

Table S1 Information of summary data of 45 dietary habits

Dietary habits	GWAS ID	Sample size	Types of diet	ACE touchscreen question
Cereal intake	ukb-b-15926	441,640	Cereal	“How many bowls of cereal do you eat a WEEK?”
Cereal type: Bran cereal (e.g. All Bran, Branflakes)	ukb-d-1468_1	299,898	Cereal	“What type of cereal do you mainly eat?”(If you eat more than one type of cereal, please select the one that you eat the most.)
Cereal type: Biscuit cereal (e.g. Weetabix)	ukb-d-1468_2	299,898	Cereal	
Cereal type: Oat cereal (e.g. Ready Brek, porridge)	ukb-d-1468_3	299,898	Cereal	
Cereal type: Muesli	ukb-d-1468_4	299,898	Cereal	
Cereal type: Other (e.g. Cornflakes, Frosties)	ukb-d-1468_5	299,898	Cereal	
Bread intake	ukb-b-11348	452,236	Bread	“How many slices of bread do you eat each WEEK?” (For other types of bread: - one bread roll = 2 slices; - one pitta bread = 2 slices)
Bread type: White	ukb-d-1448_1	348,424	Bread	“What type of bread do you mainly eat?”(If you eat more than one type of bread, please select the one that you eat the most.)
Bread type: Brown	ukb-d-1448_2	348,424	Bread	
Bread type: Wholemeal or wholegrain	ukb-d-1448_3	348,424	Bread	
Bread type: Other type of bread	ukb-d-1448_4	348,424	Bread	
Fresh fruit intake	ukb-b-3881	446,462	Fruit and vegetables	“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)”
Dried fruit intake	ukb-b-16576	421,764	Fruit and vegetables	“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)”
Salad / raw vegetable intake	ukb-b-1996	435,435	Fruit and vegetables	“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)”
Cooked vegetable intake	ukb-b-8089	448,651	Fruit and vegetables	“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)”
Age when last ate meat	ukb-b-9791	17,236	Meat and fish	“How old were you when you last ate any kind of meat? (Enter “0” if you have never eaten meat in your lifetime)”
Beef intake	ukb-b-2862	461,053	Meat and fish	“How often do you eat beef? (Do not count processed meats)”
lamb/mutton intake	ukb-b-14179	460,006	Meat and fish	“How often do you eat lamb/mutton? (Do not count processed meats)”
pork intake	ukb-b-5640	460,162	Meat and fish	“How often do you eat pork? (Do not count processed meats such as bacon or ham)”
Poultry intake	ukb-b-8006	461,900	Meat and fish	“How often do you eat chicken, turkey or other poultry? (Do not count processed meats)”
Processed meat intake	ukb-b-6324	461,981	Meat and fish	“How often do you eat processed meats (such as bacon, ham, sausages, meat pies, kebabs, burgers, chicken nuggets)?”
Oily fish intake	ukb-b-2209	460,443	Meat and fish	“How often do you eat oily fish? (e.g. sardines, salmon, mackerel, herring)”
Non-oily fish intake	ukb-b-17627	460,880	Meat and fish	“How often do you eat other types of fish? (e.g. cod, tinned tuna, haddock)”
Cheese intake	ukb-b-1489	451,486	Dairy products	“How often do you eat cheese? (Include cheese in pizzas, quiches, cheese sauce etc)”
Milk type used: Full cream	ukb-d-1418_1	360,806	Dairy products	“What type of milk do you mainly use?”If you use more than one type of milk, please select the one that you drink the most.
Milk type used: Semi-skimmed	ukb-d-1418_2	360,806	Dairy products	
Milk type used: Skimmed	ukb-d-1418_3	360,806	Dairy products	
Milk type used: Soya	ukb-d-1418_4	360,806	Dairy products	
Milk type used: Other type of milk	ukb-d-1418_5	360,806	Dairy products	
Milk type used: Never/rarely have milk	ukb-d-1418_6	360,806	Dairy products	
Coffee intake	ukb-b-5237	428,860	Drinks	“How many cups of coffee do you drink each DAY? (Include decaffeinated coffee)”
Coffee type: Decaffeinated coffee (any type)	ukb-d-1508_1	283,449	Drinks	“What type of coffee do you usually drink?” If you drink more than one type of coffee, please select the one that you drink the most
Coffee type: Instant coffee	ukb-d-1508_2	283,449	Drinks	
Coffee type: Ground coffee (include espresso, filter etc)	ukb-d-1508_3	283,449	Drinks	
Coffee type: Other type of coffee	ukb-d-1508_4	283,449	Drinks	
Tea intake	ukb-b-6066	447,485	Drinks	“How many cups of tea do you drink each DAY? (Include black and green tea)”
Water intake	ukb-b-14898	427,588	Drinks	“How many glasses of water do you drink each DAY?”
