Supplementary information

Table S1. Subgroup analyses for the effects of the vegetarian diet on total cholesterol and total triglyceride (observational studies).

Group		TC, mmol/L								TG, mmol/L							
		N	WMD	95% CI		*p*-value	*p*-value for between group heterogeneity	*p* for heterogeneity	I^2 (%)	N	WMD	95% CI		*p*-value	*p*-value for between group heterogeneity	*p* for heterogeneity	I^2 (%)
				lower	upper							lower	upper				
Vegetarian type																	
	vegan	18	-0.48	-0.57	-0.39	**< 0.001**	0.514	< 0.001	81.7%	16	0.01	-0.07	0.08	0.821	0.030	0.003	56.6%
	lacto	6	-0.53	-0.97	-0.10	**0.016**		< 0.001	91.9%	6	-0.02	-0.18	0.15	0.838		0.021	62.5%
	lacto-ovo	20	-0.52	-0.63	-0.41	**< 0.001**		< 0.001	64.8%	20	-0.15	-0.26	-0.04	**0.008**		< 0.001	74.1%
	mixed	11	-0.66	-0.88	-0.44	**< 0.001**		< 0.001	79.9%	11	-0.27	-0.50	-0.03	**0.026**		< 0.001	90.3%
Duration of vegetarian diet																	
	< 5 years	19	-0.48	-0.61	-0.35	**< 0.001**	0.191	< 0.001	70.3%	19	0.03	-0.05	0.10	0.467	0.002	0.002	54.6%
	≥ 5 years	24	-0.59	-0.70	-0.48	**< 0.001**		< 0.001	75.9%	24	-0.16	-0.26	-0.07	**0.001**		< 0.001	84.1%
Health status																	
	healthy	49	-0.58	-0.66	-0.50	**< 0.001**	0.002	< 0.001	79.0%	48	-0.14	-0.20	-0.07	**< 0.001**	0.002	< 0.001	80.2%
	chronic diseases	6	-0.40	-0.48	-0.31	**< 0.001**		0.147	38.8%	5	0.10	-0.04	0.24	0.145		0.175	37.0%
Region																	
	Asia	35	-0.49	-0.58	-0.41	**< 0.001**	0.002	< 0.001	79.8%	36	-0.07	-0.14	-0.003	**0.042**	0.160	< 0.001	81.7%
	Africa	1	-0.80	-1.24	-0.36	**< 0.001**		-	-	-	-	-	-	**-**		-	-
	Europe	10	-0.44	-0.54	-0.34	**< 0.001**		0.198	26.7%	8	-0.19	-0.32	-0.05	**0.006**		0.122	38.6%
	North America	4	-0.73	-0.98	-0.48	**< 0.001**		0.663	0	4	-0.18	-0.40	0.03	0.096		0.192	36.7%
	Oceania	1	-1.30	-1.87	-0.72	**< 0.001**		-	-	1	-0.03	-0.41	0.35	0.861		-	-
	South America	4	-1.07	-1.56	-0.58	**< 0.001**		0.002	80.3%	4	-0.35	-0.61	-0.10	**0.007**		0.086	54.6%
Research type																	
	case-control study	2	-0.52	-0.64	-0.39	**< 0.001**	0.206	0.323	0	2	0.28	-0.38	0.94	0.407	0.384	0.053	73.2%
	cross-sectional study	45	-0.53	-0.61	-0.44	**< 0.001**		< 0.001	77.7%	44	-0.13	-0.22	-0.05	**0.001**		< 0.001	73.4%
	cohort study	8	-0.73	-0.94	-0.51	**< 0.001**		< 0.001	87.1%	7	-0.08	-0.20	0.05	0.222		0.001	79.2%

Abbreviations: TC: total cholesterol; TG: triglyceride; WMD: weighted mean difference; mixed: vegan, lacto, lacto-ovo or a combination of two; We defined “vegan diet” as a diet which excludes the consumption of any meat, fish, seafood, eggs, and dairy, “lacto vegetarian diet” as a diet which excludes the consumption of any meat, fish, seafood, and eggs, and “lacto-ovo vegetarian diet” as a diet which excludes the consumption of any meat, fish, and seafood. The mixed diet was a combination of these vegetarian subtypes.

Table S2. Subgroup analyses for the effects of the vegetarian diet on total cholesterol and total triglyceride (randomized controlled trials).

		TC, mmol/L								TG, mmol/L							
Group		N	WMD	95% CI		*p*-value	*p*-value for between group heterogeneity	*p* for heterogeneity	I^2 (%)	N	WMD	95% CI		*p*-value	*p*-value for between group heterogeneity	*p* for heterogeneity	I^2 (%)
				lower	upper							lower	upper				
Vegetarian type																	
	vegan	16	-0.22	-0.35	-0.08	**0.001**	0.190	< 0.001	78.3%	16	-0.001	-0.10	0.10	0.984	0.900	< 0.001	76.7%
	lacto-ovo	1	-0.52	-0.95	-0.09	**0.018**		-	-	1	-0.02	-0.23	0.20	0.882		-	-
Duration of vegetarian diet																	
	< 12 weeks	3	-0.33	-0.63	-0.02	**0.038**	0.563	0.364	0.9%	2	-0.02	-0.20	0.17	0.876	0.895	0.983	0
	≥ 12 weeks	14	-0.23	-0.37	-0.09	**0.002**		< 0.001	81.0%	15	-0.001	-0.10	0.10	0.991		< 0.001	78.3%
Health status																	
	healthy	2	-0.53	-0.82	-0.24	**< 0.001**	0.041	0.942	0	2	0.08	-0.11	0.27	0.422	0.398	0.210	36.4%
	chronic diseases	15	-0.19	-0.33	-0.06	**0.005**		< 0.001	77.4%	15	-0.02	-0.12	0.09	0.771		< 0.001	77.4%
Region																	
	Asia	1	< 0.001	-0.57	0.57	1.000	0.071	-	-	-	-	-	-	-	0.121	-	-
	Europe	3	-0.71	-1.16	-0.25	**0.002**		0.276	22.4%	4	-0.07	-0.22	0.08	0.362		0.936	0
	North America	12	-0.17	-0.31	-0.04	**0.014**		< 0.001	78.7%	12	-0.004	-0.12	0.11	0.945		< 0.001	81.6%
	Oceania	1	-0.40	-0.68	-0.12	**0.004**		-	-	1	0.20	-0.01	0.41	0.064		-	-
Research type																	
	parallel design	13	-0.21	-0.35	-0.06	**0.005**	0.299	< 0.001	80.3%	14	-0.04	-0.14	0.07	0.489	0.097	< 0.001	77.4%
	cross-over design	4	-0.35	-0.59	-0.17	**0.003**		0.330	12.4%	3	0.14	-0.04	0.32	0.129		0.177	42.2%

Abbreviations: TC: total cholesterol; TG: triglyceride; WMD: weighted mean difference; We defined “vegan diet” as a diet which excludes the consumption of any meat, fish, seafood, eggs, and dairy, and “lacto-ovo vegetarian diet” as a diet which excludes the consumption of any meat, fish, and seafood.

Table S3. Subgroup analyses for the effects of the vegetarian diet on low-density lipoprotein and high-density lipoprotein (observational studies).

		LDL-C, mmol/L								HDL-C, mmol/L							
Group		N	WMD	95% CI		*p*-value	*p*-value for between group heterogeneity	*p* for heterogeneity	I^2 (%)	N	WMD	95% CI		*p*-value	*p*-value for between group heterogeneity	*p* for heterogeneity	I^2 (%)
				lower	upper							lower	upper				
Vegetarian type																	
	vegan	13	-0.37	-0.54	-0.20	**< 0.001**	0.875	< 0.001	84.5%	14	-0.08	-0.11	-0.05	**< 0.001**	0.548	0.120	31.9%
	lacto	6	-0.50	-0.88	-0.12	**0.009**		< 0.001	91.0%	6	-0.09	-0.12	-0.06	**< 0.001**		0.543	0
	lacto-ovo	16	-0.41	-0.51	-0.30	**< 0.001**		0.004	55.0%	20	-0.06	-0.09	-0.03	**< 0.001**		< 0.001	67.6%
	mixed	9	-0.46	-0.65	-0.26	**< 0.001**		< 0.001	82.1%	9	-0.06	-0.13	0.003	0.061		< 0.001	74.5%
Duration of vegetarian diet																	
	< 5 years	16	-0.33	-0.46	-0.19	**< 0.001**	0.139	< 0.001	78.1%	19	-0.07	-0.10	-0.04	**< 0.001**	0.703	< 0.001	63.0%
	≥ 5 years	21	-0.45	-0.53	-0.36	**< 0.001**		< 0.001	66.6%	21	-0.08	-0.11	-0.05	**< 0.001**		0.001	57.6%
Health status																	
	healthy	40	-0.44	-0.52	-0.36	**< 0.001**	0.037	< 0.001	79.8%	45	-0.06	-0.08	-0.05	**< 0.001**	0.076	< 0.001	59.2%
	chronic diseases	4	-0.18	-0.41	0.04	0.113		0.002	80.4%	4	-0.15	-0.23	-0.06	**0.001**		0.081	55.5%
Region																	
	Asia	27	-0.34	-0.42	-0.26	**< 0.001**	0.019	< 0.001	84.5%	28	-0.10	-0.12	-0.08	**< 0.001**	< 0.001	0.008	43.7%
	Europe	8	-0.39	-0.57	-0.20	**< 0.001**		0.155	34.2%	12	-0.02	-0.05	0.01	0.198		0.016	52.8%
	North America	4	-0.58	-0.80	-0.35	**< 0.001**		0.626	0	4	-0.08	-0.23	0.06	0.260		0.080	55.5%
	Oceania	1	-0.93	-1.64	-0.23	**0.010**		-	-	1	-0.10	-0.28	0.07	0.241		-	-
	South America	4	-0.89	-1.31	-0.47	**< 0.001**		0.004	77.7%	4	-0.01	-0.07	0.05	0.722		0.411	0
Research type																	
	case-control study	2	-0.34	-0.59	-0.08	**0.009**	0.024	0.150	51.8%	2	-0.10	-0.15	-0.05	**< 0.001**	0.499	0.925	0
	cross-sectional study	36	-0.37	-0.45	-0.28	**< 0.001**		< 0.001	73.2%	40	-0.07	-0.09	-0.04	**< 0.001**		< 0.001	63.4%
	cohort study	6	-0.80	-1.11	-0.50	**< 0.001**		< 0.001	90.4%	7	-0.08	-0.11	-0.04	**< 0.001**		0.083	46.3%

Abbreviations: LDL-C: low-density lipoprotein-cholesterol; HDL-C: high-density lipoprotein-cholesterol; WMD: weighted mean difference; mixed: vegan, lacto, lacto-ovo or a combination of two; We defined “vegan diet” as a diet which excludes the consumption of any meat, fish, seafood, eggs, and dairy, “lacto vegetarian diet” as a diet which excludes the consumption of any meat, fish, seafood, and eggs, and “lacto-ovo vegetarian diet” as a diet which excludes the consumption of any meat, fish, and seafood. The mixed diet was a combination of these vegetarian subtypes.

Table S4. Subgroup analyses for the effects of the vegetarian diet on low-density lipoprotein and high-density lipoprotein (randomized controlled trials).

		LDL-C, mmol/L								HDL-C, mmol/L							
Group		N	WMD	95% CI		*p*-value	*p*-value for between group heterogeneity	*p* for heterogeneity	I^2 (%)	N	WMD	95% CI		*p*-value	*p*-value for between group heterogeneity	*p* for heterogeneity	I^2 (%)
				lower	upper							lower	upper				
Vegetarian type																	
	vegan	14	-0.24	-0.38	-0.10	**< 0.001**	0.401	< 0.001	70.9%	17	-0.07	-0.11	-0.04	**< 0.001**	0.749	< 0.001	70.5%
	lacto-ovo	1	-0.41	-0.80	-0.03	**0.034**		-	-	1	-0.10	-0.23	0.04	0.169		-	-
Duration of vegetarian diet																	
	< 12 weeks	2	-0.39	-0.72	-0.06	**0.021**	0.416	0.787	0	3	-0.04	-0.16	0.09	0.546	0.555	0.297	17.6%
	≥ 12 weeks	13	-0.24	-0.38	-0.10	**0.001**		< 0.001	72.9%	15	-0.08	-0.12	-0.04	**< 0.001**		< 0.001	73.4%
Health status																	
	healthy	2	-0.35	-0.59	-0.10	**0.006**	0.446	0.655	0	2	-0.14	-0.24	-0.04	**0.007**	0.182	0.325	0
	chronic diseases	13	-0.24	-0.38	-0.10	**0.001**		< 0.001	72.1%	16	-0.07	-0.11	-0.03	**0.001**		< 0.001	69.8%
Region																	
	Asia	-	-	-	-	-	0.143	-	-	1	0.10	-0.11	0.31	0.353	0.004	-	-
	Europe	4	-0.51	-0.98	0.04	**0.035**		0.035	65.2%	4	-0.07	-0.18	0.04	0.196		0.309	16.5%
	North America	10	-0.18	-0.31	-0.05	**0.006**		0.003	63.8%	12	-0.06	-0.10	-0.03	**0.001**		< 0.001	64.0%
	Oceania	1	-0.40	-0.63	-0.17	**0.001**		-	-	1	-0.20	-0.28	-0.12	**< 0.001**		-	-
Research type																	
	parallel design	12	-0.23	-0.39	-0.08	**0.003**	0.438	< 0.001	72.9%	14	-0.07	-0.11	-0.03	**< 0.001**	0.589	< 0.001	70.4%
	cross-over design	3	-0.33	-0.51	-0.14	**< 0.001**		0.876	0	4	-0.09	-0.18	-0.01	**0.029**		0.169	40.5%

Abbreviations: LDL-C: low-density lipoprotein-cholesterol; HDL-C: high-density lipoprotein-cholesterol; WMD: weighted mean difference; We defined “vegan diet” as a diet which excludes the consumption of any meat, fish, seafood, eggs, and dairy, and “lacto-ovo vegetarian diet” as a diet which excludes the consumption of any meat, fish, and seafood.

