Chapter 4: Searching the literature *(How to actually do a search)*

The student will

- be able to formulate a search,
- be able to choose relevant databases to search,
- understand the basics of Boolean search strategy,
- be able to expand and limit a search strategy depending on results.

This section provides tips for searching the literature and finding material that includes research studies. Remember that searching in databases will help limit the type of articles you retrieve. Consider limiting your results to peer-reviewed material or scholarly material.

You also need to understand that many studies include different levels of evidence. Systematic reviews and the meta-analysis of multiple systematic reviews lend more credence to results than a single participant controlled trial. Be mindful of what the literature is telling you in the title, the abstract, the introduction and the conclusion. You should read all of the results critically for research design, methodology, type of study, participants, and results. AND, be prepared to find very little evidence in the current literature for many topics.

Once the question has been posed, you are ready to search for relevant articles. Remember: When searching the literature, be as specific as possible. Be prepared to broaden and vary items in your PICO or COPES question. If your population group is not discussed, are there similar population groups to which this study might apply? Is there material for another age group? Does something exist for a different gender or ethnic group? Is this study applicable to the population you’re studying? If there is no evidence, you need to rely on your professional training and expertise to test your hypothesis. Consider publishing your results so others may learn from your evidence.

If you have limited time, try searching the databases that specialize in evidence-based reviews: the Campbell Collaboration (social and behavioral studies, education, criminal studies) or the Cochrane Library (includes systematic reviews, case studies). For reviewed guidelines, a quick look at the National Guideline Clearinghouse (practice guidelines) might provide just what you need. These sites include material that has passed through rigorous review processes. If what you need is included, you only need to evaluate the study for applicability to your client and situation. If there are significant differences in the study and your situation, you need to look further or consider tailoring the study to your case.

If you do not find anything that is applicable to your situation, you should conduct a literature review. All of the databases and resources mentioned previously should be considered. If you notice that you are getting too many irrelevant articles, try your search in a subject specific database.
BASIC SEARCH STRATEGIES

Search Process

First, identify the key concepts. Then, organize the concepts into columns, and write synonyms and related phrases. Decide which databases are appropriate for the key concepts. Choose search techniques that are available in the chosen databases. Run the search. Review the results and decide if the search strategy needs modification. Modify the search strategy and run the search again.

Example: What is the relationship between accessibility of nutritious food and obesity?

Step 1 - Identify the Key Concepts

accessibility, food, obesity

Step 2 - Organize into Columns and Write Synonyms and Related Phrases

<table>
<thead>
<tr>
<th>access</th>
<th>food</th>
<th>obese</th>
</tr>
</thead>
<tbody>
<tr>
<td>accessible</td>
<td>foodstuffs</td>
<td>obesity</td>
</tr>
<tr>
<td>accessibility</td>
<td>groceries</td>
<td>overweight</td>
</tr>
<tr>
<td></td>
<td>nutritious</td>
<td></td>
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<tr>
<td></td>
<td>nutritionally</td>
<td></td>
</tr>
<tr>
<td></td>
<td>fruit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>fruits</td>
<td></td>
</tr>
<tr>
<td></td>
<td>vegetable</td>
<td></td>
</tr>
<tr>
<td></td>
<td>vegetables</td>
<td></td>
</tr>
</tbody>
</table>

Step 3 - Choose Appropriate Databases

Medline/PubMed, SocIndex, Academic Search Complete

Step 4 - Apply Search Strategies

Strategy 1 - Boolean Operators

AND (narrows the results through inclusion) for example: anorexia AND athletes

OR (broadens the results) for example: anorexia OR bulimia OR binge eating

NOT (narrows the results through exclusion) Some databases use AND NOT (Read the database guide.)
for example: smoking NOT cigars
for example: smoking AND NOT cigars

Combining Boolean Operators
for example: (anorexia OR bulimia OR binge eating) AND (sports OR athletes OR athletics)
for example: (parents AND schools) NOT (pta OR pto)

**Dog owners AND Cat owners**

**Dog owners OR Cat Owners**

**Dog owners NOT Cat owners**
**Strategy 2 - Truncation / Stemming (finds different word endings)**

Common truncation/stemming symbols: * $ ! (Read the database guide.)
Most databases require at least 3 letters before the symbol.

- staple* finds: staple, staples, stapler, Stapleton, etc.
- school$ finds: school, schools, schooler, schooling, Schoolbury, etc.
- disorder! finds: disorder, disorders, disordered, disorderly, etc.

**Strategy 3 - Phrase Searching (exactly these letters and spaces in this order)**

"no child left behind"
"neighborhood watch"
Some databases allow truncation/stemming inside a phrase (Read the database guide.) For example: "suicid* tendenc*"

**Strategy 4 - Limits**

Peer Reviewed
Publication years (for example: 1997-2001)
English (article is in English)
Publication type (for example: periodical, book, newspaper, etc.)
Document type (for example: article, book review, editorial, etc.)

**Strategy 5 - Field Qualification (restrict information to a specific field)**

Bradbury* in the author field
"public policy" in the title field
"journal of mental health" in the source/journal name field

**Strategy 6 - British Versions (to include more of the international literature)**

British spellings (for example: centre, programme, behaviour, etc.)
British terms
  - for example: lift (Americans use elevator)
  - for example: flat (Americans use apartment)
Strategy 7 - Proximity Operators (read the database guide)

The most common proximity operators are Near, Within, and Adjacent. Proximity operators tell the database to find two search words, but to allow only a certain number of other words to come between the two search words. For some databases, the order of the two search words matters. Some databases define the proximity operator as fewer than XX number of words between the two search words. Some databases do not have proximity operators. The database guide will tell you the proper format to use.