Hot drink temperature	ukb-b-14203	457,873	Drinks	“How do you like your hot drinks? (Such as coffee or tea)”
Alcohol usually taken with meals	ukb-b-16878	235,645	Drinks	“When you drink alcohol is it usually with meals?”
Average weekly red wine intake	ukb-b-5239	327,026	Drinks	“In an average WEEK, how many glasses of RED wine would you drink? (There are six glasses in an average bottle)”
Average weekly spirits intake	ukb-b-1707	326,565	Drinks	“In an average WEEK, how many measures of spirits or liqueurs would you drink? (there are 25 standard measures in a normal sized bottle; spirits include drinks such as whisky, gin, rum, vodka, brandy)”
Average weekly fortified wine intake	ukb-b-1070	327,563	Drinks	“In an average WEEK, how many glasses of fortified wine would you drink? (There are 12 glasses in an average bottle) (Fortified wines include drinks such as sherry, port, vermouth)”
Average weekly beer plus cider intake	ukb-b-5174	327,634	Drinks	“In an average WEEK, how many pints of beer or cider would you drink? (Include bitter, lager, stout, ale, Guinness)”
Average weekly champagne plus white wine intake	ukb-b-5716	326,801	Drinks	“In an average WEEK, how many glasses of WHITE wine or champagne would you drink? (There are six glasses in an average bottle)”
Salt added to food	ukb-b-8121	462,630	Salt	“Do you add salt to your food? (Do not include salt used in cooking)”

**Table S2** Causality of genetically determined 45 dietary habits on urolithiasis using IVW

Exposure	Calculus of kidney and ureter						Calculus of lower urinary tract					
	N snps	Method	OR	95% CI	P	Q_pval	N snps	Method	OR	95% CI	P	Q_pval
Age when last ate meat	12	FE	1.027037	0.853-1.236	7.78E-01	9.24E-01	12	FE	0.91903	0.568-1.486	7.31E-01	8.32E-01
Average weekly fortified wine intake	22	FE	0.410079	0.139-1.214	1.07E-01	2.68E-01	22	FE	0.546908	0.036-8.254	6.63E-01	3.61E-01
Bread intake	110	MRE	1.066925	0.759-1.5	7.09E-01	8.92E-06	110	FE	1.484177	0.752-2.931	2.55E-01	7.22E-01
lamb/mutton intake	125	MRE	1.050287	0.695-1.587	8.16E-01	1.99E-04	126	MRE	1.325137	0.488-3.599	5.81E-01	8.67E-03
Hot drink temperature	205	MRE	1.259554	0.871-1.821	2.20E-01	1.37E-05	205	FE	1.195996	0.522-2.739	6.72E-01	1.57E-01
Cheese intake	191	MRE	0.894696	0.728-1.099	2.89E-01	1.38E-04	191	FE	1.129563	0.715-1.784	6.01E-01	3.63E-01
Water intake	144	MRE	0.998904	0.762-1.31	9.94E-01	1.90E-02	146	FE	0.388061	0.209-0.721	2.77E-03	6.32E-01
Cereal intake	167	MRE	1.109135	0.844-1.458	4.58E-01	4.71E-04	168	FE	0.760163	0.4-1.445	4.03E-01	8.02E-02
Dried fruit intake	152	MRE	0.819607	0.614-1.094	1.77E-01	2.10E-02	152	FE	0.994706	0.48-2.06	9.89E-01	7.43E-02
Alcohol usually taken with meals	145	MRE	0.827466	0.547-1.251	3.69E-01	1.95E-03	146	FE	1.556339	0.624-3.881	3.43E-01	5.87E-01
Average weekly spirits intake	42	FE	1.00115	0.659-1.521	9.96E-01	1.41E-01	43	FE	0.699799	0.242-2.021	5.09E-01	1.56E-01
Non-oily fish intake	65	MRE	1.167855	0.729-1.872	5.19E-01	1.81E-02	66	MRE	2.957702	0.849-10.307	8.87E-02	5.70E-03
Salad / raw vegetable intake	108	MRE	0.688059	0.433-1.094	1.14E-01	1.73E-03	108	MRE	0.807653	0.253-2.582	7.19E-01	1.03E-02
Oily fish intake	159	MRE	0.710406	0.54-0.935	1.47E-02	1.91E-06	160	FE	0.667677	0.367-1.214	1.85E-01	9.35E-02
Beef intake	94	MRE	0.886731	0.589-1.334	5.64E-01	5.82E-03	96	FE	1.191462	0.455-3.121	7.21E-01	9.39E-02
Fresh fruit intake	138	MRE	0.656254	0.435-0.99	4.47E-02	6.59E-03	139	FE	0.605973	0.241-1.522	2.86E-01	5.31E-01
Average weekly beer plus cider intake	100	MRE	1.065151	0.688-1.65	7.77E-01	2.89E-05	101	FE	0.359338	0.141-0.916	3.21E-02	1.14E-01
