Study		MD	95%-CI
ZELBER–SAGI, 2006		-17.90	[-45.38; 9.58]
Harrison, 2009		-10.00	[-41.97; 21.97]
Harte, 2010		2.00	[-44.67; 48.67]
Ye, 2019		-10.90	[-22.45; 0.65]
Feng, 2023		-12.20	[-26.15; 1.75]
Zahmatkesh, 2023		-4.26	[-7.24; -1.28]
Random effects model		**-6.79**	**[-11.96; -1.63]**

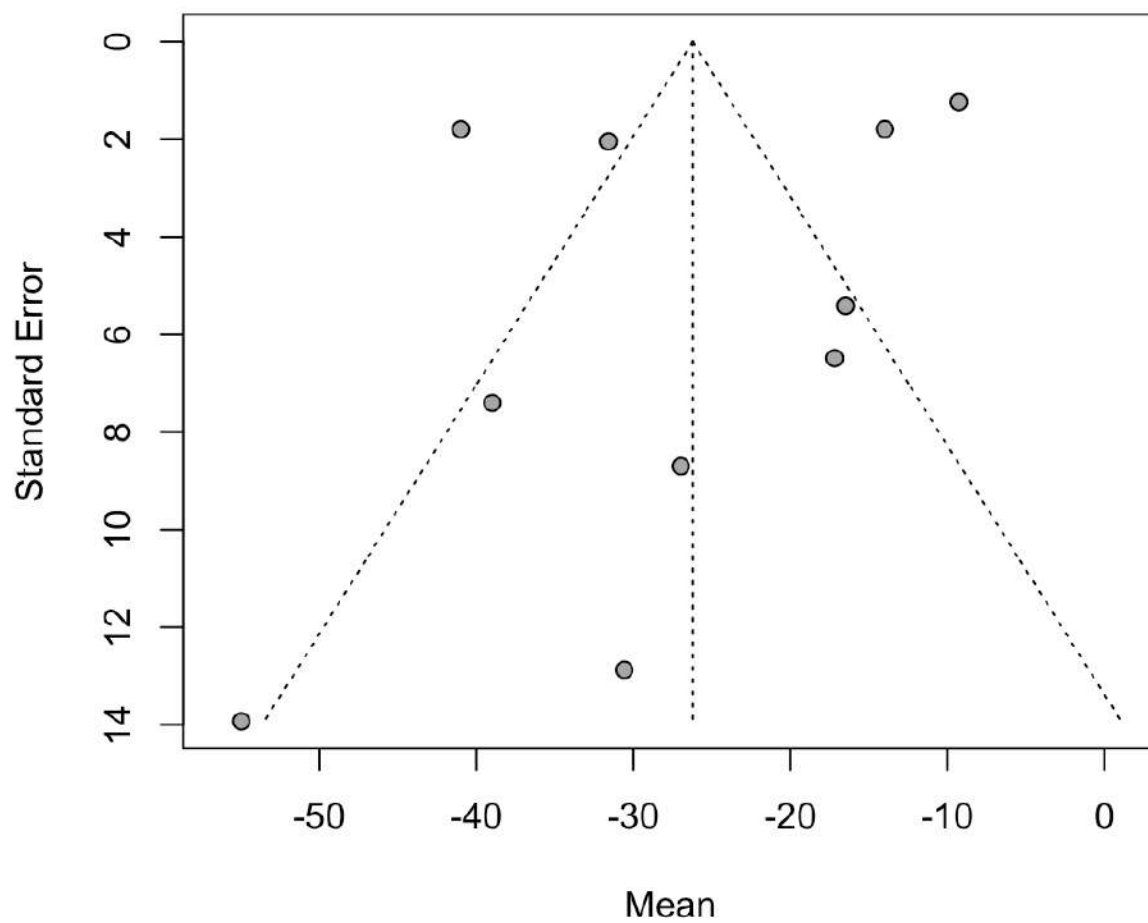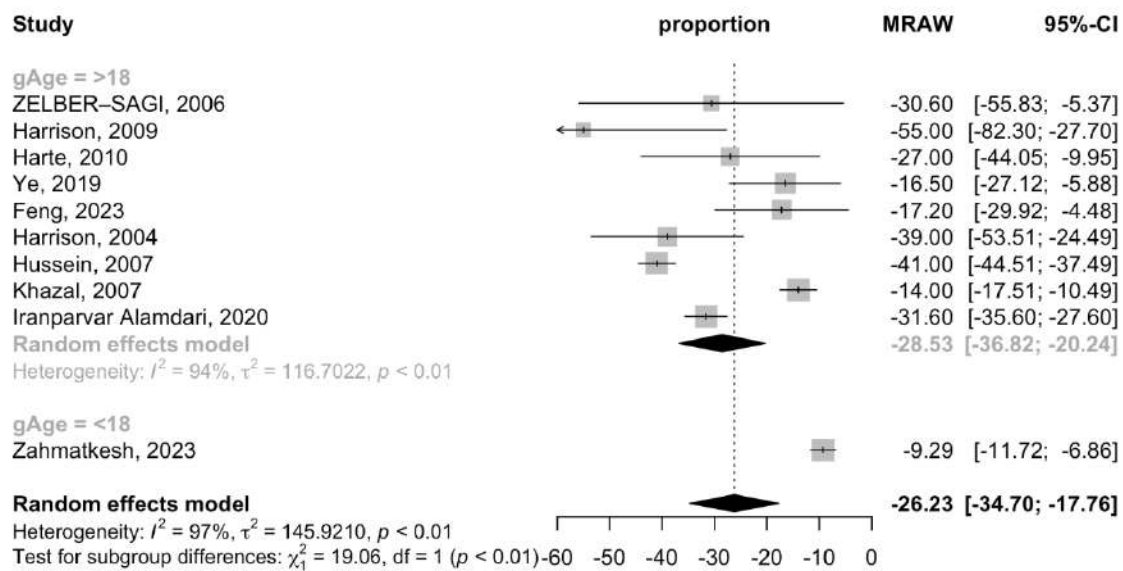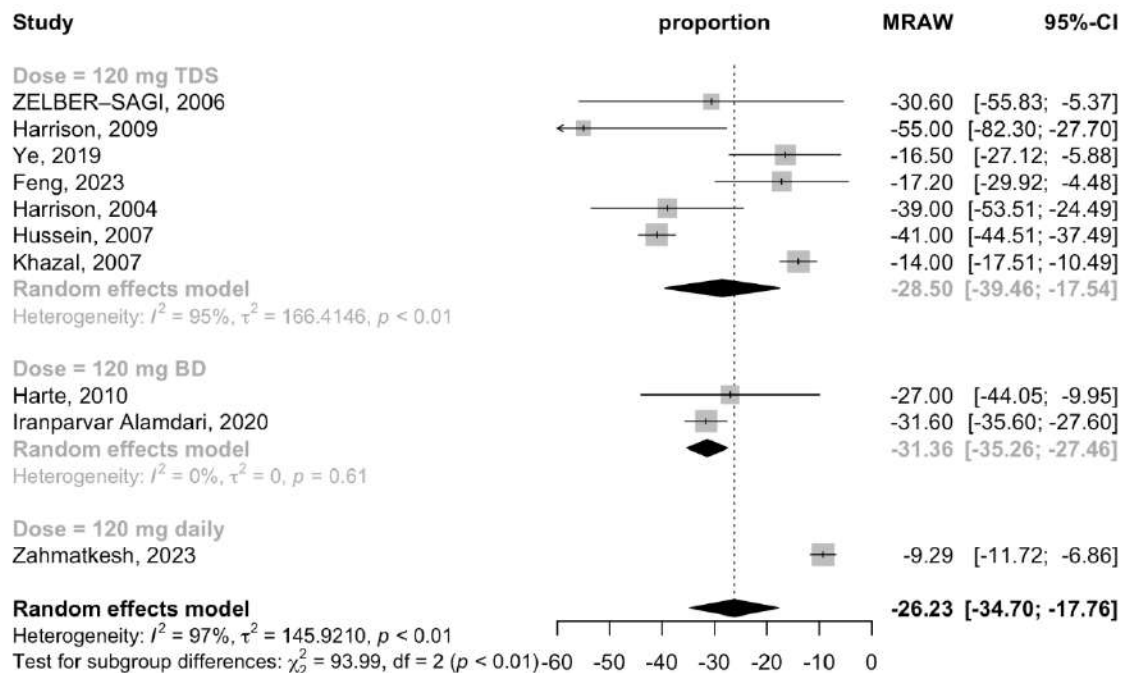Heterogeneity: $I^2 = 0\%$, $\tau^2 = 8.3522$, $p = 0.66$

