	1.10E-08	-0.031	0.017	0.062
Tea intake	rs977474	12	T	C	0.022	0.003	2.40E-14	0.019	0.023	0.407
Coffee intake	rs1057868	7	T	C	0.020	0.002	5.40E-29	-0.018	0.019	0.359
Coffee intake	rs12514566	5	A	G	-0.011	0.002	2.40E-11	0.012	0.017	0.481
Coffee intake	rs12989746	2	T	G	0.010	0.002	2.80E-08	-0.004	0.019	0.827
Coffee intake	rs13054099	22	C	T	-0.011	0.002	4.30E-09	0.015	0.020	0.448
Coffee intake	rs1527961	2	C	T	-0.013	0.002	1.70E-08	0.023	0.024	0.343
Coffee intake	rs17842490	22	G	A	-0.045	0.007	3.30E-11	0.120	0.070	0.084
Coffee intake	rs1942965	18	C	T	-0.009	0.002	3.80E-08	-0.022	0.017	0.181
Coffee intake	rs2597805	4	T	C	0.010	0.002	2.00E-08	0.006	0.019	0.730
Coffee intake	rs516636	1	A	C	0.012	0.002	4.00E-09	0.019	0.020	0.350
Coffee intake	rs56113850	19	C	T	0.013	0.002	8.90E-15	-0.013	0.022	0.575
Coffee intake	rs57918684	17	A	G	0.013	0.002	8.60E-09	-0.021	0.023	0.351
Coffee intake	rs6062682	20	T	C	0.010	0.002	2.50E-10	-0.002	0.017	0.921
Coffee intake	rs6063085	20	C	A	0.010	0.002	4.50E-10	-0.026	0.017	0.133
Coffee intake	rs61928609	12	C	A	-0.015	0.002	1.30E-11	0.018	0.024	0.438
Coffee intake	rs62064918	17	T	C	-0.010	0.002	4.10E-08	0.026	0.019	0.185
Coffee intake	rs630194	18	C	T	-0.011	0.002	2.30E-11	-0.013	0.017	0.446
Coffee intake	rs6469262	8	C	T	-0.009	0.002	1.90E-08	0.030	0.017	0.073
Coffee intake	rs780093	2	C	T	0.013	0.002	1.00E-15	0.012	0.017	0.480
Coffee intake	rs7811609	7	T	C	0.009	0.002	4.00E-08	0.005	0.017	0.782
Coffee intake	rs8056750	16	T	C	0.011	0.002	1.30E-09	-0.023	0.029	0.430
Alcoholic drinks per w	rs11860773	16	C	T	-0.015	0.002	8.35E-10	0.029	0.025	0.240
Alcoholic drinks per w	rs1387766	12	A	G	-0.011	0.002	4.79E-08	-0.002	0.017	0.925
Alcoholic drinks per w	rs16854020	4	A	G	0.018	0.003	4.82E-10	0.002	0.025	0.950
Alcoholic drinks per w	rs17542254	11	G	A	0.013	0.002	8.96E-10	0.004	0.018	0.845

Beta:beta coefficient;SE = standard error;SNP, Single-nucleotide polymorphism

Supplementary Table 4. Instrumental variables were selected at the significance threshold of 5×10^{-8} (cont.)

Exposure	SNP	Chromosome	Effect allele	Reference allele	Exposure			Outcome		
					Beta	SE	*P*	Beta	SE	*P*
Alcoholic drinks per w	rs2299409	7	A	G	-0.011	0.002	4.80E-08	-0.011	0.016	0.487
Alcoholic drinks per w	rs28680958	1	A	G	-0.014	0.002	9.78E-09	0.023	0.020	0.239
Alcoholic drinks per w	rs28712821	4	A	G	0.028	0.002	1.10E-46	-0.008	0.017	0.655
Alcoholic drinks per w	rs34121753	17	G	A	0.011	0.002	1.39E-08	0.027	0.017	0.115
Alcoholic drinks per w	rs4309187	11	C	A	0.015	0.002	1.37E-12	0.018	0.018	0.325
Alcoholic drinks per w	rs55872084	5	T	G	0.013	0.002	1.98E-08	-0.001	0.019	0.958
Alcoholic drinks per w	rs55932213	9	G	A	0.012	0.002	1.80E-08	0.008	0.021	0.707
Alcoholic drinks per w	rs6739804	2	C	T	-0.013	0.002	4.72E-10	0.015	0.017	0.384
Alcoholic drinks per w	rs676388	19	C	T	0.015	0.002	5.49E-15	-0.056	0.017	0.001
Alcoholic drinks per w	rs6969458	7	A	G	0.013	0.002	5.20E-11	0.005	0.019	0.796
Alcoholic drinks per w	rs71404478	2	T	C	-0.013	0.002	3.83E-10	0.003	0.019	0.882
Alcoholic drinks per w	rs76640332	17	A	G	-0.021	0.002	1.47E-18	-0.052	0.021	0.011
Alcoholic drinks per w	rs78234152	4	A	G	0.028	0.003	2.18E-19	0.021	0.027	0.437
Alcoholic drinks per w	rs962961	14	T	C	-0.012	0.002	2.78E-09	-0.010	0.017	0.584
Alcohol intake frequen	rs10188314	2	T	C	-0.020	0.003	7.20E-11	-0.011	0.016	0.507
Alcohol intake frequen	rs10792669	11	G	A	0.017	0.003	9.90E-09	0.005	0.016	0.765
Alcohol intake frequen	rs11223617	11	A	G	0.025	0.004	2.30E-11	-0.002	0.020	0.931
Alcohol intake frequen	rs11700855	21	G	A	-0.030	0.005	1.20E-08	-0.024	0.028	0.393
Alcohol intake frequen	rs11750777	5	A	G	-0.020	0.004	3.80E-08	0.027	0.021	0.189
Alcohol intake frequen	rs11940694	4	G	A	-0.044	0.003	1.00E-44	-0.008	0.017	0.651
Alcohol intake frequen	rs12153855	6	C	T	0.029	0.005	2.40E-09	-0.242	0.031	0.000
Alcohol intake frequen	rs12312693	12	C	T	-0.018	0.003	6.80E-09	-0.038	0.017	0.022
Alcohol intake frequen	rs13102973	4	C	T	-0.019	0.003	4.90E-10	0.004	0.017	0.794
Alcohol intake frequen	rs13178443	5	T	C	-0.019	0.003	3.80E-08	-0.016	0.018	0.379
Alcohol intake frequen	rs13390019	2	C	T	0.030	0.004	4.30E-11	0.000	0.069	0.998
Alcohol intake frequen	rs1515591	3	G	T	0.018	0.003	4.90E-09	-0.019	0.017	0.256
Alcohol intake frequen	rs1666658	11	C	T	0.018	0.003	6.70E-09	-0.008	0.017	0.646
Alcohol intake frequen	rs17662759	2	C	T	0.030	0.005	3.40E-08	0.016	0.060	0.787
Alcohol intake frequen	rs17690703	17	T	C	0.025	0.003	2.90E-13	-0.046	0.019	0.014
Alcohol intake frequen	rs186347	14	T	G	0.018	0.003	4.00E-09	0.028	0.017	0.104
Alcohol intake frequen	rs1893659	18	A	C	-0.029	0.003	7.60E-22	0.004	0.017	0.830
Alcohol intake frequen	rs1937522	13	G	A	0.017	0.003	2.50E-08	0.003	0.016	0.858
Alcohol intake frequen	rs2043677	18	T	C	0.026	0.004	1.60E-09	-0.018	0.023	0.439
Alcohol intake frequen	rs2244598	1	C	T	-0.018	0.003	3.80E-09	-0.053	0.019	0.006
Alcohol intake frequen	rs2535911	14	T	C	-0.019	0.003	2.70E-09	-0.027	0.017	0.114

Beta:beta coefficient;SE = standard error;SNP, Single-nucleotide polymorphism

Supplementary Table 4. Instrumental variables were selected at the significance threshold of 5×10^{-8} (cont.)

