Methods research in overviews of reviews: overview of a research program

Post-Colloquium Workshop: Overviews of Systematic Reviews
Vienna, Austria
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Conflicts of Interest

- I have no actual or potential conflict of interest in relation to this presentation.
Conclusions

This study shows considerable variation in the methods used for overviews. There is a need for methodological rigor and consistency in overviews, as well as empirical evidence to support the methods employed.
Methodological considerations

1) Searching for and including non-Cochrane SRs
2) Assessing the methodological quality of SRs
3) Grading the evidence based on SRs
4) Conducting network meta-analysis based on SRs
1) Searching for and including non-Cochrane SRs

- Multiple SRs on the same topic → overlapping reviews
- Why do “overlapping reviews” matter to overview authors:
  - Whether to include multiple reviews on the same topic area
  - How to extract and present data from these reviews
  - How to interpret evidence from multiple reviews on the same topic that come to different conclusions
### Case study: four topics areas

<table>
<thead>
<tr>
<th></th>
<th>Cochrane</th>
<th>Non-Cochrane</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Coverage</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total # systematic reviews</td>
<td>15</td>
<td>46</td>
</tr>
<tr>
<td>Total # interventions</td>
<td>17</td>
<td>32</td>
</tr>
<tr>
<td>Total # studies</td>
<td>202</td>
<td>749</td>
</tr>
<tr>
<td>Total # subjects</td>
<td>28,018</td>
<td>1,034,242</td>
</tr>
<tr>
<td>Unique studies (n=541)</td>
<td>32%</td>
<td>90%</td>
</tr>
<tr>
<td><strong>Quality</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean AMSTAR score (/11)</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>Mean # databases searched</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Mean # “other” sources searched</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Mean % reviews reporting methodological quality of studies</td>
<td>100%</td>
<td>39%</td>
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</table>
Case study: four topic areas

• For groups of reviews that overlap in content:
  – Results were fairly consistent across reviews, *but*...
  – Conclusions were highly variable across reviews (different authors consider different factors, and weigh these factors differently)
Implications for overviews of reviews

• Overview conclusions may differ depending on whether you extract the Results or Conclusions from your included reviews

• Including non-Cochrane reviews in your overview involves a trade-off: increased complexity vs. increased coverage
2) Assessing the methodological quality of SRs

• Authors should assess and report the methodological quality of the reviews included in the overview
• AMSTAR tool (11-item) can be used for this purpose
• We examined issues related to use of AMSTAR to assess quality of Cochrane and non-Cochrane reviews in overviews
  – 101 reviews: 24 Cochrane, 77 non-Cochrane
Cochrane reviews scored higher than non-Cochrane reviews for all 11 questions.

Mean AMSTAR scores (/11) were much higher for Cochrane compared with non-Cochrane reviews:

<table>
<thead>
<tr>
<th>Cochrane</th>
<th>Non-Cochrane</th>
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<tr>
<td>10.0</td>
<td>5.0</td>
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47% of non-Cochrane reviews had an AMSTAR score <5 (0% Cochrane). Reviews with low AMSTAR scores may be missing important information, making them hard to use in overviews.

Agreement was higher for Cochrane reviews for 8 out of 11 questions.

Overall agreement was high, but slightly higher for Cochrane compared with non-Cochrane reviews:
Implications for overviews of reviews

• AMSTAR can be used successfully in overviews
• Minor modifications may be required
• Teams should establish *a priori* decision rules as needed
• A minimum AMSTAR score may be useful as an inclusion criterion
3) Grading the quality of evidence in existing systematic reviews

- Older Cochrane reviews and non-Cochrane reviews often do not have GRADE assessments.
- This has implications for grading quality of evidence in overviews of reviews.
- We examined methodological considerations involved when using information from existing reviews to grade the quality of outcomes included in an overview (111 outcomes).
There was *moderate agreement* for overall GRADE assessments, though agreement was generally higher for Cochrane vs. non-Cochrane reviews.
Outcomes in Cochrane reviews tended to obtain *higher GRADE assessments*. In some cases, so little information was given that we were *unable to grade* one or more domains. For non-Cochrane reviews, we were unable to provide a final GRADE assessment for 6% of outcomes.
### Observations:

<table>
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<th>Study Limitations</th>
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<tr>
<td>Most difficult and time-consuming domain to assess.</td>
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<tr>
<td>Inconsistent reporting across reviews (different tools, incomplete assessments, inadequate detail).</td>
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<thead>
<tr>
<th>Consistency</th>
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<tr>
<td>Easiest to assess when meta-analysis conducted, and both forest plot and measure of heterogeneity are reported.</td>
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<tr>
<td>More challenging to assess if no meta-analysis.</td>
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<th>Directness</th>
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<tr>
<td>Easiest domain to assess.</td>
</tr>
<tr>
<td>Can be pre-specified by overview authors.</td>
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<tr>
<th>Precision</th>
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<tr>
<td>Need to pre-specify precision cutoffs (e.g., appreciable benefit or harm)</td>
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<tr>
<td>More challenging to assess if no meta-analysis.</td>
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</table>
Implications for overviews of reviews

- Grading the quality of evidence in existing reviews is often possible, but may be challenging.
- There may not always be enough information reported in reviews to assess every GRADE domain, particularly non-Cochrane reviews.
- Teams should establish *a priori* decision rules as needed to determine how to assess domains when reporting in reviews in inconsistent or incomplete.
Summary

• Completed:
  – Descriptive analysis of overviews published from 2000-2010
  – Multiple overlapping reviews
  – Assessing methodological quality/risk of bias of reviews
  – GRADING evidence based on existing reviews

• In progress:
  – Scoping review of available guidance for overview conduct and reporting
  – Applying ROBIS to overviews of reviews
Acknowledgements

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Variation in methods and reporting of overviews

• Majority of overviews:
  – Searched at least 2 databases (70%)
  – Reported years and databases searched (76%)
  – Provided key words (69%)
  – Clearly stated inclusion criteria (87%)
  – Assessed quality of SRs (52%) [13 tools used]
  – Conducted narrative or descriptive analysis of included SRs
Variation in methods and reporting of overviews

• Variation:
  – Minority of overviews included Cochrane SRs only (21%)
  – Dual independent screened and study selection (41%)
  – Quality of individual studies extracted from original SRs (18%)
  – Quality of evidence assessed (12%)
  – Publication bias discussed (22%)