

SUPPLEMENTARY MATERIALS

Pooled outcomes of endoscopic sleeve gastroplasty and how does it compare to laparoscopic sleeve gastrectomy at 12-months? A systematic review and meta-analysis

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SUPPLEMENTARY LEGEND

Supplementary Fig. 1 Flow diagram of study selection.

Supplementary Fig. 2 Forest plot, 1-month outcomes of ESG.

Supplementary Fig. 3 Forest plot, 6-month outcomes of ESG.

Supplementary Fig. 4 Forest plot, TWL at 12 months.

Supplementary Fig. 5 Forest plot, EWL at 12 months.

Supplementary Fig. 6 Forest plot, BMI at 12 months.

Supplementary Fig. 7 Forest plot, all adverse events.

Supplementary Fig. 8 Forest plot, bleeding.

Supplementary Fig. 9 Forest plot, GERD.

Supplementary Fig. 10 Funnel plot – all studies.

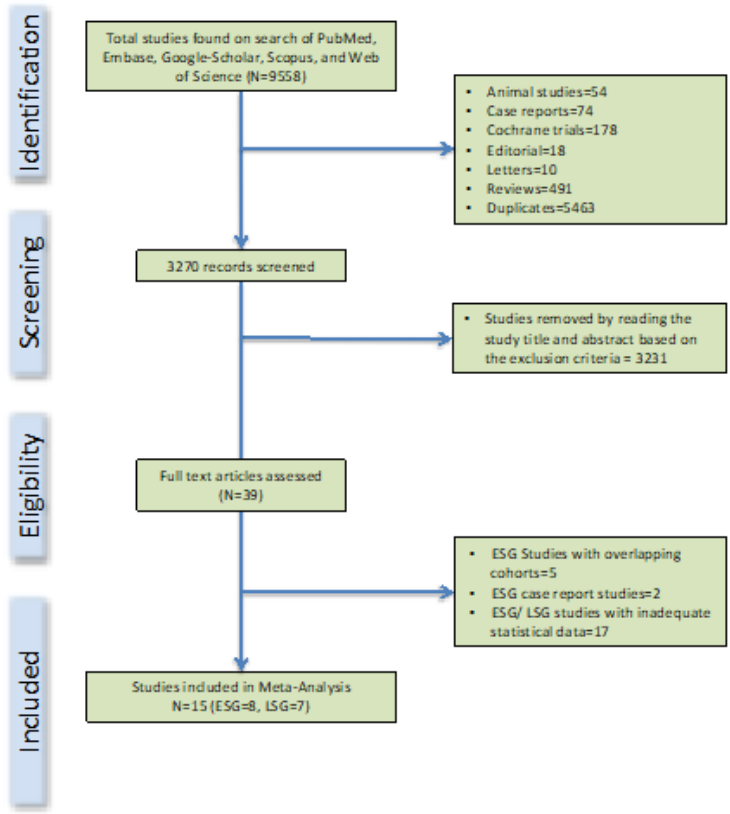
Supplementary Table 1 Study quality assessment.

Appendix-A: Literature search strategy

Appendix-B: MOOSE checklist. From: Stroup DF, Berlin JA, Morton SC et al. for the Meta-analysis Of Observational Studies in Epidemiology (MOOSE) Group. Meta-analysis of Observational Studies in Epidemiology. A Proposal for Reporting. JAMA. 2000;283(15):2008-2012. doi: 10.1001/jama.283.15.2008