Table S5. Subgroup analyses for the effects of the vegetarian diet on fasting blood glucose (observational studies).

Group		fasting blood glucose, mmol/L							
		N	WMD	95% CI		*p*-value	*p*-value for between group heterogeneity	*p* for heterogeneity	I^2 (%)
				lower	upper				
Vegetarian type									
	vegan	13	-0.19	-0.34	-0.04	**0.015**		0.002	62.0%
	lacto	2	-0.18	-0.49	0.14	0.277	0.304	0.002	89.3%
	lacto-ovo	10	-0.25	-0.34	-0.16	**< 0.001**		0.048	47.1%
	mixed	6	-0.44	-0.66	-0.22	**< 0.001**		< 0.001	89.2%
Duration of vegetarian diet									
	< 5 years	14	-0.19	-0.30	-0.07	**0.001**	0.037	0.001	63.2%
	≥ 5 years	13	-0.36	-0.48	-0.24	**< 0.001**		< 0.001	85.2%
Health status									
	healthy	28	-0.26	-0.33	-0.18	**< 0.001**	0.501	< 0.001	77.2%
	chronic diseases	3	-0.37	-0.70	-0.05	**0.025**		0.049	66.9%
Region									
	Asia	21	-0.19	-0.25	-0.13	**< 0.001**		< 0.001	63.1%
	Africa	1	-0.40	-2.21	1.41	0.664		-	-
	Europe	3	-0.20	-0.72	0.33	0.460	0.052	0.129	51.2%
	North America	3	-0.45	-0.69	-0.21	**< 0.001**		0.992	0
	South America	3	-0.89	-1.49	-0.29	**0.004**		< 0.001	89.5%
Research type									
	case-control study	1	-0.17	-0.31	-0.03	**0.016**		-	-
	cross-sectional study	26	-0.25	-0.33	-0.17	**< 0.001**	0.217	< 0.001	62.9%
	cohort study	4	-0.46	-0.76	-0.16	**0.003**		< 0.001	93.8%

Abbreviations: WMD: weighted mean difference; mixed: vegan, lacto, lacto-ovo or a combination of two; We defined “vegan diet” as a diet which excludes the consumption of any meat, fish, seafood, eggs, and dairy, “lacto vegetarian diet” as a diet which excludes the consumption of any meat, fish, seafood, and eggs, and “lacto-ovo vegetarian diet” as a diet which excludes the consumption of any meat, fish, and seafood. The mixed diet was a combination of these vegetarian subtypes.

Table S6. Subgroup analyses for the effects of the vegetarian diet on fasting blood glucose (randomized controlled trials).

Group		fasting blood glucose, mmol/L							
		N	WMD	95% CI		*p*-value	*p*-value for between group heterogeneity	*p* for heterogeneity	I^2 (%)
				lower	upper				
Vegetarian type									
	vegan	9	-0.36	-0.49	-0.24	**< 0.001**	0.265	0.354	9.7%
	lacto-ovo	2	-0.18	-0.47	0.11	0.222		0.427	0
Duration of vegetarian diet									
	< 12 weeks	3	-0.21	-0.46	0.05	0.115	0.324	0.687	0
	≥ 12 weeks	8	-0.35	-0.50	-0.21	**< 0.001**		0.271	20.1%
Health status									
	healthy	2	-0.18	-0.47	0.11	0.222	0.265	0.427	0
	chronic diseases	9	-0.36	-0.49	-0.24	**< 0.001**		0.354	9.7%
Region									
	Europe	2	-0.03	-0.51	0.45	0.908	0.352	0.183	43.6%
	North America	8	-0.38	-0.48	-0.28	**< 0.001**		0.605	0
	Oceania	1	-0.52	-1.41	0.37	0.250		-	-
Research type									
	parallel design	9	-0.36	-0.50	-0.22	**< 0.001**	0.362	0.346	10.6%
	cross-over design	2	-0.24	-0.47	-0.01	**0.045**		0.355	0

Abbreviations: WMD: weighted mean difference; We defined “vegan diet” as a diet which excludes the consumption of any meat, fish, seafood, eggs, and dairy, and “lacto-ovo vegetarian diet” as a diet which excludes the consumption of any meat, fish, and seafood.

Table S7. Subgroup analyses for the effects of the vegetarian diet on HbA1c (observational studies).

Group		HbA1c, %						
		N	WMD	95% CI		*p*-value	*p*-value for between group heterogeneity	*p* for heterogeneity	I^2 (%)
				lower	upper				
Vegetarian type									
	vegan	1	0.15	-0.41	0.71	0.598	0.052	-	-
	lacto	1	0.10	0.004	0.20	**0.040**		-	-
	lacto-ovo	1	-0.30	-0.71	0.11	0.151		-	-
	mixed	3	-0.13	-0.30	0.05	0.160		0.054	65.7%
Duration of vegetarian diet									
	< 5 years	4	-0.21	-0.31	-0.10	**< 0.001**	0.017	0.613	0
	≥ 5 years	1	0.10	-0.13	0.33	0.392		-	-
Health status									
	healthy	4	-0.07	-0.29	0.14	0.491	0.959	< 0.001	83.5%
	chronic diseases	2	-0.06	-0.45	0.32	0.750		0.094	64.2%
Region									
	Asia	3	0.05	-0.11	0.21	0.550	0.048	0.173	43.0%
	Europe	1	0.15	-0.41	0.71	0.598		-	-
	North America	1	-0.22	-0.36	-0.08	**0.002**		-	-
	South America	1	-0.20	-0.37	-0.03	**0.023**		-	-

Abbreviations: HbA1c: glycosylated hemoglobin; WMD: weighted mean difference; mixed: vegan, lacto, lacto-ovo or a combination of two; We defined “vegan diet” as a diet which excludes the consumption of any meat, fish, seafood, eggs, and dairy, “lacto vegetarian diet” as a diet which excludes the consumption of any meat, fish, seafood, and eggs, and “lacto-ovo vegetarian diet” as a diet which excludes the consumption of any meat, fish, and seafood. The mixed diet was a combination of these vegetarian subtypes.

Table S8. Subgroup analyses for the effects of the vegetarian diet on HbA1c (randomized controlled trials).

Group		HbA1c, %							
		N	WMD	95% CI		*p*-value	*p*-value for between group heterogeneity	*p* for heterogeneity	I^2 (%)
				lower	upper				
Duration of vegetarian diet									
	< 12 weeks	3	-0.18	-0.90	0.55	0.639	0.940	0.973	0
	≥ 12 weeks	9	-0.15	-0.28	-0.01	**0.034**		0.255	21.2%
Region									
	Asia	1	-0.10	-1.10	0.90	0.845	0.969	-	-
	Europe	3	-0.20	-1.01	0.60	0.619		0.984	0
	North America	7	-0.17	-0.33	-0.01	**0.043**		0.133	38.8%
	Oceania	1	-0.45	-1.62	0.72	0.450		-	-
Research type									
	parallel design	9	-0.23	-0.44	-0.01	**0.041**	0.424	0.263	20.3%
	cross-over design	3	-0.12	-0.26	0.02	0.083		0.967	0

Abbreviations: HbA1c: glycosylated hemoglobin; WMD: weighted mean difference.

Table S9. Subgroup analyses for the effects of the vegetarian diet on blood pressure (observational studies).

Group		SBP, mmHg								DBP, mmHg							
		N	WMD	95% CI		*p*-value	*p*-value for between group heterogeneity	*p* for heterogeneity	I^2 (%)	N	WMD	95% CI		*p*-value	*p*-value for between group heterogeneity	*p* for heterogeneity	I^2 (%)
				lower	upper							lower	upper				
Vegetarian type																	
	vegan	13	-0.83	-2.55	0.89	0.346	0.008	< 0.001	83.9%	12	-0.60	-1.46	0.27	0.175	0.011	< 0.001	72.2%
	lacto	6	-5.31	-10.38	-0.24	**0.040**		< 0.001	85.9%	6	-2.83	-6.73	1.07	0.155		< 0.001	87.2%
	lacto-ovo	15	-6.11	-9.21	-3.01	**< 0.001**		< 0.001	85.6%	15	-3.90	-6.04	-1.77	**< 0.001**		< 0.001	88.0%
	mixed	8	-5.87	-10.83	-0.91	**0.020**		< 0.001	88.9%	7	-4.66	-9.03	-0.30	**0.036**		< 0.001	92.9%
Duration of vegetarian diet																	
	< 5 years	15	-3.66	-6.59	-0.73	**0.014**	0.608	< 0.001	77.8%	14	-1.61	-3.42	0.19	0.080	0.222	< 0.001	77.2%
	≥ 5 years	18	-4.69	-7.31	-2.07	**< 0.001**		< 0.001	88.7%	17	-3.23	-5.10	-1.36	**0.001**		< 0.001	90.5%
Health status																	
	healthy	37	-4.72	-6.43	-3.01	**< 0.001**	0.050	< 0.001	85.6%	35	-3.22	-4.40	-2.03	**< 0.001**	0.005	< 0.001	87.5%
	chronic diseases	5	-1.76	-4.18	0.66	0.153		0.015	67.4%	5	0.15	-1.89	2.20	0.884		< 0.001	81.6%
Region																	
	Asia	27	-3.79	-5.30	-2.27	**< 0.001**	0.253	< 0.001	89.7%	27	-2.37	-3.28	-1.46	**< 0.001**	0.001	< 0.001	87.1%
	Africa	2	-1.70	-5.66	2.26	0.401		1.000	-	2	1.90	-1.16	4.96	0.223		1.000	-
	Europe	4	-3.40	-6.91	0.11	0.058		0.238	29.1%	3	-0.87	-2.27	0.53	0.221		0.603	0
	North America	7	-4.05	-7.27	-0.84	**0.013**		0.111	42.0%	6	-2.26	-4.78	0.25	0.078		0.036	57.9%
	South America	2	-15.40	-26.47	-4.33	**0.006**		0.003	88.9%	2	-11.96	-18.13	-5.79	**< 0.001**		0.016	82.6%
Research type																	
	case-control study	2	-4.15	-6.97	-1.34	**0.004**	0.586	0.700	0	2	-0.63	-2.26	1.00	0.450	0.078	0.483	0
	cross-sectional study	33	-3.98	-5.80	-2.15	**< 0.001**		< 0.001	86.5%	31	-2.69	-3.93	-1.45	**< 0.001**		< 0.001	86.3%
	cohort study	7	-6.48	-10.90	-2.07	**0.004**		< 0.001	91.4%	7	-3.58	-6.37	-0.80	**0.012**		< 0.001	91.7%

Abbreviations: SBP: systolic blood pressure; DBP: diastolic blood pressure; WMD: weighted mean difference; mixed: vegan, lacto, lacto-ovo or a combination of two; We defined “vegan diet” as a diet which excludes the consumption of any meat, fish, seafood, eggs, and dairy, “lacto vegetarian diet” as a diet which excludes the consumption of any meat, fish, seafood, and eggs, and “lacto-ovo vegetarian diet” as a diet which excludes the consumption of any meat, fish, and seafood. The mixed diet was a combination of these vegetarian subtypes.

Table S10. Subgroup analyses for the effects of the vegetarian diet on blood pressure (randomized controlled trials).

Group		SBP, mmHg								DBP, mmHg							
		N	WMD	95% CI		*p*-value	*p*-value for between group heterogeneity	*p* for heterogeneity	I^2 (%)	N	WMD	95% CI		*p*-value	*p*-value for between group heterogeneity	*p* for heterogeneity	I^2 (%)
				lower	upper							lower	upper				
Duration of vegetarian diet																	
	< 12 weeks	2	-3.40	-11.09	4.29	0.386	0.254	0.239	28.0%	2	-1.77	-6.96	3.42	0.503	0.467	0.167	47.7%
	≥ 12 weeks	11	1.23	-0.81	3.28	0.238		0.005	60.7%	11	0.21	-1.09	1.51	0.749		0.002	64.4%
Region																	
	Asia	1	1.00	-9.00	11.00	0.845	0.052	-	-	1	1.00	-4.54	6.54	0.724	0.677	-	-
	Europe	2	-5.40	-11.32	0.52	0.074		0.632	0	2	-1.68	-6.87	3.51	0.526		0.152	51.3%
	North America	9	1.05	-1.25	3.35	0.373		0.010	59.9%	9	-0.01	-1.67	1.65	0.991		0.002	67.4%
	Oceania	1	4.00	0.83	7.17	**0.014**		-	-	1	1.00	-0.46	2.46	0.179		-	-
Research type																	
	parallel design	11	0.67	-1.45	2.79	0.536	0.524	0.002	63.9%	11	-0.31	-1.59	0.98	0.640	0.046	0.005	60.3%
	cross-over design	2	3.06	-3.98	10.11	0.394		0.568	0	2	2.70	0.04	5.35	0.046		0.495	0

Abbreviations: SBP: systolic blood pressure; DBP: diastolic blood pressure; WMD: weighted mean difference.

Table S11. Begg's test and Egger's test for the observational studies.

	TC	TG	LDL-C	HDL-C	FBG	HOMA-IR	HbA1c	SBP	DBP
Begg's test	0.468	0.170	0.035	0.635	0.234	0.296	1.000	0.931	0.121
Egger's test	0.093	0.002	0.526	0.735	0.006	0.158	0.577	0.012	0.356

Abbreviations: TC: total cholesterol; TG: triglyceride; LDL-C: low-density lipoprotein-cholesterol; HDL-C: high-density lipoprotein-cholesterol; FBG: fasting blood glucose; HOMA-IR: homeostatic model assessment for insulin resistance; HbA1c: glycosylated hemoglobin; SBP: systolic blood pressure; DBP: diastolic blood pressure.