Figure S1. Forest plot describing the effect of orlistat administration on ALT levels (in RCTs)
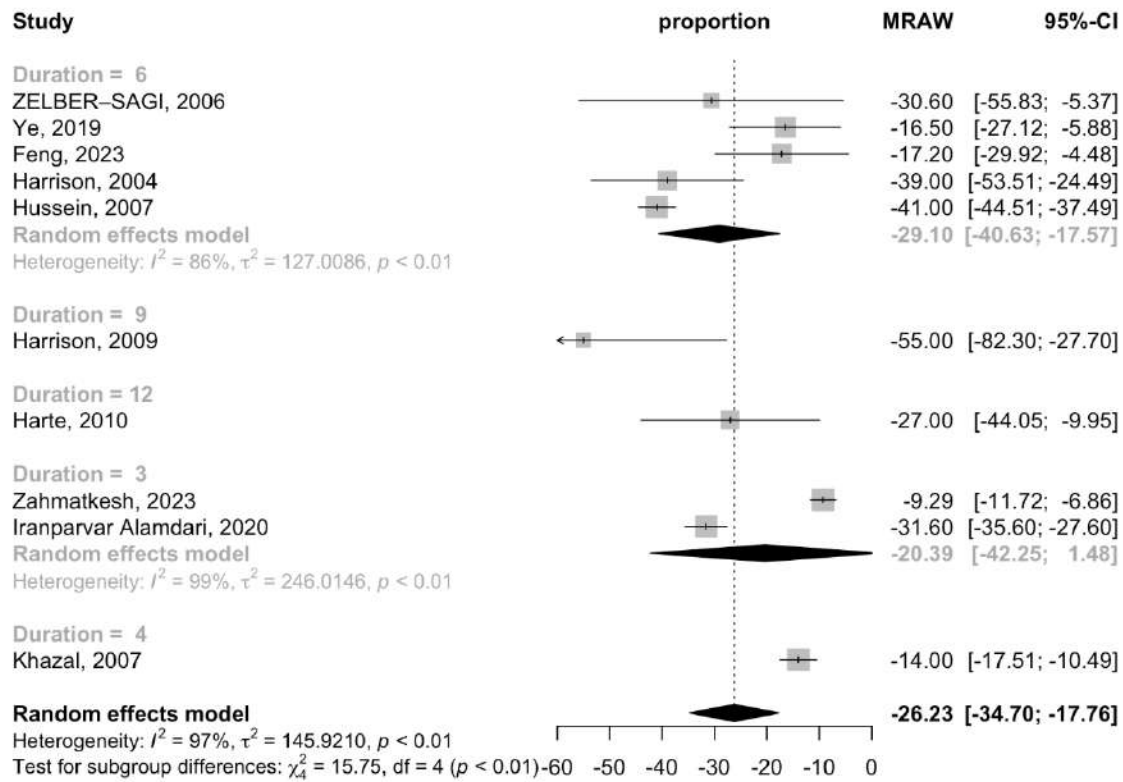
Figure S2. Funnel plot for the studies describing the effect of orlistat administration on ALT levels (in RCTs and single-arm trials)
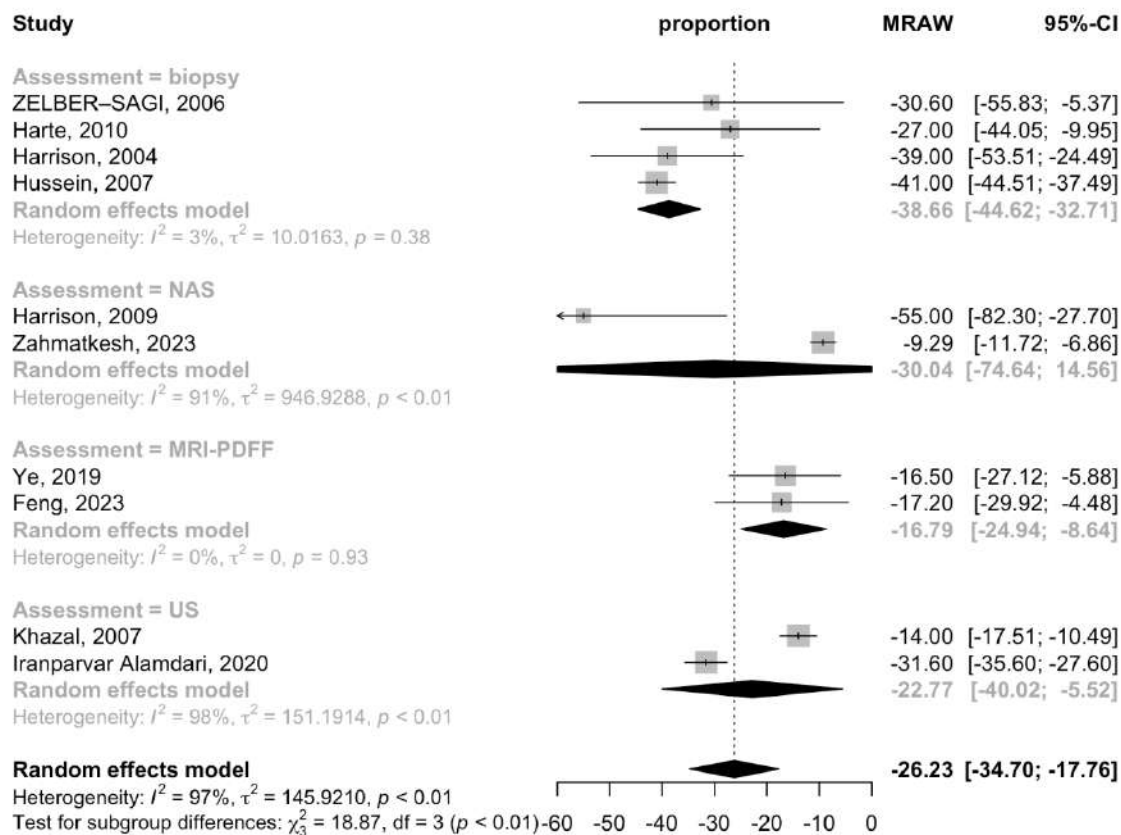
Figure S3. Forest plot describing the effect of orlistat administration on ALT levels (in RCTs and single-arm trials) (Subgroup analysis based on age of participants)
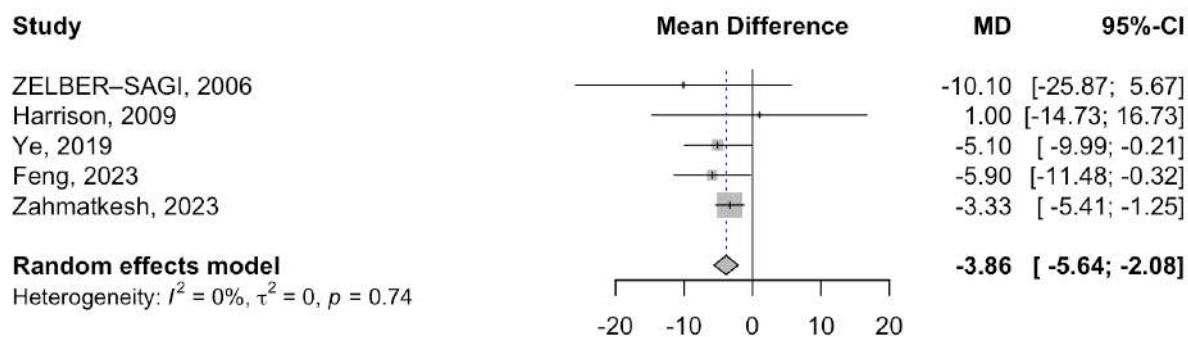

Figure S4. Forest plot describing the effect of orlistat administration on ALT levels (in RCTs and single-arm trials) (Subgroup analysis based on intake dose)

Figure S5. Forest plot describing the effect of orlistat administration on ALT levels (in RCTs and single-arm trials) (Subgroup analysis based on study duration)
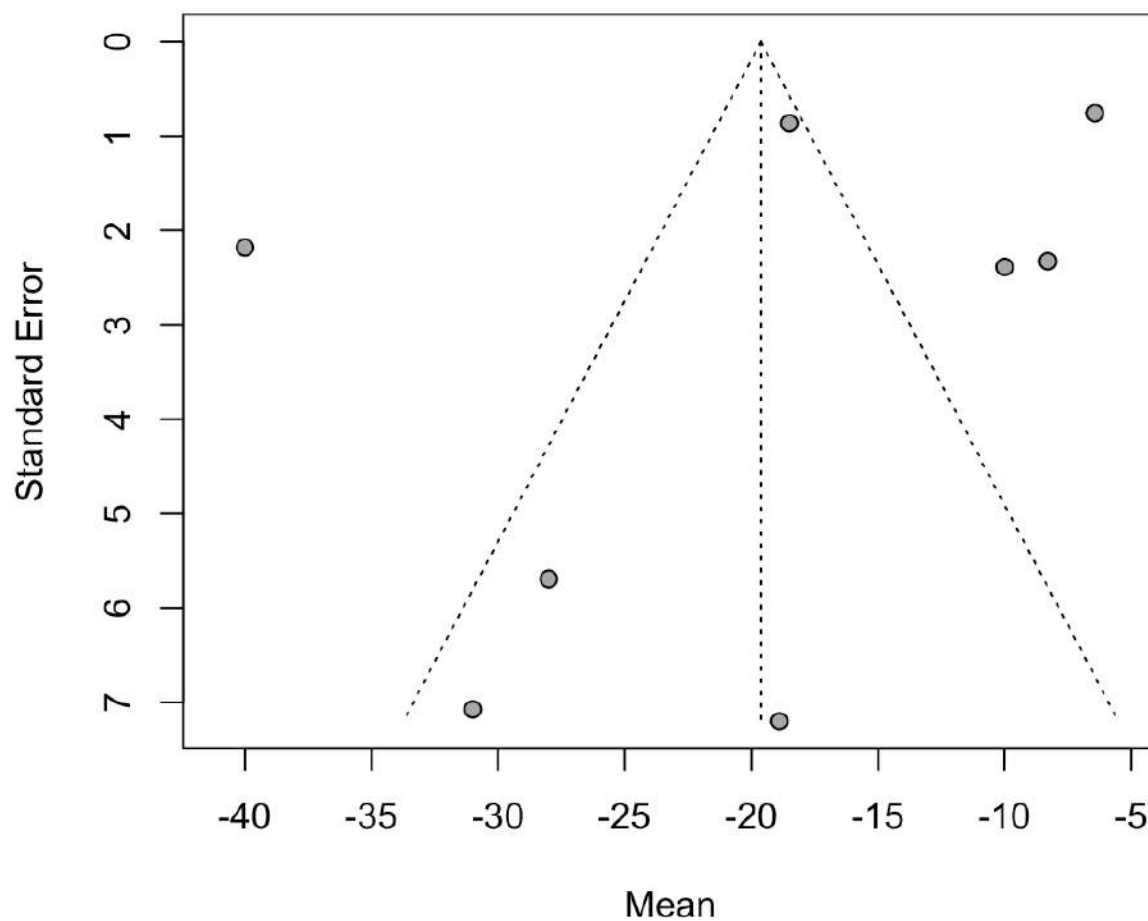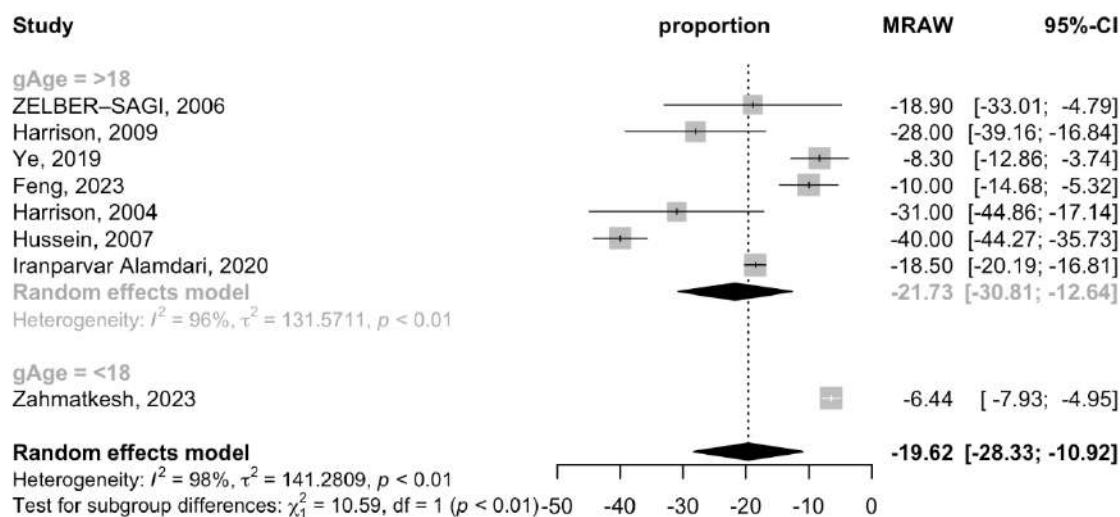
Figure S6. Forest plot describing the effect of orlistat administration on ALT levels (in RCTs and single-arm trials) (Subgroup analysis based on NAFLD detection method)
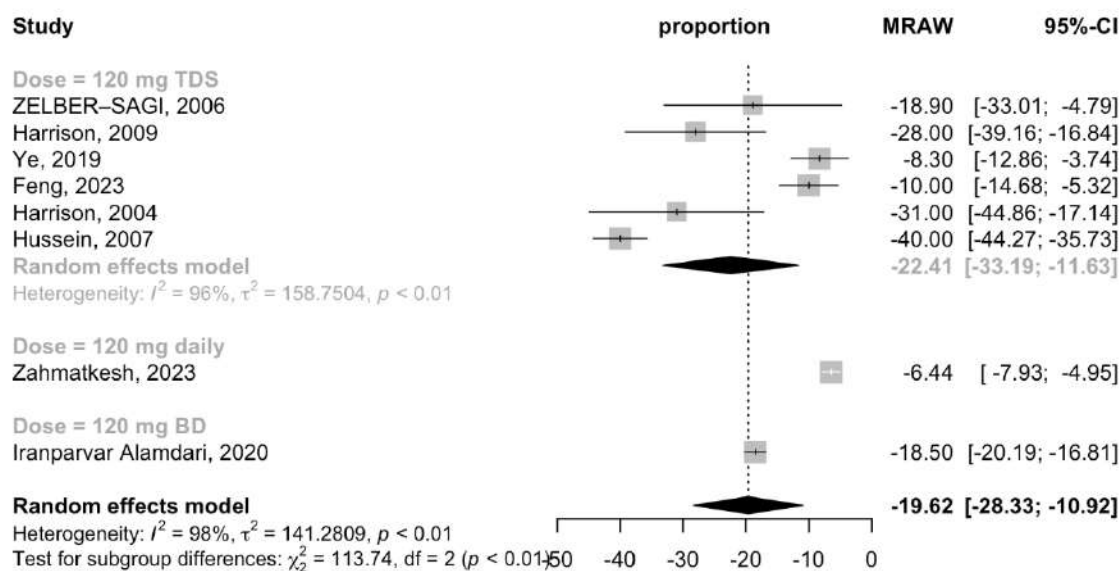

