MOOSE (Meta-analyses of Observational Studies in Epidemiology) Checklist

Item No	Recommendation	Reported on Page Number/Line Number	Reported on Section/Paragraph
Reporting of Background			
1	Problem definition		
2	Hypothesis statement		
3	Description of Study Outcome(s)		
4	Type of exposure or intervention used		
5	Type of study design used		
6	Study population		
Reporting of Search Strategy			
7	Qualifications of searchers (eg, librarians and investigators)		
8	Search strategy, including time period included in the synthesis and keywords		
9	Effort to include all available studies, including contact with authors		
10	Databases and registries searched		
11	Search software used, name and version, including special features used (eg, explosion)		
12	Use of hand searching (eg, reference lists of obtained articles)		
13	List of citations located and those excluded, including justification		
14	Method for addressing articles published in languages other than English		
15	Method of handling abstracts and unpublished studies		
16	Description of any contact with authors		

Reporting of Methods			
17	Description of relevance or appropriateness of studies assembled for assessing the hypothesis to be tested		
18	Rationale for the selection and coding of data (eg, sound clinical principles or convenience)		
19	Documentation of how data were classified and coded (eg, multiple raters, blinding, and interrater reliability)		
20	Assessment of confounding (eg, comparability of cases and controls in studies where appropriate)		
21	Assessment of study quality, including blinding of quality assessors; stratification or regression on possible predictors of study results		
22	Assessment of heterogeneity		
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		
24	Provision of appropriate tables and graphics		
Reporting of Results			
25	Graphic summarizing individual study estimates and overall estimate		
26	Table giving descriptive information for each study included		
27	Results of sensitivity testing (eg, subgroup analysis)		
28	Indication of statistical uncertainty of findings		
Reporting of Discussion			
29	Quantitative assessment of bias (eg, publication bias)		
30	Justification for exclusion (eg, exclusion of non–English-language citations)		
31	Assessment of quality of included studies		
Reporting of Conclusions			
32	Consideration of alternative explanations for observed results		
33	Generalization of the conclusions (ie, appropriate for the data presented and within the domain of the literature review)		
34	Guidelines for future research		
35	Disclosure of funding source		

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.

PRISMA 2020 Checklist

Section/topic	Item No	Checklist item	Reported on Page Number/Line Number	Reported on Section/Paragraph
TITLE				
Title	1	Identify the report as a systematic review.		
ABSTRACT				
Abstract	2	See the PRISMA 2020 for Abstracts checklist (Table 2).		
INTRODUCTION				
Rationale	3	Describe the rationale for the review in the context of existing knowledge.		
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.		
METHODS				
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.		
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.		
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.		
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.		
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.		
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.		
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.		

Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.		
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.		
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis.		
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.		
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.		
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.		
	13e	Describe any methods used to explore possible causes of heterogeneity among study results.		
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.		
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).		
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.		
RESULTS				
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.		
	16b	Cite studies that met many but not all inclusion criteria ('near-misses') and explain why they were excluded.		
Study characteristics	17	Cite each included study and present its characteristics.		
Risk of bias in studies	18	Present assessments of risk of bias for each included study.		
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.		

Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.		
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.		
	20c	Present results of all investigations of possible causes of heterogeneity among study results.		
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.		
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.		
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.		
DISCUSSION				
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.		
	23b	Discuss any limitations of the evidence included in the review.		
	23c	Discuss any limitations of the review processes used.		
	23d	Discuss implications of the results for practice, policy, and future research.		
OTHER INFORMATION				
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.		
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.		
	24c	Describe and explain any amendments to information provided at registration or in the protocol.		
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.		
Competing interests	26	Declare any competing interests of review authors.		
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.		

Table 2 PRISMA 2020 for Abstracts checklist

Section/topic	Item No	Checklist item	Reported on Page Number/Line Number	Reported on Section/Paragraph
TITLE				
Title	1	Identify the report as a systematic review.		
BACKGROUND				
Objectives	2	Provide an explicit statement of the main objective(s) or question(s) the review addresses.		
METHODS				
Eligibility criteria	3	Specify the inclusion and exclusion criteria for the review.		
Information sources	4	Specify the information sources (e.g. databases, registers) used to identify studies and the date when each was last searched.		
Risk of bias	5	Specify the methods used to assess risk of bias in the included studies.		
Synthesis of results	6	Specify the methods used to present and synthesize results.		
RESULTS				
Included studies	7	Give the total number of included studies and participants and summarise relevant characteristics of studies.		
Synthesis of results	8	Present results for main outcomes, preferably indicating the number of included studies and participants for each. If meta-analysis was done, report the summary estimate and confidence/credible interval. If comparing groups, indicate the direction of the effect (i.e. which group is favoured).		
DISCUSSION				
Limitations of evidence	9	Provide a brief summary of the limitations of the evidence included in the review (e.g. study risk of bias, inconsistency and imprecision).		
Interpretation	10	Provide a general interpretation of the results and important implications.		
OTHER				
Funding	11	Specify the primary source of funding for the review.		
Registration	12	Provide the register name and registration number.		