Coffee intake	113	MRE	0.604153	0.42-0.869	6.64E-03	2.59E-07	114	FE	1.19386	0.573-2.487	6.36E-01	1.68E-01
Average weekly red wine intake	94	MRE	0.715227	0.503-1.017	6.17E-02	1.09E-03	95	FE	1.087419	0.479-2.467	8.41E-01	5.76E-02
pork intake	82	MRE	1.04934	0.631-1.745	8.53E-01	3.74E-03	82	FE	0.778435	0.244-2.483	6.72E-01	1.92E-01
Average weekly champagne plus white wine intake	46	MRE	1.077322	0.638-1.819	7.81E-01	3.90E-03	46	FE	0.900028	0.312-2.597	8.46E-01	7.66E-01
Tea intake	135	MRE	0.51628	0.395-0.674	1.17E-06	1.97E-08	136	FE	0.817669	0.468-1.429	4.80E-01	6.17E-02
Processed meat intake	124	MRE	0.848768	0.637-1.131	2.63E-01	1.77E-03	125	FE	0.956152	0.505-1.812	8.91E-01	3.43E-01
Poultry intake	82	MRE	0.919822	0.609-1.389	6.91E-01	6.76E-03	82	FE	1.28093	0.523-3.139	5.88E-01	8.11E-01
Cooked vegetable intake	91	MRE	0.732582	0.479-1.119	1.50E-01	1.35E-02	93	FE	0.877251	0.345-2.232	7.83E-01	7.19E-01
Salt added to food	234	MRE	1.087291	0.893-1.323	4.04E-01	3.21E-02	233	MRE	1.028081	0.599-1.764	9.20E-01	9.11E-04
Milk type used: Full cream	24	MRE	1.149345	0.056-23.521	9.28E-01	5.33E-03	25	FE	1.099378	0.005-251.369	9.73E-01	6.04E-01
Milk type used: Semi-skimmed	13	FE	0.598742	0.12-2.99	5.32E-01	3.93E-01	13	FE	1.002679	0.011-94.858	9.99E-01	2.38E-01
Milk type used: Skimmed	27	FE	0.229797	0.068-0.78	1.83E-02	2.08E-01	28	FE	2.260855	0.145-35.246	5.60E-01	6.13E-01
Milk type used: Soya	22	FE	2.340111	0.093-58.992	6.06E-01	3.91E-01	22	FE	4.024552	0.001-18810.319	7.47E-01	3.63E-01
Milk type used: Other type of milk	12	FE	0.059528	0-8.418	2.64E-01	7.15E-01	12	FE	0.000285	0-288.753	2.47E-01	3.19E-01
Milk type used: Never/rarely have milk	18	FE	1.633483	0.036-73.425	8.00E-01	1.59E-01	18	FE	86.02263	0.017-447886.485	3.08E-01	8.16E-01
Bread type: White	114	MRE	1.576157	0.881-2.819	1.25E-01	1.21E-02	114	FE	0.990285	0.264-3.708	9.88E-01	4.25E-01
Bread type: Brown	17	FE	0.204853	0.02-2.076	1.80E-01	1.61E-01	17	FE	0.064867	0-11.756	3.02E-01	9.39E-01
Bread type: Wholemeal or wholegrain	78	FE	0.508026	0.276-0.935	2.95E-02	8.01E-02	79	FE	0.765137	0.188-3.11	7.08E-01	9.50E-01
Bread type: Other type of bread	18	FE	6.840108	0.343-136.414	2.08E-01	8.48E-01	18	FE	1.037394	0-2433.829	9.93E-01	7.84E-01
Cereal type: Bran cereal (e.g. All Bran, Branflakes)	12	FE	0.349136	0.055-2.23	2.66E-01	4.09E-01	12	FE	1.117048	0.005-237.25	9.68E-01	2.25E-01
Cereal type: Biscuit cereal (e.g. Weetabix)	25	FE	0.695219	0.217-2.224	5.40E-01	8.54E-01	25	FE	0.318793	0.016-6.548	4.58E-01	8.67E-01
Cereal type: Oat cereal (e.g. Ready Brek, porridge)	18	FE	1.129642	0.299-4.275	8.58E-01	4.55E-01	19	FE	2.151797	0.084-55.135	6.43E-01	9.59E-01
Cereal type: Muesli	47	MRE	0.622915	0.229-1.697	3.55E-01	1.82E-03	47	FE	6.224336	0.755-51.295	8.93E-02	2.62E-01
Cereal type: Other (e.g. Cornflakes, Frosties)	46	MRE	1.344798	0.523-3.458	5.39E-01	4.13E-02	47	FE	2.204981	0.248-19.57	4.78E-01	2.52E-01
Coffee type: Decaffeinated coffee (any type)	16	FE	1.129455	0.276-4.614	8.65E-01	8.88E-01	16	FE	76.84529	1.974-2991.434	2.01E-02	5.60E-01
Coffee type: Instant coffee	29	MRE	4.796139	1.63-14.113	4.41E-03	7.74E-03	30	FE	2.021362	0.253-16.158	5.07E-01	5.99E-01
Coffee type: Ground coffee (include espresso, filter etc)	96	MRE	0.511999	0.277-0.947	3.30E-02	1.67E-03	96	FE	0.376459	0.101-1.402	1.45E-01	7.63E-01
Coffee type: Other type of coffee	5	MRE	159.3846	0.001-38544567.656	4.23E-01	3.31E-02	5	MRE	0.601013	1.73E-15-2.09E+14	9.76E-01	2.65E-02

Nsnps, number of single nucleotide polymorphisms; OR, odd ratio; CI, confidence interval; Q\_pval, P value of Cochran'Q test; FE, fixed effect; MRE, models of random effect.

