



Research Guides

University of Michigan Library / Research Guides / Systematic Reviews / Search Strategy

Systematic Reviews

Information on how to conduct systematic reviews in the health sciences.

Overview

Work with a Search Expert

Should You Do a Systematic Review?

Types of Reviews

Evidence in a Systematic Review

Methods

Planning

Information Sources

Search Strategy

Developing an Answerable Question

PICO is a good framework to help clarify your systematic review question.

P - Patient, Population or Problem: What are the important characteristics of the patients &/or problem?

I - Intervention: What you plan to do for the patient or problem?

C - Comparison: What, if anything, is the alternative to the intervention?

O - Outcome: What is the outcome that you would like to measure?

Beyond PICO: the SPIDER tool for qualitative evidence synthesis.

5-SPICE: the application of an original framework for community health worker program design, quality improvement and research agenda setting.

Creating a Search Strategy

A well constructed search strategy is the core of your systematic review and will be reported on in the methods section of your paper. The search strategy



Developing an Answerable Question

Creating a Search Strategy

Identifying Synonyms & Related Terms

Keywords vs. Index Terms

Combining Search Terms Using Boolean Operators

A SR Search Strategy

Search Limits

Managing Records

Selection Process

Data Collection Process

Study Risk of Bias Assessment

Reporting Results

retrieves the majority of the studies you will assess for eligibility & inclusion. The quality of the search strategy also affects what items may have been missed. Informationists can be partners in this process.

Identifying Synonyms & Related Terms

For a systematic review, it is important to broaden your search to maximize the retrieval of relevant results.

Use keywords: How other people might describe a topic?

Identify the appropriate index terms (subject headings) for your topic.

- Index terms differ by database (MeSH, or Medical Subject Headings, Emtree terms, Subject headings) are assigned by experts based on the article's content.
- Check the indexing of sentinel articles (3-6 articles that are fundamental to your topic). Sentinel articles can also be used to test your search results.

Include spelling variations (e.g., behavior, behaviour).

Keywords vs. Index Terms

Both types of search terms are useful & both should be used in your search.

Keywords help to broaden your results. They will be searched for at least in journal titles, author names, article titles, & article abstracts. They can also be tagged to search all text.

Index/subject terms help to focus your search appropriately, looking for items that have had a specific term applied by an indexer.

For Search Professionals

Validated Search Filters

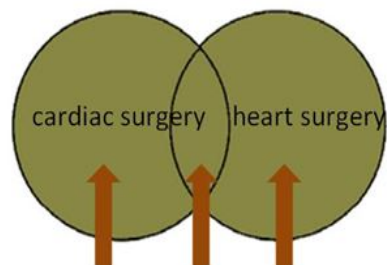
Depending on your topic, you may be able to save time in constructing your search by using specific search filters (also called "hedges") developed & validated by researchers in the Health Information Research Unit (HiRU) of McMaster University, under contract from the National Library of Medicine. These filters can be found on

- PubMed's [Clinical Queries & Health Services](#)

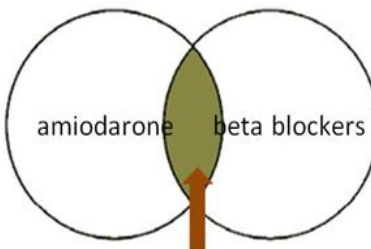
Combining Search Terms Using Boolean Operators

Boolean operators let you combine search terms in specific ways to broaden or narrow your results.

Using **OR** lets you broaden your search by combining synonyms to appropriately cover a concept. This search will retrieve articles containing each term separately, as well as both terms together.



Using **AND** lets you narrow your search and is used to combine concepts. This search will retrieve articles containing both terms only.



A SR Search Strategy

An example of a search string for one concept in a systematic review.

```
("Alzheimer Disease"[mh] OR "alzheimer's"[tiab] OR "alzheimer"[tiab] OR ad[tiab] OR "alzheimers"[tiab] OR "alzheimer"[tiab] OR "alzheimer's"[tiab] OR "cognition disorders"[mh] OR cognitive[tiab] OR cognition[tiab] OR "dementia"[mh:noexp] OR dementia[tiab])
```

In this example from a PubMed search, **[mh]** = MeSH & **[tiab]** = Title/Abstract, a more focused version of a keyword search.

Service

Research

Queries pages

- Ovid Medline's Clinical Queries filters or here
- Embase & PsycINFO
- EBSCOhost's main search page for CINAHL (Clinical Queries category)
- HiRU's Nephrology Filters page
- American U of Beirut, esp. for "humans" filters.
- Countway Library of Medicine methodology filters
- InterTASC Information Specialists' Sub-Group Search Filter

Search Limits

A typical database search **limit** allows you to narrow results so that you retrieve articles that are most relevant to your research question. Limit types vary by database & include:

- Article/publication type
- Publication dates
- Species
- Language
- Sex
- Subject
- Ages

In a systematic review search, you should use care when applying limits, as you may lose articles inadvertently. For more information, see, particularly regarding language & format limits. Cochrane 2008 6.4.9

Search Filter

Resource

- SIGN (Scottish Intercollegiate Guidelines Network) filters page

Why Create a Sensitive Search?

In many literature reviews, you try to balance the *sensitivity* of the search (how many potentially relevant articles you find) & *specificity* (how many definitely relevant articles you find), realizing that you will miss some. In a systematic review, you want a **very** sensitive search: you are trying to find any potentially relevant article. A systematic review search will:

- contain many synonyms & variants of search terms
- use care in adding search filters
- search multiple resources, databases & grey literature, such as reports & clinical trials

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