Figure S7. Forest plot describing the effect of orlistat administration on AST levels (in RCTs)
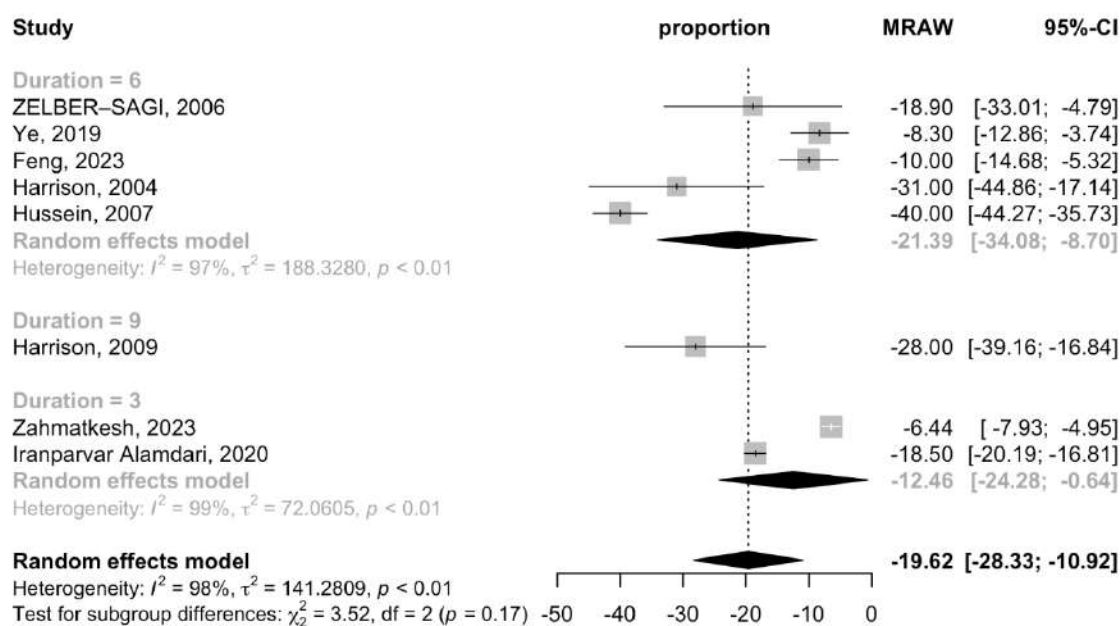
Figure S8. Funnel plot for the studies describing the effect of orlistat administration on AST levels (in RCTs and single-arm trials)

Figure S9. Forest plot describing the effect of orlistat administration on AST levels (in RCTs and single-arm trials) (Subgroup analysis based on age of participants)

Figure S10. Forest plot describing the effect of orlistat administration on AST levels (in RCTs and single-arm trials) (Subgroup analysis based on intake dose)