Table S12. Begg's test and Egger's test for the included randomized controlled trials.

	TC	TG	LDL-C	HDL-C	FBG	HOMA-IR	HbA1c	SBP	DBP
Begg's test	0.902	0.266	0.276	0.225	0.640	0.806	1.000	0.760	0.951
Egger's test	0.010	0.783	0.001	0.039	0.498	0.401	0.056	0.919	0.605

Abbreviations: TC: total cholesterol; TG: triglyceride; LDL-C: low-density lipoprotein-cholesterol; HDL-C: high-density lipoprotein-cholesterol; FBG: fasting blood glucose; HOMA-IR: homeostatic model assessment for insulin resistance; HbA1c: glycosylated hemoglobin; SBP: systolic blood pressure; DBP: diastolic blood pressure.

Table S13. Certainty of evidence for the included observational studies.

	Summary of findings		Certainty of evidence					
Outcomes	No. of participants (no. of studies)	Mean difference (95% CI)	Risk of Bias [a]	Publication bias [b]	Imprecision [c]	Inconsistency [d]	Certainty of evidence (GRADE score)	
TC (mmol/L)	108409 (55)	-0.54 (-0.60 to -0.48)	●	●	●	○	●●●	Moderate
TG (mmol/L)	63618 (53)	-0.11 (-0.17 to -0.05)	●	○	○	○	●	Very Low
LDL-C (mmol/L)	62806 (44)	-0.41 (-0.48 to -0.34)	●	●	●	○	●●●	Moderate
HDL-C (mmol/L)	64610 (49)	-0.07 (-0.09 to -0.05)	●	●	●	○	●●●	Moderate
Fasting blood glucose (mmol/L)	61853 (31)	-0.26 (-0.34 to -0.19)	●	○	●	○	●●	Low
HOMA-IR	1301 (3)	-0.14 (-0.44 to 0.16)	●	●	○	○	●●	Low
HbA1c (%)	1361 (6)	-0.07 (-0.24 to 0.10)	●	●	○	○	●●	Low
SBP (mmHg)	107844 (42)	-4.30 (-5.63 to -2.97)	●	○	●	○	●●	Low
DBP (mmHg)	107705 (41)	-2.63 (-3.47 to -1.79)	●	●	●	○	●●●	Moderate

Abbreviations: CI: confidence interval; GRADE: Grading of Recommendations, Assessment, Development and Evaluations; TC: total cholesterol concentration; TG: triglyceride concentration; LDL-C: low-density lipoprotein-cholesterol; HDL-C: high-density lipoprotein-cholesterol; FBG: fasting blood glucose; HOMA-IR: homeostatic model assessment for insulin resistance; HbA1c: glycated hemoglobin; SBP: systolic blood pressure; DBP: diastolic blood pressure.

[a] Downgraded by one level if >25% of participants were from studies with a Newcastle-Ottawa Scale ＜ 4.

[b] Downgraded by one level if the p-value of Egger's test ＜ 0.05.

[c] Downgraded by one level if a wide confidence interval was observed.

[d] Downgraded by one level if a substantial heterogeneity.

Table S14. Certainty of evidence for the included randomized controlled trials.

	Summary of findings		Certainty of evidence					
Outcomes	No. of participants (no. of trials)	Mean difference (95% CI)	Risk of Bias [a]	Publication bias [b]	Imprecision [c]	Inconsistency [d]	Certainty of evidence (GRADE score)	
TC (mmol/L)	1343 (17)	-0.24 (-0.37 to -0.10)	⊖	○	⊖	○	⊖⊖	Low
TG (mmol/L)	1455 (17)	-0.002 (-0.09 to 0.09)	⊖	⊖	○	○	⊖⊖	Low
LDL-C (mmol/L)	1289 (15)	-0.25 (-0.38 to -0.12)	⊖	○	⊖	○	⊖⊖	Low
HDL-C (mmol/L)	1451 (18)	-0.07 (-0.11 to -0.04)	⊖	○	⊖	○	⊖⊖	Low
Fasting blood glucose (mmol/L)	814 (11)	-0.50 (-0.80 to -0.20)	⊖	⊖	⊖	○	⊖⊖⊖	Moderate
HOMA-IR	624 (5)	-0.96 (-1.37 to -0.55)	⊖	⊖	⊖	⊖	⊖⊖⊖⊖	High
HbA1c (%)	847 (12)	-0.10 (-0.19 to -0.01)	⊖	⊖	⊖	⊖	⊖⊖⊖⊖	High
SBP (mmHg)	983 (13)	0.88 (-1.10 to 2.85)	⊖	⊖	○	○	⊖⊖	Low
DBP (mmHg)	983 (13)	0.04 (-1.20 to 1.28)	⊖	⊖	○	○	⊖⊖	Low

Abbreviations: CI: confidence interval; GRADE: Grading of Recommendations, Assessment, Development and Evaluations; TC: total cholesterol concentration; TG: triglyceride concentration; LDL-C: low-density lipoprotein-cholesterol; HDL-C: high-density lipoprotein-cholesterol; FBG: fasting blood glucose; HOMA-IR: homeostatic model assessment for insulin resistance; HbA1c: glycated hemoglobin; SBP: systolic blood pressure; DBP: diastolic blood pressure.

[a] Downgraded by one level if >25% of participants were from trials at a high risk of bias.

[b] Downgraded by one level if the p-value of Egger's test $<$ 0.05.

[c] Downgraded by one level if a wide confidence interval was observed.

[d] Downgraded by one level if a substantial heterogeneity.

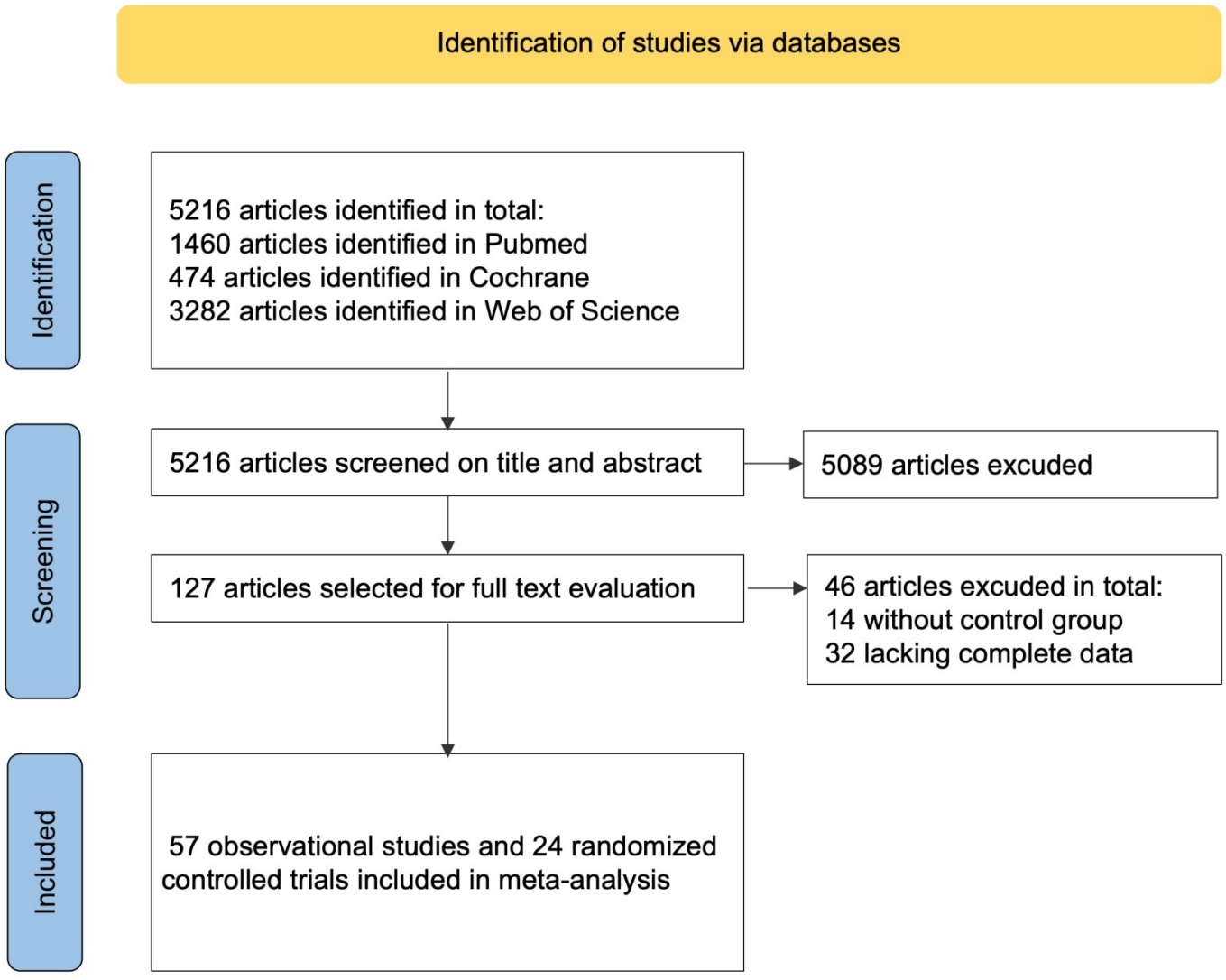


Figure S1. Flow diagram of the paper selection process.

Study ID	Outcome	D1	D2	D3	D4	D5	Overall
Cooper et al, 1982	TC/TG/HDL-C/LDL-C/FBG	+	+	+	+	!	!
Sciarrone et al, 1993	SBP/DBP/FBG/FBI	+	+	+	+	+	+
Kontessis et al, 1995	HbA1c	+	+	+	+	+	+
Nicholson et al, 1999	SBP/DBP/TC/TG/HDL-C/HbA1c	!	!	+	+	!	-
Barnard et al, 2000	TC/TG/LDL-C/HDL-C	+	+	+	+	+	+
Agren et al, 2001	TC/TG/LDL-C/HDL-C	!	!	+	+	+	!
Wheeler et al, 2002	SBP/DBP/TC/HDL-C/HbA1c	+	+	+	+	+	+
Barnard et al, 2005	FBG/FBI	+	+	+	+	+	+
Barnard et al,2006	SBP/DBP/TC/TG/LDL-C/HDL-C/FBG/HbA1c	+	+	+	+	+	+
Burke et al, 2007	TC/TG/HOMA-IR	+	+	+	+	+	+
Elkan et al, 2008	TC/TG/LDL-C/HDL-C	+	!	+	+	+	!
Barnard et al, 2009	SBP/DBP/TG/HDL-C/FBG	+	+	+	+	+	+
Levin et al, 2010	SBP/DBP/HbA1c/TC/LDL-C/HDL-C	!	!	+	+	+	!
Kahleova et al, 2011	TC/TG/LDL-C/HDL-C/FBG/FBI/HbA1c	+	+	+	+	+	+
Mishra et al, 2013	SBP/DBP/TG/TC/LDL-C/HDL-C	+	+	+	+	+	+
Bunner et al, 2015	SBP/DBP/TC/TG/LDL-C/HDL-C/FBG/HbA1c	+	+	+	+	+	+
Wright et al, 2017	SBP/DBP/TC/TG/LDL-C/HDL-C/HbA1c	!	+	+	+	+	!
Barnard et al, 2018	SBP/DBP/TC/LDL-C/HDL-C	!	+	+	+	+	!
Kahleova et al, 2020	TC/TG/LDL-C/HDL-C/FBG/FBI/HbA1c/HOMA-IR	+	+	+	+	+	+
Barnard et al, 2021	SBP/DBP/TC/TG/LDL-C/HDL-C/FBG/HbA1c/HOMA-IR	+	+	+	+	+	+
Dressler et al, 2022	SBP/DBP/TC/TG/LDL-C/HDL-C/FBG/HbA1c/HOMA-IR	+	+	+	+	+	+
Crosby et al, 2022	HOMA-IR	+	+	+	+	+	+
Turner-McGrievy et al, 2022	SBP/DBP/HbA1c	+	+	+	+	!	!
Walrabenstein et al, 2023	SBP/DBP/TG/LDL-C/HDL-C/FBG/HbA1c	+	+	+	+	+	+

+ Low risk

! Some concerns

- High risk

D1 Randomisation proces

D2 Deviations from the intended intervetions

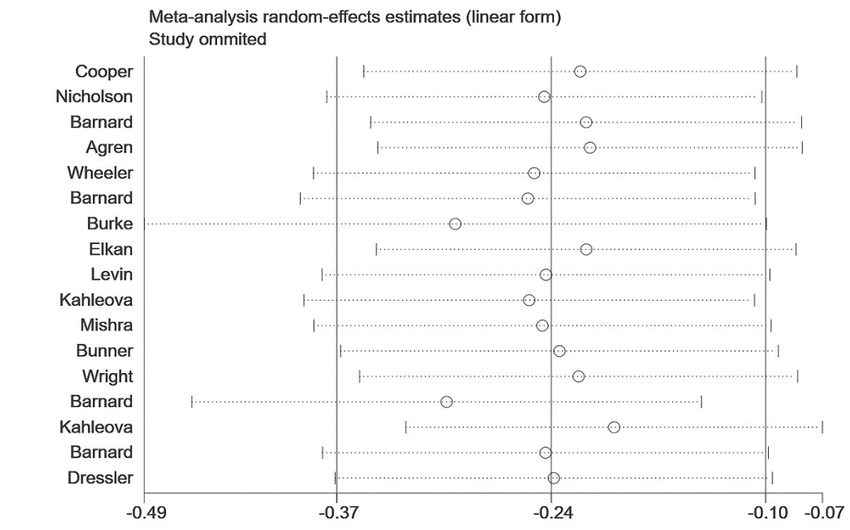
D3 Missing outcome data

D4 Measurement of the outcome

D5 Selection of the reported result

Figure S2. Risk of bias assessment for the included randomized controlled trials.

