Uptake of the PRISMA 2020 Statement and its Artificial Intelligence Component in Recently Published Systematic Reviews

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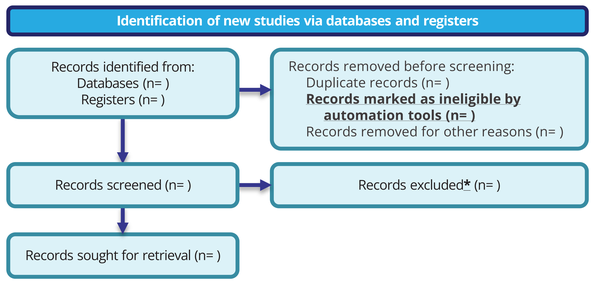
#SA434

Introduction

- The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement, first published in 2009 by Moher et al.,[1] has been widely adopted by researchers for reporting of systematic literature reviews (SLRs).
- Since then, research methods and relevant technologies for SLRs, i.e., artificial intelligence (AI), have also evolved, becoming a key component of evidence synthesis processes to support clinical decision-making and guideline development.
- As such, the PRISMA statement was updated in 2020 by Page et al.,[2] to reflect these advances and ensure more comprehensive, detailed reporting of SLR methodology and findings to better facilitate replicability. Specifically, this guidance promotes transparency with regards to the use of automation tools, including AI when reporting SLR methods and study attrition.
- With the updated guidance, there were two additions to the PRISMA 2020 flow diagram to capture these components: 1) records considered to be ineligible prior to screening and 2) records excluded by automation tools (i.e., AI) during screening (**Figure 1**) .

Figure 1. Automation tools within the PRISMA 2020 flow diagram



*** If automation tools were used, indicate how many records were excluded by a human and how many were excluded by automation tools**

Adapted from Page et al. 2021[3]

Objective

- This study aimed to assess the uptake of the PRISMA 2020 statement in recently published SLRs and determine whether AI-assisted screening or use of automation tools are being reported and how they are being used.

Methods

- Searches were performed in Embase and MEDLINE (via OvidSP) to identify SLRs published between January 2022 and April 2023.
- Search terms used a combination of multi-purpose (.mp) terms which included but were not limited to: "systematic review", "PRISMA", and "artificial intelligence". Conference abstracts, preprint records, study protocols, and non-English-language articles were excluded.
- In total, searches retrieved 273 records. Of these, only 107 (39%) had freely available full texts which were reviewed and assessed for reporting of methodological details regarding following the PRISMA 2020 statement and using automation tools or AI for title/abstract screening.
- SLRs were considered to have followed the PRIISMA 2020 statement if they met at least one of the following:
  - cited the new guidance
  - used the new PRISMA flow diagram
  - completed the PRISMA 2020 checklist
- SLRs were considered to have used automation tools if they noted such in the methods when discussing the screening process or incorporated automation tools into the PRISMA flow diagram. When reviewers stated they did not use AI or automation tools, this information was also captured.

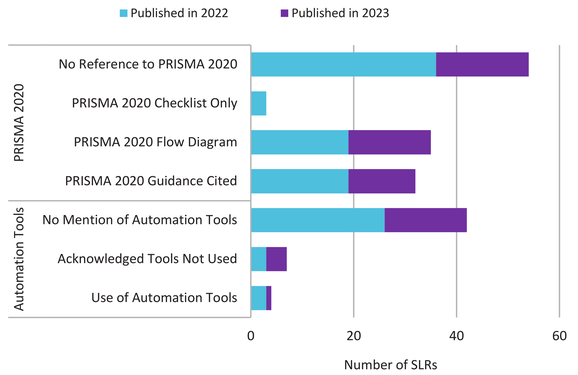
Results

Overall Results

- A review of the full texts of 107 SLRs found that 54 (50%), published across 33 peer-reviewed journals, did not report that they followed PRISMA 2020 guidance. Of the 53 SLRs that did, 32 cited the new guidelines by Page et al.,1 30 used the updated flow diagram, and only three completed the PRISMA 2020 checklist (**Figure 2**).
- There were often inconsistencies in the PRISMA versions referenced by authors in terms of the methodology that was followed, and the flow diagrams presented (**Figure 3**).
- Only 3 SLRs stated that automation tools were used to exclude studies before screening, which included: 1) removal of duplicates using automation tools; 2) application of a date or keyword filters; or 3) use of the NLP toolkit by Zdravevski et al.[4]
- Despite several SLRs reporting that screening tools such as Covidence, DistillerSR, Rayyan were used to facilitate the screening process, none of these indicated that the platform's AI capabilities were utilized.
- In contrast, 7 SLRs explicitly stated screening was conducted without use of AI/ automation tools.

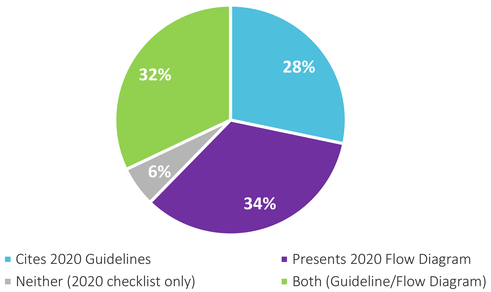
Results (Cont'd)

Figure 2. Overview of PRISMA 2020 uptake and Use of Automation/AI within SLRs



PRISMA = Preferred Reporting Items for Systematic Reviews and Meta-Analyses; SLRs = systematic literature reviews

Figure 3. Inconsistencies in PRISMA reporting



PRISMA = Preferred Reporting Items for Systematic Reviews and Meta-Analyses

Results by Publication Year

- Of the 107 SLRs, 68 were published in 2022 and 39 so far in 2023.
- Despite the searches being conducted only through April 6, 2023, more than half of SLRs published in 2023 (54%) reportedly followed the PRISMA 2020 statement compared with only 47% published in 2022.
- The most recently published SLRs were more likely to apply the 2020 PRISMA statement by citing both the new guidance document and incorporating the revised flow diagram format (8 of 21 [38%] published in 2023 vs. 9 of 32 [28%] published in 2022).

Limitations

- While an increasing number of records are published Open Access and have full texts freely available online, this study may be subject to bias by limiting the review to only references with free full texts.
- This study only assessed uptake of the PRISMA 2020 statement based on authors acknowledgement that they followed the new guidance and/or if they utilized the revised flow diagram. Further review for compliance with other PRISMA reporting guidelines may be necessary.
- If the authors did not explicitly mention that automation tools were or were not used, it was assumed that no tools (including use of AI) were employed.

Conclusions

- Since its release, the updated PRISMA 2020 statement has not been consistently adopted by systematic reviewers, but guideline compliance seems to be improving.
- There appears to be some inconsistency around what is considered an automation tool for the purposes of PRISMA reporting and whether AI is encompassed within that term or should be considered separately.
- Further review and continued monitoring of the published literature are needed to obtain a better understanding of how the updated guidance is being applied, especially as the use of automation tools expands and AI is more widely adopted.

References

1. Moher D, et al. *BMJ.* 2009;339:b2535. 2. Page MJ, et al. *BMJ.* 2021;372:n71. 3. Page MJ, et al. *BMJ.* 2021;372:n160. 4. Zdravevski E, et al. In: Ganchev I, et al., eds. Cham: Springer International Publishing; 2019:1-18.

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