Access Alliance
Multicultural Health and Community Services

PRISMA Statement and Cochrane Reviews:

Striving to improve quality and validity of systematic reviews

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Introduction

The pluralism in the scope or purpose of searching, and documentation practices of evidence over the last decades identified over a dozen types of review processes (Grant & Booth, 2009), of which the systematic review is considered the gold standard to guide clinical practices and influence decision-making (Zhang, Han, Shields, Tian & Wang, 2019).

Accurate and transparent reporting plays a vital role in the quality of systematic reviews, where compromised quality is a challenge while synthesising evidence. A sound guiding protocol provides standards for reporting systematic reviews, that help authors increase the rigour of their report. The Cochrane Handbook, MECIR and the PRISMA statement are constantly expanding and changing to ensure the guide's quality is up to date with standards of research.

The PRISMA Statement and Cochrane Handbook for Systematic Reviews, including the MECIR manual, are examples of standards that guide what systematic review must include so that the review is comprehensive, easy to read, and replicable

This initiative was to compare and explore the differences and similarities between the PRISMA statement and the Cochrane handbook while reporting and conducting quality ensured systematic reviews.

The latest version of PRISMA statement (2020) comprises a 27-item checklist including additional recommendations associated with "synthesis methods, characteristics of included studies (date of each source, organisation, language, among others), risk of bias due to missing results, and the use of automation tools at various stages of the systematic review process" (Cumpston, Lasserson, Chandler & Page, 2022). Additionally, the incorporation of a fillable flow diagram effectively synthesises the number of records included in the study.

The Cochrane Handbook, including MECIR guidelines, which is part of Cochrane's quality assurance strategy, provides detailed specifications to conduct and report systematic reviews. It includes a set of items ranging from criteria to formulate review questions to assess the certainty of the body of evidence by using GRADE (Grading of Recommendations, Assessment, Development and Evaluations) considerations (Chandler, Lasserson, Higgins, Tovey, Thomas, Flemying & Churchill, 2022).

These guidelines contribute to the reporting of systematic reviews in a transparent and succinct manner. They both target healthcare professionals, policymakers, and consumers, so that decision-making is evidence-based with minimal risk of bias. The selection of one over another is not exclusive, and both methodologies may be consulted to report or conduct systematic reviews.

PRISMA (Preferred reporting items for systematic reviews and meta-analyses) statement

The PRISMA statement evolved from the QUOROM (Quality of Reporting Meta-analyses) statement published in 1999. The QUOROM was created because at the time, there was no agreement between research fields on guidelines for reporting meta-analyses, and no consensus on what information reports should include (Moher et al., 1999). The QUOROM's goal was to improve the quality of reporting in meta-analyses. In 2009, the QUOROM was altered by a team of 29 review authors, methodologists, clinicians, medical editors, and consumers and developed into the PRISMA statement (Moher et al., 2009). The PRISMA statement was updated in 2020. Like the 2009 version, in 2017, a group of international researchers enhanced the PRISMA statement by incorporating new systematic review methodology and terminology that emerged from 2009 to 2017. This ensures that the PRISMA statement is relevant within contemporary research (Moher et al., 2020)

PRISMA was developed as a 27-item checklist based on four stages: Identification of records, Screening, Eligibility (considering exclusion criteria), and Inclusion (qualitative and quantitative synthesis). (Moher et al.2009). These phases are included in a fillable flow diagram which maps out and identifies the number of records or articles included in the systematic review.

PRISMA aims for transparency and provides orientation on how to report complete systematic reviews and meta-analyses but it is **not considered a quality-assessment tool**. However, some studies (Panic, Leoncini, de Belvis, Ricciardi & Boccia, 2013; Tan, Wigley & Shantikumar, 2014) reported an increase in reporting and methodological quality when PRISMA was endorsed.

Conduct of systematic reviews is out of the scope of PRISMA. The PRISMA statement is meant to be used to guide reporting of a review, not as a methodological guideline (Sarkis, Catalá, Aromataris & Lockwood, 2021). The checklist includes items associated with the reporting of non-randomized interventions; questions related to etiology, diagnosis, prognosis or epidemiological studies may need additional details. The PRISMA 2020 statement, which is the latest version, includes items applicable to other interventions such as social or educational interventions. Furthermore, it is also intended to be used for the inclusion of mixed-methods studies

Limitations of PRISMA statement: It should not be used to evaluate the quality of systematic reviews. It is not designed to report systematic review protocols. Reports such as network meta-analysis, a meta-analysis of individual participant data, systematic reviews of harms, systematic reviews of diagnostic test accuracy studies, and scoping reviews should be complemented with other guidelines (Page, McKenzie, Bossuyt, 2021).

Cochrane Reviews

Archie Cochrane was considered a visionary at the time that he wrote “Effectiveness and Efficiency: Random Reflections on Health Services” in 1972. This book drew attention to the lack of knowledge in terms of the application of scientific evidence in healthcare, especially that derived from randomized controlled trials (RCT). His famous statement: *“it is surely a great criticism of our profession that we have not organized a critical summary by specialty or subspecialty, adapted periodically, of all relevant randomized controlled trials*”, encouraged Iain Chalmers, during the 1980s, to compile and publish a set of RCT related to the effects of care during pregnancy, childbirth, and early infancy, given that obstetrics and gynecology (O&G) was rated as the least evidence-based medical specialty. Those findings, illustrated as a forest plot, became the well-known Cochrane logo.