A


Meta-analysis random-effects estimates (linear form)
Study ommited
Cooper
Nicholson
Barnard
Agren
Wheeler
Barnard
Burke
Elkan
Levin
Kahleova
Mishra
Bunner
Wright
Barnard
Kahleova
Barnard
Dressler
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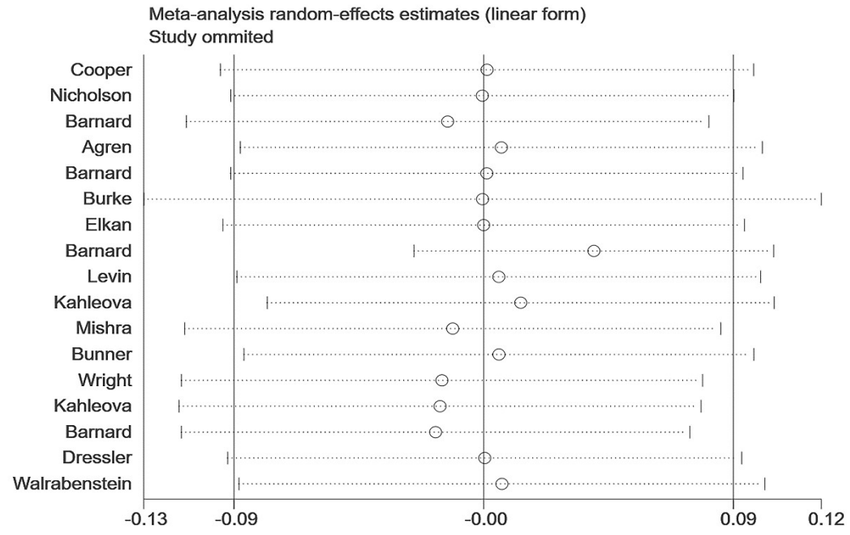
-0.24
-0.10
-0.07

B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Study ommited
Cooper
Nicholson
Barnard
Agren
Barnard
Burke
Elkan
Barnard
Levin
Kahleova
Mishra
Bunner
Wright
Kahleova
Barnard
Dressler
Walrabenstein
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0.12

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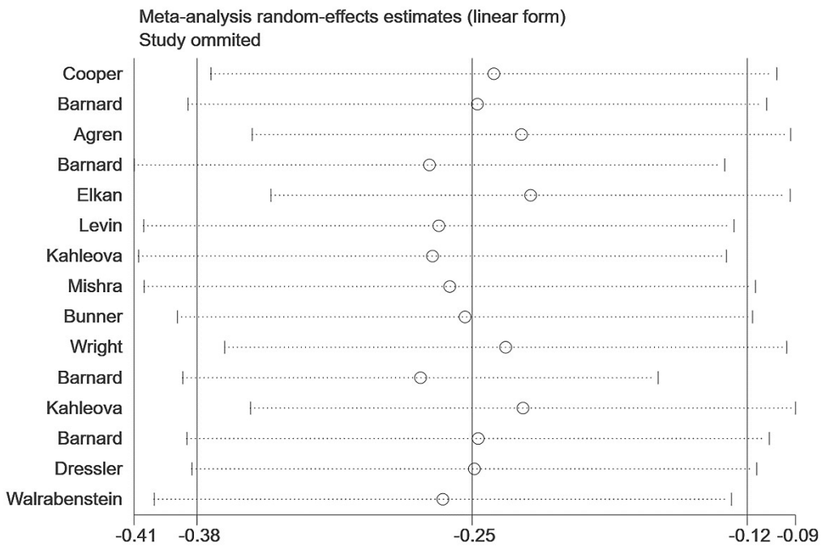
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Study ommited
Cooper
Barnard
Agren
Barnard
Elkan
Levin
Kahleova
Mishra
Bunner
Wright
Barnard
Kahleova
Barnard
Dressler
Walrabenstein
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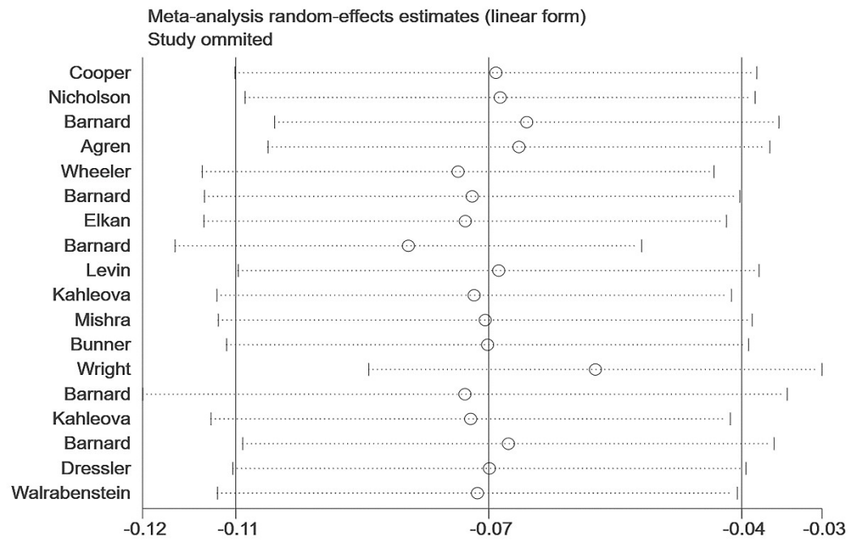
-0.09

D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Study ommited
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Agren
Wheeler
Barnard
Elkan
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Levin
Kahleova
Mishra
Bunner
Wright
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Kahleova
Barnard
Dressler
Walrabenstein
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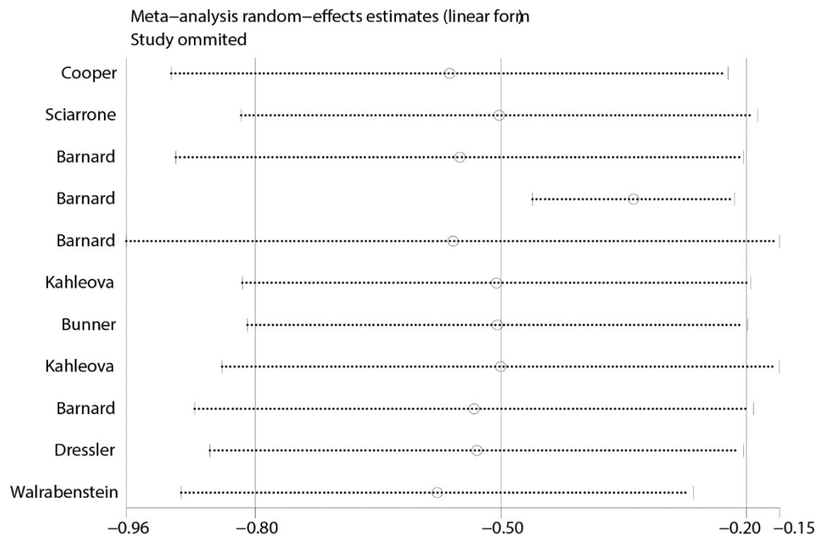
-0.07
-0.04
-0.03

E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Study ommited
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Sciarrone
Barnard
Barnard
Barnard
Kahleova
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Walrabenstein
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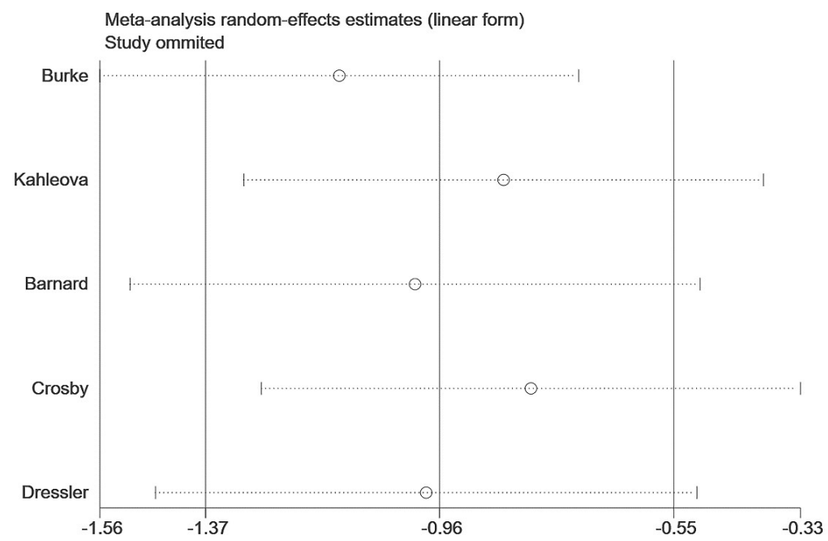
F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Kahleova
Barnard
Crosby
Dressler
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-0.55
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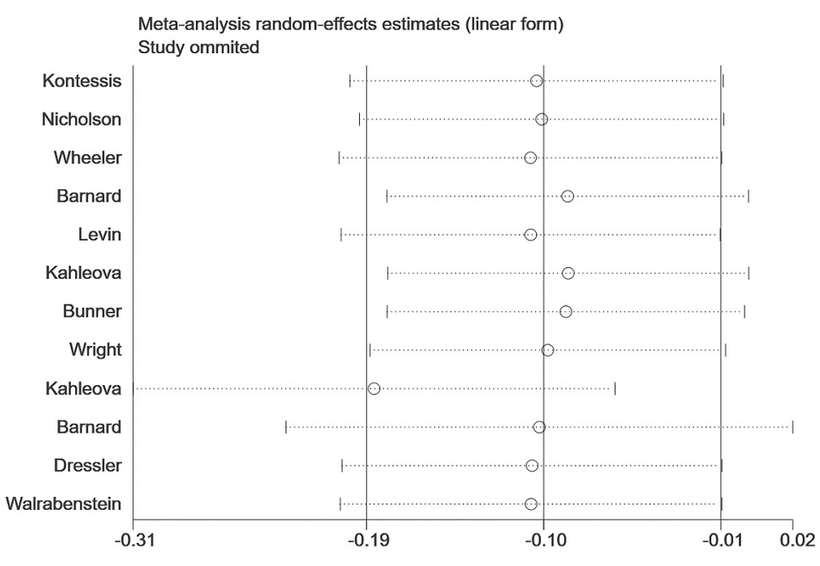
G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Study ommited
Kontessis
Nicholson
Wheeler
Barnard
Levin
Kahleova
Bunner
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Walrabenstein
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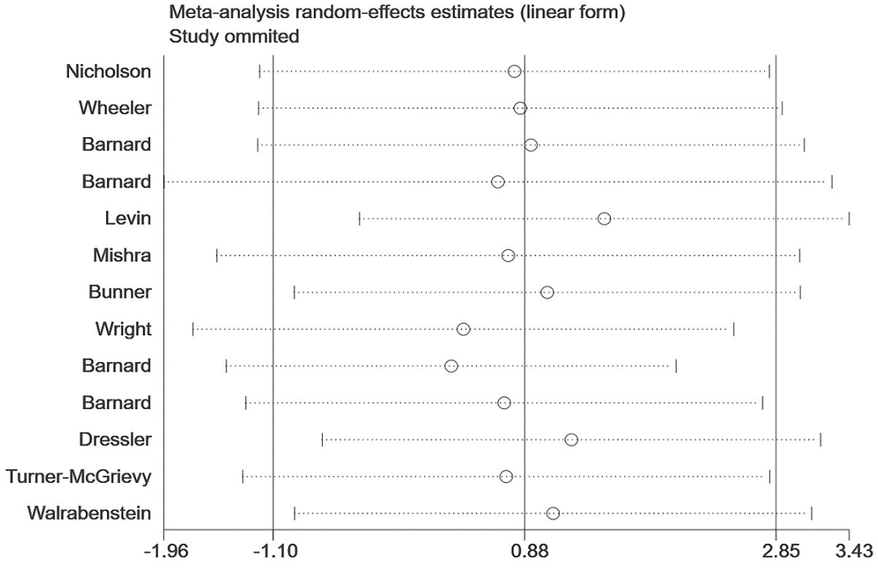
H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Study ommited
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Barnard
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Levin
Mishra
Bunner
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Turner-McGrievy
Walrabenstein
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2.85
3.43

I

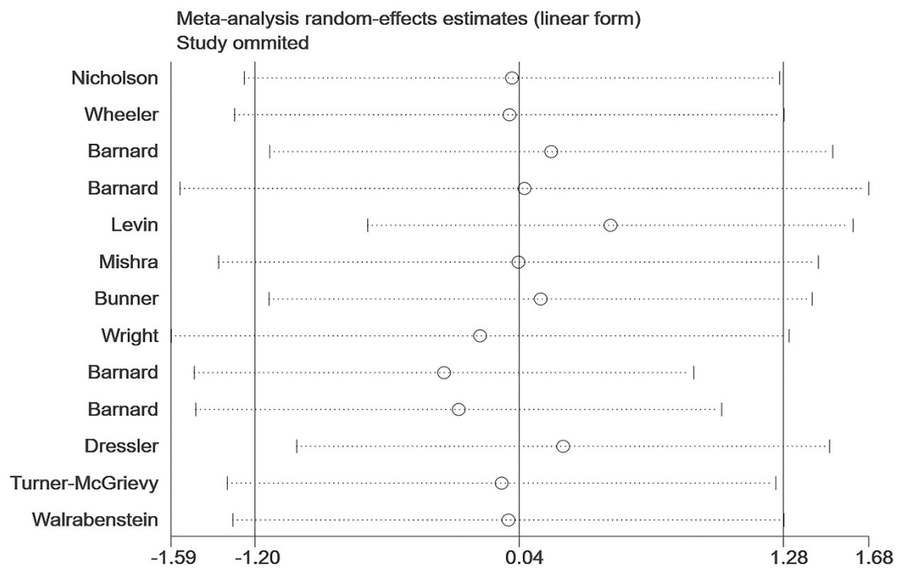
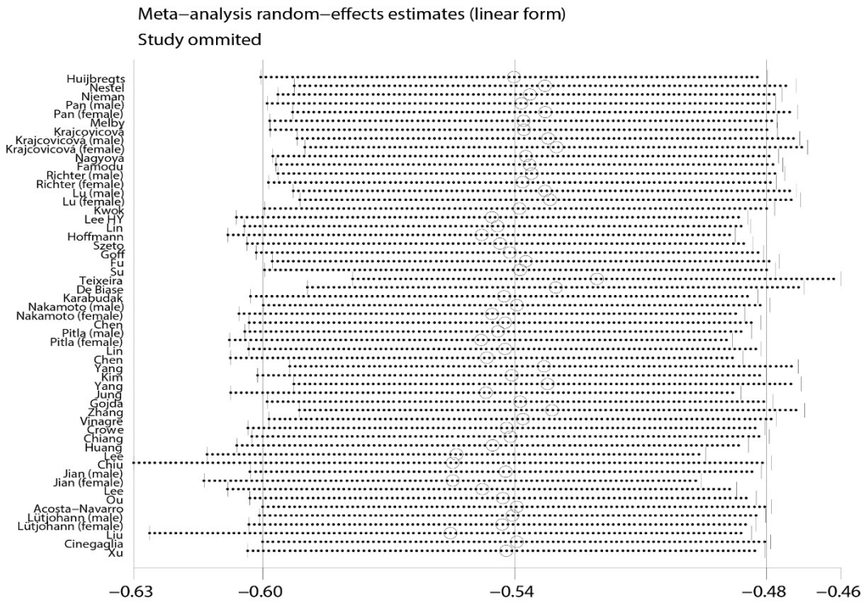


