

Systematic reviews with published protocols compared to those without: more effort, older search

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Abstract

Objective: To explore trends in published protocols of systematic reviews (SRs) and to analyze how SRs with published protocols differ from those without.

Study Design and Setting: We searched PubMed up to December 31, 2016 to identify SR protocols. We also searched for the corresponding SR for each protocol published in 2012 and 2013 and matched this with an SR without published protocol by year and journal.

Results: The number of protocols published increased from 42 in 2012 to 404 in 2016; 125 were published in 2012 and 2013. One-third of SRs remained unpublished after 3–5 years. We included 80 SRs with protocols and 80 controls. SRs with protocols reported their methods more comprehensively than their controls, but their median time from search to submission was longer (325 vs. 122 days; $P < 0.001$). Almost two-thirds of the SRs with protocols and about 10% of the controls could be found in the International Prospective Register of Systematic Reviews (PROSPERO).

Conclusion: Time from search to submission was longer for SRs with published protocols, while at the same time SRs with published protocols were better elaborated and reported. As quality, transparency, and currency are cornerstones of SRs, we suggest critically discussing the current practice of publishing SR protocols. © 2017 Elsevier Inc. All rights reserved.

Keywords: Systematic review; Protocol; Methodology; Research reporting; PRISMA; PROSPERO

1. Introduction

Systematic reviews (SRs) have become increasingly common and are often considered the best source of evidence for decision-makers [1,2]. The Cochrane Handbook for Systematic Reviews of Interventions states that a protocol should be prepared before publication of an SR [3]. There are many potential advantages of preparing protocols for SRs. They are not only restricted to Cochrane reviews but are deemed to be essential for all SRs [4]. Preparing an a priori protocol should minimize the potential for bias in the review process. Judgments in the review process (for example, definition of the research question, selecting criteria for study eligibility, specifying analysis methods

or reporting outcomes) should be made before the SR is conducted. If they are not, the review authors' judgments could be driven by the results. However, changes to a protocol can be necessary while conducting an SR. They should be fully documented and justified in the SR publication [5]. This will reduce bias and strengthen transparency. Discrepancies between protocols and published SRs have been identified in multiple studies [6–8].

Protocol publication might also reduce duplication of SRs, as publication makes it transparent that there is a group working on a given topic. Of the randomly selected eligible meta-analyses published in 2010, 49 (67%) had at least one other overlapping meta-analysis [9]. Finally, a protocol allows for peer review before starting the review process [10].

Several studies reported that most SRs do not provide protocol or registration information [11,12]. In a recent survey of 300 SRs, 26% ($n = 77$) mentioned working with an a priori protocol, but only 64% of them (49 of 77) cited a publicly available protocol. When restricted to non-Cochrane therapeutic SRs, the rate decreased to 4% (5 of 119) [1].

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What is new?**Key findings**

- The publication of systematic review (SR) protocols has increased exponentially over the last 6 years and about one-third of SRs remains unpublished 3–5 years after their protocols are published. There are important differences between SRs with and those without published protocols.

What this adds to what was known?

- To our knowledge, this is the first study assessing trends in published SR protocols and comparing the corresponding reviews with SRs without published protocols.
- We found that the time from search to submission was much longer for SRs with published protocols compared with the controls. On the other hand, they have more transparently reported methods, and their process is more extensive.
- Almost two-thirds of SRs with published protocols are registered in the International Prospective Register of Systematic Reviews (PROSPERO), which also permits updating their review status (ongoing, completed, published, and abandoned). However, this is rarely done.

What is the implication and what should change now?

- Our findings suggest that authors of SRs with published protocols should pay greater attention to keep their searches up to date. More SRs should update their status in PROSPERO regularly.

In addition to publishing protocols, there is also an opportunity for prospective registration of SRs. The International Prospective Register of Systematic Reviews (PROSPERO) was established in 2011 and presents an open-access database for SRs [13]. Registration in PROSPERO involves the submission and publication of key information about the design and conduct of an SR. Except for checking against the PROSPERO inclusion criteria, no quality assessment or peer review is performed.

Although registration of SRs can add value, it does not guarantee that a protocol is complete and methodologically sound [14]. In the aforementioned survey of 300 SRs, only 4% were registered in PROSPERO. However, this figure might be underestimated as the survey investigated PROSPERO registration for SRs published on February 2014. Considering the time taken to complete an SR, it seems reasonable that PROSPERO was not known to many SR authors at that time.

Despite the importance and the potential advantages of protocols for SRs argued in the literature, currently no analysis has compared SRs with a protocol to SRs without a protocol. The recently published survey of 300 SRs planned this but failed to do so because of the low number of SRs with protocols. However, this number might have increased in recent years.

The objective of our review was (1) to explore trends in published SR protocols and (2) to analyze how characteristics and reporting methods differ between SRs with and without published protocols.

2. Methods*2.1. Study design*

After assessing trends in published SR protocols, a case-control study was conducted by matching those SRs to controls without published protocols.

2.2. Search strategy for protocols

We searched PubMed from inception to December 31, 2016 to identify SR protocols. We used an adapted version of the validated SR search filter of the Scottish Intercollegiate Guidelines Network for PubMed [15,16] and supplemented it with the term “protocol” (see the [Appendix](#) for the search strategy). There were no limitations for language.

2.3. Inclusion and exclusion criteria for protocols

To be eligible for inclusion, protocols had to label themselves as SR protocols or had to meet the following criteria based on the Preferred Reporting Items for Systematic reviews and Meta-Analysis Protocols (PRISMA-P) definition of SRs [5]: providing the methods for study identification (e.g., providing a drafted search strategy or listing the search terms), reporting the study selection methods (e.g., providing details of the study selection process), and providing the method for how the findings were summarized (e.g., narrative synthesis if no meta-analysis could have been performed). We also included SR protocols which did not aim formally to assess internal validity of findings, as this was part of our analysis. Furthermore, we included SR protocols for reviews assessing different types of clinical questions (e.g., therapeutic effectiveness, diagnostic test accuracy). No language restrictions were applied. We excluded protocols of nonsystematic reviews, meta-analyses without a systematic search, or meta-analyses where the SR had already been conducted, scoping reviews, realist reviews, overviews (reviews of reviews or umbrella reviews) and SRs that were part of a larger study (e.g., if the SR was followed by a Delphi survey). Cochrane protocols are not indexed in PubMed and were therefore not included in our analysis.

2.4. Study selection of protocols

All titles and abstracts were screened for inclusion or exclusion by two authors (F.H. and K.A.) independently.

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