Exposure	SNP	Chromosome	Effect allele	Reference allele	Exposure			Outcome		
					Beta	SE	*P*	Beta	SE	*P*
Alcohol intake frequen	rs262240	3	T	C	-0.017	0.003	1.40E-08	-0.003	0.016	0.843
Alcohol intake frequen	rs2717063	2	A	C	-0.020	0.003	4.00E-11	0.019	0.017	0.252
Alcohol intake frequen	rs28622224	4	T	C	-0.019	0.003	3.20E-08	-0.009	0.018	0.614
Alcohol intake frequen	rs28787109	1	A	G	0.018	0.003	7.70E-09	0.000	0.018	0.987
Alcohol intake frequen	rs2924321	18	A	G	-0.020	0.003	1.60E-10	-0.018	0.017	0.274
Alcohol intake frequen	rs34440851	8	T	C	-0.023	0.004	4.60E-08	-0.020	0.023	0.367
Alcohol intake frequen	rs34473884	10	A	G	-0.020	0.004	6.20E-09	0.029	0.020	0.137
Alcohol intake frequen	rs34631026	16	T	C	-0.017	0.003	2.90E-08	-0.008	0.017	0.647
Alcohol intake frequen	rs4241258	2	T	C	0.025	0.004	1.30E-08	0.009	0.024	0.706
Alcohol intake frequen	rs4417025	1	A	G	-0.019	0.003	2.70E-09	-0.022	0.018	0.220
Alcohol intake frequen	rs4503294	1	T	C	0.018	0.003	3.40E-09	0.026	0.072	0.720
Alcohol intake frequen	rs461599	5	C	A	-0.019	0.003	2.70E-10	-0.035	0.016	0.031
Alcohol intake frequen	rs4726481	7	T	G	0.022	0.003	2.30E-12	-0.014	0.017	0.417
Alcohol intake frequen	rs4916723	5	C	A	0.024	0.003	1.10E-14	-0.014	0.017	0.408
Alcohol intake frequen	rs4968391	17	T	G	-0.019	0.003	2.30E-09	-0.061	0.017	0.000
Alcohol intake frequen	rs5022348	18	T	C	0.020	0.004	1.40E-08	0.026	0.017	0.120
Alcohol intake frequen	rs550942	11	T	C	0.022	0.004	2.00E-08	0.001	0.025	0.981
Alcohol intake frequen	rs56194430	5	T	C	0.023	0.004	3.10E-08	0.004	0.023	0.875
Alcohol intake frequen	rs6030200	20	A	G	-0.020	0.003	2.40E-09	-0.006	0.017	0.727
Alcohol intake frequen	rs62339673	4	A	C	0.018	0.003	6.60E-09	0.009	0.017	0.593
Alcohol intake frequen	rs62466318	7	T	C	-0.025	0.004	1.40E-11	0.020	0.022	0.355
Alcohol intake frequen	rs6727281	2	T	C	-0.024	0.004	5.50E-10	0.008	0.021	0.711
Alcohol intake frequen	rs6943160	7	C	T	0.021	0.004	3.10E-08	-0.008	0.021	0.700
Alcohol intake frequen	rs71651683	22	T	C	-0.070	0.013	3.60E-08	0.120	0.070	0.084
Alcohol intake frequen	rs72787062	16	A	G	-0.028	0.004	6.40E-12	-0.012	0.023	0.608
Alcohol intake frequen	rs728538	16	G	T	0.023	0.004	1.80E-08	0.029	0.023	0.205
Alcohol intake frequen	rs7298932	12	G	A	-0.024	0.004	3.80E-08	0.027	0.027	0.312
Alcohol intake frequen	rs7330939	13	T	C	-0.021	0.003	3.70E-10	-0.031	0.018	0.088
Alcohol intake frequen	rs7514579	1	C	A	0.020	0.004	4.60E-08	0.019	0.020	0.329
Alcohol intake frequen	rs7610856	3	A	C	-0.024	0.003	7.70E-15	-0.075	0.016	0.000
Alcohol intake frequen	rs838145	19	A	G	0.022	0.003	6.70E-13	0.049	0.016	0.003
Alcohol intake frequen	rs8614	17	A	C	0.025	0.004	2.70E-10	-0.024	0.021	0.257
Alcohol intake frequen	rs9349379	6	G	A	-0.019	0.003	3.50E-10	-0.014	0.017	0.429
Alcohol intake frequen	rs9403297	6	A	G	0.019	0.003	1.80E-09	0.019	0.017	0.246
Alcohol intake frequen	rs9906502	17	A	G	0.024	0.004	1.90E-09	0.028	0.024	0.245

Beta:beta coefficient;SE = standard error;SNP, Single-nucleotide polymorphism

Supplementary Table 4. Instrumental variables were selected at the significance threshold of 5×10^{-8} (cont.)

Exposure	SNP	Chromosome	Effect allele	Reference allele	Exposure			Outcome		
					Beta	SE	*P*	Beta	SE	*P*
Water intake	rs10954732	7	A	G	0.011	0.002	3.60E-08	0.013	0.019	0.469
Water intake	rs11125629	2	G	A	0.011	0.002	2.50E-09	-0.014	0.016	0.394
Water intake	rs11140831	9	G	A	-0.012	0.002	1.50E-11	0.013	0.017	0.421
Water intake	rs1963510	14	G	A	0.013	0.002	2.60E-13	0.004	0.016	0.811
Water intake	rs2229357	12	A	G	-0.012	0.002	7.90E-09	0.006	0.019	0.776
Water intake	rs2274156	6	T	C	-0.011	0.002	2.90E-08	-0.044	0.020	0.032
Water intake	rs2435200	17	A	G	0.011	0.002	1.10E-09	-0.052	0.017	0.002
Water intake	rs2656285	8	C	T	0.012	0.002	1.10E-09	-0.032	0.018	0.079
Water intake	rs34940743	14	G	A	-0.010	0.002	4.40E-08	0.013	0.019	0.475
Water intake	rs34967813	1	G	A	-0.012	0.002	7.10E-10	-0.029	0.022	0.198
Water intake	rs3808058	7	T	C	0.018	0.003	7.50E-11	0.007	0.025	0.784
Water intake	rs4239466	18	C	A	0.011	0.002	2.00E-08	-0.012	0.017	0.486
Water intake	rs56100328	20	G	A	-0.018	0.003	4.80E-08	-0.081	0.041	0.045
Water intake	rs67174962	5	A	G	-0.012	0.002	1.30E-08	0.029	0.020	0.136
Water intake	rs6835325	4	G	T	-0.012	0.002	2.00E-09	-0.007	0.018	0.697
Water intake	rs6844845	4	G	A	-0.022	0.004	3.30E-08	-0.009	0.037	0.815
Water intake	rs7124005	11	T	C	0.010	0.002	2.50E-08	-0.031	0.017	0.064
Water intake	rs7626335	3	C	A	0.011	0.002	2.50E-08	-0.064	0.017	0.000
Water intake	rs8054636	16	C	T	-0.010	0.002	2.40E-08	-0.034	0.017	0.046
Water intake	rs9414686	9	T	C	0.015	0.002	8.60E-10	0.017	0.023	0.464
Water intake	rs9830293	3	G	A	0.019	0.003	4.00E-08	-0.045	0.031	0.141
Water intake	rs9957088	18	T	C	-0.012	0.002	1.40E-08	0.000	0.020	0.984
Hot drink temperature	rs1001880	1	C	T	0.007	0.001	8.90E-09	0.001	0.017	0.954
Hot drink temperature	rs10744560	12	T	C	-0.007	0.001	3.90E-08	0.024	0.017	0.167
Hot drink temperature	rs10764990	10	A	G	0.009	0.001	5.80E-15	-0.017	0.017	0.312
Hot drink temperature	rs10822089	10	G	A	-0.007	0.001	8.90E-10	-0.006	0.016	0.696
Hot drink temperature	rs10829603	10	G	T	0.007	0.001	7.50E-10	0.026	0.016	0.112
Hot drink temperature	rs1132845	18	T	C	-0.007	0.001	8.20E-09	-0.005	0.017	0.789
Hot drink temperature	rs1144428	2	A	G	0.012	0.001	5.80E-17	0.059	0.020	0.004
Hot drink temperature	rs11710570	3	C	T	-0.008	0.001	1.20E-10	0.015	0.016	0.370
Hot drink temperature	rs12132579	1	T	C	0.007	0.001	1.20E-08	0.007	0.017	0.660
Hot drink temperature	rs12664031	6	A	C	-0.010	0.001	3.00E-14	-0.005	0.020	0.801
Hot drink temperature	rs1326609	6	A	G	-0.008	0.001	2.10E-10	0.016	0.017	0.333
Hot drink temperature	rs1447182	11	C	T	0.009	0.001	9.50E-11	0.004	0.020	0.855
Hot drink temperature	rs1568452	2	T	C	-0.012	0.001	5.90E-23	0.006	0.017	0.733

