

EDITORIAL

Open Access

# How to properly use the PRISMA Statement



Rafael Sarkis-Onofre<sup>1\*</sup>, Ferrán Catalá-López<sup>2,3</sup>, Edoardo Aromataris<sup>4</sup> and Craig Lockwood<sup>4</sup>

## Editorial

It has been more than a decade since the original publication of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Statement [1], and it has become one of the most cited reporting guidelines in biomedical literature [2, 3]. Since its publication, multiple extensions of the PRISMA Statement have been published concomitant with the advancement of knowledge synthesis methods [4–7]. The PRISMA2020 statement, an updated version has recently been published [8], and other extensions are currently in development [9].

The number of systematic reviews (SRs) has increased substantially over the past 20 years [10–12]. However, many SRs continue to be poorly conducted and reported [10, 11], and it is still common to see articles that use the PRISMA Statement and other reporting guidelines inappropriately, as was highlighted recently [13].

The PRISMA Statement and its extensions are an evidence-based, minimum set of recommendations designed primarily to encourage transparent and complete reporting of SRs. This growing set of guidelines have been developed to aid authors with appropriate reporting of different knowledge synthesis methods (such as SRs, scoping reviews, and review protocols) and to ensure that all aspects of this type of research are accurately and transparently reported. In other words, the PRISMA Statement is a road map to help authors best describe what was done, what was found, and in the case of a review protocol, what are they are planning to do.

Despite this clear and well-articulated intention [2–5], it is common for *Systematic Reviews* to receive manuscripts detailing the inappropriate use of the PRISMA Statement and its extensions. Most frequently, improper use appears with authors attempting to use the PRISMA statement as a methodological guideline for the design

and conduct reviews, or identifying the PRISMA statement as a tool to assess the methodological quality of reviews, as seen in the following examples:

- “This scoping review will be conducted according to the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Statement.”
- “This protocol was designed based on the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) Statement.”
- “The methodological quality of the included systematic reviews will be assessed with the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) Statement.”

Some organizations (such as Cochrane and JBI) have developed methodological guidelines that can help authors to design or conduct diverse types of knowledge synthesis rigorously [14, 15]. While the PRISMA statement is presented to predominantly guide reporting of a systematic review of interventions with meta-analyses, its detailed criteria can readily be applied to the majority of review types [13]. Differences between the role of the PRISMA Statement to guide reporting versus guidelines detailing methodological conduct is readily illustrated with the following example: the PRISMA Statement recommends that authors report their complete search strategies for all databases, registers, and websites (including any filters and limits used), but it does not include recommendations for designing and conducting literature searches [8]. If authors are interested in understanding how to create search strategies or which databases to include, they should refer to the methodological guidelines [12, 13]. Thus, the following examples can illustrate the appropriate use of the PRISMA Statement in research reporting:

\* Correspondence: [rafaelonofre@gmail.com](mailto:rafaelonofre@gmail.com)

<sup>1</sup>Graduate Program in Dentistry, Meridional Faculty, IMED, Passo Fundo, Brazil  
Full list of author information is available at the end of the article



© The Author(s). 2021 **Open Access** This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>. The Creative Commons Public Domain Dedication waiver (<http://creativecommons.org/publicdomain/zero/1.0/>) applies to the data made available in this article, unless otherwise stated in a credit line to the data.

- “The reporting of this systematic review was guided by the standards of the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) Statement.”
- “This scoping review was reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR).”
- “The protocol is being reported in accordance with the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) Statement.”

*Systematic Reviews* supports the complete and transparent reporting of research. The Editors require the submission of a populated checklist from the relevant reporting guidelines, including the PRISMA checklist or the most appropriate PRISMA extension. Using the PRISMA statement and its extensions to write protocols or the completed review report, and completing the PRISMA checklists are likely to let reviewers and readers know what authors did and found, but also to optimize the quality of reporting and make the peer review process more efficient.

Transparent and complete reporting is an essential component of “good research”; it allows readers to judge key issues regarding the conduct of research and its trustworthiness and is also critical to establish a study’s replicability.

With the release of a major update to PRISMA in 2021, the appropriate use of the updated PRISMA Statement (and its extensions as those updates progress) will be an essential requirement for review based submissions, and we encourage authors, peer reviewers, and readers of *Systematic Reviews* to use and disseminate that initiative.

#### Abbreviations

PRISMA: Preferred Reporting Items for Systematic Reviews and Meta-Analyses; PRISMA-ScR: Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews; PRISMA-P: Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols; SRs: Systematic reviews

#### Acknowledgements

None

#### Authors’ contributions

RSO drafted the initial version. FCL, EA, and CL made substantial additions to the first and subsequent drafts. All authors read and approved the final manuscript.

#### Funding

RSO is funded in part by Meridional Foundation. FCL is funded in part by the Institute of Health Carlos III/CIBERSAM.

#### Availability of data and materials

We do not have any additional data or materials to share.

## Declarations

#### Ethics approval and consent to participate

Not applicable.

#### Consent for publication

Not applicable.