Figure S3. Sensitivity analysis for the included randomized controlled trials.
A. TC: total cholesterol; B. TG: triglyceride; C. LDL-C: low-density lipoprotein-cholesterol; D. HDL-C: high-density lipoprotein-cholesterol; E. FBG: fasting blood glucose; F. HOMA-IR: homeostatic model assessment for insulin resistance; G. HbA1c: glycosylated hemoglobin; H. SBP: systolic blood pressure; I. DBP: diastolic blood pressure.

•

A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Study ommited
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Pan (female)
Melby
Krajcovicova
Krajcovicova (male)
Krajcovicova (female)
Nagyova
Farnodu
Richter (male)
Richter (female)
Lu (male)
Lu (female)
Kwok
Lee HY
Lin
Hoffmann
Szeto
Goff
Fu
Su
Teixeira
De Biase
Karabudak
Nakamoto (male)
Nakamoto (female)
Chen
Pitla (male)
Pitla (female)
Lin
Chen
Yang
Kim
Yang
Jung
Gojda
Zhang
Vinagre
Crowe
Chiang
Huang
Lee
Chiu
Jian (male)
Jian (female)
Lee
Ou
Acosta−Navarro
Lütjohann (male)
Lütjohann (female)
Liu
Cinegaglia
Xu
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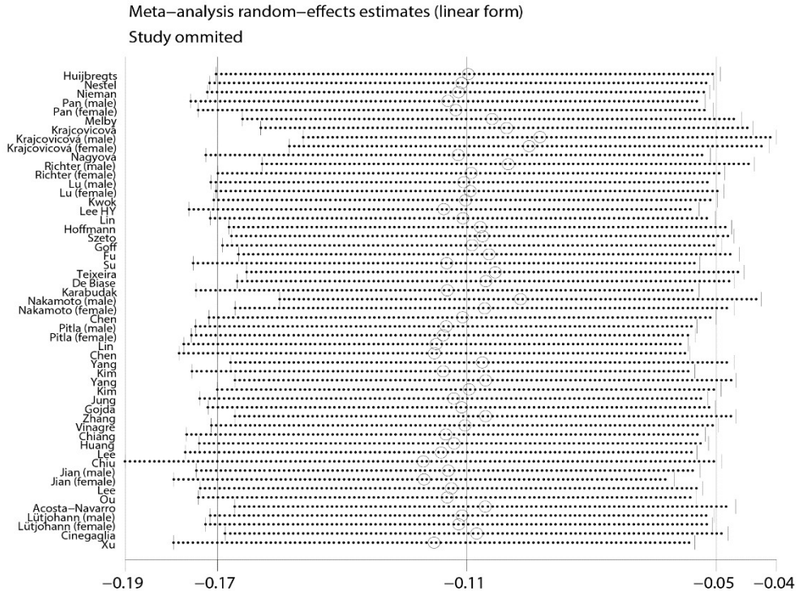
−0.48
−0.46

B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Nieman
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Melby
Krajcovicova
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Krajcovicova (female)
Nagyova
Richter (male)
Richter (female)
Lu (male)
Lu (female)
Kwok
Lee HY
Lin
Hoffmann
Szeto
Goff
Fu
Su
Teixeira
De Biase
Karabudak
Nakamoto (male)
Nakamoto (female)
Chen
Pitla (male)
Pitla (female)
Lin
Chen
Yang
Kim
Yang
Kim
Jung
Gojda
Zhang
Vinagre
Chiang
Huang
Lee
Chiu
Jian (male)
Jian (female)
Lee
Ou
Acosta−Navarro
Lütjohann (male)
Lütjohann (female)
Cinegaglia
Xu
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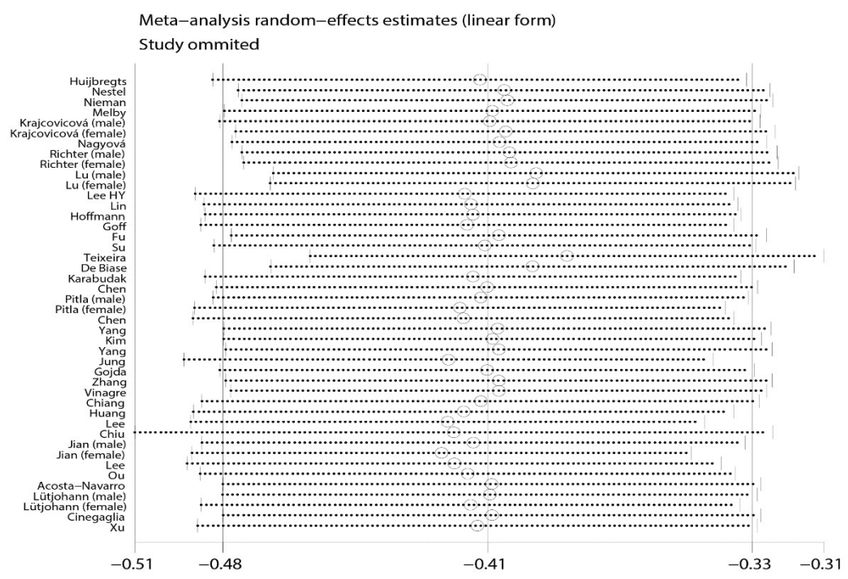
C


Meta−analysis random−effects estimates (linear form)
Study ommited
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Nieman
Melby
Krajcovicová (male)
Krajcovicová (female)
Nagyová
Richter (male)
Richter (female)
Lu (male)
Lu (female)
Lee HY
Lin
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Gojda
Zhang
Vinagre
Chiang
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Chiu
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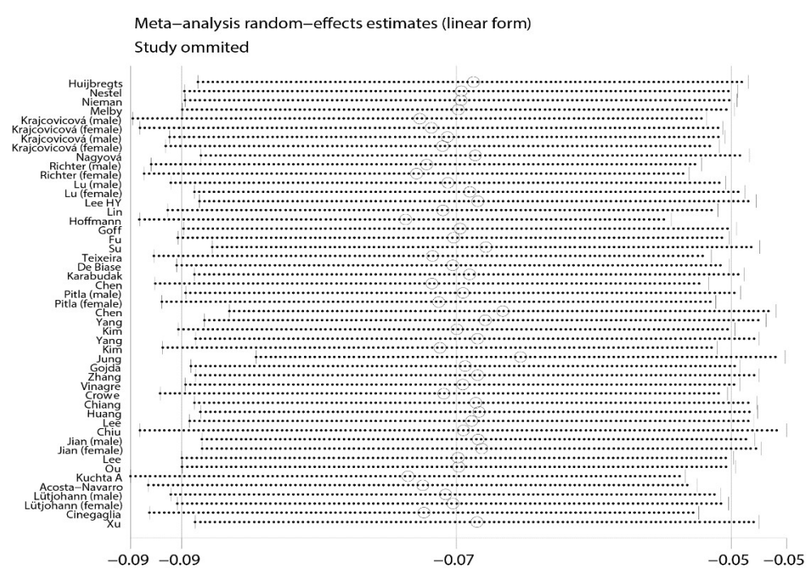
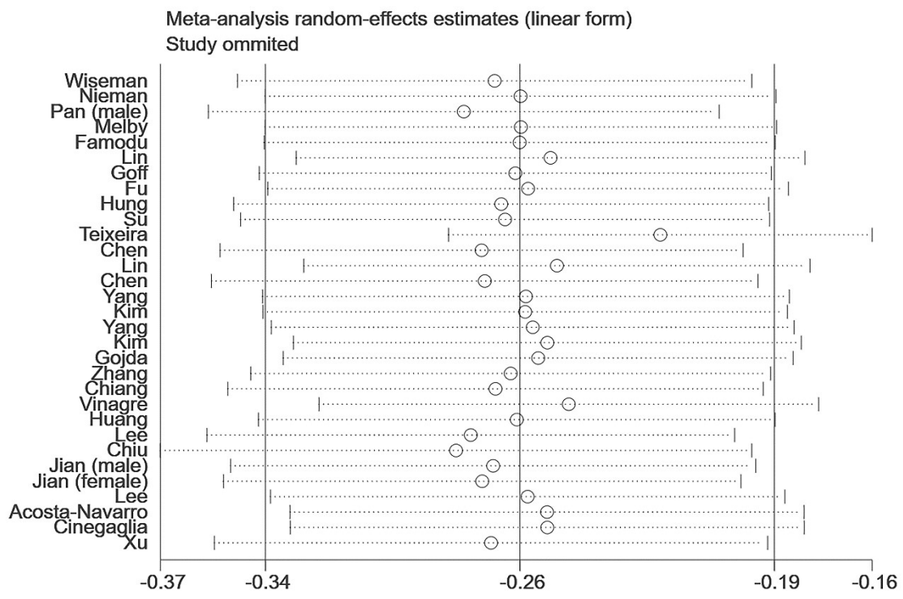
Jian (female)
Lee
Ou
Acosta−Navarro
Lütjohann (male)
Lütjohann (female)
Cinegaglia
Xu
−0.51
−0.48
−0.41
−0.33
−0.31

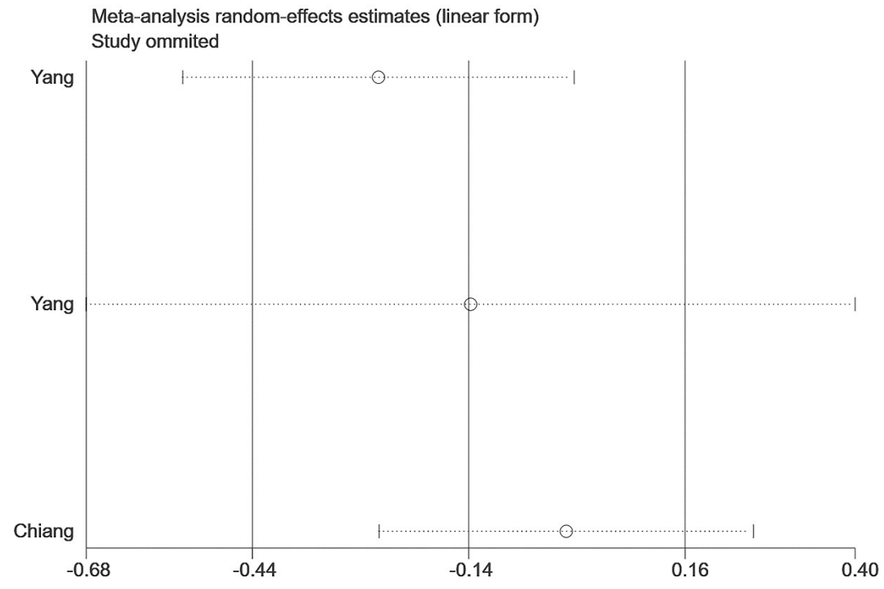
D


Meta−analysis random−effects estimates (linear form)
Study ommited
Huijbregts
Nestel
Nieman
Melby
Krajcovicová (male)
Krajcovicová (female)
Krajcovicová (male)
Krajcovicová (female)
Nagyová
Richter (male)
Richter (female)
Lu (male)
Lu (female)
Lee HY
Lin
Hoffmann
Goff
Fu
Su
Teixeira
De Biase
Karabudak
Chen
Pitla (male)
Pitla (female)
Chen
Yang
Kim
Yang
Kim
Jung
Gojda
Zhang
Vinagre
Crowe
Chiang
Huang
Lee
Chiu
Jian (male)
Jian (female)
Lee
Ou
Kuchta A
Acosta−Navarro
Lütjohann (male)
Lütjohann (female)
Cinegaglia
Xu
−0.09
−0.09
−0.07
−0.05
−0.05