Beta:beta coefficient;SE = standard error;SNP, Single-nucleotide polymorphism

Supplementary Table 4. Instrumental variables were selected at the significance threshold of 5×10^{-8} (cont.)

Exposure	SNP	Chromosome	Effect allele	Reference allele	Exposure			Outcome		
					Beta	SE	*P*	Beta	SE	*P*
Hot drink temperature	rs1680349	18	A	G	-0.007	0.001	1.90E-08	-0.034	0.016	0.036
Hot drink temperature	rs17024335	2	C	T	-0.008	0.001	6.90E-09	0.016	0.019	0.401
Hot drink temperature	rs17461712	11	C	T	0.012	0.002	3.40E-14	-0.029	0.022	0.183
Hot drink temperature	rs1997468	2	T	C	0.011	0.001	9.40E-20	0.006	0.016	0.733
Hot drink temperature	rs2032512	22	C	A	-0.009	0.001	2.10E-13	-0.021	0.017	0.207
Hot drink temperature	rs210600	7	A	G	0.008	0.001	7.10E-09	0.008	0.018	0.647
Hot drink temperature	rs2113336	7	A	C	-0.007	0.001	1.40E-09	-0.014	0.016	0.389
Hot drink temperature	rs2255015	3	A	G	-0.007	0.001	4.70E-09	-0.005	0.016	0.744
Hot drink temperature	rs2702576	4	G	A	0.007	0.001	1.40E-09	0.005	0.017	0.757
Hot drink temperature	rs2825972	21	G	A	0.009	0.001	1.90E-11	0.010	0.019	0.604
Hot drink temperature	rs2952894	4	C	T	0.007	0.001	1.00E-08	0.016	0.017	0.364
Hot drink temperature	rs34292254	2	T	G	0.007	0.001	4.70E-10	0.023	0.016	0.159
Hot drink temperature	rs34935263	16	G	A	-0.007	0.001	1.00E-08	0.017	0.017	0.315
Hot drink temperature	rs35968894	7	G	A	-0.007	0.001	3.80E-09	-0.006	0.017	0.713
Hot drink temperature	rs58391518	7	C	T	-0.007	0.001	1.70E-08	-0.002	0.018	0.914
Hot drink temperature	rs61909866	11	T	C	-0.007	0.001	8.90E-09	-0.003	0.018	0.870
Hot drink temperature	rs62134736	2	A	G	0.008	0.001	2.00E-08	-0.049	0.019	0.009
Hot drink temperature	rs62403110	6	A	G	-0.007	0.001	8.40E-09	-0.033	0.018	0.072
Hot drink temperature	rs6736362	2	T	C	-0.007	0.001	2.70E-08	-0.004	0.016	0.811
Hot drink temperature	rs6892119	5	G	A	-0.008	0.001	3.90E-11	0.005	0.017	0.755
Hot drink temperature	rs74384251	2	T	C	0.010	0.002	3.50E-08	0.007	0.043	0.870
Hot drink temperature	rs826848	12	T	C	-0.015	0.002	6.10E-10	-0.031	0.034	0.358
Hot drink temperature	rs888405	3	G	A	0.009	0.001	3.80E-10	0.000	0.022	0.989
Hot drink temperature	rs9570736	13	G	A	-0.007	0.001	3.30E-08	0.000	0.017	0.981
Cereal intake	rs10057775	5	C	T	0.020	0.003	4.50E-12	-0.016	0.027	0.553
Cereal intake	rs10857964	1	C	T	0.014	0.002	1.70E-10	-0.024	0.020	0.227
Cereal intake	rs11038810	11	G	A	0.011	0.002	2.30E-09	-0.002	0.018	0.908
Cereal intake	rs11097340	4	T	C	-0.012	0.002	2.10E-10	-0.018	0.016	0.283
Cereal intake	rs112780312	1	A	G	-0.012	0.002	1.80E-09	0.010	0.018	0.586
Cereal intake	rs11940694	4	G	A	-0.013	0.002	5.00E-12	-0.008	0.017	0.651
Cereal intake	rs184643	2	A	G	-0.012	0.002	1.60E-11	-0.013	0.017	0.468
Cereal intake	rs1853931	6	A	G	-0.011	0.002	3.80E-10	0.012	0.017	0.507
Cereal intake	rs2817377	6	A	G	0.010	0.002	3.10E-08	-0.015	0.016	0.376
Cereal intake	rs3115230	4	A	C	-0.011	0.002	3.00E-08	-0.040	0.019	0.033
Cereal intake	rs4739095	8	A	G	-0.013	0.002	9.90E-10	-0.016	0.019	0.413

Beta:beta coefficient;SE = standard error;SNP, Single-nucleotide polymorphism

Supplementary Table 4. Instrumental variables were selected at the significance threshold of 5×10^{-8} (cont.)

