Screening & selection of included studies

Hilary Thomson
MRC/CSO Social and Public Health Sciences Unit
Outline

- Inclusion & exclusion criteria
- Different stages of screening
- Flow chart
- Workshop
Remember PICOCSS from this morning? This is the basis of your inclusion/exclusion criteria

- **Population**
- **Intervention**
- **Comparison**
- **Outcome**
- **Context**
- **Study design**

And

- Dates of publication
- Language (even if you are multi-lingual be honest if there is an English language bias)
So many things you can include...

- **Populations**: children, adults, those with illness/not, ethnic backgrounds etc etc
- **Interventions**: very specific named programme or broad
  - E.g. National Literacy Mission in India, or all literacy programmes
- **Outcomes**: health, illness, economic, employment etc
- **Context**: different countries, home, hospital, rural, urban
- **Study designs**: RCTs, cohort studies, controlled studies, uncontrolled, interrupted time series etc etc
Risk of trying to include everything
So many things you can exclude...

- For example, only including RCTs may result in an ‘empty review’
- Quick and easy...but of little use
Deciding inclusion/exclusion criteria

- These need to be pre-specified in the review protocol for each aspect of PICOCs
- Some changes may be necessary during the review but these should be avoided if possible
Clearly list inclusion/exclusion criteria for screening

- What is essential for inclusion

- For example, for inclusion the study must be/report:

<table>
<thead>
<tr>
<th>Evaluation of housing improvement (as defined in the protocol)</th>
<th>Yes</th>
<th>No (then exclude)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have a control group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Follow a cohort of participants</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conducted since 1980</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conducted in LMIC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assess health outcomes at more than one time point</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Include children under 16 years</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Borderline criteria

- Part of study is relevant
  - For example review is of children under 16 years only but study includes adults and children

- Are data suitable for review?
  - Are they reported separately?
    - Age groups 10-15 & 15-20

- Make a decision about how useful available data are

- This should be decided in the protocol before the review is done.
Screening
Inclusion and exclusion criteria informs the search strategy but they are not identical.
Inclusion and exclusion criteria informs the search strategy but they are not identical

Inclusion/exclusion criteria

- Population
- Intervention
- Comparison
- Outcome
- Context
- Study design
- Dates
- Language
Inclusion and exclusion criteria informs the search strategy but they are not identical

- Searches for reviews of complex interventions often need to be very “sensitive” rather than “specific” so large number of hits to screen, sometimes 20,000 hits!

Some of the PICOCs criteria can be difficult to search for in some circumstances.

E.g. Comparisons, Context and Study designs (unless RCTs or systematic reviews).

Dates, language, electronic databases and other sources are crucial.
Four stages of screening

Health impacts of increasing employee participation in workplace decision-making (OECD countries)

65282 search hits

733 retrieved

18 Selected for review

IDENTIFIED

SCREENED: remove duplicates and those obviously not relevant (based on title alone)

ELIGIBLE: detailed screen of full text to check that study meets all inclusion criteria

INCLUDED
Screening process:
Health impacts of increasing employee participation in workplace decision-making (OECD countries)

65282 search hits

↓

733 retrieved

↓

18 Selected for review

Screen titles and abstracts: limited details so we focused on identifying
(a) workplace intervention evaluations;
(b) health outcomes;
(c) employee participation/control;
(d) country
Screening process:
Health impacts of increasing employee participation in workplace decision-making (OECD countries)

65282 search hits

733 retrieved

Screen titles and abstracts: limited details so we focused on identifying:
(a) workplace intervention evaluations;
(b) health outcomes;
(c) employee participation/control;
(d) country

Screen retrieved articles with additional criteria:
(e) psychosocial mechanism;
(f) Study methods

18 Selected for review
Screening process

How many!!

Sometimes a huge number of hits is difficult to avoid

Tips for screening include

1) One person can screen the obviously irrelevant titles/abstracts— or perhaps one person does them all and another does a random sample

2) After that, 2 people screen the remaining titles/abstracts independently
Double screening

- Should be conducted by two independent reviewers
  - disagreements resolved by discussion between reviewers and possible with review team

- Cohens Kappa statistic to measure disagreement
  - Not often done: reflects number of studies debate over rather than key issues emerging around inclusion/exclusion criteria
    - Kappa doesn’t reflect impact of influence of inclusion/exclusion of a particular study
    - Better to identify key emerging issues of disagreement
      - May need to refine incl/excl criteria: record in protocol amendment section
Screening process

• The screening process often involves an escalation of inclusion/exclusion criteria at each stage
  • Easy to remove obviously not relevant studies at first round