Figure S11. Forest plot describing the effect of orlistat administration on AST levels (in RCTs and single-arm trials) (Subgroup analysis based on study duration)
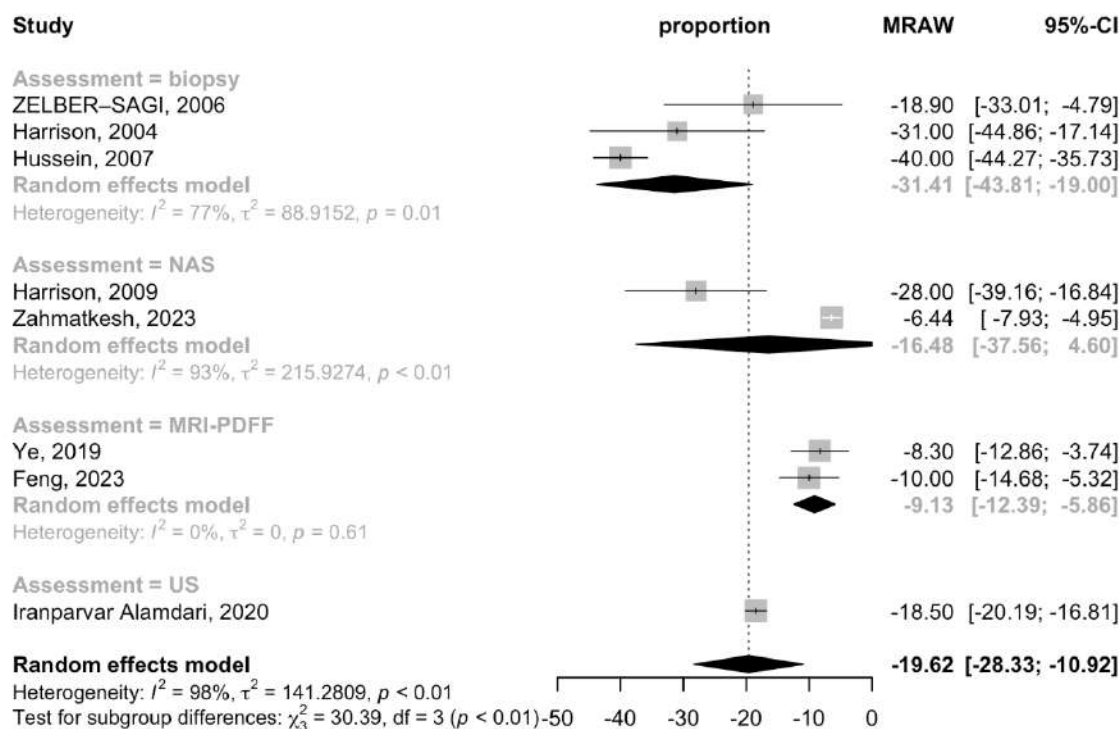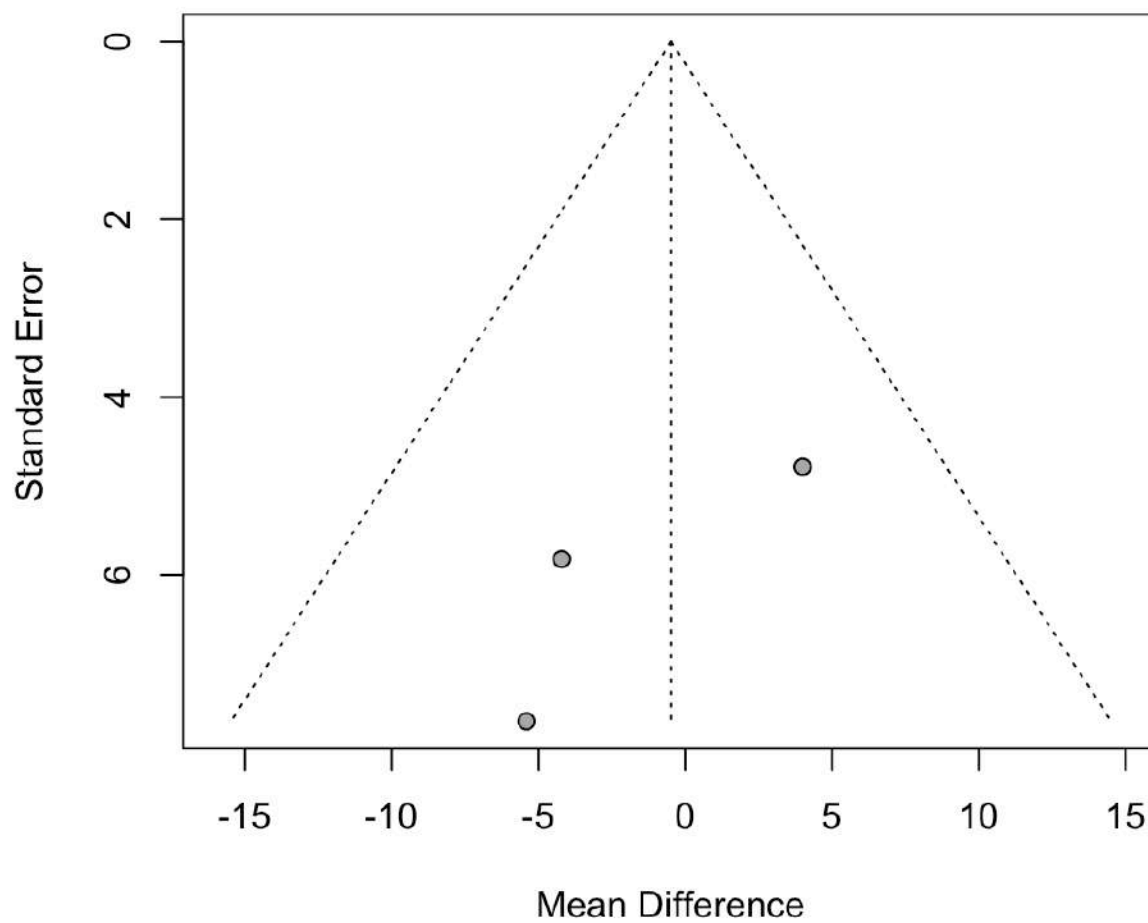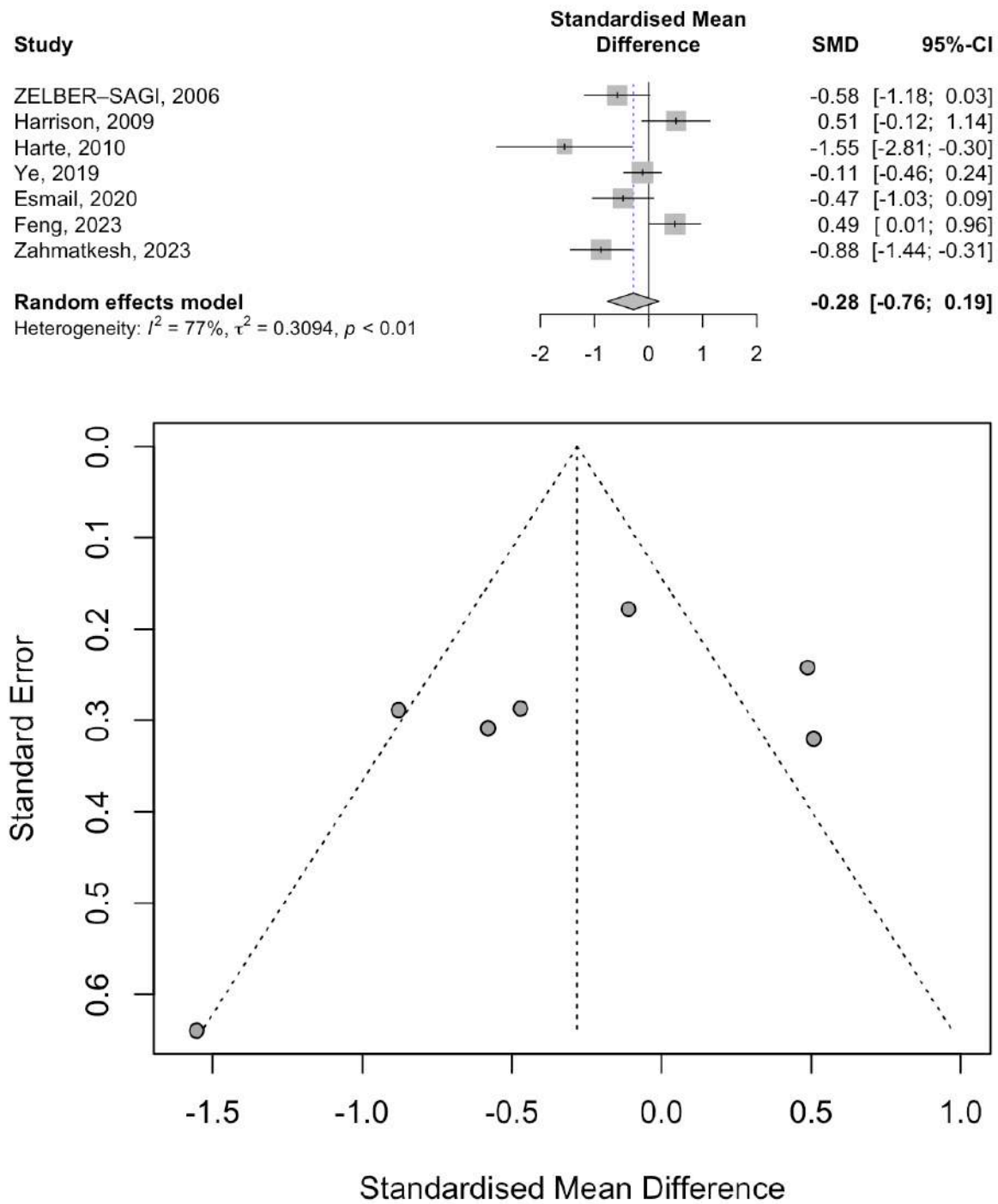

Figure S12. Forest plot describing the effect of orlistat administration on AST levels (in RCTs and single-arm trials) (Subgroup analysis based on NAFLD detection method)

Figure S13. Funnel plot for the studies describing the effect of orlistat administration on ALP levels

Figure S14. Forest and funnel plot for the studies describing the effect of orlistat administration on FBS

Figure S15. Forest plot for the studies describing the effect of orlistat administration on FBS (Subgroup analysis based on intake dose)

Figure S16. Forest plot for the studies describing the effect of orlistat administration on FBS (Subgroup analysis based on study duration)

Figure S17. Forest and funnel plot for studies describing the effect of orlistat administration on HOMA

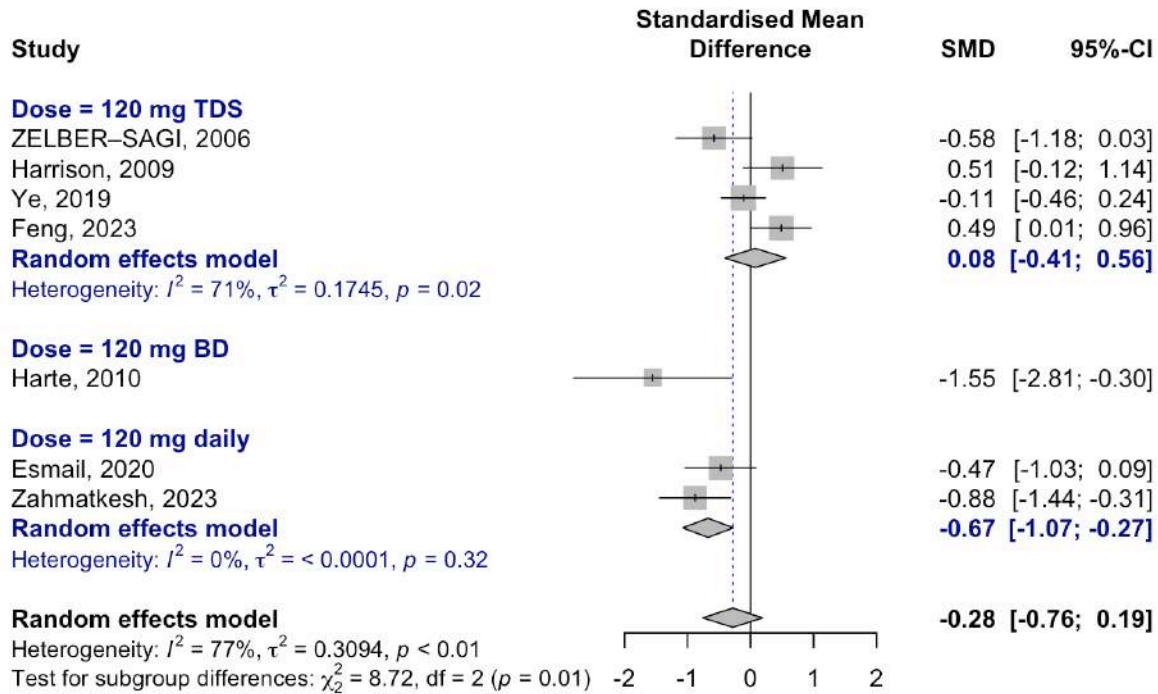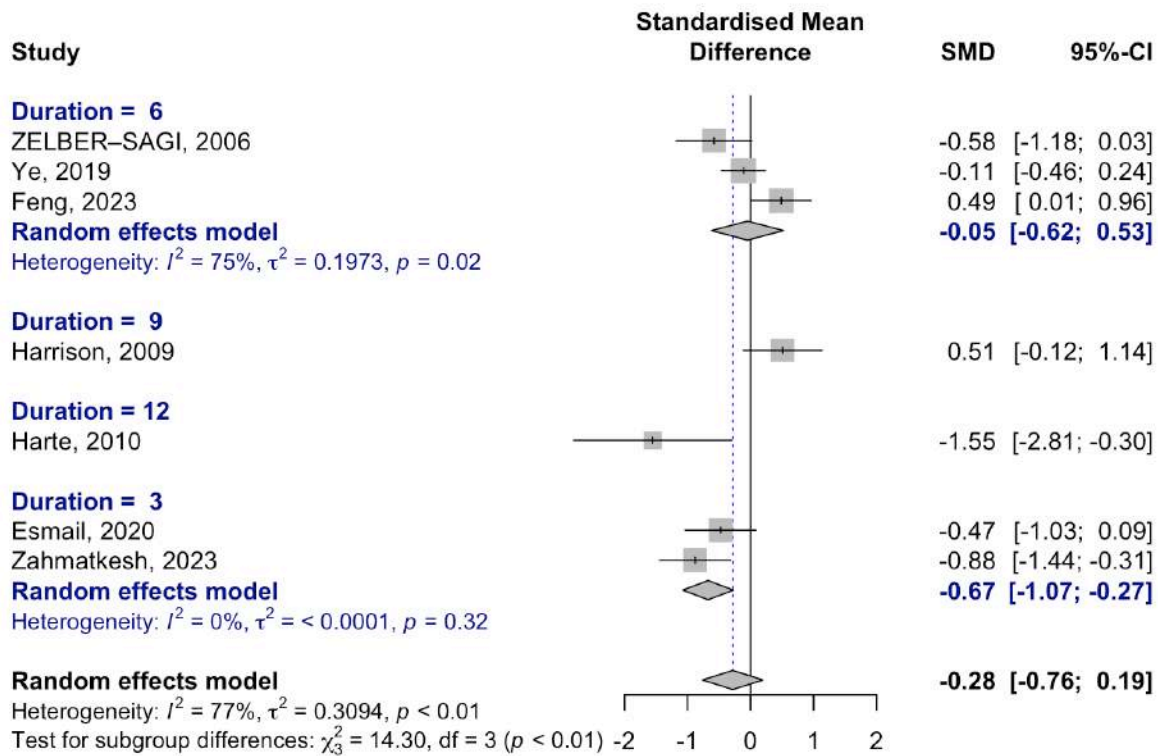**Figure S18.** Forest and funnel plot for studies describing the effect of orlistat administration on BMI
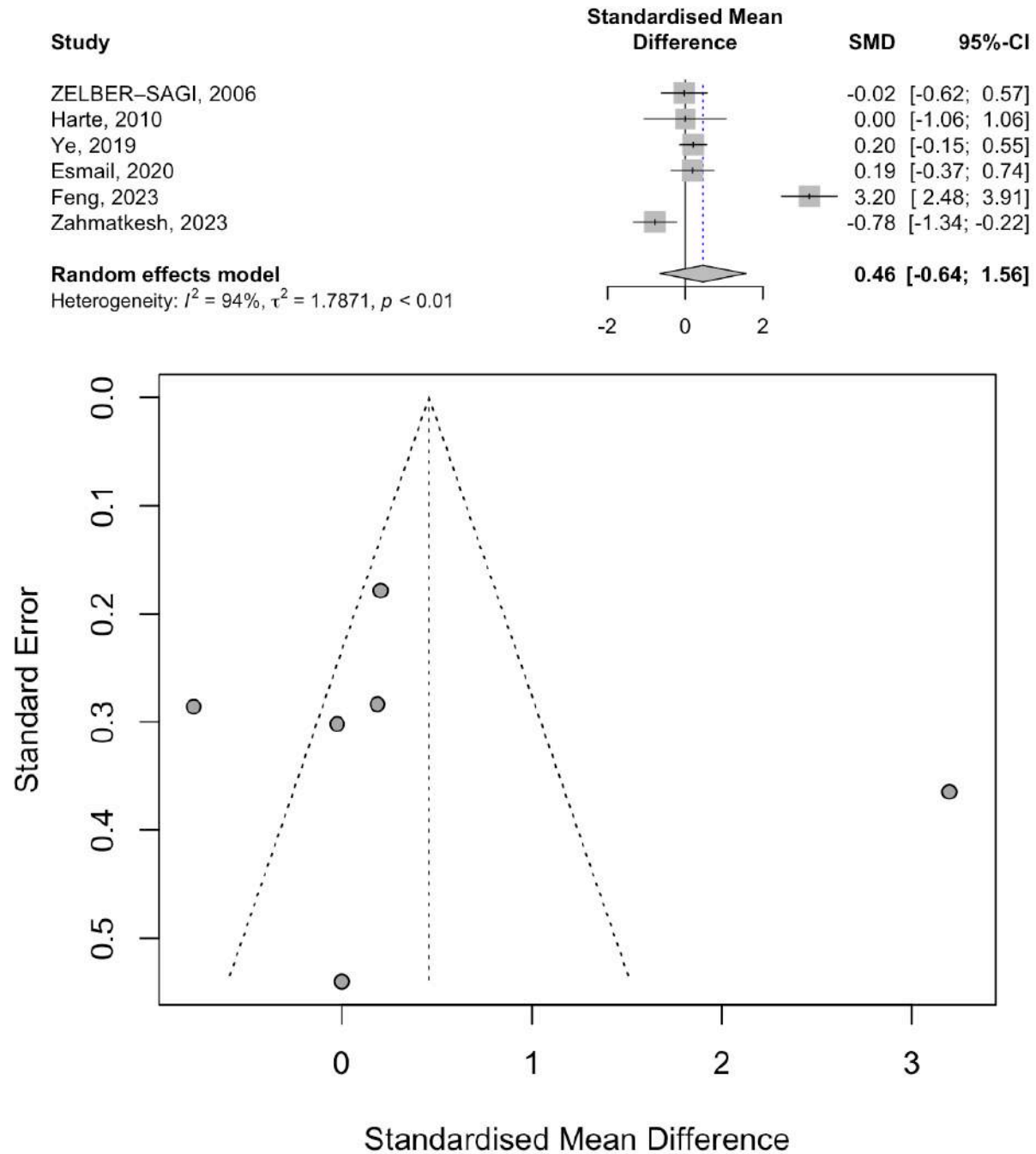
Figure S19. Forest and funnel plot for studies describing the effect of orlistat administration on TG levels

