LIB:261 Advanced Search Techniques for systematic reviews

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Learning Outcomes

- Overview of what is involved when conducting a systematic review
- Understand the importance of drawing up a clear search strategy
- Advanced search techniques using Ovid databases

BREAK

- Reading a search strategy
- What is Grey Literature and where to find them
- Where to get further information and support
High quality systematic reviews seeks to:

• Identify all relevant published and unpublished evidence
• Select studies or reports for inclusion
• Assess the quality of each study or report
• Synthesise the findings from individual studies or reports in an unbiased way
• Interpret the findings and present a balanced and impartial summary of the findings with due consideration of any flaws in the evidence

The most reliable source of evidence to guide clinical practice
The Cochrane Handbook for Systematic Reviews of Interventions is the official document that describes in detail the process of preparing and maintaining Cochrane systematic reviews on the effects of healthcare interventions.

- Part 2, Section 6 – Searching for Studies.
The stages of a systematic review

Cochrane Collaboration sets out eight stages of doing a systematic review:

1. **Defining the review question and developing criteria for including studies**
2. **Searching for studies**
3. Selecting studies and collecting data
4. Assessing risk of bias in included studies
5. Analysing data and undertaking meta-analyses
6. Addressing reporting biases
7. Presenting results and “summary of findings” tables
8. Interpreting results and drawing conclusions
Stage 1: Planning your search

1. Focus your question
2. Identify key search topics and terms
3. Develop inclusion criteria
4. Identify appropriate databases for your topic
Focus your question

What is the most effective intervention for treating eating disorders?’

'Is cognitive therapy better than antidepressants for treating eating disorders?’
### PICO - search framing technique

<table>
<thead>
<tr>
<th></th>
<th>Patient, population / problem, condition</th>
<th>People suffering from eating disorders</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>Intervention / exposure</td>
<td>Cognitive therapy</td>
</tr>
<tr>
<td>I</td>
<td>comparison – comparing therapies or options</td>
<td>Antidepressant drugs</td>
</tr>
<tr>
<td>C</td>
<td>outcome – the effects of the intervention</td>
<td>Reduction of symptoms</td>
</tr>
</tbody>
</table>
Alternatives to PICO

PESTEL - Political, Economic, Social, Technological, Environmental and Legal Factors

SPICE – Setting, Population, Intervention, Comparison, Evaluation

ECLIPS [management and service related issues] – Expectations, Client Group, Location, Impact, Professionals Involved, Service

MIP [medical ethics review] – Methodology, Issues, Participants
PICO Exercise

- Complete the PICO exercise on the handout
  Individually or in small groups

- Complete the blank template for your own research question/systematic review title

Use the PICO template, or one of the alternatives to PICO, or if not appropriate use the Literature Search Practical template splitting your research question into different concepts.
Step 2 - Searching

- Choosing the right database(s)
- Subject heading searching
- Keyword searching
- Search tools – truncation wildcard etc
- Using Boolean operators
- Refining and limiting
# PICO - search framing technique

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**P** - Patient, population / problem, condition

**I** - Intervention / exposure

**C** - Comparison – comparing therapies or options

**O** - Outcome – the effects of the intervention
Choose the most relevant for your subject

<table>
<thead>
<tr>
<th>Subject</th>
<th>Databases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicine, Biomedicine, Dentistry</td>
<td>Medline, Web of Science</td>
</tr>
<tr>
<td>Pharmaceutical</td>
<td>Embase, SciFinder</td>
</tr>
<tr>
<td>Psychotherapy</td>
<td>PsycInfo, Web of Science</td>
</tr>
<tr>
<td>Social Sciences</td>
<td>Scopus, ASSIA</td>
</tr>
<tr>
<td>Nursing</td>
<td>Cinahl</td>
</tr>
<tr>
<td>Chemistry</td>
<td>SciFinder</td>
</tr>
</tbody>
</table>
Subject heading searching

- Standardised terms
- Assigned by expert indexers (humans not machines!)
- Allows exploration of associated (broader, narrower and related) terms in subject tree.
- Can help your search and avoid problems inherent in free text
- Can retrieve articles where the term does not occur in title or abstract
Using subject headings

