Conducting a Systematic Review
For Researchers & HDR Students
Research ReachOut @ the Library 2019
Workshop Overview

• What is a systematic review?
• PICO questions
• Finding systematic reviews
• Systematic reviews, documentation & protocols
• Choosing a database
• Non-database searching
• Selection & appraisal; analysis, synthesis & reporting of results
Learning Outcomes

By the end of this workshop, you should be able to:

• Explain the difference between a literature review and systematic review
• Find systematic reviews and other literature
• Develop a plan for conducting a systematic review
What is a Systematic Review?
Systematic Reviews

https://www.youtube.com/watch?v=04E8JiXY2s4
Group Activity

Online poll
• [https://PollEv.com/bryanchan521](https://PollEv.com/bryanchan521)

Which of the following describe:
• Systematic reviews
• Literature reviews?
# Systematic Review or Literature Review?

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>SR</th>
<th>LR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examines a clearly defined topic or question</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>May be evidence-based, but is not evidence (research)</td>
<td>✗</td>
<td>✓</td>
</tr>
<tr>
<td>Does not use an explicit search protocol or plan</td>
<td>✗</td>
<td>✓</td>
</tr>
<tr>
<td>An explicit, predetermined protocol, that specifies inclusion and exclusion criteria, is used to select studies for the review</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>A comprehensive search is undertaken to identify all potentially relevant studies</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>A level of evidence rating system may be used to &quot;grade&quot; the quality and strength of individual studies</td>
<td>✗</td>
<td>✓</td>
</tr>
<tr>
<td>When evidence is lacking, the authors make recommendations based on their opinions and experience</td>
<td>✗</td>
<td>✓</td>
</tr>
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Systematic Review Guide

Covers the material in this workshop:

• What you need to know about systematic reviews, particularly the methodology

How to get there:

• Library homepage > Help for Researchers > Systematic Review Guide
• Use Library Search
• Murdoch University website: search engine
<table>
<thead>
<tr>
<th>Systematic Review</th>
<th>Literature (or Narrative) Review</th>
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<tbody>
<tr>
<td>Examines a clearly defined topic or question</td>
<td>Provides an overview of a topic</td>
</tr>
<tr>
<td>Uses an explicit search plan or protocol to minimize bias</td>
<td>Does not use an explicit search protocol or plan</td>
</tr>
<tr>
<td>A comprehensive search is undertaken to identify all potentially relevant studies</td>
<td>The search process may or may not include all potentially relevant studies</td>
</tr>
<tr>
<td>An explicit, predetermined protocol, that specifies inclusion and exclusion criteria, is used to select studies for the review</td>
<td>An explicit, predetermined protocol is not used to select the studies that are used to support the reviewers' recommendations</td>
</tr>
<tr>
<td>The quality of individual studies is rigorously appraised in a meta-analysis and a systematic synthesis of the results of included studies is undertaken with evidence &quot;grades&quot; applied to individual studies</td>
<td>A level of evidence rating system may be used to &quot;grade&quot; the quality and strength of individual studies</td>
</tr>
<tr>
<td>Provides evidence (research)</td>
<td>May be evidence-based, but is not evidence (research)</td>
</tr>
<tr>
<td>When evidence is lacking, the authors usually recommend further research</td>
<td>When evidence is lacking, the authors make recommendations based on their opinions and experience</td>
</tr>
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</table>
Discuss

When/why would you conduct a systematic review?

• A systematic review is a research methodology like experimental or qualitative methods

• A literature review is not research, but has an important role in supporting the research endeavour
PICO Questions
Discuss

• What is PICO? What does it stand for?
PICO Question Video

HOW TO FRAME YOUR PICO MEDICAL QUESTION:

FLU SHOT!

https://youtu.be/j5LccGp9RW8
Think Pair Share

• Complete Question 1 of the PICO worksheet
  (refer to the Systematic Review Guide for guidance)
• Pair up with the person next to you, discuss your PICO questions and give each other feedback
• Share your PICO question with the class
Finding Systematic Reviews
Check for existing reviews

- This should be the **first step** in any systematic review!

<table>
<thead>
<tr>
<th>1. Starting a Systematic Review</th>
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<tbody>
<tr>
<td>• Check existing reviews/protocols - ensure proposed study is unique</td>
</tr>
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<table>
<thead>
<tr>
<th>2. Developing your Clinical Question</th>
</tr>
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<tbody>
<tr>
<td>• Develop a specific question so your search will be relevant - use PICO or PICO</td>
</tr>
<tr>
<td>• Devise a protocol - determine the inclusion/exclusion and eligibility criteria for further studies</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. Finding the Literature</th>
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<tbody>
<tr>
<td>• Conduct a comprehensive search - your search strategy must be explicit and reproducible</td>
</tr>
</tbody>
</table>
• Free
• Automatic term mapping
• Clinical queries (includes systematic reviews)
Activity

• Go to PubMed (Databases > P > PubMed)
• Click ‘Clinical Queries’ in the middle of the home page
• Search for a recent systematic review on your topic, or a topic of interest
• Skim systematic review and look at its content and structure
Discuss

How does this relate to your research topic?

