

REVIEW ARTICLES

Systematic review finds overlapping reviews were not mentioned in every other overview

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Abstract

Objectives: The objective of this study was to determine if the authors mention overlapping reviews in overviews (reviews of reviews). In addition, we aimed to calculate the actual overlap in published overviews using newly introduced, validated measures.

Study Design and Settings: We systematically searched for overviews from 2009 to 2011. Reviews included in the overviews were obtained. Tables (review \times primary publication) were generated for each overview. The first occurrence of a primary publication is defined as the index publication. We calculated the “corrected covered area” (CCA) as a measure of overlap by dividing the frequency of repeated occurrences of the index publication in other reviews by the product of index publications and reviews, reduced by the number of index publications. Subgroup analyses were performed to investigate further differences in the overviews.

Results: Only 32 of 60 overviews mentioned overlaps. The median CCA was 4.0. Validation of the CCA and other overlap measures was in accordance with our predefined hypotheses. The degree of overlap tended to be higher in health technology assessment reports than in journal publications and was higher with increasing numbers of publications.

Conclusions: Overlaps must be reported in well-conducted overviews, and this can comprehensively be accomplished using the CCA method. © 2014 Elsevier Inc. All rights reserved.

Keywords: Systematic review; Methods; Research design; Meta-analysis; Evidence-based medicine; Information science

1. Introduction

Overviews (reviews of reviews), as a new type of evidence synthesis, have recently gained more interest, such that the number of published overviews is steadily increasing [1]. It is possible that overviews are becoming more prevalent because overviews have potential advantages over systematic reviews (SRs). For example, overviews enable data obtained from different interventions or conditions to be compared, which provides decision makers with a broader summary of the current information available. This is a limitation of SRs, which may be overcome by using overviews [2]. Furthermore, overviews can compare the

findings of several reviews and determine the reasons for conflicting results. By identifying the reasons for discordance, users are able to base their decisions on the most current, reliable, and suitable data for their situation [3,4].

It has been stated that many of the methodological standards for SRs can also be applied to overviews [5]. However, little guidance is available for authors on how to conduct methodologically sound overviews. Interestingly, a descriptive analysis concluded that overviews often have limited rigor [4].

Decisions in health care should be based on all of the available evidence to draw reliable conclusions and to support policy making. Therefore, we most often rely on the SRs [6]. When conducting an overview, one might argue that a decision should be based on an enormous body of evidence. Even if this holds to be true, it may be difficult and challenging to survey all of the available evidence that is gained from primary studies mainly because they are often included in more than one review. Additionally, a meta-analysis of meta-analyses may also be difficult to conduct because many of the primary studies will usually be included in more than one meta-analysis. Therefore,

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What is new?**Key findings**

- Almost half of the overviews (53.3%) mentioned overlaps, whereas the remaining overviews did not.

What this adds to what was known?

- This is the first systematic analysis of overlaps in reviews of reviews.
- Development and validation of a measure (corrected covered area [CCA]) to calculate the actual degree of overlap in overviews.

What is the implication and what should change now?

- Insufficient reporting of the quality of systematic reviews complicates the production of overviews, in particular with respect to overlaps.
- Overlaps must be reported in well-conducted overviews, and this can comprehensively be done using the CCA method.

pooling the results of all of the reviews would give disproportionate statistical power to multiple primary studies [2]. An informal analysis that sums the results of the reviews could also introduce significant overlap and result in many primary studies being included more than once, which would lead to biased results. This problem should be addressed by developing standard methods for authors of overviews to follow [7].

However, to the best of our knowledge, the degree of overlap in overviews has not been examined systematically. Thus, the amount of overlapping data in overviews remains unknown. First, we aimed to determine whether authors mentioned overlaps in their overviews, and if so, we examined how the authors dealt with these overlaps. Second, we examined the actual overlap in published overviews and suggested potential measures for handling these overlaps.

2. Methods

2.1. Literature search

In November 2011, we performed a systematic search for overviews of reviews. An update was performed in May 2012. We searched the databases of Medline, Embase, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Physiotherapy Evidence Database (PEDro), and all of the databases of the Cochrane library. Because no subsets, subject headings, or search filters for overviews were available thus far, we searched the databases using text words. We adapted this search strategy based on prior work

from our group [4]. Furthermore, we hand searched the web sites of health technology assessment (HTA) agencies for published reports. A list of HTA agencies was derived by investigating member lists from the International Network of Agencies for Health Technology Assessment, Health Technology Assessment international, the European network for Health Technology Assessment, and supplemental HTA agencies. Overall, we searched the web sites of 127 HTA agencies.

The search was restricted to articles published in English or German. All reviews had to be published between 2009 and 2011. The study protocols for overviews such as those published by the Cochrane Collaboration were excluded. If updates were published, only the most recent publication was included. Two members of the research team screened all titles and abstracts independently. The full texts of potentially eligible articles were then obtained including relevant supplements or appendices. Two reviewers assessed the eligibility of the full texts against the review inclusion criteria. Any disagreements were resolved by discussion.

2.2. Selection

For the inclusion and the analysis of overlaps, we developed a two-step approach. In the first step, we included all overviews that synthesized reviews on the same or a similar topic and/or intervention that were derived through a systematic literature search. To be included, the authors had to name at least one database and explicitly state that they searched for reviews. We did not exclude overviews that also included primary studies. For inclusion, the evidence synthesis had to rely at least in part on reviews (eg, combining primary studies and reviews in evidence synthesis). In addition, all of the literature that was included (either secondary or primary research) must have been critically appraised. We excluded all overviews with a methodological focus (eg, reviews dealing with the reporting characteristics or the quality of SRs in a specific field) and those that included clinical practice guidelines (CPGs).

2.3. Data collection

In the second step, we obtained reviews that were included for evidence synthesis in the overviews based on the reference list. We excluded all overviews that had inadequately reported the data. This problem may also occur in reviews of primary research. Irrespective of whether the problem arose in an overview or review, we defined a cutoff point for each overview such that not more than 10% of the reviews (or the primary studies included in it) would be missing. There were many reasons for missing reviews, such as the full text was not obtainable, language restrictions (in addition to German and English, we also considered reviews in French), or bad reporting resulting. If there were any doubts or inconsistencies, we made every

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