**Table S3** Causality of genetically determined 45 dietary habits on Calculus of kidney and ureter in sensitivity analysis

Exposure	N snps	Weighted median			MR egger					MR presso		
		OR	95% CI	P	OR	95% CI	P	Intercept	Intercept Pval	OR	P	N outliers
Age when last ate meat	12	1.006718	0.796-1.273	9.55E-01	1.069797	0.597-1.918	8.25E-01	-0.003097451	0.888079	1.027037	6.88E-01	0
Average weekly fortified wine intake	22	0.395796	0.085-1.853	2.39E-01	1.108332	0.123-10.024	9.28E-01	-0.008991135	0.321449	0.410079	1.22E-01	0
Bread intake	110	1.075987	0.708-1.636	7.32E-01	1.083543	0.339-3.465	8.93E-01	-0.000210156	0.978297	1.001782	9.92E-01	1
lamb/mutton intake	125	1.096881	0.636-1.891	7.39E-01	2.176784	0.593-7.985	2.43E-01	-0.007282819	0.248761	1.089523	6.76E-01	1
Hot drink temperature	205	1.487794	0.91-2.433	1.13E-01	2.952921	0.81-10.768	1.02E-01	-0.006805454	0.179683	1.304828	1.52E-01	1
Cheese intake	191	0.78096	0.593-1.028	7.80E-02	0.934202	0.461-1.891	8.50E-01	-0.000662201	0.900199	0.900491	3.05E-01	2
Water intake	144	1.212445	0.831-1.769	3.17E-01	2.681093	1.217-5.909	1.57E-02	-0.012530956	0.010308	0.963585	7.81E-01	1
Cereal intake	167	1.060475	0.737-1.525	7.52E-01	1.185589	0.464-3.026	7.22E-01	-0.000803392	0.884247	1.07125	6.14E-01	1
Dried fruit intake	152	0.852384	0.577-1.259	4.22E-01	0.524893	0.171-1.608	2.61E-01	0.004885654	0.420462	0.819607	1.79E-01	0
Alcohol usually taken with meals	145	0.685192	0.404-1.162	1.61E-01	1.690806	0.268-10.662	5.77E-01	-0.005775901	0.436346	0.764944	1.95E-01	1
Average weekly spirits intake	42	1.058891	0.596-1.881	8.45E-01	0.934735	0.351-2.489	8.93E-01	0.001126802	0.87972	1.00115	9.96E-01	0
Non-oily fish intake	65	0.91552	0.49-1.711	7.82E-01	0.992349	0.303-3.249	9.90E-01	0.002011177	0.769945	0.882939	5.31E-01	3
Salad / raw vegetable intake	108	0.443701	0.248-0.793	6.04E-03	1.117344	0.271-4.615	8.78E-01	-0.004790609	0.47979	0.638654	5.38E-02	1
Oily fish intake	159	0.66808	0.469-0.952	2.55E-02	0.821988	0.285-2.367	7.17E-01	-0.001887518	0.779833	0.710406	1.58E-02	0
Beef intake	94	0.941653	0.551-1.61	8.26E-01	0.813595	0.226-2.929	7.53E-01	0.000997227	0.889732	0.948886	7.95E-01	1
Fresh fruit intake	138	0.498912	0.292-0.853	1.11E-02	0.326863	0.076-1.399	1.34E-01	0.005767649	0.328906	0.656254	4.67E-02	0
Average weekly beer plus cider intake	100	1.210182	0.719-2.036	4.72E-01	0.934056	0.192-4.542	9.33E-01	0.001439843	0.865794	1.1281	5.79E-01	1
Coffee intake	113	0.606561	0.359-1.025	6.19E-02	0.658757	0.301-1.444	2.99E-01	-0.001172593	0.807471	0.595762	3.86E-03	2
Average weekly red wine intake	94	0.792185	0.513-1.223	2.93E-01	1.194617	0.345-4.134	7.80E-01	-0.006812635	0.400524	0.796486	1.71E-01	2
pork intake	82	0.742755	0.39-1.414	3.65E-01	0.88795	0.193-4.082	8.79E-01	0.001654855	0.820424	1.04934	8.53E-01	0
Average weekly champagne plus white wine intake	46	1.023569	0.549-1.908	9.42E-01	0.433406	0.09-2.083	3.02E-01	0.012227085	0.234491	0.977811	9.30E-01	1
Tea intake	135	0.565513	0.398-0.805	1.53E-03	0.340617	0.175-0.663	1.90E-03	0.006705779	0.184345	0.499601	6.61E-07	1
Processed meat intake	124	1.086168	0.754-1.565	6.57E-01	0.765356	0.285-2.052	5.96E-01	0.001448825	0.830153	0.848768	2.65E-01	0