Exposure	SNP	Chromosome	Effect allele	Reference allele	Exposure			Outcome		
					Beta	SE	*P*	Beta	SE	*P*
Cereal intake	rs4797242	18	A	C	0.011	0.002	4.50E-09	-0.003	0.018	0.878
Cereal intake	rs6510177	19	C	T	-0.013	0.002	1.20E-08	0.025	0.026	0.347
Cereal intake	rs68136852	17	A	C	-0.014	0.002	1.20E-08	0.001	0.024	0.964
Cereal intake	rs79642906	5	A	G	-0.018	0.003	1.90E-08	0.046	0.030	0.122
Cereal intake	rs9987289	8	G	A	0.018	0.003	7.80E-09	0.022	0.029	0.443
Bread intake	rs10761661	10	T	C	-0.011	0.002	1.00E-08	-0.038	0.017	0.021
Bread intake	rs11183201	12	C	T	-0.017	0.002	5.30E-17	0.052	0.016	0.002
Bread intake	rs11628639	14	C	T	-0.013	0.002	6.20E-09	0.018	0.019	0.336
Bread intake	rs13023099	2	A	C	-0.011	0.002	1.40E-08	0.056	0.017	0.001
Bread intake	rs17083079	5	A	G	0.030	0.005	1.20E-10	0.137	0.226	0.544
Bread intake	rs1940033	11	T	C	-0.011	0.002	4.70E-08	0.011	0.016	0.503
Bread intake	rs2068650	5	C	A	-0.014	0.002	3.10E-12	0.001	0.016	0.950
Bread intake	rs2517678	6	T	C	0.013	0.002	2.20E-10	0.106	0.017	0.000
Bread intake	rs28406095	15	A	G	-0.011	0.002	4.40E-08	0.011	0.016	0.502
Bread intake	rs55745436	10	T	C	0.013	0.002	1.00E-08	-0.026	0.019	0.174
Bread intake	rs62091167	18	C	A	-0.014	0.002	1.20E-08	0.017	0.020	0.404
Bread intake	rs75287965	2	A	G	-0.025	0.004	1.50E-09	0.047	0.033	0.157
Bread intake	rs7802468	7	T	C	-0.023	0.002	6.90E-30	0.027	0.017	0.113
Bread intake	rs79436018	7	C	T	-0.018	0.003	1.60E-08	0.003	0.025	0.904
Bread intake	rs9323989	14	C	T	-0.012	0.002	1.60E-08	-0.007	0.017	0.662
Bread intake	rs9662365	1	T	C	0.012	0.002	9.60E-10	0.039	0.017	0.018
Dried fruit intake	rs10129747	14	G	A	0.009	0.002	2.60E-08	-0.011	0.017	0.528
Dried fruit intake	rs10896126	11	G	A	-0.015	0.002	1.60E-16	-0.022	0.018	0.233
Dried fruit intake	rs11152349	18	A	G	0.010	0.002	4.90E-08	-0.017	0.018	0.326
Dried fruit intake	rs11632215	15	C	A	-0.014	0.003	4.40E-08	-0.011	0.032	0.725
Dried fruit intake	rs12137234	1	T	C	0.010	0.002	2.80E-08	0.003	0.021	0.899
Dried fruit intake	rs1582322	16	G	A	0.010	0.002	6.80E-09	0.027	0.017	0.099
Dried fruit intake	rs1622515	11	G	A	0.010	0.002	2.90E-09	-0.011	0.016	0.500
Dried fruit intake	rs1648404	4	T	C	0.009	0.002	1.80E-08	-0.001	0.015	0.954
Dried fruit intake	rs2533273	7	A	C	-0.010	0.002	3.90E-09	0.003	0.019	0.868
Dried fruit intake	rs261809	1	G	A	-0.010	0.002	9.80E-09	0.024	0.016	0.139
Dried fruit intake	rs34162196	14	T	C	-0.022	0.003	7.10E-16	0.011	0.028	0.706
Dried fruit intake	rs4140799	14	A	G	0.009	0.002	1.80E-08	0.006	0.016	0.732
Dried fruit intake	rs57499472	3	C	T	0.010	0.002	8.10E-09	-0.017	0.017	0.298
Dried fruit intake	rs62084586	17	C	T	0.013	0.002	3.20E-09	0.026	0.022	0.239

Beta:beta coefficient;SE = standard error;SNP, Single-nucleotide polymorphism

Supplementary Table 4. Instrumental variables were selected at the significance threshold of 5×10^{-8} (cont.)

Exposure	SNP	Chromosome	Effect allele	Reference allele	Exposure			Outcome		
					Beta	SE	*P*	Beta	SE	*P*
Dried fruit intake	rs72720396	1	G	A	0.011	0.002	8.70E-09	-0.024	0.021	0.265
Dried fruit intake	rs7582086	2	T	G	-0.010	0.002	8.80E-09	0.002	0.016	0.881
Dried fruit intake	rs7599488	2	T	C	-0.010	0.002	6.70E-10	0.009	0.017	0.600
Dried fruit intake	rs7808471	7	C	T	-0.012	0.002	1.10E-10	0.023	0.017	0.187
Dried fruit intake	rs7829800	8	G	A	-0.010	0.002	5.10E-09	-0.004	0.018	0.827
Dried fruit intake	rs8081370	17	T	C	-0.017	0.003	1.40E-08	-0.011	0.035	0.765
Dried fruit intake	rs893856	10	A	G	-0.013	0.002	1.30E-08	0.019	0.022	0.394
Fresh fruit intake	rs10064431	5	C	T	-0.008	0.001	6.00E-10	-0.024	0.018	0.188
Fresh fruit intake	rs10249294	7	A	G	0.020	0.001	4.10E-54	0.026	0.017	0.124
Fresh fruit intake	rs1051547	16	C	T	-0.008	0.001	1.10E-09	-0.032	0.017	0.061
Fresh fruit intake	rs10840126	11	G	A	-0.008	0.001	1.90E-09	-0.004	0.019	0.849
Fresh fruit intake	rs11032362	11	A	G	0.012	0.002	5.30E-09	-0.035	0.028	0.216
Fresh fruit intake	rs11085749	19	A	G	-0.008	0.001	7.10E-10	-0.059	0.017	0.000
Fresh fruit intake	rs11896330	2	A	G	-0.008	0.001	3.40E-11	-0.009	0.018	0.615
Fresh fruit intake	rs12044599	1	G	A	0.009	0.002	3.70E-10	-0.037	0.020	0.065
Fresh fruit intake	rs12641371	4	T	C	0.008	0.001	1.40E-10	-0.021	0.016	0.196
Fresh fruit intake	rs12885598	14	A	G	0.008	0.001	1.70E-09	0.007	0.017	0.682
Fresh fruit intake	rs13072255	3	C	A	0.009	0.001	2.10E-13	0.005	0.016	0.757
Fresh fruit intake	rs149449	5	A	G	0.007	0.001	2.40E-09	0.006	0.016	0.709
Fresh fruit intake	rs17049185	2	T	G	0.008	0.001	7.30E-09	-0.020	0.019	0.294
Fresh fruit intake	rs1866823	8	A	G	0.007	0.001	2.10E-09	-0.005	0.017	0.784
Fresh fruit intake	rs2093654	9	G	A	0.007	0.001	1.50E-08	-0.006	0.017	0.729
Fresh fruit intake	rs2143081	6	A	G	0.008	0.001	1.30E-11	-0.016	0.016	0.340
Fresh fruit intake	rs2790688	1	T	C	0.011	0.002	1.50E-11	0.060	0.023	0.010
Fresh fruit intake	rs329274	7	G	A	0.007	0.001	2.80E-08	-0.029	0.017	0.092
Fresh fruit intake	rs34162196	14	T	C	-0.018	0.002	4.00E-19	0.011	0.028	0.706
Fresh fruit intake	rs4302893	9	A	G	0.007	0.001	1.30E-08	-0.016	0.017	0.337
Fresh fruit intake	rs4953150	2	T	C	-0.008	0.001	6.60E-11	-0.004	0.017	0.818
Fresh fruit intake	rs62051554	16	A	G	0.012	0.002	4.60E-09	-0.058	0.028	0.037
Fresh fruit intake	rs72974263	2	T	C	0.007	0.001	1.80E-08	0.021	0.017	0.230
Fresh fruit intake	rs739320	19	C	T	-0.009	0.001	1.90E-12	0.070	0.021	0.001
Fresh fruit intake	rs7554485	1	C	T	-0.008	0.001	1.70E-10	0.026	0.017	0.122
Fresh fruit intake	rs7869969	9	G	A	0.008	0.001	5.70E-09	-0.020	0.017	0.253
Fresh fruit intake	rs7982441	13	C	T	-0.008	0.001	9.80E-10	0.027	0.018	0.143
Fresh fruit intake	rs8095324	18	G	A	-0.007	0.001	2.70E-08	0.008	0.017	0.621

Beta:beta coefficient;SE = standard error;SNP, Single-nucleotide polymorphism

Supplementary Table 4. Instrumental variables were selected at the significance threshold of 5×10^{-8} (cont.)