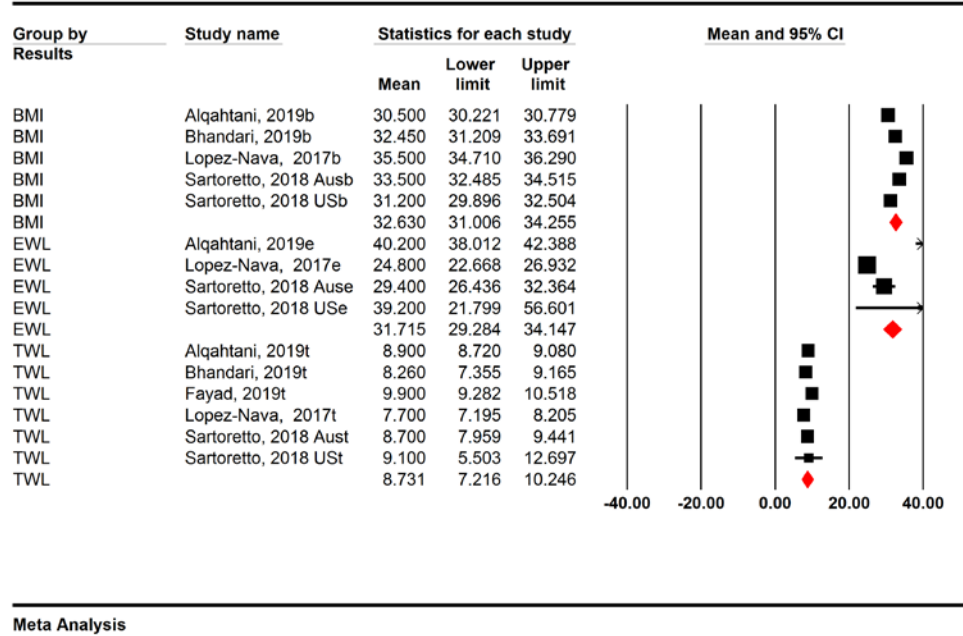
Appendix-C: PRISMA checklist. From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

Supplementary Fig. 1 Flow diagram of study selection.



Supplementary Fig. 2 Forest plot, 1-month outcomes of ESG.

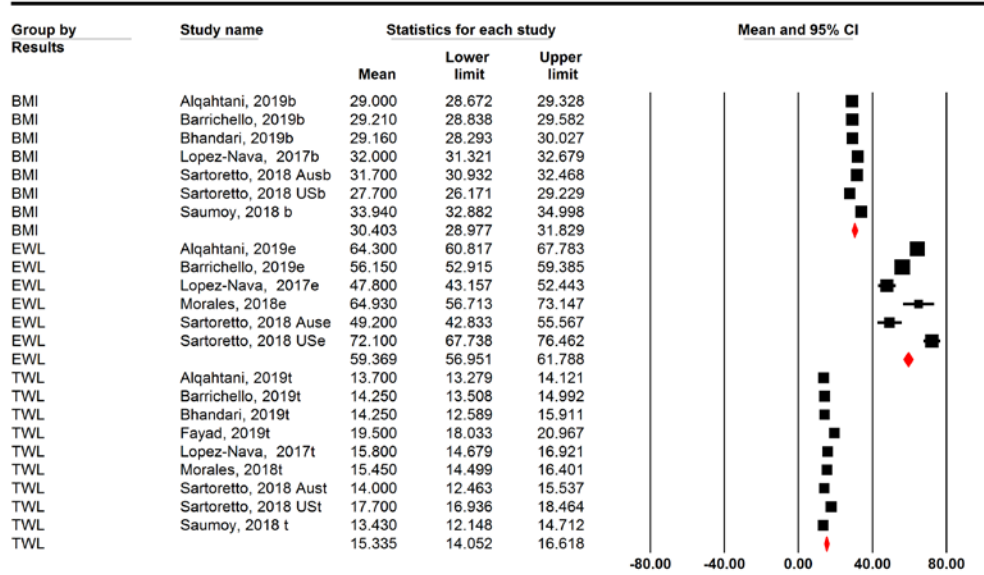
ESG: 1-month outcomes



Meta Analysis

Supplementary Fig. 3 Forest plot, 6-month outcomes of ESG.