Figure S20. Forest plot for studies describing the effect of orlistat administration on TG levels (after removal of Feng's study)

Figure S21. Forest and funnel plot for studies describing the effect of orlistat administration on cholesterol levels

Figure S22. Forest plot for studies describing the effect of orlistat administration on cholesterol levels (after removal of Feng's study)

Figure S23. Forest and funnel plot for studies describing the effect of orlistat administration on insulin levels
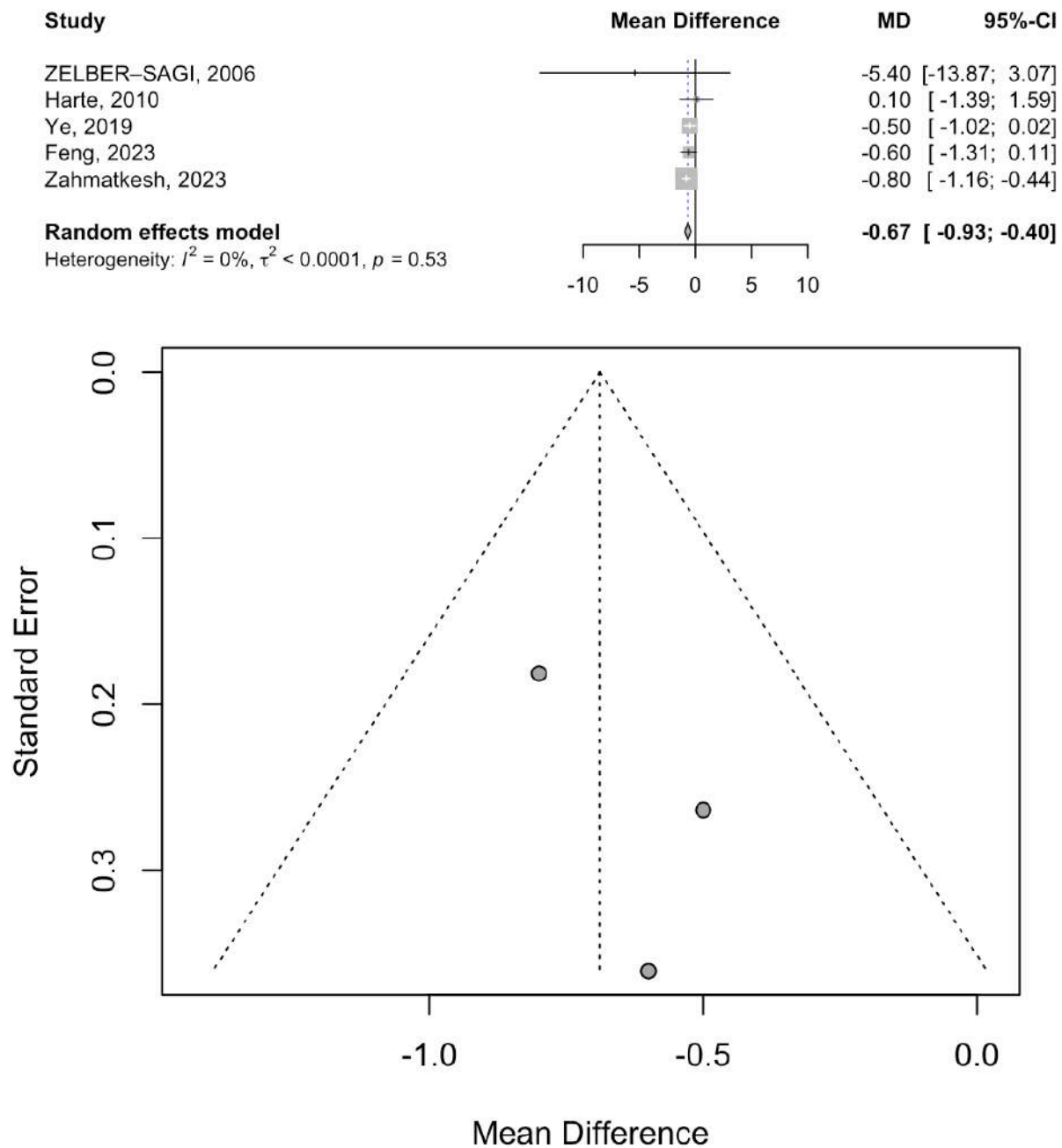
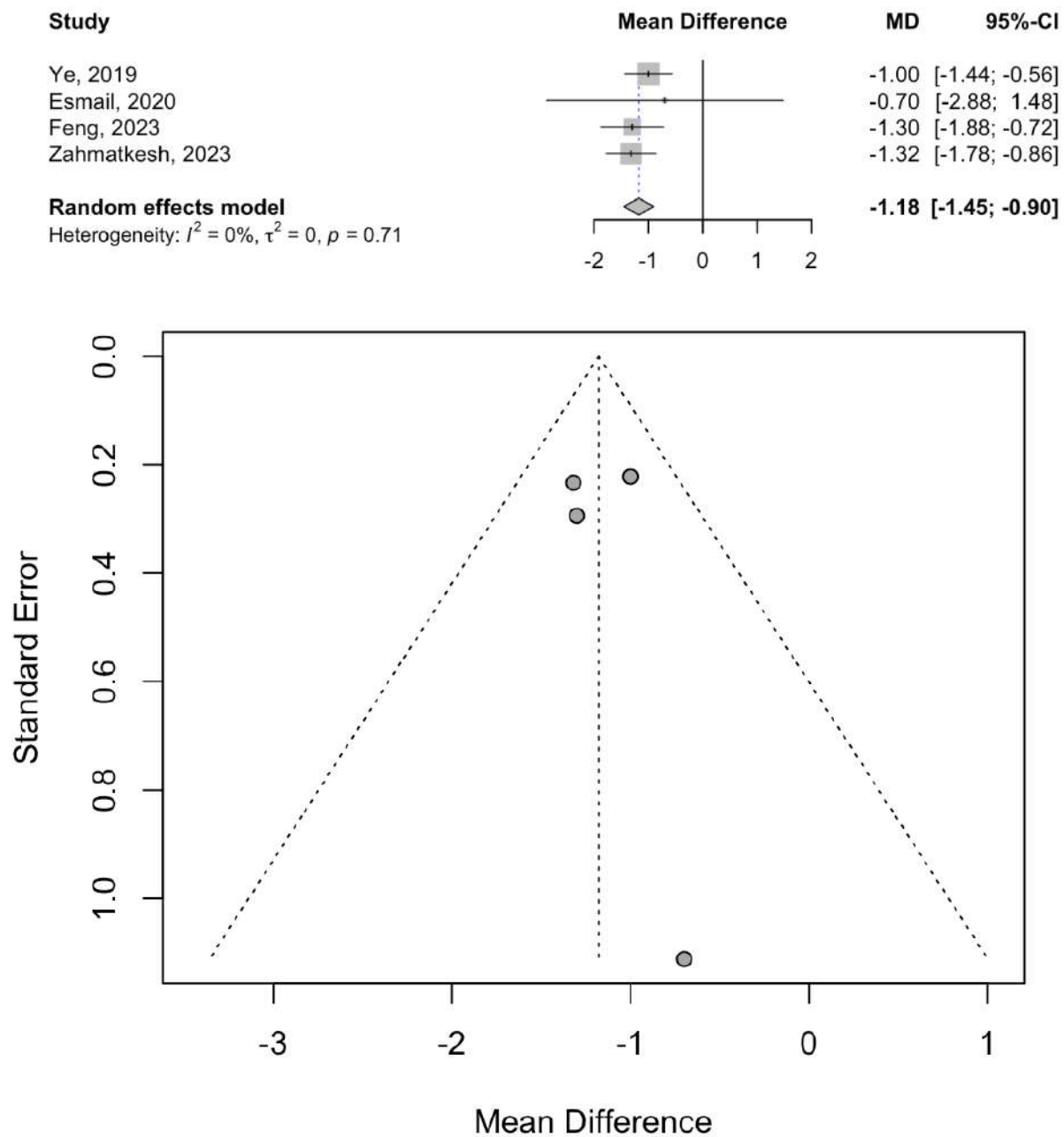**Figure S24.** Forest and funnel plot for studies describing the effect of orlistat administration on LDL levels