• There will be some occasions when you can’t decide whether or not to include a title/abstract
  • Better to **include** at this point and decide once you have the full text of the paper

• Record any changes to inclusion/exclusion criteria are
  • needs clear justification (and agreed with review group)
Screening

• Screening is key stage in selection of included studies
  • Like recruitment of participants to study, e.g. response rate

• Systematic review must be transparent & replicable
  • Keep record of changes to inclusion/exclusion criteria
  • Prepare flow chart
  • Keep record of studies which are screened in detail with reasons for exclusion
Example of a review flowchart showing study selection (Essential for publication of review)

H. Thomson’s housing review

Search results: n= 28,545

- Clearly not relevant n=28,330
  - Not housing improvement/no health measure= 140
  - Not discrete intervention n=2
  - Too small/no further info n=2
  - Medical priority/adaptations n=30

Obtained for detailed screening n=217

- Not direct measure of health (housing related health service use) n=5

Completed housing intervention study n=43

Included studies n=38

- Warmth only Post 1980 n=17
- Rehousing/refurb +/-hood renewal, +/-warmth Post 1995 n=11
- Developing country Post 2000 n=6
  - Slum improvement Pre 1960 n=4

Also provide list of excluded studies as appendix
List of excluded studies

- **Not housing intervention (most often reports of associations at single time point) (n=4)**

- **No assessment of changes in health outcomes (n=6)**
  - (1978). An exploratory project on heating for the elderly. United Kingdom, Department of the Environment.

- **Not primary study of housing improvement (includes reviews & commentaries) (n=1)**
Some advantages of Endnote or Reference Manager

• You can de-duplicate articles retrieved from different databases

• You can keep track of the number of documents identified and screened from different sources (use ‘custom’ or spare fields to record information)

• You can record reasons for exclusion on custom fields

• Once you get into it, you can get through several thousand citations in a day.
### Endnote tips

<table>
<thead>
<tr>
<th>Author</th>
<th>Title</th>
<th>Journal/Secondary Title</th>
<th>Label</th>
<th>Custom 5</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leigh</td>
<td>Occupational injury and illness in the United States: Estimates of costs, morbidity, and mortality</td>
<td>Archives of Internal Medicine</td>
<td>review</td>
<td>1st WOS Search</td>
<td>Retrieved</td>
</tr>
<tr>
<td>Leigh</td>
<td>Occupational injury and illness in the United States: Estimates of costs, morbidity, and mortality</td>
<td>Archives of Internal Medicine</td>
<td>review</td>
<td>1st WOS Search</td>
<td>Retrieved</td>
</tr>
<tr>
<td>Lemelin</td>
<td>Life-course socioeconomic positions and subclinical atherosclerosis in the multi-ethnic study of atherosclerosis</td>
<td>Social Science &amp; Medicine</td>
<td>income</td>
<td>WOS SCOPUS Search</td>
<td>Retrieved</td>
</tr>
<tr>
<td>Lemosina</td>
<td>Health disparity by neighborhood income</td>
<td>Canadian Journal of Public Health-Review Can...</td>
<td>Citation search</td>
<td>WOS SCOPUS Search</td>
<td>Retrieved</td>
</tr>
<tr>
<td>Lepinck</td>
<td>The nature of the inflammatory response to traumatic brain injury</td>
<td>Molecular Neurobiology</td>
<td>1st WOS Search</td>
<td>WOS SCOPUS Search</td>
<td>Retrieved</td>
</tr>
<tr>
<td>Leonard</td>
<td>Alzheimer's Disease Care: Costs and Potential Savings</td>
<td>Health Affairs</td>
<td>1st WOS Search</td>
<td>WOS SCOPUS Search</td>
<td>Retrieved</td>
</tr>
<tr>
<td>Lemon</td>
<td>Gender and the risk environment for people in Ontario who smoke crack</td>
<td>Mental Retardation and Developmental Disability</td>
<td>1st WOS Search</td>
<td>WOS SCOPUS Search</td>
<td>Retrieved</td>
</tr>
<tr>
<td>Lepinck</td>
<td>The problem of quality of life in medicine</td>
<td>Canadian Journal of Infectious Diseases and M...</td>
<td>1st WOS Search</td>
<td>WOS SCOPUS Search</td>
<td>Retrieved</td>
</tr>
<tr>
<td>Lerner</td>
<td>THE PREVALENCE OF QUESTIONABLE METHODS OF CANCER-TREATMENT IN THE UNITED-STATES</td>
<td>Journal of the American Medical Association</td>
<td>1st WOS Search</td>
<td>WOS SCOPUS Search</td>
<td>Retrieved</td>
</tr>
<tr>
<td>Lerner</td>
<td>The prevalence of questionable methods of cancer treatment in the United States</td>
<td>American Journal of Obstetrics and Gynecology</td>
<td>1st WOS Search</td>
<td>WOS SCOPUS Search</td>
<td>Retrieved</td>
</tr>
<tr>
<td>Lepinck</td>
<td>ADVERSE PSYCHOLOGIC CONSEQUENCES OF POSITIVE CYTOLOGIC CERVICAL SCREENING</td>
<td>Eva Cancer Journal for Clinicians</td>
<td>contains Income 1st WOS Search</td>
<td>WOS SCOPUS Search</td>
<td>Retrieved</td>
</tr>
<tr>
<td>Lepinck</td>
<td>The prevalence of questionable methods of cancer treatment in the United States</td>
<td>Epidemiologia e psichiatria sociale</td>
<td>1st WOS Search</td>
<td>WOS SCOPUS Search</td>
<td>Retrieved</td>
</tr>
<tr>
<td>Lepinck</td>
<td>The prevalence of questionable methods of cancer treatment in the United States</td>
<td>Photobiology</td>
<td>1st WOS Search</td>
<td>WOS SCOPUS Search</td>
<td>Retrieved</td>
</tr>
<tr>
<td>Leszek</td>
<td>Elder abuse in Poland</td>
<td>European Psychiatry Conference: 19th Europe...</td>
<td>Citation search</td>
<td>WOS SCOPUS Search</td>
<td>Retrieved</td>
</tr>
<tr>
<td>Letfobridge</td>
<td>Elder abuse in Poland</td>
<td>European Psychiatry Conference: 19th Europe...</td>
<td>Citation search</td>
<td>WOS SCOPUS Search</td>
<td>Retrieved</td>
</tr>
<tr>
<td>Letfobridge</td>
<td>Elder abuse in Poland</td>
<td>European Psychiatry Conference: 19th Europe...</td>
<td>Citation search</td>
<td>WOS SCOPUS Search</td>
<td>Retrieved</td>
</tr>
</tbody>
</table>
Endnote tips