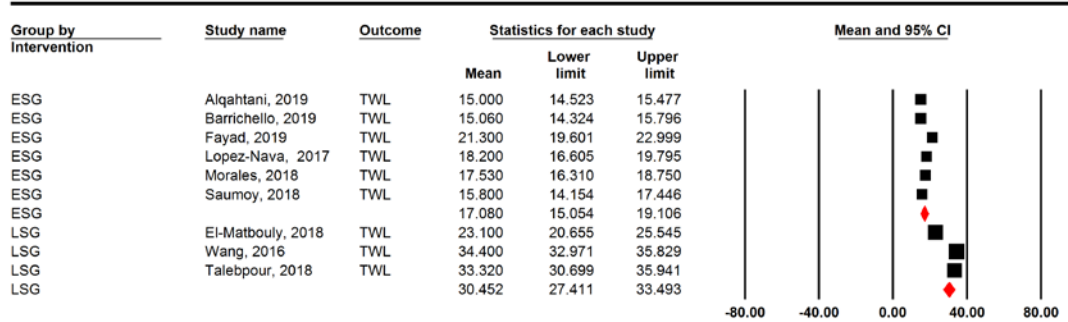
ESG: 6-month outcomes



Meta Analysis

Supplementary Fig. 4 Forest plot, TWL at 12 months.

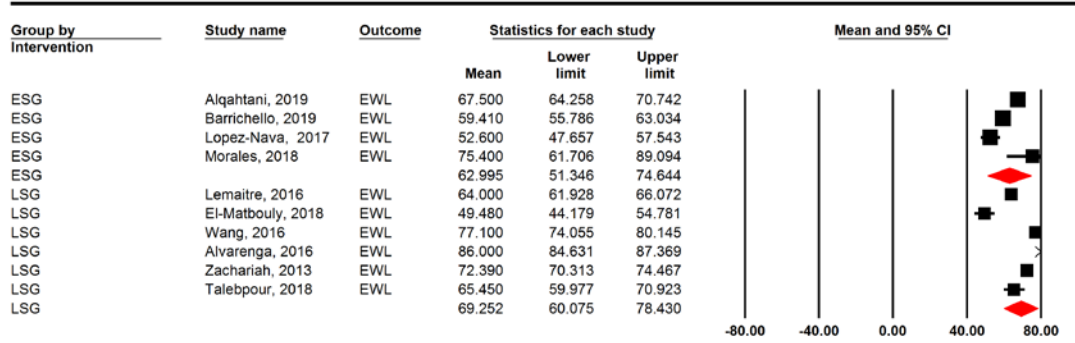
%TWL at 12-months



Meta Analysis

Supplementary Fig. 5 Forest plot, EWL at 12 months.

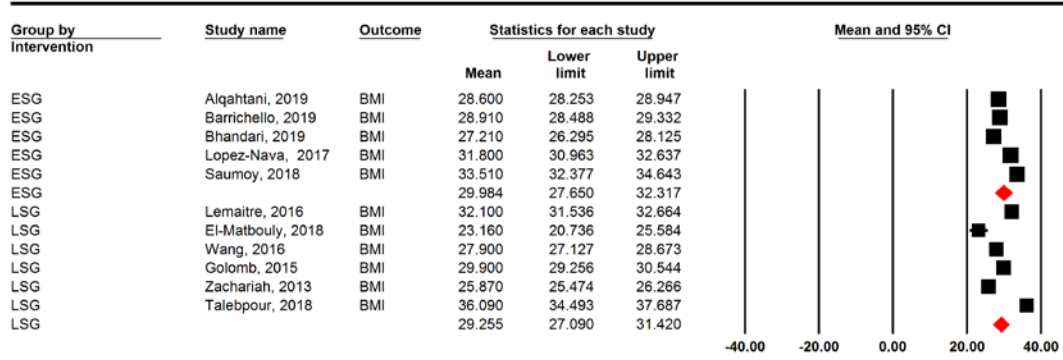
%EWL at 12-months



Meta Analysis

Supplementary Fig. 6 Forest plot, BMI at 12 months.