Exposure	SNP	Chromosome	Effect allele	Reference allele	Exposure			Outcome		
					Beta	SE	*P*	Beta	SE	*P*
Fresh fruit intake	rs9517948	13	T	C	0.007	0.001	1.70E-08	-0.003	0.017	0.833
Fresh fruit intake	rs9919429	10	G	A	-0.007	0.001	3.80E-08	0.007	0.016	0.661
Salad/raw vegetable int	rs10819082	9	A	G	-0.009	0.002	1.40E-09	-0.041	0.017	0.019
Salad/raw vegetable int	rs12203592	6	T	C	-0.010	0.002	1.30E-09	-0.004	0.066	0.952
Salad/raw vegetable int	rs12908495	15	A	C	-0.009	0.002	2.00E-08	0.020	0.019	0.298
Salad/raw vegetable int	rs1890012	13	G	T	-0.010	0.002	8.10E-09	0.011	0.021	0.603
Salad/raw vegetable int	rs4291983	18	A	C	-0.008	0.001	3.70E-09	0.007	0.016	0.655
Salad/raw vegetable int	rs62461186	7	C	A	-0.011	0.002	1.00E-09	0.008	0.021	0.723
Salad/raw vegetable int	rs8130508	21	A	G	0.009	0.002	3.00E-08	-0.005	0.018	0.784
Cooked vegetable inta	rs10156602	9	G	A	0.011	0.002	1.80E-11	-0.017	0.017	0.328
Cooked vegetable inta	rs10161952	13	C	A	-0.010	0.002	1.30E-08	0.006	0.018	0.730
Cooked vegetable inta	rs1816263	5	C	T	0.010	0.002	3.70E-08	0.024	0.018	0.189
Cooked vegetable inta	rs2052063	10	T	C	-0.009	0.002	1.60E-09	-0.011	0.016	0.491
Cooked vegetable inta	rs2102738	2	C	A	-0.012	0.002	5.30E-09	0.001	0.023	0.954
Cooked vegetable inta	rs2252508	1	G	A	0.009	0.002	5.70E-09	0.025	0.016	0.128
Cooked vegetable inta	rs2844672	6	A	G	-0.010	0.002	2.10E-09	-0.136	0.017	0.000
Cooked vegetable inta	rs28450747	4	A	G	-0.010	0.002	4.30E-08	0.009	0.019	0.646
Cooked vegetable inta	rs34155012	22	T	C	0.011	0.002	3.90E-08	0.009	0.023	0.703
Salt intake	rs1008078	1	T	C	0.012	0.002	1.10E-10	0.010	0.019	0.600
Salt intake	rs10128297	10	T	C	-0.011	0.002	4.50E-09	-0.020	0.017	0.227
Salt intake	rs10140751	14	T	G	-0.011	0.002	3.60E-08	0.008	0.019	0.684
Salt intake	rs1045411	13	T	C	-0.015	0.002	4.00E-14	-0.003	0.020	0.897
Salt intake	rs10752999	1	C	A	0.013	0.002	3.50E-11	0.004	0.018	0.820
Salt intake	rs10883796	10	A	G	0.011	0.002	3.30E-09	-0.007	0.018	0.678
Salt intake	rs10971930	9	C	T	0.016	0.003	4.50E-09	0.018	0.024	0.457
Salt intake	rs11022746	11	G	T	0.012	0.002	6.30E-10	-0.016	0.029	0.579
Salt intake	rs11075194	16	G	A	-0.010	0.002	4.00E-08	0.018	0.017	0.288
Salt intake	rs11082431	18	T	C	0.011	0.002	3.80E-08	0.020	0.018	0.261
Salt intake	rs11126666	2	A	G	-0.012	0.002	2.90E-09	0.012	0.018	0.507
Salt intake	rs11210985	1	A	G	-0.016	0.002	7.20E-18	-0.008	0.017	0.623
Salt intake	rs11761254	7	T	C	-0.018	0.003	3.80E-12	0.038	0.026	0.142
Salt intake	rs12094804	1	G	A	0.021	0.004	2.00E-08	0.008	0.046	0.857
Salt intake	rs12563932	1	C	A	-0.028	0.005	4.50E-08	-0.002	0.046	0.971
Salt intake	rs12658060	5	C	T	-0.027	0.002	2.50E-38	0.010	0.019	0.602
Salt intake	rs12789951	11	T	C	-0.012	0.002	7.00E-11	-0.067	0.017	0.000

Beta:beta coefficient;SE = standard error;SNP, Single-nucleotide polymorphism

Supplementary Table 4. Instrumental variables were selected at the significance threshold of 5×10^{-8} (cont.)

Exposure	SNP	Chromosome	Effect allele	Reference allele	Exposure			Outcome		
					Beta	SE	*P*	Beta	SE	*P*
Salt intake	rs13131880	4	C	T	-0.013	0.002	3.00E-09	0.035	0.020	0.073
Salt intake	rs1726866	7	A	G	0.027	0.002	7.70E-51	0.014	0.017	0.413
Salt intake	rs1728779	16	G	A	0.010	0.002	3.50E-08	0.053	0.023	0.021
Salt intake	rs17805497	2	C	T	0.012	0.002	1.50E-11	-0.003	0.017	0.864
Salt intake	rs1895951	12	C	T	-0.012	0.002	4.80E-08	-0.016	0.021	0.448
Salt intake	rs2263636	2	C	A	0.011	0.002	1.00E-08	-0.013	0.018	0.474
Salt intake	rs2339234	5	A	G	-0.018	0.002	1.60E-20	0.010	0.018	0.559
Salt intake	rs2457427	8	C	T	-0.017	0.003	1.10E-10	-0.009	0.024	0.710
Salt intake	rs2506738	6	G	A	-0.015	0.002	5.00E-17	-0.007	0.017	0.698
Salt intake	rs264932	2	G	A	-0.010	0.002	7.30E-09	-0.001	0.018	0.978
Salt intake	rs2693687	14	T	C	0.012	0.002	1.70E-10	0.003	0.017	0.857
Salt intake	rs2736748	3	G	A	0.028	0.002	1.80E-38	-0.017	0.020	0.404
Salt intake	rs2835623	21	T	C	0.023	0.004	4.40E-08	-0.014	0.038	0.716
Salt intake	rs28366169	6	A	G	-0.021	0.003	2.60E-10	-0.203	0.036	0.000
Salt intake	rs2899345	22	C	T	0.010	0.002	2.50E-08	-0.038	0.017	0.020
Salt intake	rs324018	12	G	T	0.010	0.002	3.30E-08	-0.008	0.017	0.641
Salt intake	rs33137	5	T	C	-0.012	0.002	9.40E-12	0.028	0.017	0.089
Salt intake	rs34906832	4	G	A	0.015	0.003	2.40E-09	0.041	0.025	0.099
Salt intake	rs35099536	6	C	A	0.026	0.003	5.80E-16	0.007	0.030	0.809
Salt intake	rs35271178	11	T	C	0.010	0.002	1.10E-08	0.012	0.017	0.484
Salt intake	rs3890316	4	A	G	-0.011	0.002	2.80E-08	0.032	0.020	0.112
Salt intake	rs400750	3	G	T	0.017	0.002	3.30E-20	0.024	0.017	0.159
Salt intake	rs4235642	5	G	A	0.012	0.002	1.30E-11	0.040	0.018	0.029
Salt intake	rs429358	19	C	T	-0.015	0.002	2.90E-10	-0.074	0.025	0.003
Salt intake	rs4595499	10	T	C	-0.017	0.002	1.20E-21	-0.028	0.017	0.098
Salt intake	rs4739105	8	C	T	0.015	0.002	1.30E-12	-0.022	0.021	0.301
Salt intake	rs4799949	18	T	C	-0.011	0.002	4.50E-09	-0.003	0.017	0.854
Salt intake	rs4860797	4	A	G	0.012	0.002	1.10E-10	0.000	0.020	0.996
Salt intake	rs4912891	5	C	T	0.011	0.002	3.00E-08	-0.029	0.018	0.097
Salt intake	rs491907	15	G	A	0.011	0.002	4.60E-10	0.017	0.016	0.292
Salt intake	rs4948275	10	T	C	0.013	0.002	7.40E-13	-0.006	0.019	0.733
Salt intake	rs4981196	14	C	A	-0.011	0.002	3.30E-10	-0.022	0.017	0.194
Salt intake	rs526210	4	A	G	0.010	0.002	2.80E-08	0.009	0.017	0.578
Salt intake	rs55897719	2	A	C	0.014	0.002	1.10E-12	0.005	0.018	0.768
Salt intake	rs586716	9	A	G	0.014	0.002	1.10E-15	0.008	0.017	0.647