• Not all databases provide subject headings or a thesaurus
• Medline uses MeSH, EMBASE uses EMTREE etc..
• In OvidSP search usually maps to headings by default.
• Remember to check ‘Scope’ notes and explore the subject tree where you can explode or focus terms.
• Search in stages and then combine results using Search History functions
What do you see?

http://www.flickr.com/photos/rossjamesparker/89414788/sizes/m/in/photostream/
FRUIT

Apples
- Green apples
  - Granny Smith apples
  - Golden Delicious apples
- Red apples
  - Cox apples
  - Gala apples

Bananas

Peaches

Pears
- Conference pears
- Comice pears
- Dessert pears

• Example subject heading thesaurus showing narrower more specific terms under the heading Fruit.

• Most databases with subject headings will allow you to select a heading e.g. Fruit and choose to automatically select any article which has been tagged with one of the more specific subject headings which fall underneath it e.g. Bananas or Gala Apples

• This option is called Explode in Medline, Embase etc. on the Ovid platform.
Free text searching

• Free text, keyword, or ‘natural language’ searching
• The strategy used for searching the web and any database
• Finds results if the words you are searching for are present in:
  
  article title
  abstract
  keywords

You will find an article if you use the same terminology as the author(s)
Problems with free text searching

- The ambiguity of ‘natural language’
- Synonyms, homonyms etc..
- Variant forms of the same word or phrase – spelling, plural v. singular, abbreviations etc..
- How do you know what you are missing?
Search tools – Wildcard
(symbols vary from database to database)
The ‘?’ or ‘$’ stands for zero or one character

P?ediatrics

Pediatrics
Paediatrics

Wom?n

Woman
Women
Search tools - Truncation

Truncation - Use the ‘truncation’ symbol, an asterisk * to find alternative word endings: symbols vary in databases

Phrase searching – ensure the terms appear together e.g. “antidepressant drugs
Search tools - Adjacency searching

- (adj# - Ovid) acute adj5 otitis media
- (N# - Cinahl) middle ear N3 inflam*
- (NEAR/x – Web of Science) chronic NEAR/4 disease*
Boolean Operators: Combing your search terms

**OR**
- Antidepressant drugs
  - OR
  - Antidepressive agents

**AND**
- Eating disorders
  - AND
  - Cognitive therapy
OR

• Retrieves results containing either term, i.e. inclusive
• Useful for synonyms and related terms
• e.g. Antidepressant drugs OR antidepressive agents
• Useful for variant terms
• e.g. Selective serotonin reuptake inhibitors OR SSRIs
• Makes search broader

AND

• Retrieves results containing only both terms
• e.g. Eating disorders AND cognitive therapy
• Makes search more specific
• Sometimes automatic for two or more terms depending on database
Using Filters
(e.g. to limit results to RCTs)

Cochrane filter
http://www.cochrane-handbook.org/

SIGN
http://www.sign.ac.uk/methodology/filters.html

Centre for Reviews and Dissemination
http://www.york.ac.uk/inst/crd/intertasc/rct.htm
Search filters – for study type

Cochrane filter for RCTs
http://handbook.cochrane.org/ (section 6.4.11)

SIGN
http://www.sign.ac.uk/methodology/filters.html

Centre for Reviews and Dissemination
http://www.york.ac.uk/inst/crd/intertasc/rct.htm

National Clinical Guideline Centre
http://www.ncgac-ac.uk/Guidelines/

Filters can be copied into your search strategy
Step 3 - Retrieving

1. Article in full text databases

2. King’s subscriptions via SFX King’s

3. Interlibrary loan or access to other libraries

4. Open access article
A sample search strategy

Music interventions for improving psychological and physical outcomes in cancer patients - Cochrane Database of Systematic Reviews

https://flic.kr/p/fook3
An example of a search strategy


navigate to Appendices for search strategy via ‘Jump to’ box under Article tab

- Adjacency
- Truncation
- Synonyms
- Subject headings v free text searching
- Limit to specific fields e.g. PT (publication type)
Sources of existing search strategies