Figure S25. Forest plot for studies describing the effect of orlistat administration on LDL levels (after removal of Feng's study)
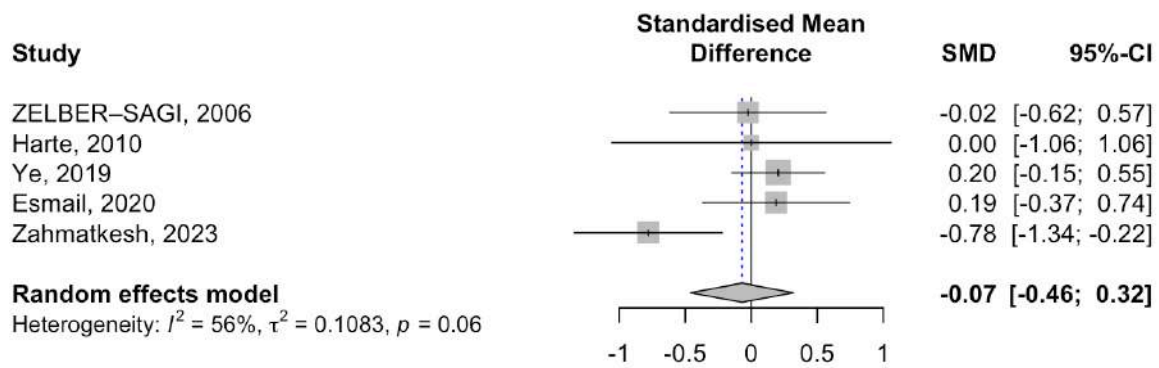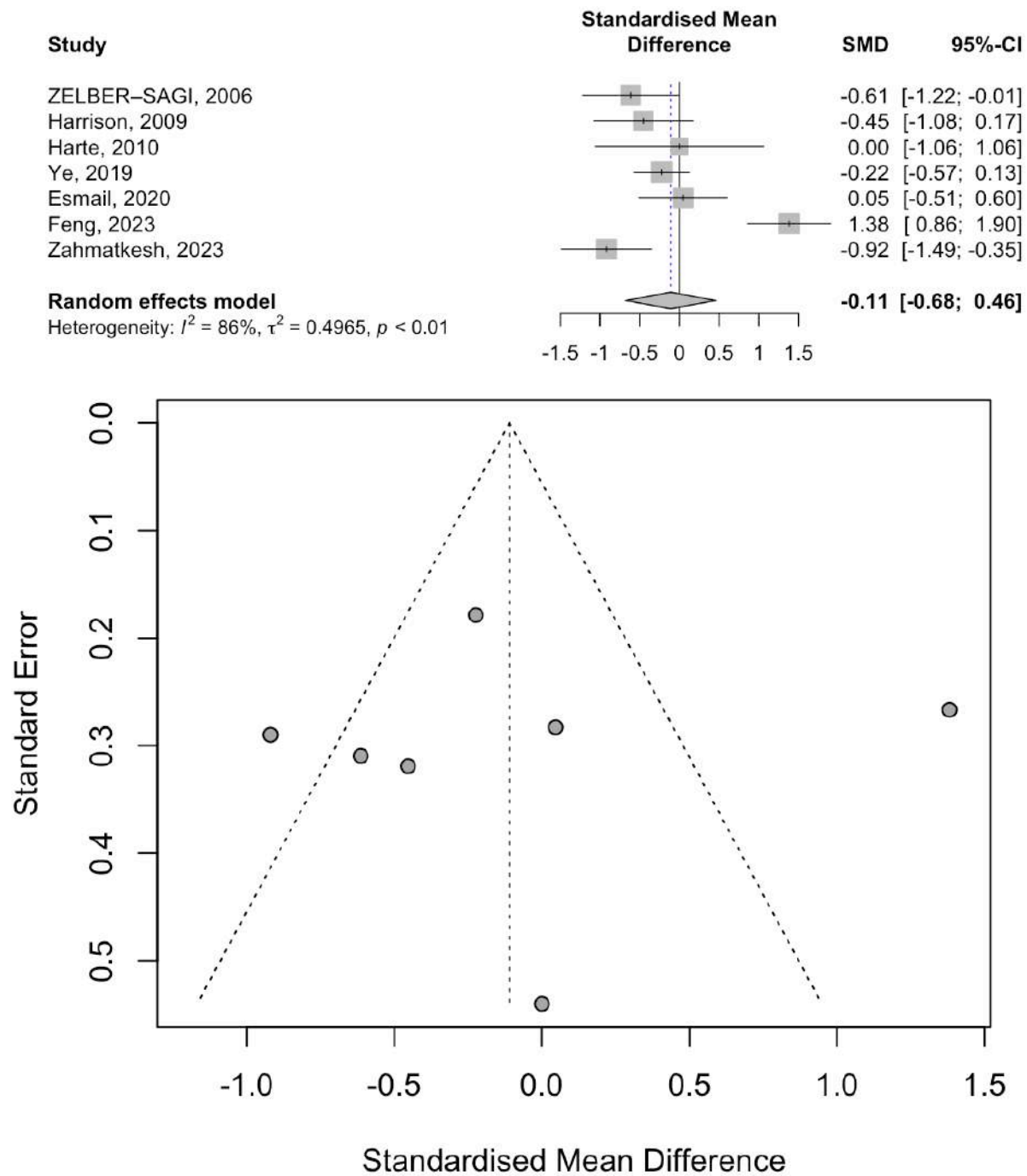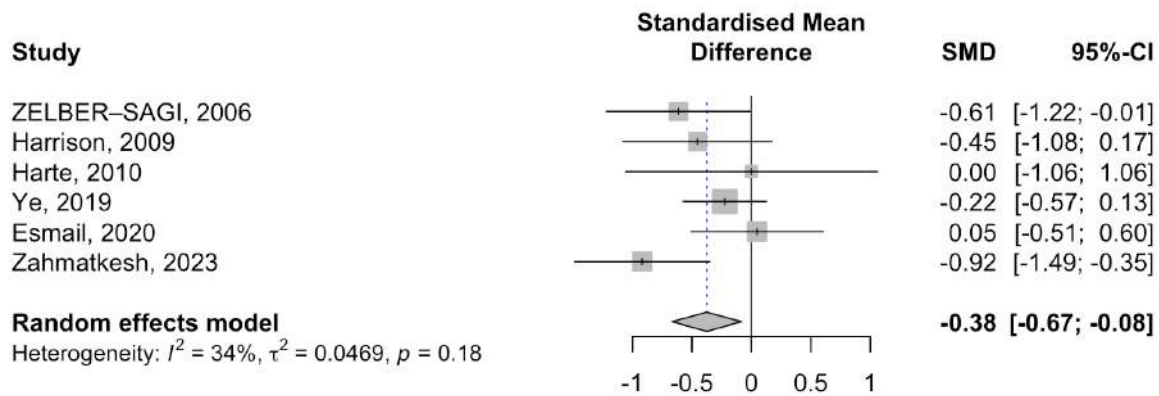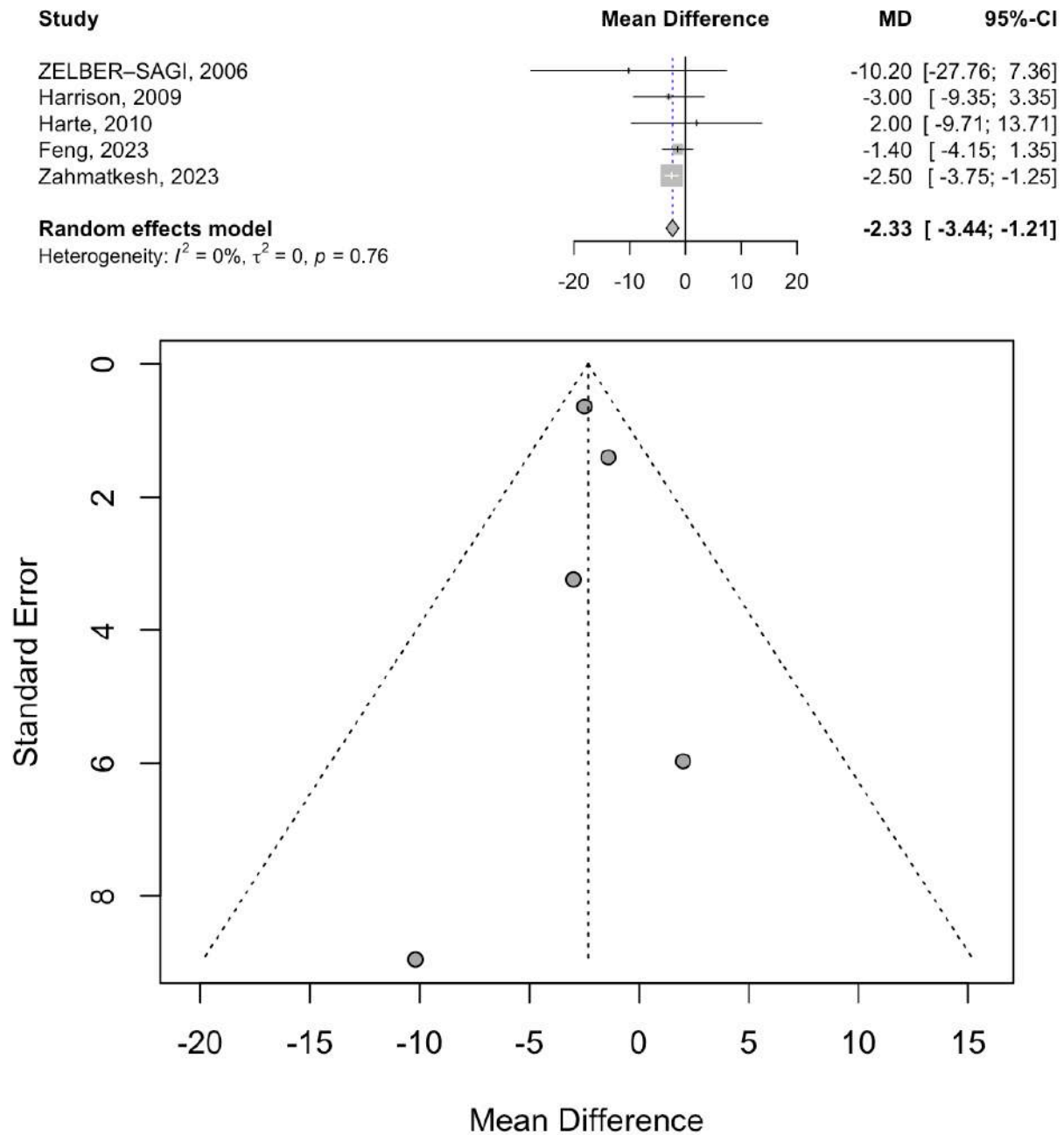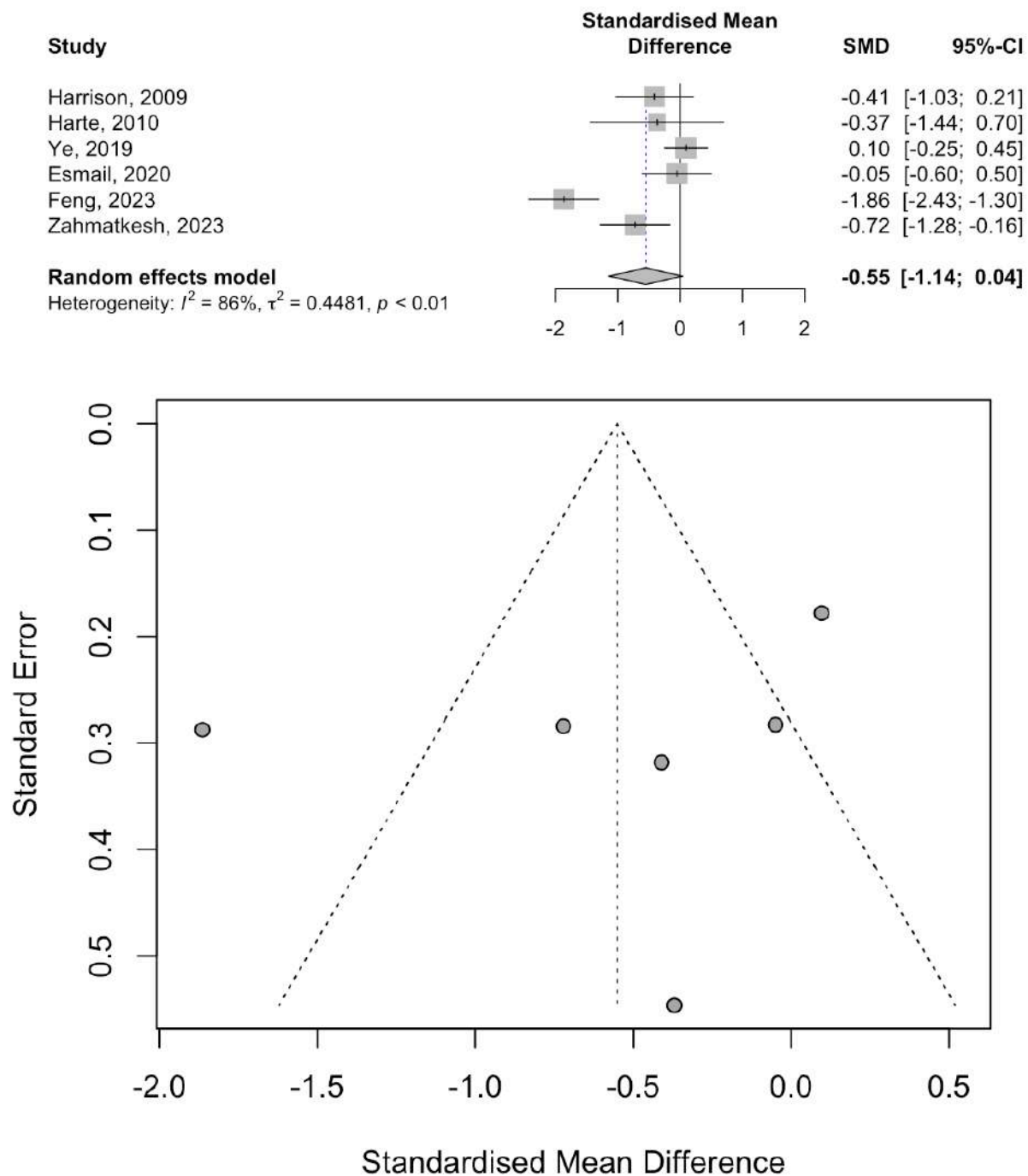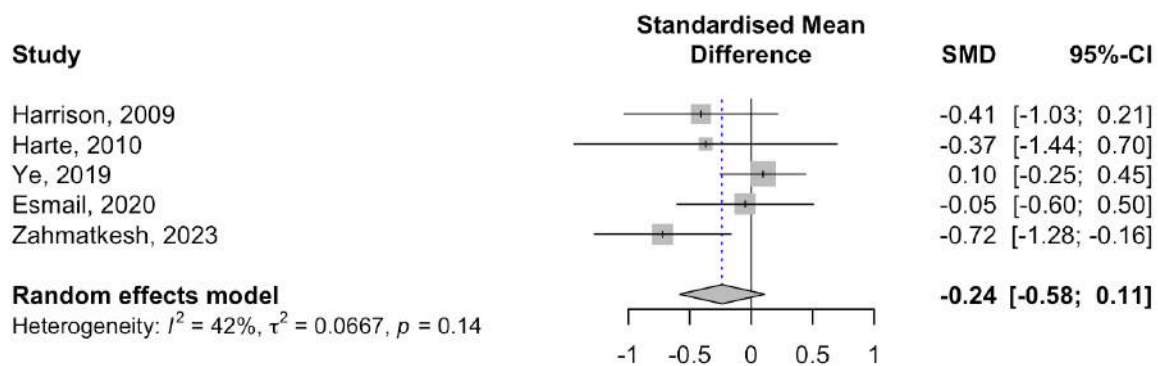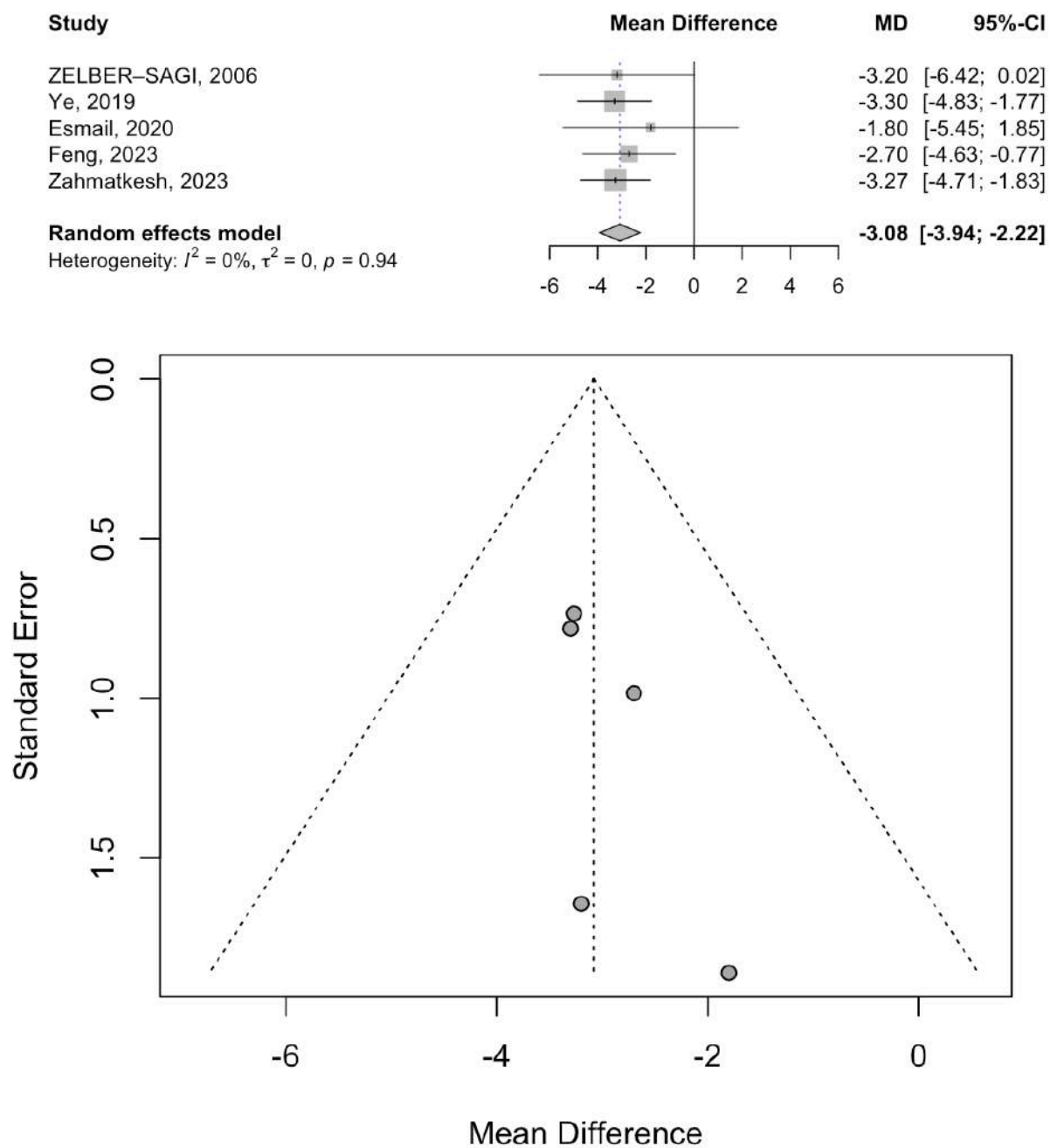
Figure S26. Forest and funnel plot for studies describing the effect of orlistat administration on WC