Poultry intake	82	1.052026	0.612-1.808	8.54E-01	0.254645	0.073-0.893	3.56E-02	0.015376784	0.037134	0.919822	6.92E-01	0
Cooked vegetable intake	91	1.029756	0.599-1.769	9.15E-01	1.687311	0.485-5.872	4.13E-01	-0.009019697	0.166982	0.732582	1.54E-01	0
Salt added to food	234	1.165882	0.872-1.558	3.00E-01	0.874337	0.476-1.605	6.65E-01	0.002839141	0.457942	1.087291	4.05E-01	0
Milk type used: Full cream	24	1.049216	0.032-33.955	9.78E-01	0.138644	2.10E-05-911.859	6.64E-01	0.008406521	0.619826	1.149345	9.29E-01	0
Milk type used: Semi-skimmed	13	0.844465	0.093-7.704	8.81E-01	3.474236	0.016-743.423	6.58E-01	-0.012169324	0.513742	0.598742	5.44E-01	0
Milk type used: Skimmed	27	0.257765	0.049-1.348	1.08E-01	0.347997	0.016-7.433	5.05E-01	-0.002851681	0.77364	0.229797	2.61E-02	0
Milk type used: Soya	22	5.273347	0.059-471.385	4.68E-01	0.000826	1.61E-07-4.23	1.19E-01	0.025966358	0.063865	2.340111	6.11E-01	0
Milk type used: Other type of milk	12	1.653167	0.002-1271.355	8.82E-01	0.075118	3.65E-05-154.575	5.21E-01	-0.000869267	0.938939	0.059528	2.17E-01	0
Milk type used: Never/rarely have milk	18	0.991024	0.009-114.542	9.97E-01	0.396542	6.84E-06-22986.183	8.71E-01	0.004135365	0.789989	1.633483	8.04E-01	0
Bread type: White	114	1.843635	0.867-3.919	1.12E-01	0.565921	0.051-6.251	6.43E-01	0.00687947	0.390845	1.576157	1.28E-01	0
Bread type: Brown	17	0.232132	0.014-3.855	3.08E-01	0.185037	0.0001453781604878-235.514	6.50E-01	0.000527979	0.976777	0.204853	1.98E-01	0
Bread type: Wholemeal or wholegrain	78	0.349405	0.153-0.8	1.29E-02	0.352201	0.022-5.641	4.63E-01	0.002635155	0.791378	0.508026	3.26E-02	0
Bread type: Other type of bread	18	15.97712	0.262-972.727	1.86E-01	252.7047	0.061-1043189.648	2.11E-01	-0.013514735	0.376022	6.840108	1.39E-01	0
Cereal type: Bran cereal (e.g. All Bran, Branflakes)	12	0.174636	0.013-2.331	1.87E-01	0.064848	0.001-6.802	2.76E-01	0.011516969	0.455746	0.349136	2.90E-01	0
Cereal type: Biscuit cereal (e.g. Weetabix)	25	1.229885	0.213-7.086	8.17E-01	0.695244	0.062-7.797	7.71E-01	-3.02E-07	0.999974	0.695219	4.72E-01	0
Cereal type: Oat cereal (e.g. Ready Brek, porridge)	18	1.559794	0.257-9.457	6.29E-01	0.520652	0.021-12.621	6.94E-01	0.006415051	0.605766	1.129642	8.60E-01	0
Cereal type: Muesli	47	0.595963	0.177-2.012	4.04E-01	0.322925	0.024-4.372	4.00E-01	0.004850586	0.594514	0.622915	3.59E-01	0
Cereal type: Other (e.g. Cornflakes, Frosties)	46	1.032516	0.327-3.265	9.57E-01	0.643607	0.034-12.304	7.71E-01	0.005136265	0.607618	1.344798	5.42E-01	0
Coffee type: Decaffeinated coffee (any type)	16	1.14775	0.173-7.595	8.86E-01	4.354275	0.116-162.833	4.39E-01	-0.013085103	0.44123	1.129455	8.28E-01	0
Coffee type: Instant coffee	29	4.069172	1.203-13.767	2.40E-02	0.233925	0.008-7.225	4.14E-01	0.02628729	0.081323	3.78176	1.41E-02	1
Coffee type: Ground coffee (include espresso, filter etc)	96	0.306188	0.147-0.637	1.53E-03	0.282763	0.038-2.131	2.23E-01	0.00441153	0.546504	0.564734	6.22E-02	1
Coffee type: Other type of coffee	5	0.639742	1.83E-06-223117.884	9.45E-01	2065792	2.24E-09-1.9E+21	4.69E-01	-0.055959222	0.599091	159.3846	4.68E-01	0

Nsnps, number of single nucleotide polymorphisms; OR, odd ratio; CI, confidence interval; Noutliers, number of outliers.

