Bongani Mayosi Health Sciences Library

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SYSTEMATIC REVIEWS

SEARCHING THE LITERATURE IN THE HEALTH SCIENCES

Traditionally reviews have been narrative, qualitative and often subjective summaries of evidence on a given topic.

In **evidence-based medicine**, clinical decision-making is based on a combination of individual expertise, patient values and the integration of the best available evidence from systematic research. A **systematic review** includes a comprehensive search for primary studies on a particular clinical question, the critical evaluation of these studies and a synthesis of results according to a pre-determined methodology which may include meta-analyses of data.

Meta-analyses are produced when results of various studies are combined and represented in a statistical format. Not all systematic reviews contain a meta-analysis as this might not be appropriate, for instance if the designs of the studies were too different, or if the outcome measures are too dissimilar, an average result across the studies would not be meaningful.

Protocols

All research should be conducted according to a pre-defined methodology. Protocols define the problem; define how data is to be measured and the type of study design. It also outlines the process for identifying, assessing and summarizing studies in a review.

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Steps in conducting a systematic review

1. Formulate the question and break it up into searchable terms. The PICO method can be used, e.g.
   Question: *Is the training of caregivers effective in improving the health outcomes of stroke patients?*
   - **P population=** *stroke patients*
   - **I Intervention=** *training of caregivers*
   - **C comparison=** *no training*
   - **O outcome=** *health improvement of patients*
2. **Search** for primary studies
3. Critical **appraisal** of studies
4. **Synthesis** of results
5. **Interpretation** of results

Searching for evidence

It is in the area of literature searching that the **library** has a role in the provision of material in print and online, and in facilitating access to this information via its databases, web sites and journal portal. Once the question has been formulated, the next step is to identify appropriate databases and other sources of print and online information. In the context of EBP, the most important literature sources are systematic reviews and meta-analyses of primary studies such as clinical trials. These are followed in importance by research articles, proceedings, theses, books, unpublished studies and other grey literature. Within this hierarchy of evidence, the most important databases are:

1. PubMed, the National Library of Medicine's search platform for Medline (Index Medicus). Use built-in filters/filtering terminology to target primary studies and reviews. For tutorials and guides to using PubMed see:- www.pubmed.gov

2. EMBASE (Excerpta Medica), an important complementary database to Medline particularly strong in the fields of pharmacology, psychiatry, biomedical engineering and forensic science. This is not available at UCT but the database, **Scopus** (available at UCT), covers most of the journals indexed in EMBASE, but lacks the search functionality of EMBASE.

3. Cochrane Library

Cochrane Database of Systematic Reviews (full reviews of randomized controlled trials)
Database of Abstracts of Reviews of Effects (DARE)
Cochrane Central Register of Controlled Trials (CENTRAL) (abstracts of published trials taken from other sources)
Cochrane Protocols (trials in progress)
For tutorials and guides to using Cochrane see:-
www.thecochranelibrary.com

4. Science Citation Index (on Web of Science) is a cited reference index enabling one to broaden one's search by tracking who is citing whom.

According to Greenhalgh and Peacock (2005), most high quality primary studies can be identified by searching the above four databases. Searching further databases identified only an extra 2.4 percent of trials. However, depending on the nature of the topic covered, it is advisable to include databases like **Academic Search Premier**, **Africa-Wide Information** (for studies published in and about Africa), **African Index Medicus, CINAHL** (Cumulative Index of Nursing and Allied Health), and **PsychInfo.** A full list of databases available at UCT can be found on the library's home page under Databases.

Grey literature or unpublished studies

For theses and dissertations see links on library home page under Search & Find.

For conference proceedings, see library link (under Databases) to **Directory of Published Proceedings.**

Google and Google Scholar

Search engines like Google can also be useful sources of information on conferences and reports. Google is good for locating **authors,** their bibliographies, CV's and addresses for directly communicating with them. Google Scholar is a more academic search engine and is particularly useful if preferences are set to link to UCT's online journal collection.

Tips for developing a search strategy

1. *"Golden rule of searching: keep track of what you have done!"*(Glasziou et al., 2001:110). Note which **strategy/set of terms** gives the best result so that it can be replicated in different databases. This enables a clear and coherent rationale for inclusion in the review.
2. **Broaden or narrow search.** If results from a search are too few or not exhaustive enough, broaden the search by using synonyms, combining index terms like MeSH and keywords, truncating terms, exploding index terms and omitting subheadings. To narrow a search, use most specific terms, use MeSH as a major topic, use subheadings and filters.
3. When using **keywords** be aware of the following:
   Synonyms (heart or cardiac or cardiovascular)
   Alternative spelling (anaesthesia or anesthesia)
   Local usage (operating room or operating theatre)
   Brand or generic name (panado or paracetamol)
   Abbreviations (TB or tuberculosis)
   Opposites (search long needle or short needle)
4. **Reference and citation tracking**. The lists of references at the end of articles often point to previous research. Cited references indicate who is citing the article in hand pointing to possible later research. Science Citation Index, Scopus and Google Scholar are good sources of cited references. 'Related articles' in PubMed and Web of Science shows articles linked by citations and keywords.

Inter Library Loans Service

Items that are not available online or in print in the library can be obtained through the inter-library loan system. There is no cost for items obtained within South Africa. Contact details can be found on the Library's home page:-
http://www.lib.uct.ac.za/lib/borrow/interlibrary-loans

References

Glasziou, P et al. 2001. Systematic reviews in health care: a practical guide. Cambridge: Cambridge University Press.
Greenhalgh, T & Peacock, R. 2005. Effectiveness and efficiency of search methods in systematic reviews of complex evidence: audit of primary sources. *BMJ,* 331(7524): 1064-5.
Khan, K et al. 2011. Systematic reviews to support evidence-based medicine. 2nd ed. London: Hodder Arnold.
Pai, M et al. 2004. Systematic reviews and meta-analyses: an illustrated step by step guide. *National Medical Journal of India,* 17(2): 86-95.