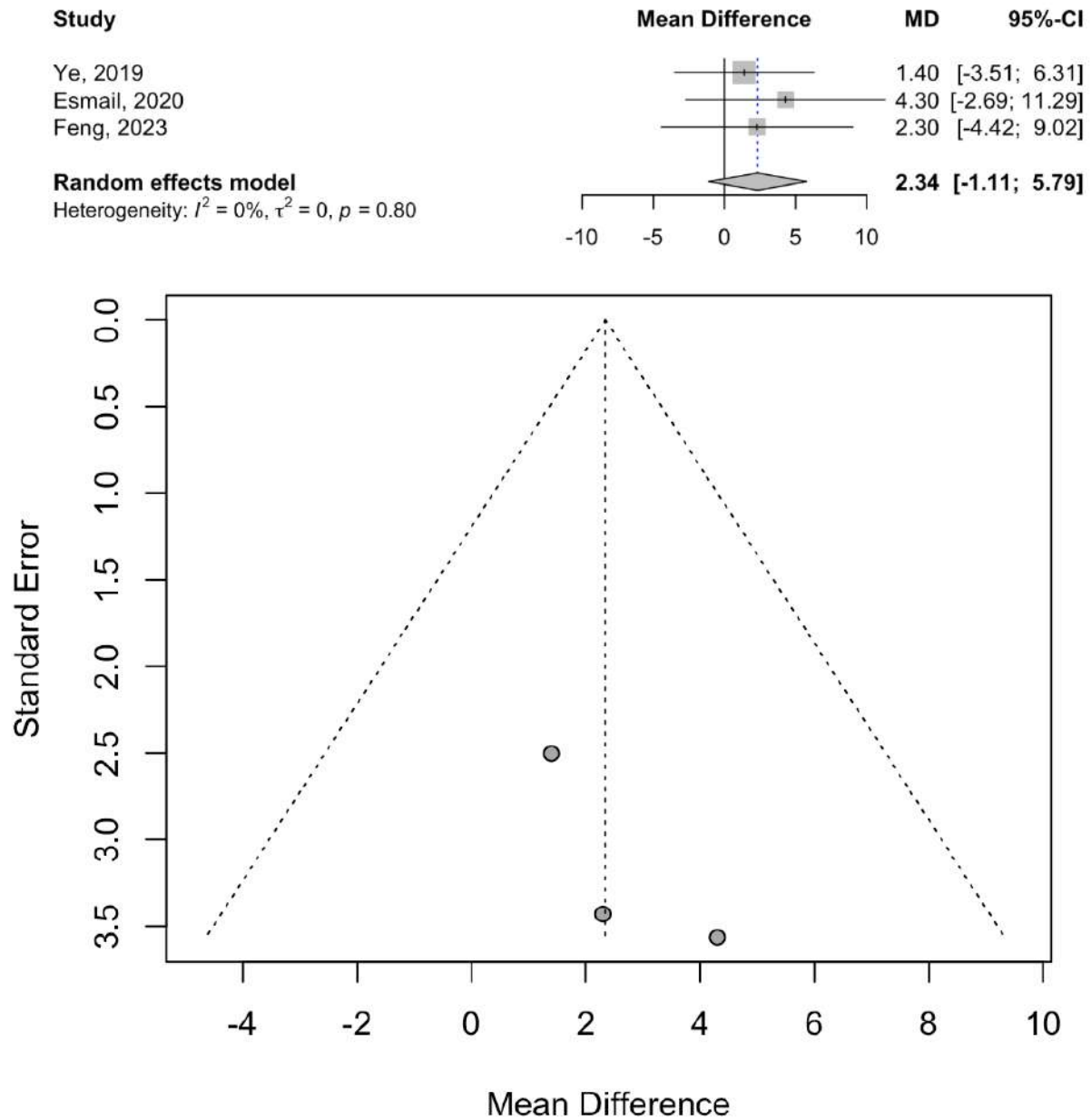**Figure S27.** Forest and funnel plot for studies describing the effect of orlistat administration on SBP