**Table S4** Causality of genetically determined 45 dietary habits on Calculus of lower urinary tract in sensitivity analysis

Exposure	N snps	Weighted median			MR egger					MR presso		
		OR	95% CI	P	OR	95% CI	P	Intercept	Intercept Pval	OR	P	N outliers
Age when last ate meat	12	0.851964	0.429-1.693	6.48E-01	2.433074	0.534-11.10	2.77E-01	-0.0031	0.214367	0.91903	6.65E-01	0
Average weekly fortified wine intake	22	0.333205	0.007-15.526	5.75E-01	0.499446	0.002-144.4	8.13E-01	-0.00899	0.97161	0.546908	6.67E-01	0
Bread intake	110	2.014639	0.737-5.505	1.72E-01	14.37976	1.421-145.5	2.60E-02	-0.00021	0.046675	1.484177	2.37E-01	0
lamb/mutton intake	126	0.654278	0.176-2.437	5.27E-01	1.140228	0.049-26.77	9.35E-01	-0.00728	0.921748	1.325137	5.82E-01	0
Hot drink temperature	205	0.58877	0.175-1.975	3.91E-01	1.559199	0.084-28.901	7.66E-01	-0.00681	0.852871	1.195996	6.72E-01	0
Cheese intake	191	1.419898	0.689-2.926	3.42E-01	1.357506	0.284-6.492	7.02E-01	-0.00066	0.810008	1.129563	6.02E-01	0
Water intake	146	0.621924	0.227-1.707	3.57E-01	1.297147	0.204-8.253	7.83E-01	-0.01253	0.177011	0.388061	2.64E-03	0
Cereal intake	168	1.136068	0.461-2.797	7.81E-01	0.754193	0.084-6.735	8.01E-01	-0.0008	0.994117	0.760163	4.04E-01	0
Dried fruit intake	152	1.072601	0.394-2.921	8.91E-01	0.04377	0.003-0.709	2.92E-02	0.004886	0.024299	0.994706	9.89E-01	0
Alcohol usually taken with meals	146	2.173731	0.588-8.033	2.44E-01	11.26221	0.193-657.833	2.45E-01	-0.00578	0.329374	1.556339	3.37E-01	0
Average weekly spirits intake	43	0.713157	0.162-3.144	6.55E-01	0.214554	0.018-2.622	2.35E-01	0.001127	0.312871	0.699799	5.13E-01	0
Non-oily fish intake	66	2.055236	0.395-10.7	3.92E-01	2.653439	0.11-64.024	5.50E-01	0.002011	0.942223	2.957702	9.34E-02	0
Salad / raw vegetable intake	108	0.492348	0.109-2.221	3.57E-01	10.74819	0.314-367.428	1.90E-01	-0.00479	0.131482	0.807653	7.19E-01	0
Oily fish intake	160	0.549224	0.239-1.26	1.57E-01	0.168286	0.017-1.638	1.27E-01	-0.00189	0.220503	0.667677	1.87E-01	0
Beef intake	96	0.650793	0.176-2.402	5.19E-01	2.01141	0.095-42.413	6.54E-01	0.000997	0.723376	1.191462	7.22E-01	0
Fresh fruit intake	139	0.428363	0.104-1.767	2.41E-01	0.05342	0.002-1.336	7.67E-02	0.005768	0.12514	0.605973	2.85E-01	0
Average weekly beer plus cider intake	101	0.313523	0.09-1.093	6.86E-02	0.068051	0.002-1.908	1.17E-01	0.00144	0.310552	0.359338	3.45E-02	0
Coffee intake	114	1.311687	0.371-4.637	6.74E-01	1.014712	0.208-4.962	9.86E-01	-0.00117	0.821084	1.19386	6.37E-01	0
Average weekly red wine intake	95	1.188387	0.391-3.611	7.61E-01	0.170033	0.009-3.073	2.33E-01	-0.00681	0.193551	1.087419	8.42E-01	0
pork intake	82	0.821861	0.159-4.237	8.15E-01	1.131112	0.035-36.936	9.45E-01	0.001655	0.824138	0.778435	6.73E-01	0
Average weekly champagne plus white wine intake	46	1.466489	0.312-6.9	6.28E-01	0.179564	0.007-4.36	2.97E-01	0.012227	0.299399	0.900028	8.33E-01	0
