



Systematic Review

Training course in research methodology and
research protocol development

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Systematic review

Objective of presentation:

The main purpose of this presentation is to provide brief information about the principles of systematic review.

As the demand for generating recommendations for practice through systematic review is increasing, health care professionals need to understand the principles of preparing such reviews.



Systematic review

What is systematic review?

“A systematic literature review is a means of identifying, evaluating and interpreting all available research relevant to a particular research question, or topic area, or phenomenon of interest. Individual studies contributing to a systematic review are called *primary studies*; a systematic review is a form a *secondary study*”.



Systematic review

Systematic review vs literature search

- Narrative literature search provides information about state of knowledge on a specific health topic from a theoretical and contextual point of view.
- The literature review is generally meant to keep professionals updated in a particular field and on what is being written in their area of expertise.
- Systematic review is a structured review with a specific methodology designed to answer specific research questions.
- Studies included in a review should meet the defined eligibility criteria. Peer review is a key part of the process.
- Individual studies eligible for systematic review are considered as primary studies and systematic review is a form of secondary study.



Systematic review

Steps for conducting a systematic review

1. Defining an appropriate question

- Stating a clear objective is crucial for conducting a systematic review and should be made at the beginning of the process.
- In defining the scope of systematic review, the PICOS (Population, Intervention, Comparators, Outcomes and Study design) may be helpful
The question to address a problem or intervention should be specific, clear and structured.



Systematic review

2. Identifying relevant studies, by searching:

- Published and unpublished literature, which should also include non-English sources.
- Hand searching of selected printed journals.
- Grey literature, such as technical reports, working papers, conferences, and workshops. Grey materials are those that are not formally published.



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3. Assessing the study quality and study selection

- For the studies that meet the inclusion criteria full text papers are searched and retrieved.
- Studies with poor methodological quality are excluded but are discussed in the review report.
- For the studies with accepted methodological quality, reported findings are extracted, using an appropriate data extraction form.
- Assessment is normally conducted by two independent reviewers. A list of studies included in the review should be created.



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4. Summarizing the results

The findings from the reviewed studies should be aggregated. The aggregation of findings is called evidence synthesis.

The type of evidence synthesis depends on the type of data:

- For qualitative data the **meta-synthesis** is used.
- For homogenous quantitative data, the **meta-analysis** is used.
- Narrative summaries are used if quantitative data are not homogenous.



5. Interpreting the finding

- The findings from the evidence synthesis need to be discussed and put into context.
- The quality and heterogeneity of the included studies should be addressed.
- The applicability of the findings should be mentioned.
- For any recommendation generated from a systematic review, the strength and weakness of evidence should be highlighted.



Systematic review

A systematic review conducted by WHO: [WHO systematic review of maternal mortality and morbidity: methodological issues and challenges](#)

Gülmezoglu M, Say L, Betrán A, Villar J, Piaggio G. WHO systematic review of maternal mortality and morbidity: methodological issues and challenges. BMC Medical Research Methodology. 5 July 2004.



Systematic review

For more information about systematic reviews please consult the following websites:

The Cochrane Library <https://www.cochrane.org/>

The Joanna Briggs Institute <http://joannabriggs.org/>

The Campbell Collaboration <http://www.campbellcollaboration.org/>

The Centre for Evidence-Based Medicine <https://www.cebm.net/>

The NHS Centre for Reviews and Dissemination <https://www.york.ac.uk/crd/>



References

- Kitchenham B. Procedures for performing systematic reviews. Keele, UK, Keele University. 2004;33(2004):1-26. Available from: <http://www.inf.ufsc.br/~aldo.vw/kitchenham.pdf>
- Gülmezoglu M, Say L, Betrán A, Villar J, Piaggio G. WHO systematic review of maternal mortality and morbidity: methodological issues and challenges. BMC Medical Research Methodology. 5 July 2004. Available from: <https://bmcmmedresmethodol.biomedcentral.com/articles/10.1186/1471-2288-4-16>
- University of York, Centre for Review and Dissemination. Systematic Review, CRD guidance for Undertaking Reviews in Health Care (UK). 2009 Jan 294 p. Available from: https://www.york.ac.uk/media/crd/Systematic_Reviews.pdf