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Tips for Submitting Systematic Reviews to *Academic Medicine*

Academic Medicine staff

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Scope of this resource

This educational presentation provides an overview of what *Academic Medicine* editors and reviewers look for in systematic review manuscripts. It is *not* a comprehensive guide to systematic reviews or their scholarly content, and it should *not* be cited.

When conducting and writing systematic reviews, please consult the appropriate published systematic review guidelines and other resources (e.g., the key sources for this presentation) and as well as relevant experts, including librarians and statisticians.

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Sources for this presentation

This presentation is based on published sources (see key sources). Specific sources are cited on individual slides. Two of these resources, referred to with acronyms, are defined below:

✓BEME Guide No. 3: This two-part guide is from the Best Practices in Medical Education Collaboration. Part 1 provides extensive details on sources to search for medical education reviews. Part 2 provides extensive details on constructing searches and provides examples. Written by Alex Haig and Marshall Dozier, the guide was published in *Medical Teacher* in 2003.

✓PRISMA 2009 Checklist: The PRISMA Statement (Preferred Reporting Items for Systematic Reviews and Meta-Analyses), although developed for systematic reviews of randomized clinical trials, "can also be used as a basis for reporting systematic reviews of other types of research, particularly evaluations of interventions."

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Purpose of a Systematic Review

"The purpose of a systematic literature review is to evaluate and interpret all available research evidence relevant to a particular question. . . . This differs from a traditional review in which previous work is described but not systematically identified, assessed for quality and synthesized."

National Health and Medical Research Council. *How to review the evidence: Systematic identification and review of the scientific literature*. Australia: NHMRC; 1999.

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Narrative vs. Systematic Reviews

Narrative Review	Systematic Review
Reproducibility and research question	
A narrative review is neither systematic nor reproducible.	A systematic review is a distinct reproducible research method. It requires a testable hypothesis or a focused research question.
Search and selection process	
An “expert” selects the articles deemed to be most important.	The search of the literature is systematic and comprehensive; articles are selected for inclusion according to criteria set in advance.
Analysis	
An “expert” comes to some conclusions based on these articles (as well as his or her own experience).	Data are systematically abstracted from the reviewed articles and compiled into evidence tables.
Interpretation	
An “expert” summarizes his or her understanding of the issues in a review article.	Data are interpreted in the context of all relevant studies. (Meta-analyses analyze data across studies identified in systematic reviews.)

Source: Text excerpted and adapted with publisher’s permission from Lang TA. The value of systematic reviews as research activities in medical education. Acad Med. 2004;79:1067-1072.

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Systematic Reviews: Background and Context

The introduction should:

- Provide background and context for the review.
  - What is the issue or problem the review will address?
  - What is already known about the topic?
  - Why is the issue/problem important, and what is its scope?
- Clearly state the research question(s).
- Identify the population, interventions/activities/practices, comparisons, and outcomes (PICOS).

Sources: Lang TA. The value of systematic reviews as research activities in medical education. Acad Med. 2004;79:1067-1072; PRISMA 2009 Checklist.

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Method: Search strategy

Include the following details of the literature search strategy to ensure the search is reproducible:

- When the search was conducted and by whom
- Limits/characteristics of search, including explicit date range, language of publication, whether published guidelines (e.g., PRISMA) were followed
- Information sources: the database(s) searched, hand searching, contact with study authors or other experts
- Search terms and Boolean operators: for at least one database, list the Medical Subject Headings (MeSH), keywords, and/or other controlled vocabulary terms

Sources: Maggio LA, Tannery NH, Kanter SL. Reproducibility of Literature Search Reporting in Medical Education Reviews. Acad Med. 2011;86:1049-1054; PRISMA 2009 Checklist.

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A note on information sources in medical education

"The foremost challenge in searching for evidence in medical education is that there are very few comprehensive sources dedicated to the profession. . . . [T]here is no indexed database for medical education. . . . Instead, one must turn to either medical (e.g., Medline) or educational (e.g., ERIC) databases—neither of which adequately collects or indexes medical education content."