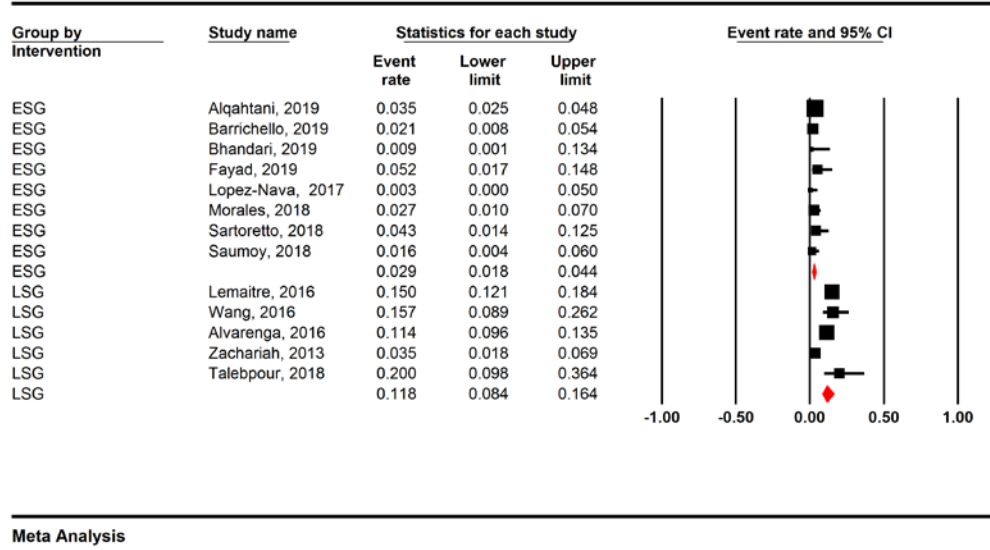
BMI at 12-months



Meta Analysis

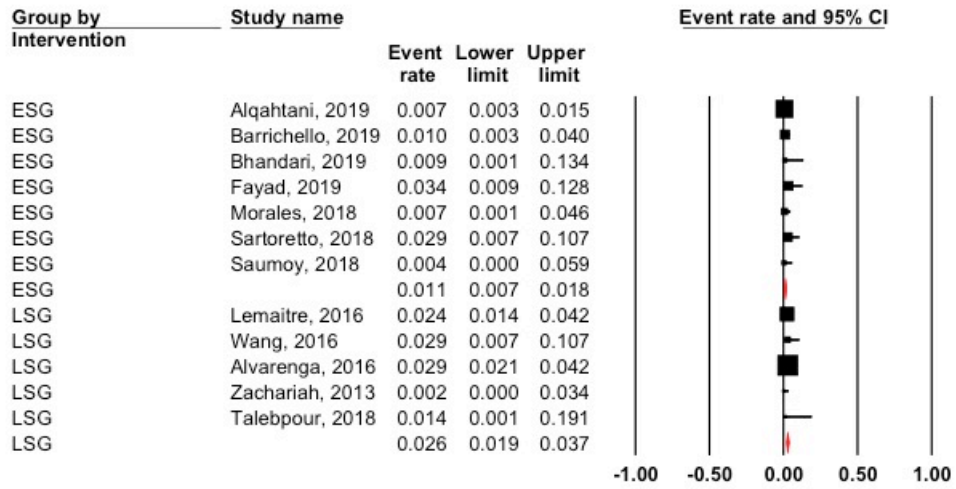
Supplementary Fig. 7 Forest plot, all adverse events.