#### Competing interests

CL is Editor-in-Chief of *Systematic Reviews*, FCL is Protocol Editor of *Systematic Reviews*, and RSO is Associate Editor of *Systematic Reviews*.

#### Author details

<sup>1</sup>Graduate Program in Dentistry, Meridional Faculty, IMED, Passo Fundo, Brazil. <sup>2</sup>Department of Health Planning and Economics, National School of Public Health, Institute of Health Carlos III, Madrid, Spain. <sup>3</sup>Department of Medicine, University of Valencia/INCLIVA Health Research Institute and CIBERSAM, Valencia, Spain. <sup>4</sup>JBI, Faculty of Health and Medical Sciences, The University of Adelaide, Adelaide, Australia.

Published online: 19 April 2021

## References

1. Moher D, Liberati A, Tetzlaff J, Altman DG. PRISMA Group. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *J Clin Epidemiol*. 2009;62(10):1006–12. <https://doi.org/10.1016/j.jclinepi.2009.06.005>.
2. Caulley L, Cheng W, Catala-Lopez F, Whelan J, Khoury M, Ferraro J, et al. Citation impact was highly variable for reporting guidelines of health research: a citation analysis. *J Clin Epidemiol*. 2020;127:96–104. <https://doi.org/10.1016/j.jclinepi.2020.07.013>.
3. Page MJ, Moher D. Evaluations of the uptake and impact of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Statement and extensions: a scoping review. *Syst Rev*. 2017;6(1):263. <https://doi.org/10.1186/s13643-017-0663-8>.
4. Rethlefsen ML, Kirtley S, Waffenschmidt S, Ayala AP, Moher D, Page MJ, et al. PRISMA-S: an extension to the PRISMA Statement for reporting literature searches in systematic reviews. *Syst Rev*. 2021;10(1):39. <https://doi.org/10.1186/s13643-020-01542-z>.
5. Tricco AC, Lillie E, Zarin W, O’Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Ann Intern Med*. 2018;169(7):467–73. <https://doi.org/10.7326/M18-0850>.
6. Moher D, Shamseer L, Clarke M, Ghersi D, Liberati A, Petticrew M, et al. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Syst Rev*. 2015;4(1):1. <https://doi.org/10.1186/2046-4053-4-1>.
7. Hutton B, Salanti G, Caldwell DM, Chaimani A, Schmid CH, Cameron C, et al. The PRISMA extension statement for reporting of systematic reviews incorporating network meta-analyses of health care interventions: checklist and explanations. *Ann Intern Med*. 2015;162(11):777–84. <https://doi.org/10.7326/M14-2385>.
8. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *Syst Rev*. 2021;10(1):89. <https://doi.org/10.1186/s13643-021-01626-4>.
9. EQUATOR Network: Reporting guidelines under development for systematic reviews. <https://www.equator-network.org/library/reporting-guidelines-under-development/reporting-guidelines-under-development-for-systematic-reviews/>. Accessed 11 Feb 2021.
10. Page MJ, Shamseer L, Altman DG, Tetzlaff J, Sampson M, Tricco AC, et al. Epidemiology and Reporting Characteristics of Systematic Reviews of Biomedical Research: A Cross-Sectional Study. *Plos Med*. 2016;13(5):e1002028. <https://doi.org/10.1371/journal.pmed.1002028>.
11. Ioannidis JP. The Mass Production of Redundant, Misleading, and Conflicted Systematic Reviews and Meta-analyses. *Milbank Q*. 2016;94(3):485–514. <https://doi.org/10.1111/1468-0009.12210>.
12. Niforatos JD, Weaver M, Johansen ME. Assessment of Publication Trends of Systematic Reviews and Randomized Clinical Trials, 1995 to 2017. *JAMA Intern Med*. 2019;179(11):1593–4. <https://doi.org/10.1001/jamainternmed.2019.3013>.

13. Caulley L, Catala-Lopez F, Whelan J, Khoury M, Ferraro J, Cheng W, et al. Reporting guidelines of health research studies are frequently used inappropriately. *J Clin Epidemiol*. 2020;122:87–94. <https://doi.org/10.1016/j.jclinepi.2020.03.006>.
14. Higgins JPT, Thomas J, Chandler J, Cumpston M, Li T, Page MJ, Welch VA (editors). *Cochrane Handbook for Systematic Reviews of Interventions*. 2nd Edition ed. Chichester: Wiley; 2019.
15. Aromataris E, Munn Z (Editors). *JBIM Manual for Evidence Synthesis*. ed. Adelaide: JBI; 2020.

### Publisher's Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

**Ready to submit your research? Choose BMC and benefit from:**

- fast, convenient online submission
- thorough peer review by experienced researchers in your field
- rapid publication on acceptance
- support for research data, including large and complex data types
- gold Open Access which fosters wider collaboration and increased citations
- maximum visibility for your research: over 100M website views per year

**At BMC, research is always in progress.**

Learn more [biomedcentral.com/submissions](https://biomedcentral.com/submissions)