After this achievement, Iain Chalmers, along with 77 collaborators from nine countries, created in 1993, the Cochrane Collaboration, which was launched at the first Cochrane Colloquium in Oxford, UK. Since then, it has grown exponentially and currently, it includes around 15,000 contributors from more than 100 countries, involving researchers, practitioners, consumers, policymakers, editors, and translators, among others. They are distributed into Cochrane Review Groups, which are organized into eight Networks and receive support from Methods Groups, Geographic Groups, and the Central Executive Team (Cumpston et al, 2022).

Cochrane reviews are intended to guide authors in decisions related to the most appropriate methodology to report systematic reviews. Key elements of Cochrane reviews have been developed through continuous improvement in order to ensure the sustainable quality of reported systematic reviews. Cochrane reviews are grounded on ten principles related to collaboration, multidisciplinarity, bias reduction, incorporation of new evidence, relevance, quality, and continuity (Chandler, Cumpston, Thomas, Higgins, Deeks, Clarke, 2022).

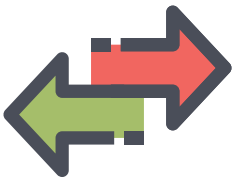
Most criteria included in the Cochrane handbook for systematic reviews integrate randomized clinical trials, considering the reliability they provide. However, it also incorporated chapters to assess diagnostic test accuracy and non-randomized studies. Additionally, Cochrane reviews emphasize the relevance of qualitative research to explore experiences and factors that may affect decision-making. (Chandler et al, 2022) In practice, when incorporating qualitative research, Cochrane reviews use a mixed-methods approach, incorporating the qualitative research into an intervention or quantitative review. However, the Cochrane handbook has a dedicated chapter that discusses key points that should be considered when planning to use qualitative research in a systematic review.

The latest version of Cochrane review (Version 6.3, 2022) includes criteria to update systematic reviews. Based on a report of 100 systematic reviews, it was established for a period of 5.5 years to revise Cochrane reviews. Nevertheless, this current version provides the authors with certain flexibility on whether and when an update is needed.

Methodological Expectations of Cochrane Intervention Reviews (MECIR)

The MECIR is a methodological manual developed by the Cochrane Collaboration for *reporting* and *conducting* reviews. The manual is comprehensive, covering four distinct components of a successful review, hoping to improve the overall quality of a review article:

- Standards for the CONDUCT of new Cochrane Intervention Reviews.
- Standards for the REPORTING of PROTOCOLS of new Cochrane Intervention Reviews.
- Standards for the REPORTING of new Cochrane Intervention reviews.
- Standards for planning, conduct, and reporting of UPDATES of Cochrane Intervention Reviews.



The MECIR distinguishes between conduct and reporting because “good conduct does not necessarily lead to good reporting, good reporting cannot improve poor conduct, and poor reporting can obscure good or poor conduct of a review” (Cumpston et al, 2022).

In other words, each component of the MECIR must be made to have distinct “quality assurance” guidelines because the lacking quality in one section of a review, decreases quality in all other sections of the review and methodology.

The Standards for the ***Reporting section*** of the MECIR contains, in total, 153 items to consider and include when reporting a review. These items should be considered when planning to write and writing the review.

This section aims to make the review report as concise and easy to read as possible, "so that someone who is not an expert in the area can understand it". Following the items in this section make the report accessible during dissemination, and makes editorial evaluation more efficient. (Chandler et al, 2022).

The ***Conduct Section*** of the MECIR includes 75 items that should be consulted during the construction of the protocol for a Cochrane Review. "The protocol describes the review question, the criteria for considering studies for the review, and the methods that will be followed to identify, appraise, summarize and synthesize the studies" (Chandler et al, 2022). Similarly, the ***Reporting of Protocol Section*** discusses best practices for developing a research question(s) and which methods will be used to address the question(s). There are 44 items to consider when constructing a protocol for a systematic review.

In the context of a Cochrane review, these items are used to inform reviewers that seek to have their review protocol published by Cochrane libraries. Even without publishing a review's protocol, the MECIR offers a comprehensive guide to developing and refining the protocol of a review (Chandler et al, 2022).

The ***Update Section*** includes a set of criteria to apply when authors are planning to update their reviews. Furthermore, in this case, a discussion is required with the Cochrane Review Group (CRG) to assess any changes or amendments in terms of methodology or the question proposed.

Before preparing an update, it is mandatory to consider the currency and relevance of the question as well as the methodology used to address it.

The advantage of using the MECIR, compared to using another review guidance, like PRISMA, is that it provides guidance on best practices for one's conduct when completing a review. The Conduct section of the MECIR contains 75 items which, if followed, assure that proper methodological conduct is followed when completing a review (Chandler et al, 2022).

Conclusion

The PRISMA Statements and Cochrane Reviews may differ by structure since the first is a checklist that encompasses seven aspects of the report, while the second includes concepts and presents a broad range of circumstances to consider when reporting systematic reviews. Both approaches operate under the same principles of transparency and reliability to strive for quality. However, the PRISMA statement is not designed to inform systematic reviews per se, while the Cochrane reviews comprehensively include the Cochrane review handbook and MECIR guidelines, which cover conduct and reporting for review protocols, new reviews and updates of reviews of interventions.

The MECIR identifies that its reporting guidelines are compatible with the core items within the PRISMA statement and that PRISMA is more comprehensive in some areas of reporting standards like synthesis methods and characteristics of included studies. Finally, considering their similarities and differences, both types of methodologies can be complementary rather than mutually exclusive for a systematic review process that is sound scientifically and is rigour in quality.

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