• Your research might not be suitable for the systematic review methodology

• If so, then the rest of this workshop will not apply to you

• There is a separate workshop for advanced ‘systematic’ searching of the literature
Break time!

• 5 min

• Feel free to leave if you are not conducting a systematic review
Documenting a Systematic Review

- Defining feature of systematic reviews
- Both the search and the analysis processes need to be documented
- Aids transparency and replicability – makes the review ‘evidence’

(http://libguides.murdoch.edu.au/systematic/documenting)
Discuss

• What is a systematic review protocol?
“A systematic review protocol describes the rationale, hypothesis, and planned methods of the review. It should be prepared before a review is started and used as a guide to carry out the review.” (PRISMA, 2015)

Discuss

• A protocol is often registered/published before a review.
• Why is this important?
Choosing a Database

Conducting a systematic review
Choosing Databases

You will need to search a number of databases:

• Disciplinary vs multidisciplinary
• Citation databases
• Systematic reviews/EBP databases

Be comprehensive!
Databases

- PubMed/MedLine (biomedical)
- CINAHL (nursing & allied health)
- ProQuest (PsycINFO, ERIC, Health Collection)
- Informit (Australian content)
- Cochrane Library/Joanna Briggs Institute (systematic reviews)
- Business databases (eg. organisational behaviour)
- Scopus/Web of Science (citations)
Activity (individual)

Look for relevant databases for your topic via:

- Library website – Database page, by subject
- Subject Guides

Complete Question 7 of the PICO worksheet
Non-Database Searching

Conducting a systematic review
Non-Database Searching

- Citation searching
- Grey literature
- Other ways of getting literature
Citation Searching

• Backwards – reference lists (sometimes linked in database)
• Forwards – Scopus, Web of Science and Google Scholar
• ‘Snowballing’
Grey Literature

https://vimeo.com/119080035

- What is grey literature?
- Why is it important to include this in a systematic review?

Systematic Review guide:
http://libguides.murdoch.edu.au/systematic/grey
Other Techniques

Must be explicitly mentioned in SR report:

• Papers provided by colleagues/supervisors
• Search for the authors of articles you have found
• Any other sources
Selection, Appraisal, Analysis, & Reporting
Selection, Appraisal, & Analysis

- Requires domain knowledge
- Not an area of library expertise, other than to provide tools and advise on process
Selection & Appraisal

Process includes:

• Applying inclusion & exclusion criteria
• Critical appraisal of selected articles
• Identifying bias
• Second reviewers
• Documenting your selection process

http://libguides.murdoch.edu.au/systematic/appraising
Levels of Evidence (NHMRC)

- Level I: Systematic reviews of randomised controlled trials
- Level II: Randomised controlled trials
- Level III-1: Pseudo-randomised controlled trials
- Level III-2: Cohort studies, case-control studies
- Level III-3: Comparative studies with historical control, single-arm studies
- Level IV: Case series

Activity (Individual)

• Complete Questions 2, 3 & 6 of the PICO worksheet
• May include meta-analysis

PRISMA Flow diagram
Software

- **EndNote**: Manage your references and remove duplicates
- **JBI SUMARI**: Templates and workflow management (login via Ovid & create a free account)
Conclusion
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Homework

• Q4 & Q5 of the PICO worksheet
• Consult your Subject Librarian for assistance
• Please complete the Research ReachOut survey form, which will be emailed to you
• Your feedback is greatly appreciated!
Questions
Need Help?


- Enquiry service
- Book an appointment with your Subject Librarian

Subject Librarian’s details also on Subject Guide
Are school-based programs effective in reducing high-risk behaviour among Australian Indigenous teenagers?

<table>
<thead>
<tr>
<th>Component</th>
<th>Concept</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>Australian Indigenous teenagers</td>
</tr>
<tr>
<td>Intervention</td>
<td>School-based programs</td>
</tr>
<tr>
<td>Comparison</td>
<td>None</td>
</tr>
<tr>
<td>Outcome</td>
<td>Effective in reducing high-risk behaviour</td>
</tr>
</tbody>
</table>
(((indigenous OR aboriginal) AND Australian) AND (adolescent OR teenage) AND (high risk AND behaviour) AND school)