Tea intake	136	1.278448	0.521-3.138	5.92E-01	0.646168	0.158-2.648	5.45E-01	0.006706	0.722079	0.817669	4.81E-01	0
Processed meat intake	125	0.632979	0.243-1.651	3.50E-01	0.160345	0.018-1.408	1.01E-01	0.001449	0.094682	0.956152	8.91E-01	0
Poultry intake	82	0.846659	0.235-3.046	7.99E-01	0.798814	0.049-13.031	8.75E-01	0.015377	0.727237	1.28093	5.61E-01	0
Cooked vegetable intake	93	0.591609	0.158-2.218	4.36E-01	0.39377	0.024-6.395	5.14E-01	-0.00902	0.551473	0.877251	7.74E-01	0
Salt added to food	233	1.062977	0.523-2.16	8.66E-01	1.281515	0.241-6.813	7.71E-01	0.002839	0.784928	1.095129	7.37E-01	1
Milk type used: Full cream	25	3.088936	0.001-7911.016	7.78E-01	3.056606	3.10E-07-30111683.91	8.93E-01	0.008407	0.895967	1.099378	9.72E-01	0
Milk type used: Semi-skimmed	13	0.346909	0.001-95.869	7.12E-01	97.04417	25.4E-05-370699360.656	5.66E-01	-0.01217	0.54688	1.002679	9.99E-01	0
Milk type used: Skimmed	28	3.929335	0.082-188.142	4.88E-01	2.593118	0.003-2671.13	7.90E-01	-0.00285	0.966672	2.260855	5.45E-01	0
Milk type used: Soya	22	1.101587	8.73597680517427E-06-138907.6	9.87E-01	331.1749	2.17E-08-5.0628E+12	6.33E-01	0.025966	0.696012	4.024552	7.50E-01	0
Milk type used: Other type of milk	12	0.005909	1.70146979986703E-10-205181.608	5.62E-01	4.403399	3.44E-09-5631457882.516	8.93E-01	-0.00087	0.264018	0.000285	2.72E-01	0
Milk type used: Never/rarely have milk	18	23090.23	0.138-3.85E+09	1.01E-01	2.24894	9.41E-11-5.377E+10	9.48E-01	0.004135	0.753027	86.02263	2.36E-01	0
Bread type: White	114	0.81257	0.117-5.629	8.34E-01	10.02194	0.043-2331.994	4.09E-01	0.006879	0.392698	0.990285	9.88E-01	0
Bread type: Brown	17	0.010604	1.18E-05-9.552	1.90E-01	110.3794	1.95E-05-624765182.384	5.62E-01	0.000528	0.335498	0.064867	1.72E-01	0
Bread type: Wholemeal or wholegrain	79	0.996985	0.133-7.471	9.98E-01	0.182809	0.000358270258449821-93.279	5.95E-01	0.002635	0.645475	0.765137	6.67E-01	0
Bread type: Other type of bread	18	4.261875	7.42E-05-244806.967	7.95E-01	2.77E+08	0.12-6.387E+17	9.62E-02	-0.01351	0.076869	1.037394	9.91E-01	0
Cereal type: Bran cereal (e.g. All Bran, Branflakes)	12	0.324087	0.0004-289.562	7.45E-01	0.001143	2.68E-09-487.079	3.30E-01	0.011517	0.280788	1.117048	9.68E-01	0
Cereal type: Biscuit cereal (e.g. Weetabix)	25	1.145722	0.014-94.398	9.52E-01	4.650591	0.009-2501.691	6.36E-01	-0.023054	0.350623	0.318793	3.81E-01	0
Cereal type: Oat cereal (e.g. Ready Brek, porridge)	19	6.677881	0.083-539.759	3.97E-01	1.00638	3.52E-04-2880.383	9.99E-01	0.006415	0.840064	2.151797	5.21E-01	0
Cereal type: Muesli	47	3.778536	0.182-78.285	3.90E-01	0.074695	0.0003.604E-04-15.478	3.46E-01	0.004851	0.084806	6.224336	9.60E-02	0
Cereal type: Other (e.g. Cornflakes, Frosties)	47	2.239346	0.104-48.071	6.06E-01	70.85476	0.076-66354.465	2.29E-01	0.005136	0.29992	2.204981	4.81E-01	0
Coffee type: Decaffeinated coffee (any type)	16	35.65131	0.157-8082.796	1.97E-01	335.3354	0.027-4191401.722	2.47E-01	-0.01309	0.744687	76.84529	2.73E-02	0
