Systematic reviews & evidence syntheses

Searching for studies
Plan for today

• Key steps in searching & managing results during the systematic review process
  • Formulating a question
  • Developing a strategy
  • Choosing databases
  • Organising & screening results
  • Documenting the search
What is a systematic review?
What is a systematic review?

A systematic review is a high-level overview of primary research on a particular research question that tries to identify, select, synthesize and appraise all high quality research evidence relevant to that question in order to answer it.¹
What is a systematic review?

Systematic review is an approach used in health, education and social policy (as part of evidence based policy or practice). It's much more than a 'literature review' - it follows a strict methodology which means it's 'transparent, rigorous and replicable.'
<table>
<thead>
<tr>
<th>Literature reviews vs. systematic reviews</th>
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</thead>
<tbody>
<tr>
<td><strong>No protocol</strong></td>
</tr>
<tr>
<td><strong>General question</strong></td>
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<tr>
<td><strong>Brief details of main keywords</strong></td>
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<tr>
<td><strong>Searches 1 or 2 sources</strong></td>
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<tr>
<td><strong>Includes known literature</strong></td>
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<td><strong>No specific criteria for inclusion &amp; exclusion</strong></td>
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<td><strong>No search documentation</strong></td>
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Types of systematic review

• Systematic review of:
  • Intervention studies, diagnostic studies, prognostic studies, qualitative studies, economic evaluations, IPD...
  • Mixed methods & realist reviews
  • Rapid reviews
  • Scoping reviews
  • Systematic overviews
Common search methods

- Formulate a question
- Identify existing reviews
- Develop a search strategy
- Run the search across multiple databases
- Use additional search methods to identify unpublished “grey” literature
- Manage & screen results
- Document the search
Formulating a search question

Search tools

• **PICO** =
• **PICOS** =
• **PECO** =
• **SPIDER** =
Formulating a search question

- **PICO** = Population, intervention, control, outcome
- **PICOS** = Population, intervention, control, outcome, study type
- **PECO** = Population, exposure, control, outcome
- **SPIDER** = sample, phenomenon of interest, design, evaluation, research type
Formulating a search question

Delayed antibiotic prescriptions for respiratory infections

- **P** = Respiratory infections
- **I** = Delayed antibiotic prescription
- **C** = Immediate or no prescription
- **O** = Symptom resolution, side effects, hospitalisations, costs...
Delayed antibiotic prescriptions for respiratory infections

- **P** = Respiratory infections
- **I** = Delayed antibiotic prescription
- **C** = Immediate or no prescription
- **O** = symptom alleviation, side effects, costs...

Key search criteria in **BOLD**
Identifying existing reviews

• Ongoing reviews
  • PROSPERO
• Reviews published in journals
  • Search PubMed and limit to systematic reviews
• Reviews from regional or national health care organisations
  • TRIPdatabase, NICE Evidence Search
Developing a protocol

• Once you’ve decided to pursue your own systematic review, start a protocol
  • Helps with developing the search
  • Identifies what you need to do at each stage of the process
  • Makes the review easier to publish
Developing a search strategy

- Identify keywords
- Find subject headings
- Apply methodological search filters (if appropriate)
- Combine the search strings
- Weigh up whether to apply limits to your search...bias
Exercise 1
Editing & finalising the search

- Test the search
  - Does it capture key papers?
  - Are there too many irrelevant papers?
- Share your search strategy with colleagues
- Ask for comments on coverage, relevance, accuracy...
- Review & finalise – iterative process
Exercise 2
Searching across multiple databases

• Choose which databases to search
• Adapt the search for each database
• Export the results into reference management software
Searching for grey literature

- Conference abstracts
- Theses
- Study protocols
- Official documents – reports, statistics, case studies...
- Organisational reports
Searching for grey literature

• Forward & backward citation tracking
• Related articles linking
• Hand-searching conference reports & journals
• Searching trial registers
• Web searching
• Contacting authors, experts & organisations
Registering your protocol

• Once your search methods are finalised, finish & register your protocol
  • PROSPERO
  • Systematic Review organisations e.g. Cochrane, JBI...
• Publish in a journal which accepts protocols
Managing your search results

- Reference management software is essential
- Endnote, Mendeley, Refworks...
- De-duplicating results
- Screening
- Locating & storing PDFs
- Writing up your review
Screen your search results

• Are you going to double screen or single screen?
• Are you going to use reference management software, ExCel, Word...?
• Are you going to use review management software?
Review management software

• Things to consider:
  • Ease of use
  • Cost - Free, one off payment, subscription...
  • Compatibility with other software & devices
  • User support
• Examples of software:
  • Covidence, EPPI-Reviewer, RevMan
Document your search: PRISMA

You need to record:

- Databases searched
- Search terms used
- Date of last search
- Additional search methods used
- Total number of references retrieved
- Number of duplicates
- Final number of references screened
Report your search

Include a summary of the search methods in the body of your review

Include a full copy of the exact search strategy for at least one database as additional information (Appendix)