Adverse events



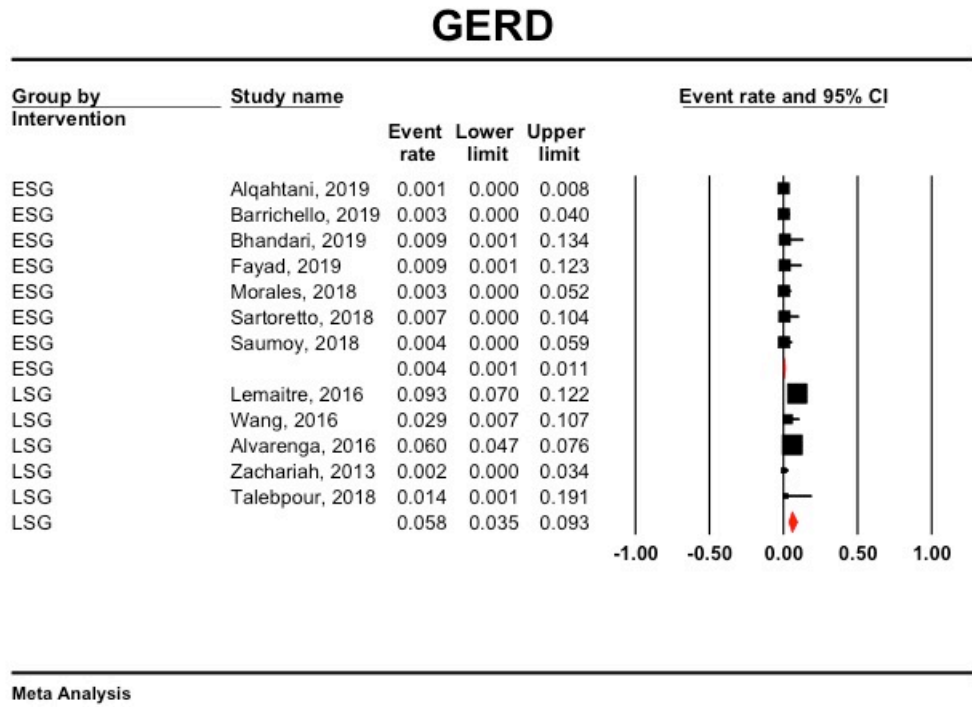
Supplementary Fig. 8 Forest plot, bleeding.