Beta:beta coefficient;SE = standard error;SNP, Single-nucleotide polymorphism

Supplementary Table 4. Instrumental variables were selected at the significance threshold of 5×10^{-8} (cont.)

Exposure	SNP	Chromosome	Effect allele	Reference allele	Exposure			Outcome		
					Beta	SE	*P*	Beta	SE	*P*
Salt intake	rs62098445	18	A	C	-0.016	0.002	1.00E-16	-0.016	0.019	0.393
Salt intake	rs667128	12	T	C	0.015	0.003	6.00E-09	0.003	0.026	0.920
Salt intake	rs6695915	1	G	A	-0.017	0.003	2.90E-08	-0.020	0.032	0.528
Salt intake	rs6776248	3	C	T	0.011	0.002	1.40E-08	-0.008	0.019	0.665
Salt intake	rs6804929	3	A	G	0.017	0.003	7.40E-09	-0.016	0.027	0.552
Salt intake	rs6887291	5	G	T	0.013	0.002	5.10E-12	-0.001	0.017	0.958
Salt intake	rs6987313	8	C	T	0.010	0.002	2.00E-08	0.006	0.016	0.723
Salt intake	rs7021360	9	A	C	-0.010	0.002	2.30E-08	-0.004	0.017	0.789
Salt intake	rs7110845	11	G	A	-0.012	0.002	1.10E-10	0.012	0.017	0.484
Salt intake	rs72807804	16	T	C	0.012	0.002	1.70E-08	-0.004	0.021	0.835
Salt intake	rs73040343	3	G	A	-0.010	0.002	1.20E-08	-0.016	0.020	0.429
Salt intake	rs7465705	9	A	G	-0.012	0.002	6.80E-11	-0.017	0.017	0.307
Salt intake	rs7591518	2	C	T	-0.021	0.002	5.10E-27	0.000	0.018	0.987
Salt intake	rs7670308	4	A	G	-0.012	0.002	1.00E-10	0.003	0.017	0.850
Salt intake	rs7673170	4	A	G	-0.013	0.002	2.70E-12	-0.013	0.017	0.452
Salt intake	rs7982263	13	C	T	0.011	0.002	2.90E-09	0.004	0.017	0.821
Salt intake	rs8022455	14	C	T	-0.011	0.002	3.40E-10	-0.030	0.016	0.061
Salt intake	rs8040685	15	T	C	-0.015	0.003	2.30E-08	0.013	0.026	0.605
Salt intake	rs8097544	18	G	A	0.014	0.003	2.40E-08	-0.005	0.023	0.838
Salt intake	rs9278020	6	A	G	0.023	0.003	4.80E-16	-0.197	0.030	0.000
Salt intake	rs9317406	13	T	C	-0.011	0.002	4.40E-09	0.010	0.018	0.586
Salt intake	rs9569747	13	G	T	-0.013	0.002	8.60E-11	0.003	0.018	0.889
Salt intake	rs961044	14	T	C	-0.014	0.003	3.00E-08	-0.056	0.023	0.017
Salt intake	rs9667150	11	A	G	0.013	0.002	1.50E-12	-0.026	0.017	0.118
Salt intake	rs9843358	3	T	C	0.019	0.002	6.20E-16	0.006	0.022	0.789
Salt intake	rs99780	11	T	C	0.011	0.002	3.60E-09	-0.009	0.017	0.589
Cheese intake	rs1073242	13	A	G	0.016	0.002	6.70E-12	0.026	0.017	0.126
Cheese intake	rs113367286	7	T	C	0.015	0.002	1.30E-09	-0.049	0.021	0.022
Cheese intake	rs11620149	13	C	T	-0.018	0.003	3.60E-08	-0.013	0.032	0.686
Cheese intake	rs12296440	12	A	G	0.019	0.003	2.80E-10	0.005	0.021	0.820
Cheese intake	rs12447542	16	A	G	0.020	0.003	6.80E-09	-0.017	0.028	0.532
Cheese intake	rs12475594	2	G	A	0.016	0.003	4.40E-08	-0.022	0.021	0.296
Cheese intake	rs12672200	7	A	G	-0.014	0.002	9.00E-09	-0.020	0.020	0.306
Cheese intake	rs1291145	20	C	T	-0.020	0.002	4.40E-17	0.007	0.017	0.701
Cheese intake	rs1434511	18	T	C	0.013	0.002	9.50E-09	-0.009	0.016	0.584

Beta:beta coefficient;SE = standard error;SNP, Single-nucleotide polymorphism

Supplementary Table 4. Instrumental variables were selected at the significance threshold of 5×10^{-8} (cont.)

Exposure	SNP	Chromosome	Effect allele	Reference allele	Exposure			Outcome		
					Beta	SE	*P*	Beta	SE	*P*
Cheese intake	rs1806771	10	G	T	-0.022	0.004	4.10E-08	0.006	0.030	0.834
Cheese intake	rs1931805	6	C	T	0.013	0.002	1.60E-08	-0.009	0.016	0.567
Cheese intake	rs2802530	1	A	G	0.019	0.003	4.20E-08	0.028	0.025	0.267
Cheese intake	rs34198643	7	T	C	-0.017	0.003	4.50E-10	-0.004	0.020	0.855
Cheese intake	rs35270670	15	G	A	0.016	0.003	1.50E-09	0.017	0.020	0.386
Cheese intake	rs3911016	9	G	T	0.021	0.003	5.30E-10	-0.012	0.025	0.629
Cheese intake	rs4296548	3	G	T	0.013	0.002	1.20E-08	0.002	0.017	0.923
Cheese intake	rs4503172	9	T	C	0.013	0.002	1.60E-08	0.030	0.017	0.074
Cheese intake	rs4692708	4	C	A	0.015	0.003	1.30E-08	0.017	0.019	0.378
Cheese intake	rs4860341	4	C	T	0.024	0.004	2.20E-08	0.084	0.034	0.012
Cheese intake	rs524468	12	G	A	-0.014	0.003	2.40E-08	-0.013	0.019	0.508
Cheese intake	rs531358	1	T	C	0.013	0.002	1.80E-08	-0.011	0.017	0.528
Cheese intake	rs61953351	12	T	G	0.015	0.003	1.50E-08	-0.014	0.019	0.466
Cheese intake	rs62236533	22	A	G	0.025	0.004	1.10E-11	-0.032	0.060	0.597
Cheese intake	rs6685323	1	T	C	-0.013	0.002	4.80E-08	-0.043	0.018	0.014
Cheese intake	rs67238148	11	T	G	0.017	0.003	1.10E-09	-0.039	0.020	0.055
Cheese intake	rs6774906	3	C	A	0.032	0.006	2.50E-08	-0.088	0.056	0.116
Cheese intake	rs6873324	5	C	A	-0.012	0.002	3.90E-08	0.002	0.016	0.893
Cheese intake	rs71386942	16	A	C	0.014	0.003	9.90E-09	-0.012	0.018	0.532
Cheese intake	rs7298331	12	C	A	-0.013	0.002	1.10E-08	-0.036	0.019	0.058
Cheese intake	rs73096946	4	C	T	-0.021	0.003	1.90E-11	0.004	0.023	0.855
Cheese intake	rs73335955	10	C	T	0.028	0.005	2.40E-08	-0.062	0.035	0.079
Cheese intake	rs7386207	8	T	C	-0.012	0.002	3.60E-08	0.009	0.017	0.570
Cheese intake	rs9504123	6	C	A	0.014	0.003	1.50E-08	0.011	0.018	0.557
Cheese intake	rs975303	6	G	A	0.021	0.003	2.50E-13	-0.011	0.021	0.604