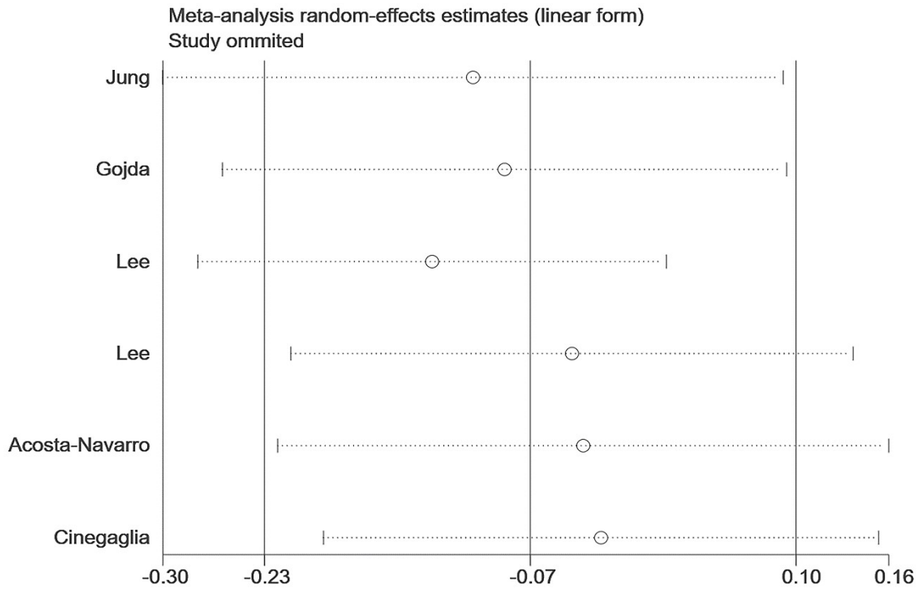
E


Meta-analysis random-effects estimates (linear form)
Study ommited
Wiseman
Nieman
Pan (male)
Melby
Famodu
Lin
Goff
Fu
Hung
Su
Teixeira
Chen
Lin
Chen
Yang
Kim
Yang
Kim
Gojda
Zhang
Chiang
Vinagre
Huang
Lee
Chiu
Jian (male)
Jian (female)
Lee
Acosta-Navarro
Cinegaglia
Xu
-0.37
-0.34
-0.26
-0.19
-0.16

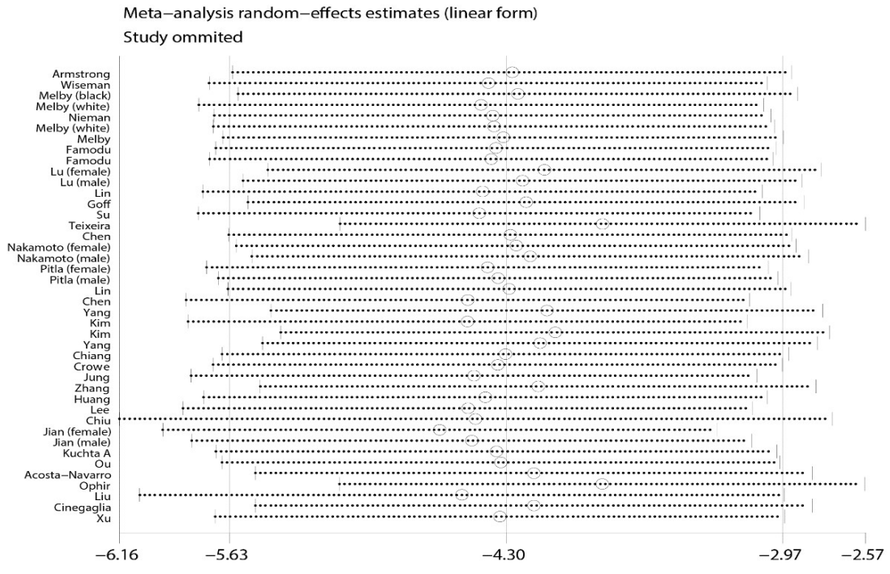
F


Meta-analysis random-effects estimates (linear form)
Study ommited
Yang
Yang
Chiang
-0.68
-0.44
-0.14
0.16
0.40

G


Meta-analysis random-effects estimates (linear form)
Study ommited
Jung
Gojda
Lee
Lee
Acosta-Navarro
Cinegaglia
-0.30
-0.23
-0.07
0.10
0.16

H


Meta−analysis random−effects estimates (linear form)
Study ommited
Armstrong
Wiseman
Melby (black)
Melby (white)
Nieman
Melby (white)
Melby
Famodu
Famodu
Lu (female)
Lu (male)
Lin
Goff
Su
Teixeira
Chen
Nakamoto (female)
Nakamoto (male)
Pitla (female)
Pitla (male)
Lin
Chen
Yang
Kim
Kim
Yang
Chiang
Crowe
Jung
Zhang
Huang
Lee
Chiu
Jian (female)
Jian (male)
Kuchta A
Ou
Acosta−Navarro
Ophir
Liu
Cinegaglia
Xu
−6.16
−5.63
−4.30
−2.97
−2.57

I

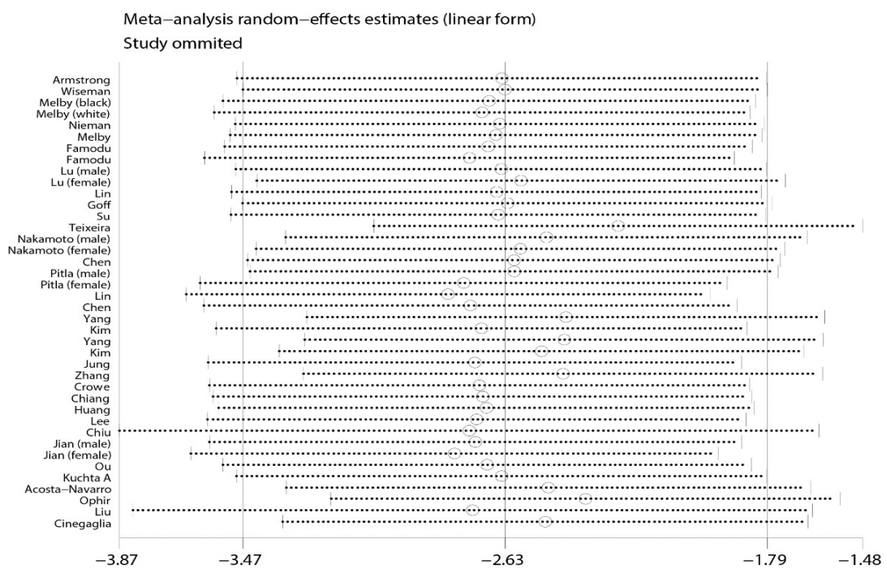
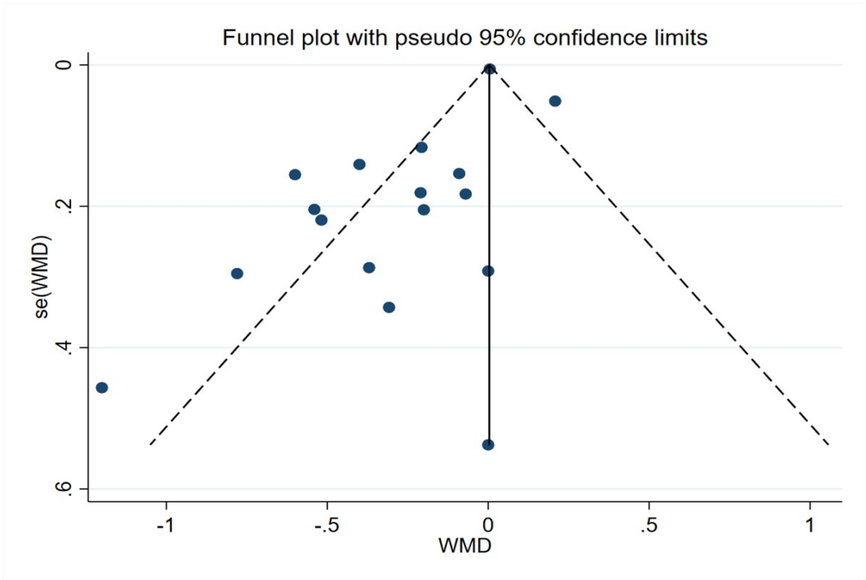
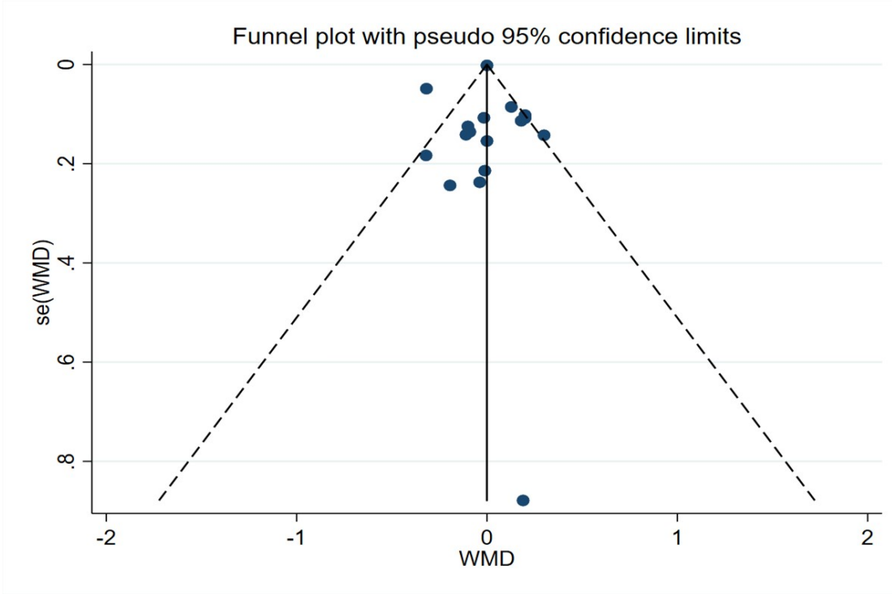


Figure S4. Sensitivity analysis for the included observational studies.
A.TC: total cholesterol; B. TG: triglyceride; C. LDL-C: low-density lipoprotein-cholesterol; D. HDL-C: high-density lipoprotein-cholesterol; E. FBG: fasting blood glucose; F. HOMA-IR: homeostatic model assessment for insulin resistance; G. HbA1c: glycosylated hemoglobin; H. SBP: systolic blood pressure; I. DBP: diastolic blood pressure.

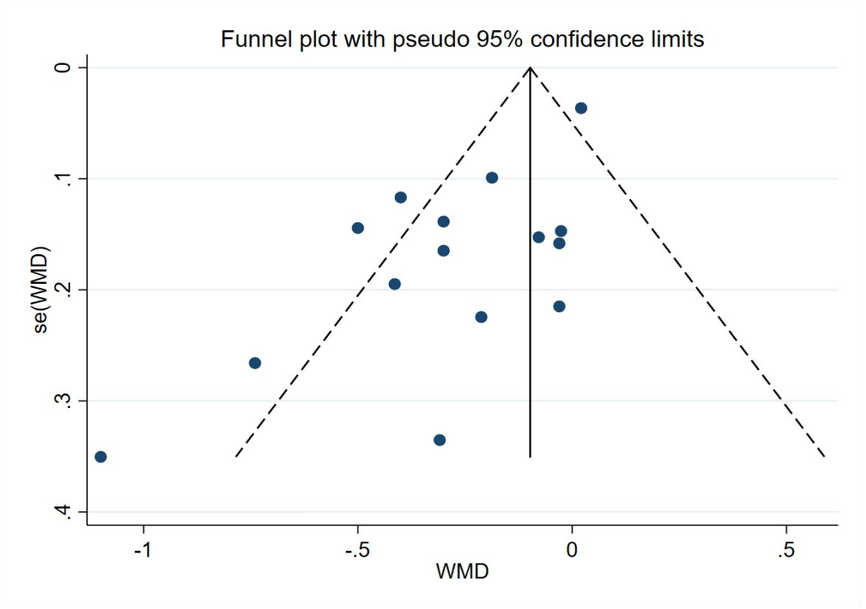
A


Funnel plot with pseudo 95% confidence limits
se(WMD)
0
.2
.4
.6
-1
-.5
0
.5
1
WMD

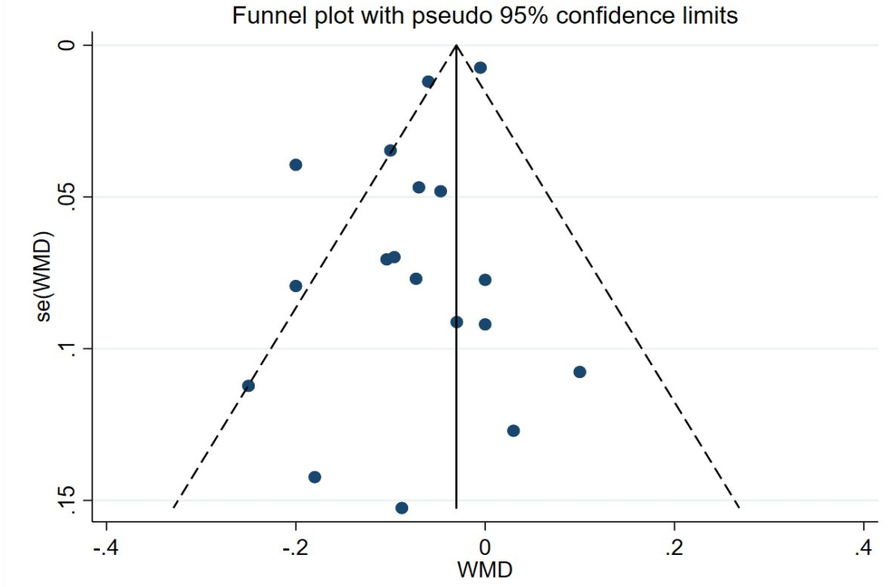
B


Funnel plot with pseudo 95% confidence limits
se(WMD)
0
.2
.4
.6
.8
-2
-1
0
1
2
WMD

