

How to conduct a literature search

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This leaflet explains how to conduct a literature search with particular emphasis on how to construct search strategies for electronic databases. Planning the steps of your literature search in advance is key and the following stages may help to do this.

Stages of a literature search

- 1. Decide on the search topic**
Formulate a title / question / hypothesis to help define the topic
- 2. Decide on the scope of the search topic**
Think about what you want to include, exclude, the languages you wish to search in, any time limit on the search, geographical area, country of publication, age or gender issues, whether you wish to do a complete literature review or a brief literature search etc
- 3. Think about the sort of information you wish to retrieve**
(eg books, journal articles, current research, other people's experiences)
Consider the sources of information that will be relevant (eg libraries, electronic databases, electronic discussion lists etc)
- 4. Consider the keywords you wish to use for the literature search**
including synonyms, alternative and related terms, international terms (eg physical therapy), alternative spellings, former terms that may have changed (eg the absence of politically correct terms)
- 5. Plan out the stages of your literature search**
(eg which databases you will search and when, the libraries you will obtain articles from and when) Leave plenty of time. It may well take you a lot longer than you may anticipate.
- 6. Carry out the searching and collect the information**
- 7. Record the sources of information you have used**
(eg databases searched, keywords used, years searched). Keep full bibliographic details in order to generate reference lists / bibliographies
- 8. Consider whether the sources used have been appropriate**
and whether useful information has been found. Seek alternative sources if not. Critically assess the information you have found.

Search techniques

Keywords

It is important to have keywords in mind before starting your search. It is best to think laterally about the search topic and consider all the possible synonyms and related areas of your search topic. For example if you are searching for information on multi-disciplinary working in paediatrics the possible words you could use might be multi-disciplinary team, inter-disciplinary team, multi-professional working, collaboration, patient care team/s, team working, paediatrics, pediatrics, child, children and infant/s. If all possible words are not considered then less information will be retrieved and literature will be missed.

Most databases provide a thesaurus of keywords to look up terms. This is done in order to standardise the literature searching process and make it more consistent. For example if there are a range of synonyms for certain terms only one term will be used as a keyword in the thesaurus, for example low back pain may be used to cover back pain, back ache, etc. It is important to use this facility.

On MEDLINE and the Cochrane Library these terms are called MeSH heading (Medical Subject Headings). The subject headings are used to index references and it is important to be familiar with them. For example on MEDLINE, CINAHL and the Cochrane library the terms 'physical therapy techniques or physical therapy speciality' are used instead of 'physiotherapy'. On AMED 'cerebrovascular disorders' is used instead of 'stroke'. Thus, many records can be missed if the wrong keywords are used.

If there are no keywords in the thesaurus appropriate to your topic, then it is best to use free text searching. This is where words are retrieved anywhere in the reference including the abstract. It may therefore mean that some irrelevant records are retrieved that may merely mention the term you are looking for.

In order to capture as many records as possible it is best to search using keywords from the thesaurus as well as free text searching.

Boolean Logic

Boolean logic is important for joining, widening or excluding terms when conducting a search:

AND should be used to join concepts to make a search more specific, eg physiotherapy AND pain

OR should be used to widen a search when you require any set of words to be present or to specify, eg physiotherapy OR physical therapy

NOT should be used to exclude words, eg physiotherapy NOT occupational therapy

NEAR can also be used to search for terms together, eg chartered NEAR society NEAR physiotherapy

Quotation marks can also be used to search for a phrase, eg "chartered society of physiotherapy"

Truncation/Wildcard

The process known as truncation, wildcard or word stemming lets you search on part of a word to retrieve information on similar words and this can simplify searching. A range of symbols can be placed after the word and this varies between databases. For example symbols such as the following:

physiotherap*

physiotherap?

physiotherap\$

physiotherap%

will pick up the words 'physiotherapy', 'physiotherapist', 'physiotherapists' or 'physiotherapeutic'. You will need to know what symbol is recognised by the database you are using.

Spelling and alternative terms

It is always important to consider different spellings of words. For example 'orthopaedics' or 'orthopedics'. Alternative terms should also be borne in mind and these can be searched for using Boolean commands. For example one might search for 'physiotherapy' or 'physical therapy' in order to retrieve all the possible records for this topic.

Focusing a search

Depending on the search topic, a simple search can often retrieve a vast amount of records. There are ways in which you can narrow down your search. For example it is possible to:

- specify the language of information retrieved
- limit the time scale of a search by narrowing it to specific years
- search for a particular publication type
- search for review articles only
- search for words in the title of an article only
- limit by age or gender

All databases will vary as to what limits are available and how searches are limited. There is a limit facility on many databases which will provide a list of the ways you can limit your search.