Table S1. JBI critical appraisal checklist for randomized controlled trials

RCT studies included	1	2	3	4	5	6	7	8	9	10	11	12	13
Zahmatkesh et al.[15]	Yes	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Feng et al.[16]	Yes	Yes	Yes	Yes	Yes	Yes	n/a	Yes	Yes	Yes	Yes	Yes	Yes
Wasta Esmail et al.[14]	Yes	No	Yes	No	No	Yes	n/a	Yes	Yes	Yes	Yes	Yes	Yes
Ye et al. [17]	Yes	No	Yes	No	No	Yes	n/a	Yes	Yes	Yes	Yes	Yes	Yes
Harte et al.[18]	No	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Harrison et al.[19]	Yes	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Zelber–Sagi et al.[20]	Yes	Yes	Yes	Yes	Yes	Yes	n/a	Yes	Yes	Yes	Yes	Yes	Yes

1- Was true randomization used for assignment of participants to treatment groups?

2- Was allocation to treatment groups concealed?

3- Were treatment groups similar at the baseline?

4- Were participants blind to treatment assignment?

5- Were those delivering the treatment blind to treatment assignment?

6- Were treatment groups treated identically other than the intervention of interest?

7- Were outcome assessors blind to treatment assignment?

8- Were outcomes measured in the same way for treatment groups?

9- Were outcomes measured in a reliable way?

10- Was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analyzed?

11- Were participants analyzed in the groups to which they were randomized?

12- Was appropriate statistical analysis used?

13- Was the trial design appropriate and any deviations from the standard RCT design (individual randomization, parallel groups) accounted for in the conduct and analysis of the trial?

Table S2. JBI critical appraisal checklist for quasi-experimental studies

Single-arm trials included	1	2	3	4	5	6	7	8	9
Iranparvar Alamdari et al.[21]	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Khazal et al.[13]	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hussein et al.[22]	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Harrison et al.[23]	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes

1- Is it clear in the study what is the "cause" and what is the "effect" (i.e. there is no confusion about which variable comes first)?

2- Was there a control group?

3- Were participants included in any comparisons similar?

4- Were the participants included in any comparisons receiving similar treatment/care, other than the exposure or intervention of interest?

5- Were there multiple measurements of the outcome, both pre and post the intervention/exposure?

6- Were the outcomes of participants included in any comparisons measured in the same way?

7- Were outcomes measured in a reliable way?

8- Was follow-up complete and if not, were differences between groups in terms of their follow-up adequately described and analyzed?

9- Was appropriate statistical analysis used?

Table S3. Sensitivity analysis for studies assessing TG levels

Study	Estimate	CI_lb	CI_ub	p_value	Tau2	I2
ZELBER–SAGI	0.5589	-0.77799	1.895794	0.41257	2.206851	96.29354
Harte	0.544935	-0.77555	1.86542	0.418611	2.187304	96.79489
Ye	0.514243	-0.84422	1.872707	0.458124	2.269922	95.36896
Esmail	0.516276	-0.83592	1.868477	0.454266	2.258144	96.26787
Feng	-0.07074	-0.46142	0.319943	0.722672	0.108736	57.7949
Zahmatkesh	0.712844	-0.50195	1.927641	0.2501	1.799965	95.37402

Table S4. Sensitivity analysis for studies assessing cholesterol levels

Study	Estimate	CI_lb	CI_ub	p_value	Tau2	I2
ZELBER–SAGI	-0.02513	-0.672	0.621734	0.939294	0.55273	87.65158
Harrison	-0.05281	-0.71398	0.608357	0.875598	0.582644	88.31157
Harte	-0.12379	-0.77349	0.525905	0.708812	0.582994	89.31295
Ye	-0.08874	-0.77257	0.595082	0.799222	0.616837	86.267
Esmail	-0.13712	-0.81169	0.537461	0.690345	0.606665	88.31534
Feng	-0.37592	-0.66872	-0.08311	0.01186	0.047308	36.49487
Zahmatkesh	0.030263	-0.56862	0.62915	0.921105	0.458542	85.20076

Table S5. Sensitivity analysis for studies assessing LDL levels

Study	Estimate	CI_lb	CI_ub	p_value	Tau2	I2
Harrison	-0.58087	-1.29994	0.138199	0.113358	0.569794	88.06166
Harte	-0.57903	-1.26635	0.108283	0.098702	0.540852	88.84267
Ye	-0.70468	-1.35436	-0.055	0.033513	0.431989	80.88303
Esmail	-0.65704	-1.34244	0.028372	0.060268	0.504801	86.14197
Feng	-0.23803	-0.58207	0.106012	0.175092	0.066837	45.24189
Zahmatkesh	-0.51718	-1.23872	0.204365	0.16007	0.570103	87.54376

Table S6. Sensitivity analysis for studies assessing FBS levels

Study	Estimate	CI_lb	CI_ub	p_value	Tau2	I2
ZELBER–SAGI	-0.24824	-0.80909	0.312607	0.38566	0.38823	83.57852
Harrison	-0.41123	-0.89844	0.075982	0.098066	0.272885	78.34587
Harte	-0.16758	-0.61696	0.281803	0.46485	0.24191	78.16519
Ye	-0.33762	-0.92707	0.251819	0.261591	0.42588	81.5384
Esmail	-0.26809	-0.84157	0.305382	0.359529	0.407805	83.91835
Feng	-0.42207	-0.89049	0.046342	0.077386	0.238131	73.96895
Zahmatkesh	-0.17993	-0.6824	0.322533	0.482762	0.292321	78.92562