--Alex Haig and Marshall Dozier, BEME Guide No. 3: Part 1, page 352

For comprehensive overviews of information sources—from databases to Web sites—and constructing searches for medical education systematic reviews, see BEME Guide No. 3, parts 1 and 2, respectively, by Haig and Dozier.

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Method: Study selection

Explain how studies were selected:

- Define and explain inclusion and exclusion criteria
- Report how many (and which) authors reviewed titles, abstracts, and articles
- Explain how disagreements were resolved and the level of agreement among the researchers

Sources: PRISMA 2009 Checklist; Lang TA, Seic M. Reporting systematic reviews and metanalyses. In *How to Report Statistics in Medicine*. 2nd ed. Philadelphia: American College of Physicians; 2006.

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Method: Data extraction and analysis

Data extraction and analysis will necessarily vary according to your research question(s), study design, and team. Be sure to:

- ❑ Define variables (explanatory and response)
- ❑ Explain how data were abstracted from the selected studies and who did so
- ❑ Indicate how publication, selection, and/or measurement biases were assessed and minimized
- ❑ Explain how quality of included studies was assessed
- ❑ Explain any additional analyses

Sources: PRISMA 2009 Checklist; Lang TA, Seic M. Reporting systematic reviews and metanalyses. In *How to Report Statistics in Medicine*. 2nd ed. Philadelphia: American College of Physicians; 2006.

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Results: Studies included and excluded

Begin by describing the studies that were included and excluded.

- Report the total number of sources identified (broken down by database/search method, if applicable).
- Indicate the number included (and the reasons for exclusion) at each stage of the review.
- Illustrate this process with a flowchart.

Sources: PRISMA 2009 Checklist; Lang TA, Seic M. Reporting systematic reviews and metanalyses. In *How to Report Statistics in Medicine*. 2nd ed. Philadelphia: American College of Physicians; 2006.

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Results: Analysis and Interpretation

The details of your analysis and interpretation of your results will necessarily vary according to your research question(s) and study design. Be sure to:

- Include both numbers and percentages when reporting characteristics of groups of articles in the text. Include studies' superscript reference numbers.

- Use the extracted data to provide study characteristics for each study in one or more evidence tables. Include author last name, year, and corresponding superscript reference number.

Sources: Lang TA. The value of systematic reviews as research activities in medical education. Acad Med. 2004;79:1067-1072; PRISMA 2009 Checklist.

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Discussion: Significance and Implications

In the Discussion, make the significance and implications of your findings clear. Be sure to:

- ❑ Summarize key findings and their relevance to key groups
- ❑ Consider limitations
- ❑ Provide context and, if appropriate, an explanation for the results
- ❑ Indicate what your findings imply for future research

Sources: PRISMA 2009 Checklist; Lang TA, Seic M. Reporting systematic reviews and metanalyses. In *How to Report Statistics in Medicine*. 2nd ed. Philadelphia: American College of Physicians; 2006.

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Key sources

The following were key sources for this presentation. These are good places to start when preparing systematic reviews, but this list should not be considered comprehensive.

Haig A, Dozier M. BEME Guide No. 3: Systematic searching for evidence in medical education—Part 1: Sources of information. Medical Teacher. 2003;25:352-353. doi:10.1080/0142159031000136815.

Haig A, Dozier M. BEME Guide No. 3: Systematic searching for evidence in medical education—Part 2: Constructing searches. Medical Teacher. 2003;25:463-484. doi:10.1080/01421590310001608667.

Lang TA, Seic M. Reporting systematic reviews and metanalyses. In *How to Report Statistics in Medicine*. 2nd ed. Philadelphia: American College of Physicians; 2006.

Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group. *P*referred *R*eporting *I*tems for *S*ystematic Reviews and *M*eta-*A*nalyses: The PRISMA Statement. 2009. PLoS Med 6(6): e1000097. doi:10.1371/journal.pmed1000097

National Health and Medical Research Council. *How to review the evidence: Systematic identification and review of the scientific literature*. Australia: NHMRC; 1999.

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