

From Research to Practice: Training Course in Sexual and Reproductive Health Research

Systematic Review

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Geneva 2014

Objective of presentation

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

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

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*”.

Barbara Kitchenham. Procedures for performing systematic reviews, joint technical report. Department of computer sciences, Keele University (UK), Empirical Software Engineering National ITC Australia Ltd (Australia), Report No. 0400011T.1 2004 July

Systematic review vs literature search

- Narrative literature search provides information about state of knowledge on a specific health topic from 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 vs literature search

- 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.

Table 1 - Main Differences Between Systematic Literature Review and Narrative Literature Review.

Features	Narrative Literature Review	Systematic Literature Review
Question	Broad	Specific
Source	Not usually specified, potentially biased	Comprehensive sources, explicit search approach
Selection	Not usually specified, potentially biased	Criterion-based selection, uniformly applied
Evaluation	Variable	Rigorous critical evaluation
Synthesis	Often Qualitative	Quantitative *
Inferences	Sometimes evidence-based	Usually evidence-based
* A quantitative synthesis that includes a statistical method is a meta-analysis (Cook, 1997).		

Cook D J. et. al. Ann Intern Med 1997;126:376-380

Steps for conducting a systematic review

Sources:

- University of York, Centre for Review and Dissemination. Systematic Review, CRD guidance for Undertaking Reviews in Health Care (UK). 2009 Jan 294 p
 - S Khan K, Kunz R, Kleijnen J, Antes G. Five Steps to conducting a Systematic Review. Journal of Royal Society of Medicine. 2003 Sept; 96:118-121
 - Barbara Kitchenham. Procedures for performing systematic reviews, joint technical report. Department of computer sciences, Keele University (UK), Empirical Software Engineering National ITC Australia Ltd (Australia), Report No. 0400011T.1 2004 July
- What is ?.....series: <http://www.whatisseries.co.uk/whatis/>

- **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 (Participants, intervention, comparators, outcomes and Study design) may be helpful.
 - The question to address a problem or intervention should be specific, clear and structured.

Steps for conducting a systematic review

2. Identifying relevant studies, by searching:

- The 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, conference, 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.

Steps for conducting a systematic review

4. Combining 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.

Steps for conducting a systematic review

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.
- Please see the link below for an example of systematic review conducted by WHO on maternal mortality and morbidity
<http://www.biomedcentral.com/1471-2288/4/16>

For more information about systematic reviews please consult the following websites

The Cochrane Library

www.cochrane.org

The Joanna Briggs Institute

www.joannabriggs.edu.au/

The Campbell Collaboration

www.campbellcollaboration.org

The Centre for Evidence-Based Medicine

www.cebm.net

The NHS Centre for Reviews and Dissemination

www.york.ac.uk/inst/crd

Bandolier

www.medicine.ox.ac.uk/bandolier

PubMed Clinical Queries: Find Systematic Reviews

www.ncbi.nlm.nih.gov/pubmed/clinical