- dog* NEAR 6 cat
- dog* WITHIN 6 cat
- dog* ADJ6 cat
- dog* N6 cat
- dog* W6 cat
- dog* ADJ/6 cat
- dog* N/6 cat
- dog* W/6 cat
- dog* ADJ/6 cat

The above examples would give this result to you:
The dog's attention turned to the cat.

The above examples would not give this result to you:
The dog's attention turned to the squirrel in the tree while the owner watched television and the cat slept on the sofa.

Proximity operators would be helpful if you were searching for Beck's depression inventory because the topic appears in various ways:
- the depression inventory developed by Beck
- Beck's inventory for depression
- the inventory for depression created by Beck
- Beck published a depression inventory
Applying the Search Strategies to the Example for the Academic Search
Complete Database:

access*  food*  obes*
OR      OR      OR
        grocer*  nutriti*
        OR      OR
        fruit*  vegetable*

AND     AND

Limits: 2005-2014, Peer Reviewed

Step 5 - Run the Search

Use the advanced search mode when it is available.
Type each column into the database as a separate search.
Use OR to type the terms/phrases for a column.
Use AND to combine the set numbers of the columns.

NOTE: If a column has more than ten terms/phrases, split the column into separate searches of ten or fewer terms/phrases. Then, use the search history to OR the separate searches together into one big pile of results. Many databases have a limit on the number of terms/phrases that can be searched at one time. The databases rarely give a warning when you use too many terms/phrases. Some databases start ignoring terms/phrases after the tenth term/phrase. Use the search history/previous searches tab to combine the search sets.
Follow the database’s format for writing the set numbers.
    For example: s1 AND s2 AND s3
    For example: #1 AND #2 AND #3
Step 6 - Examine the Results (Words to Include/Exclude, Strategy Changes)

Look at the results and decide if the results meet your needs. If not, consider the following ways to modify the search.

If your search produces too many results, consider the following:

- Apply more limits or tighten the existing limits.
- Field qualify the terms to the Title, Abstract, Subject fields instead of searching all fields.
- If a database thesaurus is available, use the thesaurus search.
- Include another concept in the search (AND another column of phrases).
- Use NOT to get rid of results that use the terms in a different context.
- Use phrase searching instead of word searching (apply the quote marks).
- Use proximity operators if available in the database.

If your search produces too few results, consider the following:

- Check your spelling. Misspelled words produce fewer results.
- Add broader terms (for example: eating disorders to a search on anorexia).
- Broaden or remove some of the limits that you applied.
- Choose a different database.
- If a database thesaurus is available, choose broader or related terms.
- Look at the words/descriptors used in a good result. Revise the search to include the new words.
- Look in a thesaurus for more synonyms and then revise the search.
- Run the search with fewer concepts (do not AND one of the columns of phrases).
- Use a truncation/stemming symbol.
- Use both the American and British spellings and both the American and British terms.

There are too many irrelevant results. Use the Field Qualification strategy to modify the search. Restrict access* to the Title Field. Rerun the search.
Step 7 - Revise the Search and Run the Search Again

Revising the search to use Field Qualification for the access* column. Restrict the access* column to the Title Field.

access* OR food* OR obes*
{only in the Title field} OR grocer* OR nutriti* OR fruit* OR vegetable*

AND AND

Limits: 2005-2014, Peer Reviewed
Template for basic searches:

<table>
<thead>
<tr>
<th>Concept 1</th>
<th>Concept 2</th>
<th>Concept 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR</td>
<td>OR</td>
<td>OR</td>
</tr>
<tr>
<td>OR</td>
<td>OR</td>
<td>OR</td>
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<td>OR</td>
<td>OR</td>
<td>OR</td>
</tr>
<tr>
<td>OR</td>
<td>OR</td>
<td>OR</td>
</tr>
</tbody>
</table>

In the search history/previous searches tab, combine the concepts.

Set number for concept 1 **AND** set number for concept 2 **AND** set number for concept 3
Selected Databases as a Starting Point

<table>
<thead>
<tr>
<th>Health Orientation:</th>
<th>Social Orientation:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cinahl Plus</td>
<td>Academic Search Complete</td>
</tr>
<tr>
<td>Cochrane Library</td>
<td>Annual Reviews</td>
</tr>
<tr>
<td>Global Health</td>
<td>ASSIA: Applied Social Sciences Index &amp; Abstracts</td>
</tr>
<tr>
<td>Health and Wellness Resource Center</td>
<td>Family &amp; Society Studies Worldwide</td>
</tr>
<tr>
<td>Medline/PubMed</td>
<td>IBSS: Int'l Bibliography of the Social Sciences</td>
</tr>
<tr>
<td>Pilots</td>
<td>Social Sciences Citation Index</td>
</tr>
<tr>
<td>PsycInfo</td>
<td>Social Services Abstracts</td>
</tr>
<tr>
<td>Science Direct</td>
<td>Social Work Abstracts</td>
</tr>
<tr>
<td>SCOPUS</td>
<td>SocIndex</td>
</tr>
</tbody>
</table>

Note: The library offers classes related to searching. Check the Insidebrown events calendar for the room number, time, and description.