- Tick 'Annotated', exit style manager
- Then edit/output style – tick annotated
Endnote tips

Highlight the relevant citations

Then

Tools / Change and Move Fields...

---


This paper investigates whether individuals feel worse off when others around them earn more. In other words, do people care about relative position, and does “lagging behind the Joneses” diminish well-being? To answer this question, I match individual-level data containing various indicators of well-being to information about local average earnings. I find that, controlling for an individual's own income, higher earnings of neighbors are associated with lower levels of self-reported happiness. The data's panel nature and rich set of measures of well-being and behavior indicate that this association is not driven by selection or by changes in the way people define happiness. There is suggestive evidence that the negative effect of increases in neighbors' earnings on own well-being is most likely caused by interpersonal preferences, that is, people having utility functions that depend on relative consumption in addition to absolute consumption. © 2005 by the President and Fellows of Harvard College and the Massachusetts Institute of Technology.
Workshop

This workshop is based (loosely) on Gibson et al...

Welfare to work interventions and their effects on health and well-being of lone parents and their children

Task
From the lists of titles and abstracts you are given, identify those that you would ‘retrievel using my retrieval criteria.
Welfare to work interventions and their effects on health and well-being of lone parents and their children

Retrieval criteria

- **Population:** lone parent families
- **Intervention:** helping/compelling parents into work
- **Comparison:** (worry about this at retrieval stage)
- **Outcome:** any health outcome
- **Context:** developed country (OECD)
- **Study design:** evaluation (quantitative, primary study)

- Dates of publication: any
- Language: English

Note these are fictional criteria – and it is assumed that more detailed criteria would be used at retrieval stage
Welfare to work interventions and their effects on health and well-being of lone parents and their children

Retrieval criteria

- **Population:** lone parent families
- **Intervention:** helping/compelling parents into work
- **Comparison:** (worry about this at retrieval stage)
- **Outcome:** any health outcome
- **Context:** developed country (OECD)
- **Study design:** evaluation (quantitative, primary study)

- Dates of publication: any
- Language: English

Stage 1: focus on first 5 titles/abstracts only

Which would you retrieve?
Welfare to work interventions and their effects on health and well-being of lone parents and their children

Retrieval criteria

- **Population:** lone parent families
- **Intervention:** helping/compelling parents into work
- **Comparison:** (worry about this at retrieval stage)
- **Outcome:** any health outcome
- **Context:** developed country (OECD)
- **Study design:** evaluation (quantitative, primary study)

- Dates of publication: any
- Language: English

Stage 2: do the remaining titles/abstracts

Which would you retrieve?