**Cochrane Library**
Cochrane Reviews: Cochrane Database of Systematic Reviews

*Database of Abstracts of Reviews of Effect*

**Campbell Collaboration**
Systematic reviews in education, crime and justice, and social welfare

Evaluate the quality – can you use it, or can you do better?
Assessing the Quality

Peer Review of Electronic Search Strategies - PRESS EBC

- Evidence based checklist
- Quick quality assessment check

PRESS EBC can be used to assess your own and existing systematic review strategy search strategies
“There are many definitions of grey literature, but it is usually taken to mean literature that is not formally published in sources such as books or journal articles.” – Cochrane Handbook

Formats include:
- Technical or research reports from government agencies
- Reports from scientific research groups
- Working papers from research groups or committees
- Doctoral dissertations
- Some conference proceedings and official publications
Searching grey literature

- **OpenGrey**  [http://www.opengrey.eu/](http://www.opengrey.eu/)
- Libraries of specialist research organisations and professional societies – check via **Open Doar**
- **HMIC** (The Healthcare Management Information Consortium) via Databases list (King’s username and password)
- **Global Health** – Ovid via Databases list (King’s username and password)
• **Social Science Research Network**
  www.ssrn.com/
• 451,800 abstracts and 365,700 full-text docs. Subject specific networks, including one for health
• **Social Care Online** www.scie-socialcareonline.org.uk/
• legislation, government documents briefings, UK grey
• **Conference proceedings**
• **Web of Science**
• **SciVerse Scopus**
• **Medline** – search for Congresses AND then combine with a topic
Trials Registers

Meta-registers of Controlled Trials – which bring together several international sources

- **ISRCTN registry**
- **WHO clinical trials registry**
  [http://apps.who.int/trialsearch/](http://apps.who.int/trialsearch/)
- **US register of clinical trials**
  [https://clinicaltrials.gov/](https://clinicaltrials.gov/)
Theses and Dissertations

- **CINAHL** and **PsycInfo** (Ovid) – access via databases list
- **WorldCat** dissertations and Theses (OCLC) – access via databases list
- **Senate House** – Index to Theses in Great Britain and Ireland covers >500,000 theses
- British Library’s **eThos** site – [http://ethos.bl.uk](http://ethos.bl.uk)
Hand searching

- Physically searching journal contents
- Can identify articles not yet included
- in electronic databases
- Articles or studies not indexed properly

Citation searching and reference searching

- Search the reference list or interesting papers
- See where interesting papers have been cited

https://flic.kr/p/5S1yfz
Direct Contact

• Making direct contact – usually by email – with the authors or organisations who are experts in this field
• Authors often include their contact details in abstracts
• Can find out about ongoing or unpublished research
• Papers not on your list which authors might be aware of
The Cochrane Library

An international organisation and a collection of databases:

- Cochrane Database of Systematic reviews
- DARE (Database of Abstracts of Reviews of Effects)
- Cochrane Controlled Trials Register
- Cochrane Methodology Register
- NHS Economic Evaluation Database (NHS EED)
- Health Technology Assessment Database (HTA).

Contains reliable evidence about the effectiveness of Interventions
Summaries of Evidence

BMJ Best Practice

- Access from the Databases link at http://www.kcl.ac.uk/library
Evidence Search
(previously NHS Evidence)

- http://www.evidence.nhs.uk/
  - NICE search engine of evidence based resources, e.g. guidelines and reviews
  - Covers health and social care
Further Training & Support

- LIB:229 Literature Review Workshop for Health and Clinical PG students
- LIB:280 Desktop EndNote for PC
- Book on SkillsForge: [http://training.kcl.ac.uk/](http://training.kcl.ac.uk/)
- Your subject guides [http://libguides.kcl.ac.uk/home](http://libguides.kcl.ac.uk/home)
- [libraryservices@kcl.ac.uk](mailto:libraryservices@kcl.ac.uk) or come and visit us