Bleeding

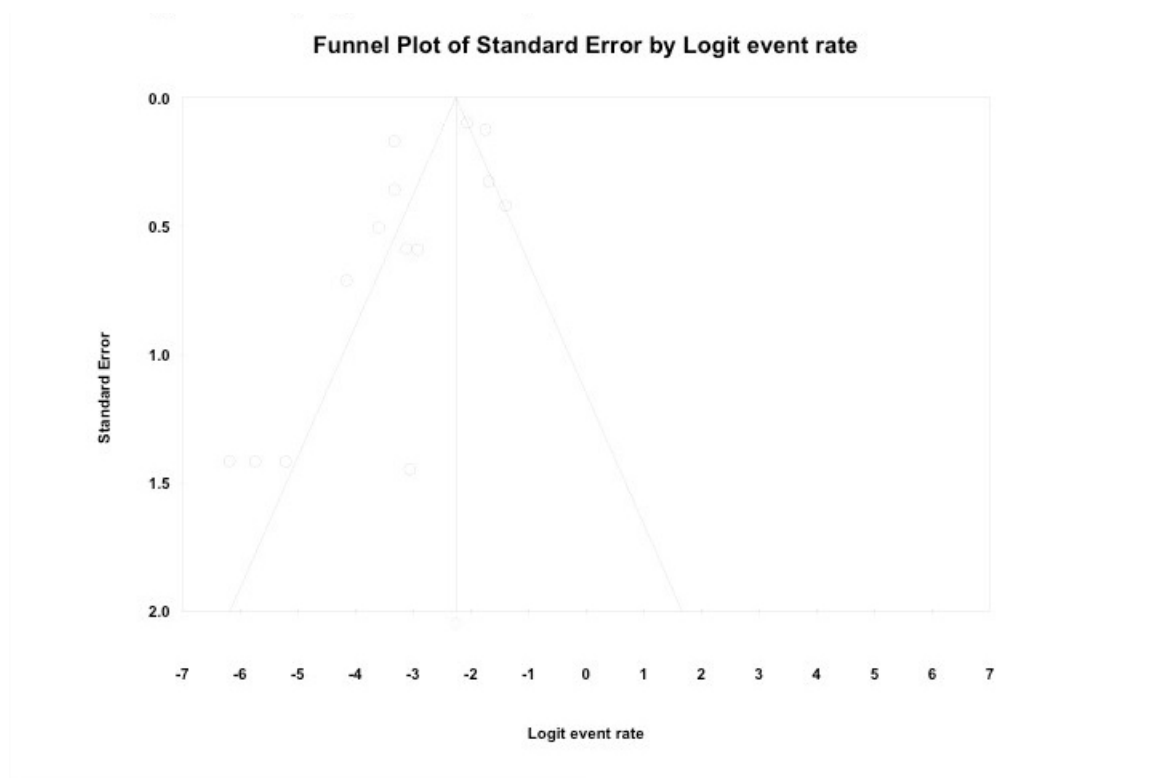


Meta Analysis

Supplementary Fig. 9 Forest plot, GERD.



Supplementary Fig. 10 Funnel plot – all studies.



Supplementary Table 1 Study quality assessment.

Study	Selection		Comparability		Outcome		Score		Quality	
	Representativeness of the average adult in community	Cohort size	Information on weight-loss outcomes	Outcome not present at start	factors comparable between the groups	Adequate clinical assessment	Follow up time of 12-months	Adequacy of follow-up		
	population based: 1; multi-center: 0.5; single-center: 0	> 40 patients: 1; 39 to 20: 0.5; < 20: 0	information with clarity: 1; information derived from percentage value: 0.5; unclear: 0	not present: 1; present: 0	yes: 1; no: 0	yes: 1; no: 0	yes: 1; not mentioned: 0	all patients followed up: 1; > 50% followed up: 0.5; < 50% followed up OR not mentioned: 0	Max=8	High > 6, medium 4 to 6, low < 4
Alqahtani, 2019	0	1	1	1	1	1	1	0	6	Medium
Barrichello, 2019	0.5	1	1	1	1	1	1	0.5	7	High
Bhandari, 2019	0	1	1	1	1	1	1	0.5	6.5	High
Fayad, 2019	0	1	1	1	1	1	1	0	6	Medium
Lopez-Nava, 2017	0	1	1	1	1	1	1	0	6	Medium
Morales, 2018	0	1	1	1	1	1	1	0	6	Medium
Sartoretto, 2018	0.5	1	1	1	1	1	1	0	6.5	High
Saumoy, 2018	0	1	1	1	1	1	1	0	6	Medium
Lemaitre, 2016	0	1	1	1	1	1	1	0	6	Medium
EI-Matbouly, 2018	0	1	1	1	1	1	1	0	6	Medium
Wang, 2016	0	1	1	1	1	1	1	0	6	Medium
Golomb, 2015	0	1	1	1	1	1	1	0	6	Medium
Alvarenga, 2016	0	1	1	1	1	1	1	0	6	Medium
Zachariah, 2013	0	1	1	1	1	1	1	0	6	Medium
Talebpour, 2018	0	0.5	1	1	1	1	1	0	5.5	Medium

Appendix-A: Literature search strategy

Endoscopic sleeve gastroplasty versus laparoscopic sleeve gastrectomy: A systematic review and comparative meta-analysis.

	a	b	c
MeSH	"Endoscopy, Gastrointestinal"[Mesh]	"Gastrectomy"[Mesh] "Gastroplasty"[Mesh] "Bariatric Surgery"[Mesh]	Obesity/weight loss "Over nutrition"[Mesh] {includes obesity and all its subtypes "Weight Loss"[Mesh]
Emtree	'gastrointestinal endoscopy'/exp	'gastrectomy'/exp 'gastroplasty'/exp	'overnutrition'/exp body weight loss'/exp
Emtree	'sleeve gastrectomy'/exp		
Keywords	Sleeve Endoscopy Endoscopic Endoscopies	Gastrectomy Gastrectomies Gastroplasty Gastroplasties Bariatric therapy Bariatric surgery Gastric resection	Obese Obesity Weight Overweight

<https://bestpractice.bmj.com/info/toolkit/learn-ebm/study-design-search-filters/>

