Systematic reviews
What is a systematic review

A systematic review is a review of the methods and results of all individual studies designed to answer the same research question and that conform to set criteria.

"A review of a clearly formulated question that uses systematic and explicit methods to identify, select and critically appraise relevant research, and to collect and analyse data from the studies that are included in the review. Statistical methods (meta-analysis) may or may not be used to analyse and summarise the results of the included studies."

Glossary of Term in The Cochrane Collaboration. version 4.2.5 May 2005
Why do a Systematic review

“Any form of healthcare used in NHS must be properly evaluated and shown to be clinically effective before use”

Archie Cochrane
Ben Goldacre on Publication Bias

https://youtu.be/RKmxL8VYYy0M
Examples of systematic review
Stages of a Systematic review

1. Define the review question
2. Identify evidence
3. Data extraction
4. Quality Assessment
5. Data Synthesis
Stage 1: Define your research question

- Population
- Intervention
- Comparison
- Outcome

Example

From: What is the best treatment for quitting smoking?

To: What is the effectiveness of hypnotherapy versus nicotine replacement therapy for helping people to give up smoking?
Stage 1: Define your research question

- Other frameworks/planning tools that you could consider using to break your search question down into concepts include:

- PICOST (As PICO but with additional areas to consider): Population, Intervention, Comparison, Outcome, Situation, Type of Study OR PICOCS Population, Intervention, Comparison, Outcome, Context, Study type

- 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

- Other framework examples related to public health in Cochrane
Stage 1: Inclusion/Exclusion criteria

- Nature of intervention
- Geographical
- Language
- Time period
- Unpublished studies
- Study design
Stage 2: Identify the evidence

A. Where to look
B. Search Strategy
C. Record your search
Stage 2a: Where to look-Cochrane

- The Cochrane Database of Systematic Reviews (CDSR) is the leading resource for systematic reviews in health care.

- The Cochrane Library Handbook suggests Medline, Embase, and Cochrane Trials database as a minimum (if you are undertaking a medical intervention based systematic review).
Stage 2a: Where to look Campbell collaboration

- The Campbell Collaboration is an international research network that produces systematic reviews of the effects of social interventions in Crime & Justice, Education, International Development, and Social Welfare.

- The Campbell Collaboration's Information Retrieval Methods Group has published a guide to information retrieval for systematic reviews: "Searching for studies: A guide to information retrieval for Campbell Systematic Reviews". This is based on the searching chapter within the Cochrane Handbook but adapted to suit the different subject area.

- Searching for studies: A guide to information retrieval for Campbell Systematic Reviews
Stage 2a: Where to look

- What databases should I search/how many databases should I search?
Stage 2a: Where to look - Grey lit

- Registered Controlled Trial Registers e.g. Cochrane Trials or PROSPERO
- Technical or research reports from government agencies
- Reports from scientific research groups
- Working papers from research groups or committees
- Doctoral (PhD) dissertations
- Some conference proceedings and official publications
Stage 2b: Search strategy

Your key concepts come from PICO

You need a search strategy for each database

- terminology varies across databases
- Command operators, limiting options and availability of fields differ
- Also use controlled vocabulary and thesaurus where available as well as free text search

Cochrane = comprehensive literature search e.g. the Medline search for Randomised Controlled Trials
Stage 2c: Recording search

- List all information sources
- Present full search strategy
- Be systematic and explicit

PRISMA Checklist
Stage 3: Extracting data

- Conducted by at least two people independently
- Have criteria listed
- Create and pilot a data extraction form
- May require contacting authors for any missing data
Stage 4: Quality Assessment

- Assess the risk of bias
- Potential biases are likely to be greater for non-randomized studies compared with randomized trials
- Many tools proposed for assessing quality, including Cochrane’s Risk of Bias table.
Stage 5: Data Synthesis

- Paul will look at meta-analysis
- How you synthesize data depends on the studies you include in your systematic review
References


- Cochrane public Health appendix

- http://handbook.cochrane.org/index.htm#chapter_6/6_4_11_search_filters.htm

- Searching for studies: A guide to information retrieval for Campbell Systematic Reviews

- Cochrane Handbook for Systematic Reviews of Interventions

- Cochrane Handbook for Diagnostic Test Accuracy (DTA) Reviews
https://liverpool.online/surveys.ac.uk/library-session-feedback