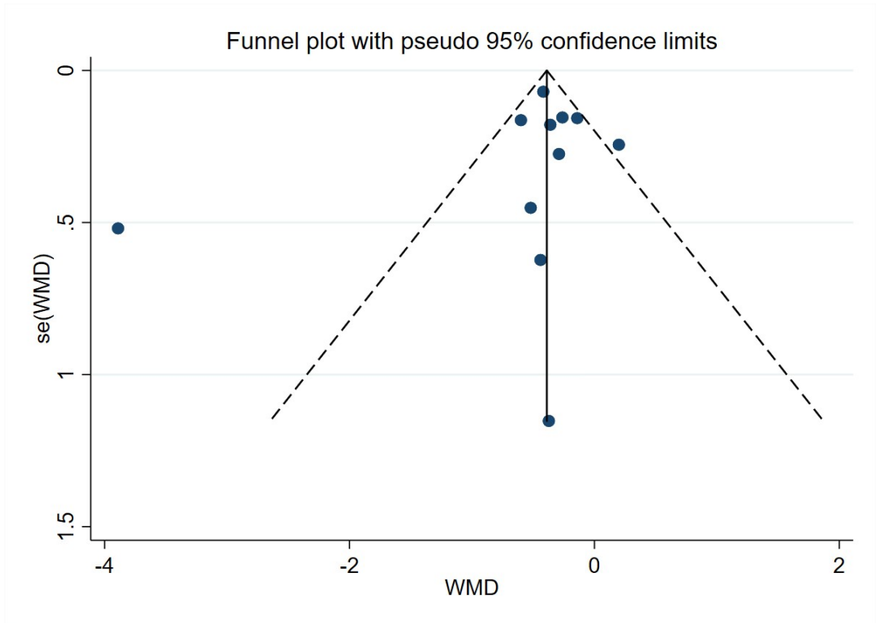
C


Funnel plot with pseudo 95% confidence limits
se(WMD)
0
.1
.2
.3
.4
-1
-.5
0
.5
WMD

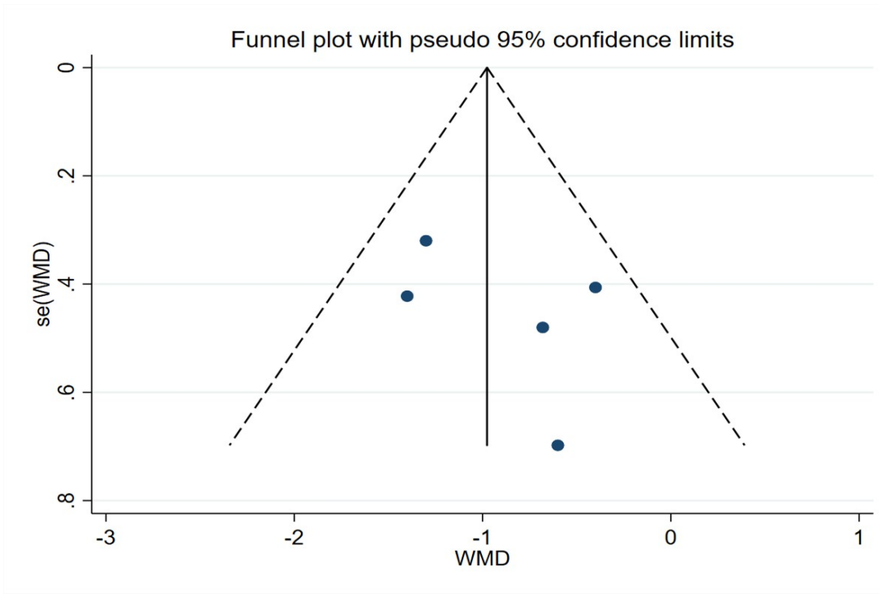
D


Funnel plot with pseudo 95% confidence limits
se(WMD)
0
.05
.1
.15
-.4
-.2
0
.2
.4
WMD

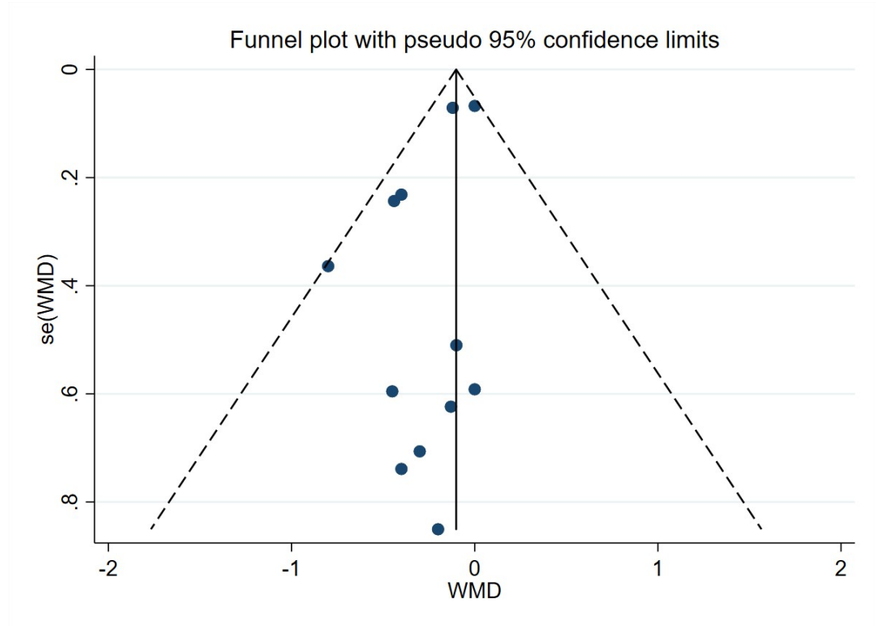
E


Funnel plot with pseudo 95% confidence limits
se(WMD)
0
.5
1
1.5
-4
-2
0
2
WMD

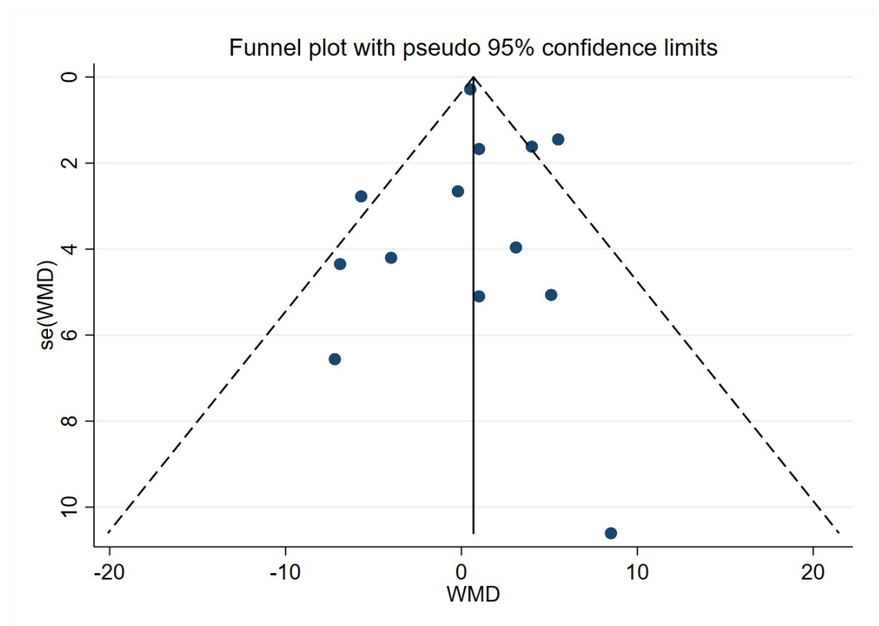
F


Funnel plot with pseudo 95% confidence limits
se(WMD)
0
.2
.4
.6
.8
-3
-2
-1
0
1
WMD

G


Funnel plot with pseudo 95% confidence limits
se(WMD)
0
.2
.4
.6
.8
-2
-1
0
1
2
WMD

H


Funnel plot with pseudo 95% confidence limits
se(WMD)
0
2
4
6
8
10
-20
-10
0
10
20
WMD

I

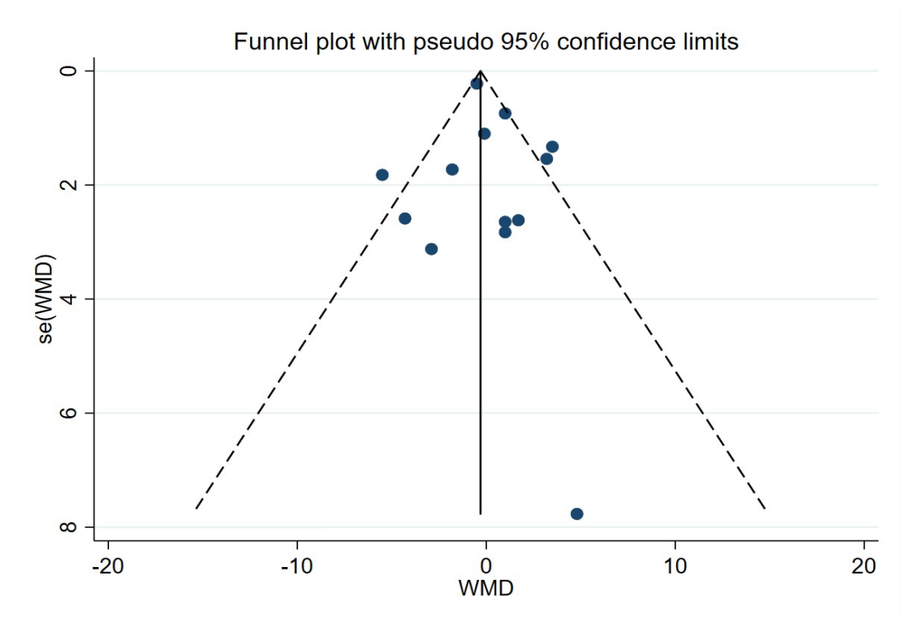
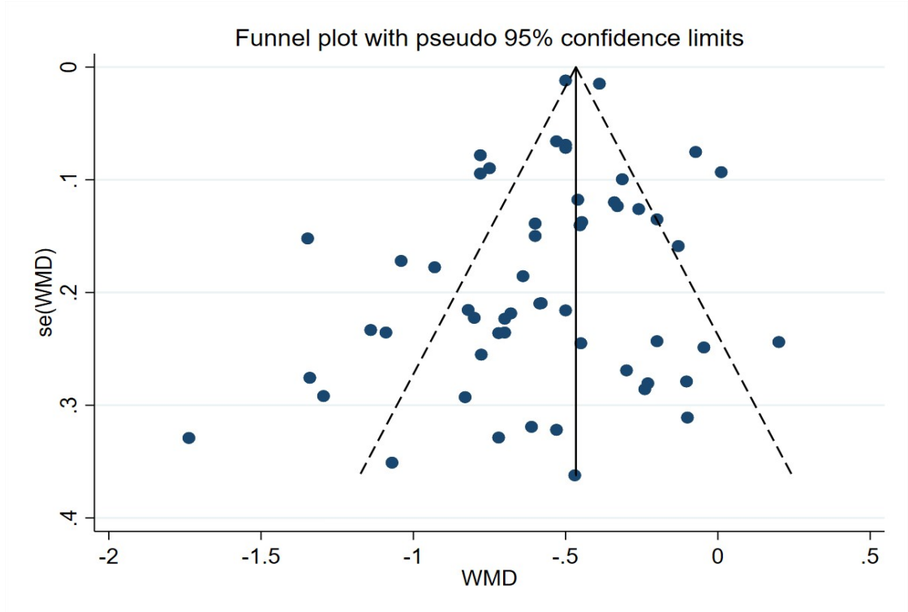
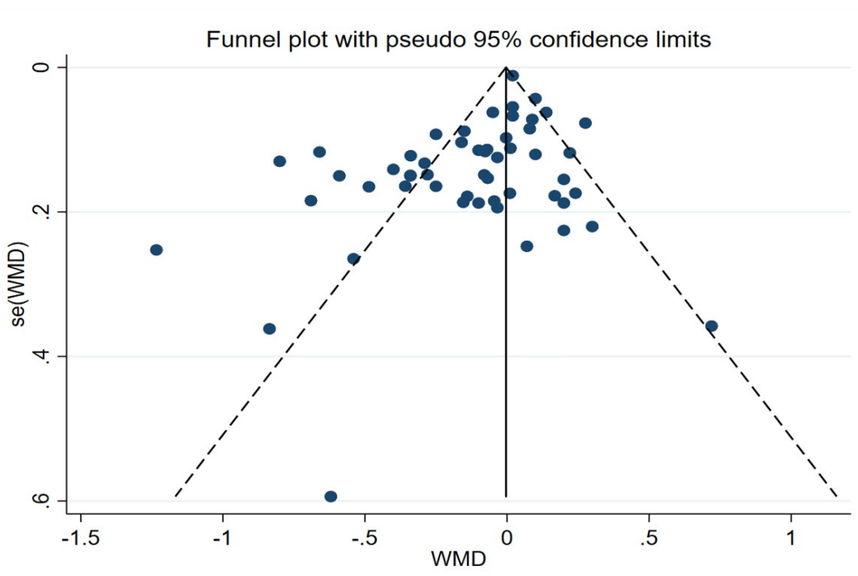


Figure S5. Funnel plots for the included randomized controlled trials.
A. TC: total cholesterol; B. TG: triglyceride; C. LDL-C: low-density lipoprotein-cholesterol; D. HDL-C: high-density lipoprotein-cholesterol; E. FBG: fasting blood glucose; F. HOMA-IR: homeostatic model assessment for insulin resistance; G. HbA1c: glycosylated hemoglobin; H. SBP: systolic blood pressure; I. DBP: diastolic blood pressure.