Medline randomised controlled trial strategy

1. "randomized controlled trial".pt.
2. {random\$ or placebo\$ or single blind\$ or double blind\$ or triple blind\$}.ti,ab.
3. {retraction of publication or retracted publication}.pt.
4. or/1-3
5. {animals not humans}.sh.
6. {(comment or editorial or meta-analysis or practice guideline or review or letter) not "randomized controlled trial"}.pt.
7. {random sampl\$ or random digit\$ or random effect\$ or random survey or random regression}.ti,ab. not "randomized controlled trial".pt.
8. 4 not {5 or 6 or 7}

Embase RCT filter

1. {random\$ or placebo\$ or single blind\$ or double blind\$ or triple blind\$}.ti,ab.
2. RETRACTED ARTICLE/

Appendix-B: MOOSE checklist. From: Stroup DF, Berlin JA, Morton SC et al. for the Meta-analysis Of Observational Studies in Epidemiology (MOOSE) Group. Meta-analysis of Observational Studies in Epidemiology. A Proposal for Reporting. JAMA. 2000;283(15):2008-2012. doi: 10.1001/jama.283.15.2008

MOOSE Checklist for Meta-analyses of Observational Studies

Item No	Recommendation	Reported on Page No
Reporting of background should include		
1	Problem definition	4
2	Hypothesis statement	-
3	Description of study outcome(s)	4
4	Type of exposure or intervention used	4-6
5	Type of study designs used	5-7
6	Study population	6
Reporting of search strategy should include		
7	Qualifications of searchers (eg, librarians and investigators)	5
8	Search strategy, including time period included in the synthesis and key words	5
9	Effort to include all available studies, including contact with authors	6
10	Databases and registries searched	5
11	Search software used, name and version, including special features used (eg, explosion)	-
12	Use of hand searching (eg, reference lists of obtained articles)	5
13	List of citations located and those excluded, including justification	-
14	Method of addressing articles published in languages other than English	-
15	Method of handling abstracts and unpublished studies	5
16	Description of any contact with authors	6
Reporting of methods should include		
17	Description of relevance or appropriateness of studies assembled for assessing the hypothesis to be tested	6-8
18	Rationale for the selection and coding of data (eg, sound clinical principles or convenience)	6-8
19	Documentation of how data were classified and coded (eg, multiple raters, blinding and interrater reliability)	6-8
20	Assessment of confounding (eg, comparability of cases and controls in studies where appropriate)	6-8
21	Assessment of study quality, including blinding of quality assessors, stratification or regression on possible predictors of study results	6-8
22	Assessment of heterogeneity	7-8

23	Description of statistical methods (eg, complete description of fixed or random effects models, justification of whether the chosen models account for predictors of study results, dose-response models, or cumulative meta-analysis) in sufficient detail to be replicated	7-8
24	Provision of appropriate tables and graphics	Tables 1,2, Figs 1-10
Reporting of results should include		
25	Graphic summarizing individual study estimates and overall estimate	Figs 2-10
26	Table giving descriptive information for each study included	Table 1
27	Results of sensitivity testing (eg, subgroup analysis)	Table 2
Item No	Recommendation	Reported on Page No
Reporting of discussion should include		
29	Quantitative assessment of bias (eg, publication bias)	10, fig 11
30	Justification for exclusion (eg, exclusion of non-English language citations)	-
31	Assessment of quality of included studies	Supple table-1
Reporting of conclusions should include		
32	Consideration of alternative explanations for observed results	11-13
33	Generalization of the conclusions (ie, appropriate for the data presented and within the domain of the literature review)	11-13
34	Guidelines for future research	12
35	Disclosure of funding source	2

Appendix-C: PRISMA checklist. From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	1
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	3
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	4
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	4
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	5-8
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	5-8
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	5-8
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	5-8
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	5-8
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	5-8
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	5-8
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	5-8

Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	5-8
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	5-8

Section/topic	#	Checklist item	Reported on page #
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	6
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	7
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	8-9
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	8-9
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	8-9, suppl table-1
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	8-9
Synthesis of results	21	Present the main results of the review. If meta-analyses are done, include for each, confidence intervals and measures of consistency	8-9
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	Supple tabl-1
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	8-9
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	11-13
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	12
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	13
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	2