Beta:beta coefficient;SE = standard error;SNP, Single-nucleotide polymorphism

Supplementary Table 5. The 21 causal relationships (SNPs reaching p<5×10-8)

Exposure	No.SNP	Inverse variance weighted method		Weighted median method		MR-Egger method	
		OR(95% CI)	*p*-value	OR(95% CI)	*p*-value	OR(95% CI)	*p*-value
Processed meat intake	12	0.801(0.347-1.849)	0.603	0.725(0.262-2.008)	0.536	0.903(0.002-435.734)	0.975
Pork intake	7	3.415(0.617-18.890)	0.159	5.468(0.631-47.357)	0.123	0.120(1.70E-6-84900.825)	0.725
Lamb/mutton intake	19	0.809(0.325-2.009)	0.647	0.778(0.224-2.706)	0.693	1.925(0.013-294.433)	0.802
Poultry intake	4	1.353(0.158-11.595)	0.783	0.614(0.082-4.590)	0.635	3.16E-5(5.51E-34-1.82E+24)	0.788
Beef intake	4	0.264(0.060-1.163)	0.078	0.326(0.060-1.775)	0.195	0.135(1.35E-6-13524.000)	0.766
Non-oily fish intake	7	0.798(0.215-2.956)	0.735	1.628(0.304-8.727)	0.570	2.297(0.001-3843.547)	0.835
Oily fish intake	38	0.603(0.309-1.177)	0.138	0.526(0.273-1.015)	0.056	0.356(0.019-6.620)	0.493
Tea intake	25	0.759(0.430-1.339)	0.340	0.475(0.244-0.924)	0.028	0.454(0.041-5.070)	0.528
Coffee intake	20	0.503(0.247-1.024)	0.058	0.398(0.145-1.087)	0.072	0.121(0.009-1.643)	0.130
Alcoholic drinks per week	18	1.046(0.517-2.115)	0.901	1.069(0.459-2.489)	0.877	1.174(0.120-11.496)	0.892
Alcohol intake frequency	56	1.314(0.889-1.943)	0.171	1.199(0.812-1.769)	0.362	0.228(0.043-1.203)	0.087

Exposure	Simple mode		Weighted mode	
	OR(95% CI)	*p*-value	OR(95% CI)	*p*-value
Processed meat intake	0.641(0.133-3.089)	0.591	0.606(0.134-2.745)	0.529
Pork intake	10.857(0.321-367.67	0.233	11.179(0.356-350.8	0.219
Lamb/mutton intake	0.551(0.045-6.706)	0.646	0.299(0.025-3.584)	0.353
Poultry intake	0.534(0.040-7.178)	0.668	0.534(0.049-5.784)	0.641
Beef intake	0.644(0.055-7.596)	0.750	0.480(0.043-5.415)	0.595
Non-oily fish intake	2.568(0.163-40.358)	0.527	2.653(0.188-37.523)	0.498
Oily fish intake	0.372(0.114-1.210)	0.109	0.394(0.121-1.285)	0.131
Tea intake	0.474(0.146-1.540)	0.227	0.455(0.170-1.217)	0.130
Coffee intake	0.244(0.037-1.613)	0.160	0.338(0.075-1.530)	0.175
Alcoholic drinks per week	1.337(0.310-5.762)	0.702	0.950(0.309-2.925)	0.930
Alcohol intake frequency	1.428(0.632-3.227)	0.396	1.210(0.672-2.179)	0.527

OR, Odds ratio; SNPs, Single-nucleotide polymorphisms; CI, Confidence interval

Supplementary Table 5. The 21 causal relationships (SNPs reaching p<5×10-8) (cont.)

Exposure	No.SNP	Inverse variance weighted method		Weighted median method		MR-Egger method	
		OR(95% CI)	*p*-value	OR(95% CI)	*p*-value	OR(95% CI)	*p*-value
Water intake	22	0.560(0.203-1.543)	0.262	0.763(0.264-2.205)	0.589	0.763(0.029-2653.251)	0.467
Hot drink temperature	37	1.578(0.760-3.277)	0.221	1.657(0.607-4.524)	0.324	1.904(0.043-85.174)	0.742
Cereal intake	16	0.955(0.449-2.029)	0.904	0.815(0.290-2.291)	0.699	0.147(0.002-10.820)	0.396
Bread intake	16	0.713(0.166-3.054)	0.648	0.330(0.125-0.873)	0.025	0.040(1.0E-4-13.384)	0.296
Dried fruit intake	21	0.740(0.362-1.513)	0.410	0.689(0.258-1.844)	0.459	3.323(0.112-98.804)	0.496
Fresh fruit intake	30	0.789(0.273-2.279)	0.662	0.854(0.272-2.684)	0.787	3.132(0.090-108.791)	0.533
Salad/raw vegetable intake	7	0.948(0.171-5.271)	0.951	0.470(0.067-3.327)	0.450	0.051(5.75E-10-4.55E+6)	0.763
Cooked vegetable intake	9	7.917(0.312-201.014)	0.210	1.398(0.271-7.203)	0.688	6.557E-09(1.590E-25-2.704E+8)	0.367
Salt	65	1.057(0.735-1.520)	0.766	1.130(0.693-1.842)	0.625	0.910(0.262-3.167)	0.883
Cheese intake	34	1.038(0.627-1.717)	0.886	0.761(0.401-1.443)	0.402	0.209(0.019-2.248)	0.206

Exposure	Simple mode		Weighted mode	
	OR(95% CI)	*p*-value	OR(95% CI)	*p*-value
Water intake	0.827(0.128-5.317)	0.843	0.882(0.182-4.283)	0.878
Hot drink temperature	1.832(0.243-13.811)	0.560	1.671(0.258-10.806)	0.593
Cereal intake	0.524(0.075-3.678)	0.526	0.583(0.095-3.572)	0.568
Bread intake	0.305(0.084-1.117)	0.093	0.316(0.107-0.929)	0.054
Dried fruit intake	0.795(0.113-5.591)	0.820	0.551(0.084-3.636)	0.543
Fresh fruit intake	0.405(0.040-4.122)	0.451	1.770(0.335-9.341)	0.506
Salad/raw vegetable intake	0.460(0.035-6.108)	0.577	0.460(0.036-5.934)	0.573
Cooked vegetable intake	1.129(0.178-10.818)	0.919	0.933(0.098-8.873)	0.953
Salt	1.170(0.443-3.086)	0.752	1.142(0.513-2.545)	0.746
Cheese intake	0.609(0.168-2.215)	0.457	0.662(0.220-1.993)	0.468