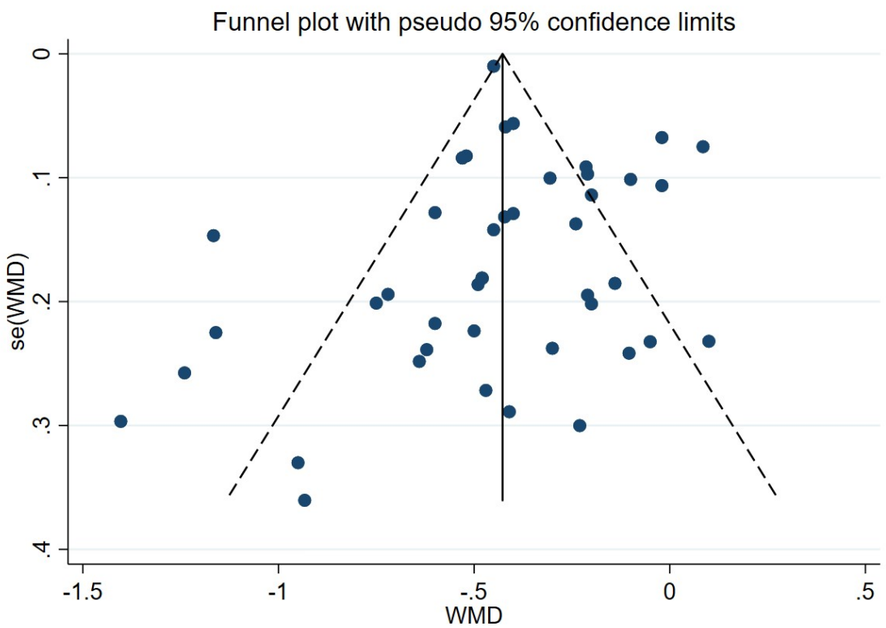
A


Funnel plot with pseudo 95% confidence limits
se(WMD)
0
.1
.2
.3
.4
-2
-1.5
-1
-.5
0
.5
WMD

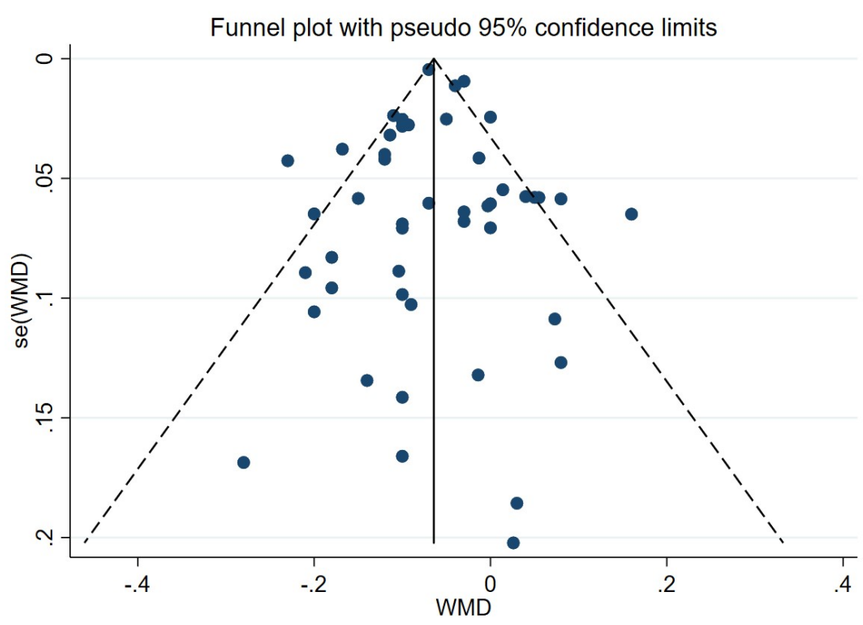
B


Funnel plot with pseudo 95% confidence limits
se(WMD)
0
.2
.4
.6
-1.5
-1
-.5
0
.5
1
WMD

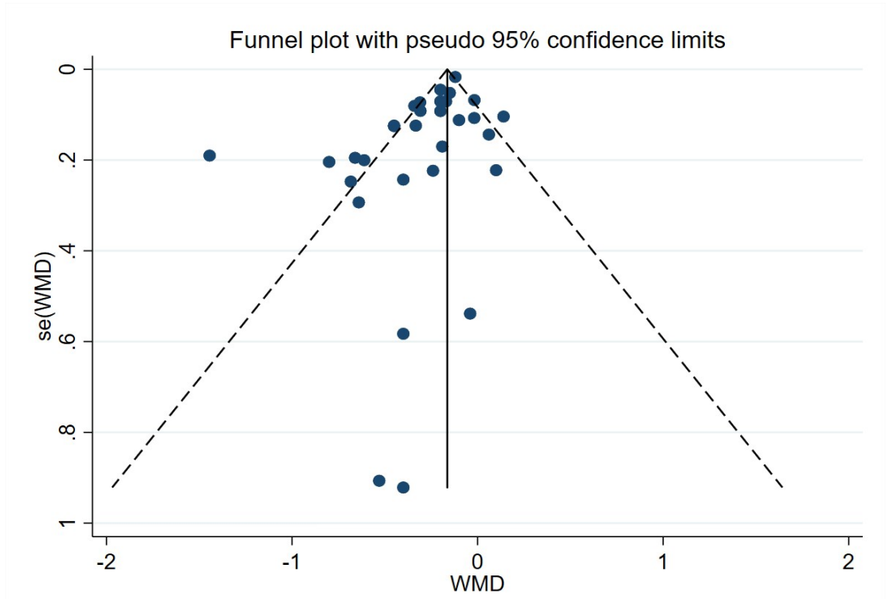
C


Funnel plot with pseudo 95% confidence limits
se(WMD)
0
.1
.2
.3
.4
-1.5
-1
-.5
0
.5
WMD

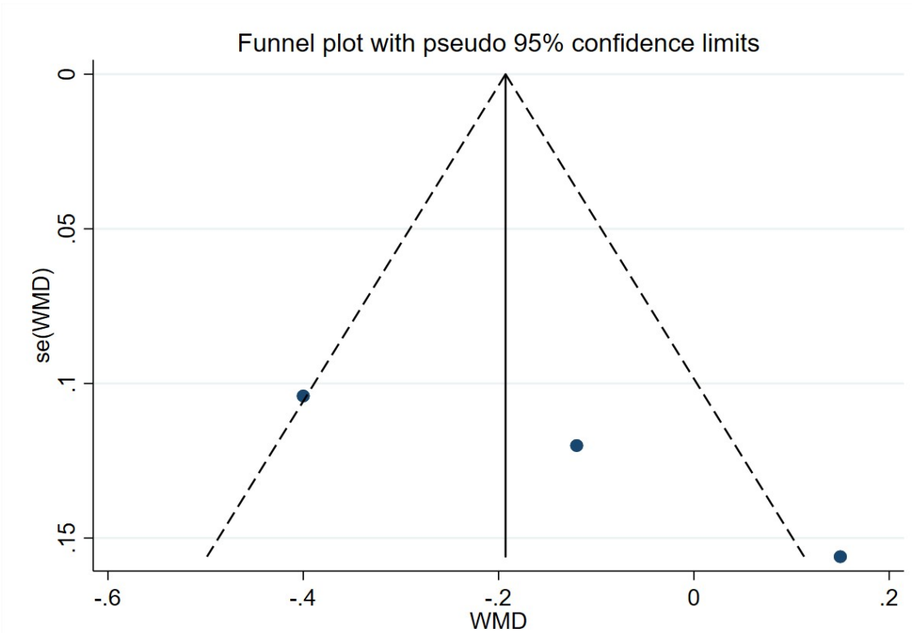
D


Funnel plot with pseudo 95% confidence limits
se(WMD)
0
.05
.1
.15
.2
-.4
-.2
0
.2
.4
WMD

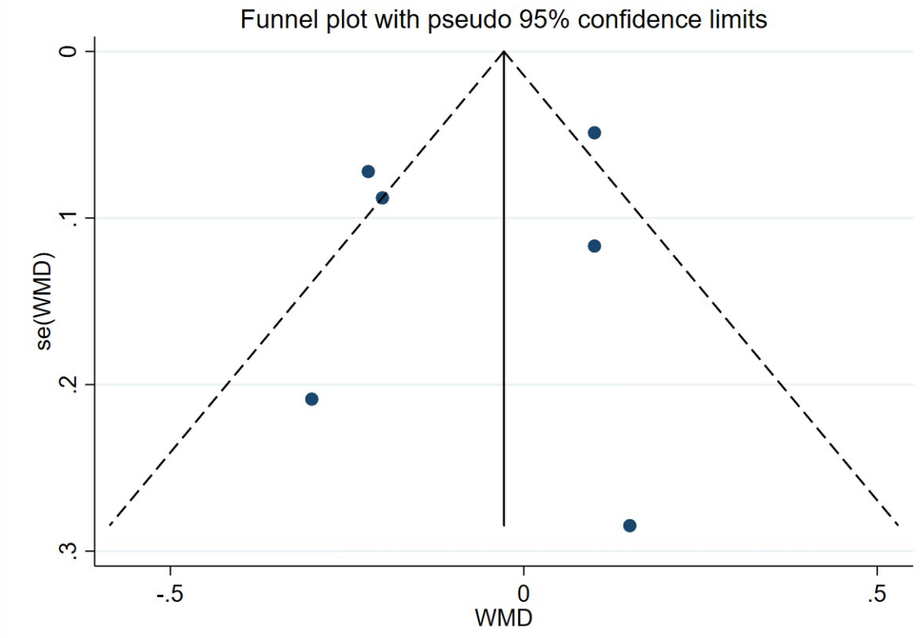
E


Funnel plot with pseudo 95% confidence limits
se(WMD)
0
.2
.4
.6
.8
1
-2
-1
0
1
2
WMD

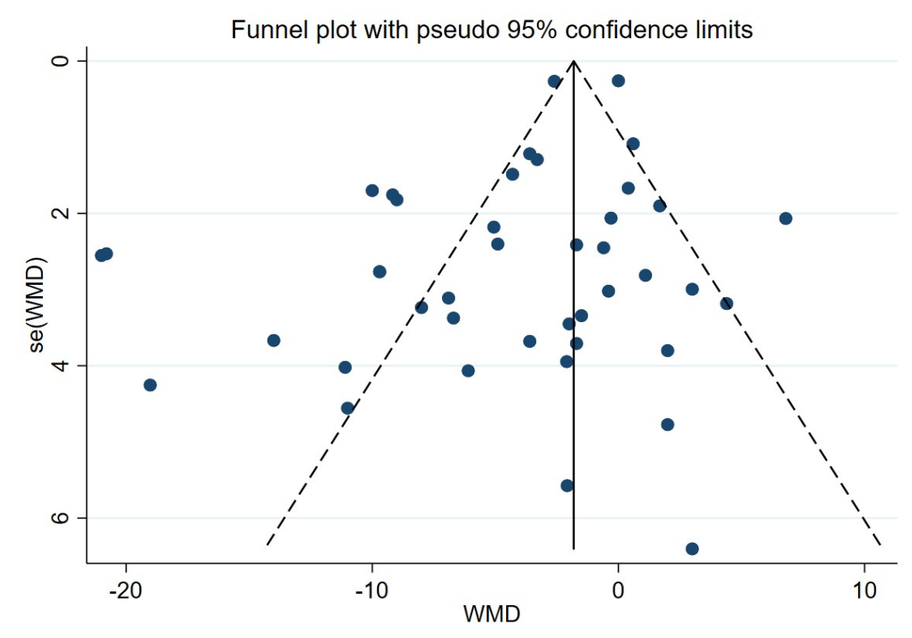
F


Funnel plot with pseudo 95% confidence limits
se(WMD)
0
.05
.1
.15
-.6
-.4
-.2
0
.2
WMD

G


Funnel plot with pseudo 95% confidence limits
se(WMD)
0
.1
.2
.3
-.5
0
.5
WMD

H


Funnel plot with pseudo 95% confidence limits
se(WMD)
0
2
4
6
-20
-10
0
10
WMD

I

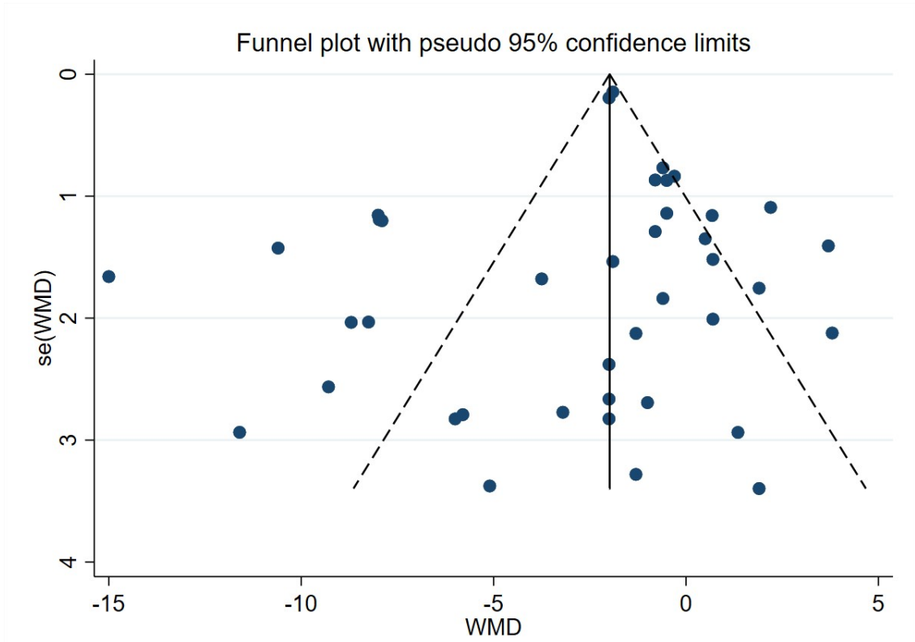


Figure S6. Funnel plots for the included observational studies.

A. TC: total cholesterol; B. TG: triglyceride; C. LDL-C: low-density lipoprotein-cholesterol; D. HDL-C: high-density lipoprotein-cholesterol; E. FBG: fasting blood glucose; F. HOMA-IR: homeostatic model assessment for insulin resistance; G. HbA1c: glycosylated hemoglobin; H. SBP: systolic blood pressure; I. DBP: diastolic blood pressure.