PRISMA-Search (PRISMA-S) Extension to PRISMA Development Protocol

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Background

Systematic reviews and their closely related methodologies, rapid reviews, scoping reviews, health technology assessments, and other literature-based evidence syntheses, are created based on thorough and highly sensitive literature searches, often performed in multiple databases and using literature published in all languages. The recommended techniques for creating comprehensive literature searches for systematic reviews has long existed in the Cochrane Handbook for Systematic Reviews of Interventions.(1) An entire chapter focuses on proper searching techniques to reduce bias and enhance sensitivity to ensure the most complete systematic review. More recently, the Cochrane Collaboration released the Methodological Expectations of Cochrane Intervention Reviews (MECIR) which further elaborate components of the search strategy that must be performed to comply with Cochrane Collaboration standards.(2) Though the Cochrane Collaboration started the systematic review methodology, other groups utilizing this methodology have created their own guidance for search strategy development (3, 4).

Reporting guidelines for systematic reviews and meta-analyses, including Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) and Meta-Analysis of Observational Studies in Epidemiology (MOOSE) both include checklist items relating to the reporting of the search strategy.(5, 6) Though these reporting guidelines do emphasize the importance of including enough about search strategies so that they might be reproduced, authors may not understand how or what to report so that a search strategy may be reproduced.(7, 8) Though reporting has improved in the years post-PRISMA (9), many searches remain incompletely reported.(10, 11) Other literature search reporting guidance remains fractured and inconsistent, and is not widely known or dispersed due to lack of association with a recognized reporting standard.(12-14) Many systematic reviews are published without an information specialist on the author team or included in the research process, leading to poorly documented search strategies as a direct result of lack of expertise on what components are critical for a reproducible search.(10, 15, 16)

Rationale

Though others have created search strategy reporting guidelines, none have been associated with an internationally recognized reporting guideline, nor have they given specific guidance about how to report certain items, such as date ranges searched, web searches, grey literature searches, and more.(13, 14, 17) Research on search strategy reporting has shown a wide range in how even the very researchers interpret “reproducible” searches.(10, 15, 18, 19) There has long been no consensus on what needs to be included in a published systematic review, or within an article, where the information should be reported. Though many currently available guidelines loosely describe items to include in a search strategy, many systematic review authors do not have the expertise to describe the items or components of a search strategy in such a way that it can be accurately interpreted and reproduced by others. PRISMA is the most commonly used reporting guideline for systematic reviews, so building upon

its name recognition and adoption by many hundreds of journals will significantly enhance the discoverability of the new extension.

Objectives

The purpose of this research is to create an extension to the PRISMA Statement, using a consensus-based approach common to other reporting guideline development processes.(20) The Delphi process and a formal consensus conference will produce a checklist that will form the basis of the PRISMA extension. The checklist and its accompanying elaboration and explanation document will enable information specialists and systematic reviewers to have concrete items to report, with detailed examples of preferred methods of reporting each item.

Participants and Study Design

The project is based on the techniques elaborated in the "Guidance for Developers of Health Research Reporting" document, created in part by the authors of PRISMA and other reporting guidelines. Specifically, this study will be completed in accordance with items 4 through 6 of the "Recommended steps," the identification of participants, the Delphi exercise, and the generation of a list of items for discussion at the face-to-face consensus meeting.(20)

Participants will be an international multidisciplinary group of information specialists, systematic review experts in many fields, and journal editors selected by the investigators based on known expertise and leadership in the field of systematic reviews and literature search reporting. To obtain at least 22 experts, the median for creating consensus-based guidelines, 75 potential experts will be identified and recruited via email.

Through a series of three surveys using the Delphi technique, participants will identify the components of search strategies and other parts of literature reviews that they feel must be reported in published systematic reviews. After the participant completes the first survey in the series, their identifying information will be removed from all collected data. Participants who completed the first survey will be eligible to participate in the two follow-up surveys.