OR, Odds ratio; SNPs, Single-nucleotide polymorphisms; CI, Confidence interval

Supplementary Table 6. Heterogeneity and pleiotropy estimates for the associations between dietary habits and MS

Exposure	Cochrane s Q test		Pleiotropy		
	Q	*p*-value	MR-Egger intercept	SE	P-value
Processed meat intake	13.510	0.261	-0.002	0.044	0.970
Pork intake	8.630	0.195	0.033	0.055	0.577
Lamb/mutton intake	20.900	0.285	-0.009	0.026	0.735
Poultry intake	5.470	0.140	0.114	0.361	0.792
Beef intake	1.910	0.591	0.008	0.066	0.919
Non-oily fish intake	4.458	0.615	-0.012	0.042	0.788
Oily fish intake	95.507	0.000	0.008	0.021	0.718
Tea intake	37.189	0.042	0.008	0.020	0.672
Coffee intake	15.854	0.667	0.018	0.016	0.280
Alcoholic drinks per week	26.805	0.061	-0.002	0.018	0.918
Alcohol intake frequency	169.927	0.000	0.040	0.019	0.039
Water intake	49.416	0.000	-0.034	0.036	0.351
Hot drink temperature	39.738	0.307	-0.002	0.016	0.922
Cereal intake	14.330	0.501	0.024	0.028	0.401
Bread intake	80.777	0.000	0.043	0.043	0.333
Dried fruit intake	14.501	0.804	-0.017	0.019	0.386
Fresh fruit intake	62.710	0.000	-0.013	0.062	0.431
Salad/raw vegetable intake	7.252	0.298	0.028	0.088	0.766
Cooked vegetable intake	59.215	0.000	0.211	0.196	0.318
Salt	79.294	0.094	0.002	0.009	0.807
Cheese intake	45.541	0.072	0.026	0.019	0.186

OR Odds ratio; SNPs, Single-nucleotide polymorphisms; CI, Confidence interval; NA, Not available

Supplementary Table 7. The results of MR-PRESSO for the associations between dietary habits and MS

Exposure	MR-PRESSO[†]										
	Raw			Outliers	Outlier-corrected						
	Casual estimate	SD	*p*-value		Casual estimate	SD	*p*-value				
Processed meat intake	-0.222	0.427	0.613	NA	NA	NA	NA				
Pork intake	1.228	0.873	0.209	NA	NA	NA	NA				
Lamb/mutton intake	-0.213	0.464	0.653	NA	NA	NA	NA				
Poultry intake	0.303	1.096	0.800	NA	NA	NA	NA				
Beef intake	-1.333	0.604	0.115	NA	NA	NA	NA				
Non-oily fish intake	-0.226	0.576	0.708	NA	NA	NA	NA				
Oily fish intake	-0.506	0.341	0.146	rs1876245, rs2952140, rs4002471, rs55930451	-0.585	0.236	0.018				
Tea intake	-0.276	0.290	0.350	rs6829	-0.408	0.252	0.119				
Coffee intake	-0.687	0.331	0.052	NA	NA	NA	NA				
Alcoholic drinks per week	0.045	0.359	0.903	NA	NA	NA	NA				
Alcohol intake frequency	0.273	0.199	0.177	rs12153855, rs4726481, rs7610856	0.245	0.137	0.080				
Water intake	-0.087	0.437	0.844	NA	NA	NA	NA				

Exposure	Outliers excluded[‡]										
	Inverse variance weighted method		Weighted median method		MR-Egger method		Cochrane s Q test		Pleiotropy		
	OR(95% CI)	*p*-value	OR(95% CI)	*p*-value	OR(95% CI)	*p*-value	Q	*p*-value	MR-Egger intercept	SE	*p*-value
Processed meat intake	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pork intake	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lamb/mutton intake	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Poultry intake	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beef intake	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Non-oily fish intake	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oily fish intake	0.557 (0.351-0.884)	0.013	0.513 (0.266-0.988)	0.046	0.381 (0.050-2.896)	0.358	35.174	0.366	0.005	0.014	0.708
Tea intake	0.665 (0.406-1.089)	0.105	0.457 (0.237-0.880)	0.019	0.899 (0.108-7.482)	0.923	26.143	0.294	-0.005	0.017	0.777
Coffee intake	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Alcoholic drinks per wee	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Alcohol intake frequency	1.277 (0.977-1.671)	0.074	1.195 (0.812-1.759)	0.365	0.361 (0.118-1.100)	0.079	67.144	0.077	0.028	0.013	0.027
Water intake	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

OR Odds ratio; SNPs, Single-nucleotide polymorphisms; CI, Confidence interval; NA, Not available

[†]The results of MR-PRESSO are presented in the form of beta values, and there is a conversion relationship between beta values and OR, specifically beta=log(OR)

[‡]owed repeated the Mendelian randomization analysis after removing outliers

Supplementary Table 6. The results of MR-PRESSO for the associations between dietary habits and MS (cont.)

Exposure	MR-PRESSO †						
	Raw			Outliers	Outlier-corrected		
	Casual estimate	SD	*p*-value		Casual estimate	SD	*p*-value
Hot drink temperature	0.456	0.373	0.229	NA	NA	NA	NA
Cereal intake	-0.274	0.456	0.554	NA	NA	NA	NA
Bread intake	-0.339	0.742	0.655	rs10761661, rs11183201, rs13023099, rs2517678	-0.616	0.396	0.148
Dried fruit intake	-0.301	0.310	0.345	NA	NA	NA	NA
Fresh fruit intake	-0.237	0.541	0.665	rs11085749, rs739320	-0.274	0.456	0.554
Salad/raw vegetable intak	-0.053	0.875	0.953	NA	NA	NA	NA
Cooked vegetable intake	2.069	1.650	0.245	rs2844672	0.425	0.574	0.483
Salt	0.055	0.185	0.767	NA	NA	NA	NA
Cheese intake	0.037	0.257	0.887	NA	NA	NA	NA

Exposure	Outliers excluded ‡										
	Inverse variance weighted method		Weighted median method		MR-Egger method		Cochrane s Q test		Pleiotropy		
	OR(95% CI)	*p*-value	OR(95% CI)	*p*-value	OR(95% CI)	*p*-value	Q	*p*-value	MR-Egger intercept	SE	*p*-value
Hot drink temperature	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cereal intake	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bread intake	0.540 (0.249-1.173)	0.120	0.340 (0.124-0.933)	0.036	0.095 (0.006-1.497)	0.125	12.318	0.340	0.027	0.021	0.228
Dried fruit intake	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fresh fruit intake	0.760 (0.311-1.860)	0.549	0.837 (0.269-2.604)	0.759	4.530 (0.258-79.617)	0.311	39.394	0.059	-0.017	0.013	0.211
Salad/raw vegetable intak	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cooked vegetable intake	1.530 (0.431-5.434)	0.511	1.122 (0.205-6.153)	0.895	2.869E-05 (1.603E-11-51.324)	0.204	5.519	0.597	0.110	0.074	0.187
Salt	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cheese intake	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

OR Odds ratio; SNPs, Single-nucleotide polymorphisms; CI, Confidence interval; NA, Not available

†The results of MR-PRESSO are presented in the form of beta values, and there is a conversion relationship between beta values and OR, specifically beta=log(OR)

‡owed repeated the Mendelian randomization analysis after removing outliers