Coffee type: Instant coffee	30	4.821173	0.245-94.905	3.01E-01	0.240842	2.34E-04-247.038	6.90E-01	0.026287	0.533538	2.021362	4.93E-01	0
Coffee type: Ground coffee (include espresso, filter etc)	96	0.724202	0.12-4.381	7.25E-01	0.198622	0.003-14.638	4.63E-01	0.004412	0.76019	0.376459	1.27E-01	0
Coffee type: Other type of coffee	5	0.000702	6.89E-15-71545003.583	5.74E-01	1.13E-20	7.96E-56-1.610E+15	3.47E-01	-0.05596	0.317589	0.601013	9.78E-01	0

Nsnps, number of single nucleotide polymorphisms; OR, odd ratio; CI, confidence interval; Noutliers, number of outliers.

**Table S5** FDR results of associations between dietary habits and subtypes related to urolithiasis

Exposure	Calculus of kidney and ureter	Calculus of lower urinary tract
Age when last ate meat	9.27E-01	9.99E-01
Average weekly fortified wine intake	4.67E-01	9.99E-01
Bread intake	9.27E-01	9.99E-01
lamb/mutton intake	9.27E-01	9.99E-01
Hot drink temperature	5.82E-01	9.99E-01
Cheese intake	6.20E-01	9.99E-01
Water intake	9.96E-01	1.24E-01
Cereal intake	7.93E-01	9.99E-01
Dried fruit intake	5.39E-01	9.99E-01
Alcohol usually taken with meals	7.22E-01	9.99E-01
Average weekly spirits intake	9.96E-01	9.99E-01
Non-oily fish intake	8.10E-01	8.04E-01
Salad / raw vegetable intake	4.67E-01	9.99E-01
Oily fish intake	1.65E-01	9.99E-01
Beef intake	8.19E-01	9.99E-01
Fresh fruit intake	2.52E-01	9.99E-01
Average weekly beer plus cider intake	9.27E-01	4.81E-01
Coffee intake	9.96E-02	9.99E-01
Average weekly red wine intake	3.09E-01	9.99E-01
pork intake	9.27E-01	9.99E-01
Average weekly champagne plus white wine intake	9.27E-01	9.99E-01
Tea intake	5.28E-05	9.99E-01
Processed meat intake	5.99E-01	9.99E-01
Poultry intake	9.27E-01	9.99E-01
Cooked vegetable intake	5.20E-01	9.99E-01
Salt added to food	7.57E-01	9.99E-01
Milk type used: Full cream	9.71E-01	9.99E-01
Milk type used: Semi-skimmed	8.10E-01	9.99E-01
Milk type used: Skimmed	1.65E-01	9.99E-01
Milk type used: Soya	8.52E-01	9.99E-01
Milk type used: Other type of milk	5.99E-01	9.99E-01
Milk type used: Never/rarely have milk	9.27E-01	9.99E-01
Bread type: White	4.69E-01	9.99E-01
Bread type: Brown	5.39E-01	9.99E-01
Bread type: Wholemeal or wholegrain	2.12E-01	9.99E-01
Bread type: Other type of bread	5.82E-01	9.99E-01
Cereal type: Bran cereal (e.g. All Bran, Branflakes)	5.99E-01	9.99E-01
Cereal type: Biscuit cereal (e.g. Weetabix)	8.10E-01	9.99E-01
Cereal type: Oat cereal (e.g. Ready Brek, porridge)	9.27E-01	9.99E-01
Cereal type: Muesli	7.22E-01	8.04E-01
Cereal type: Other (e.g. Cornflakes, Frosties)	8.10E-01	9.99E-01
Coffee type: Decaffeinated coffee (any type)	9.27E-01	4.53E-01
Coffee type: Instant coffee	9.93E-02	9.99E-01
Coffee type: Ground coffee (include espresso, filter etc)	2.12E-01	9.99E-01
Coffee type: Other type of coffee	7.61E-01	9.99E-01

FDR, false discovery rate.