Length of Study

The PI estimates that it will take 9 weeks to send out the surveys, collect data from each stage, modify the next stage survey as appropriate, and finalize the checklist items to present at the consensus conference. Each survey component will take two weeks to distribute and gather information, followed by a one week period for analysis.

Inclusion/Exclusion Criteria

This study will only include hand-selected participants, known for their expertise in the topic areas. If any other participants are accidentally included, it should not represent a serious contamination, due to the consensus-based processes.

Statistical Considerations

This study will only involve frequency counts, basic statistics of central tendency (median, mode), and ranking.

SAFETY OVERSIGHT

There are no safety concerns due to the minimal risks associated with the Delphi technique and the surveys.

PROTOCOL

The executive committee for the PRISMA-S project will use the following protocol as a guide:

1. The PI submits the protocol to the University of Utah institutional review board (IRB) since this research involves human subjects. The other executive committee members will be on the protocol as investigators.
2. Once the IRB approves the methodology, or once any changes requested by the IRB had been made and approved, the Delphi survey processes outlined below will commence.
3. In the meantime, the executive committee will begin the formative research to inform the Delphi surveys via a structured systematic review based on Sampson et al's 2008 systematic review of search reporting standards.(12)
4. Prior to the survey commencement, the executive committee will develop a list of a minimum of 50 international information retrieval, systematic review, or reporting guideline experts, including their email addresses.
5. The executive committee will send the survey to the identified experts, with at least 1 reminder sent to non-responsive experts, via email. The initial survey will ask experts for their belief in the importance of potential checklist items as identified in the systematic review.
6. The results will be compiled. Items with 70% or more experts rating the item as a 3 or higher on a four point Likert scale, with a median of at least 3.25, will be retained for the second survey. Other than retaining a list of who completed the initial survey, the results will be de-identified (by SK) before analysis (by MLR).
7. The second survey, sent to experts who completed the first survey, will ask experts to rank the remaining potential checklist items in order of importance for reporting. At least 1 reminder will be sent to non-responsive experts.
8. Respondents to the 2nd survey will be assigned randomized unique identifiers by one member of the executive committee (SK), and a table linking the respondents' personal information to their unique identifier will be kept separately.
9. The third survey, sent to experts who completed the first survey, will ask experts to rank the remaining potential checklist items in order of importance for reporting. An additional section will ask respondents where the checklist item should be reported (i.e., manuscript, flowchart, appendix/supplement). At least 1 reminder will be sent to non-responsive experts.
10. Respondents' data will be de-identified by the one of the executive committee (SK) as above, and the de-identified rankings between the second and third surveys will be analyzed for consistency across the two surveys by a different member of the executive committee (JK). Data from the location component of the survey will be anonymized and analyzed (MLR).
11. The top-ranked 20-40 checklist items, depending on rank scores, will be collected for discussion at the consensus conference(s).

12. Based on the number and thematic distribution of the top-ranked checklist items, the executive committee will reach out to experts to facilitate discussions about each checklist item or group of items.
13. The experts, in concert with the executive committee, will prepare talking points and background research for the face-to-face discussions.
14. All experts identified in Step 4 will be invited to participate in the face-to-face discussion. Additional experts will be identified from the Medical Library Association Systematic Review SIG, the Information Retrieval Methods Group of the Cochrane Collaboration, and recommendations from participants if needed.
15. The results of the Delphi survey will be presented at the consensus conference. Discussion facilitators will lead conversations about checklist items or groups.
16. The initial consensus conference will also develop a strategy for document production, including identification of who will be involved in which components and how authorship on the final consensus checklist and explanatory document will be assigned.
17. The guidance statement will be developed.
18. A pilot test of the checklist will be planned.
19. A publication strategy will be developed, ideally to include simultaneous publication in multiple journals, including *Journal of the Medical Library Association*, *Research Synthesis Methods*, *PLoS One*, and *Systematic Reviews*.

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