

RAPID EVIDENCE PUBLICATION IN THE COVID-19 ERA: IMPACT ON STUDY QUALITY AND STUDY IDENTIFICATION

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BACKGROUND

- The COVID-19 pandemic created a rapidly changing research evidence dissemination landscape. The scientific community responded quickly, releasing over 125,000 COVID-19–related scientific articles within 10 months of the first confirmed case, of which more than 30,000 were hosted by preprint servers.¹
- Preprints are manuscripts submitted to journals that have not yet been peer-reviewed, enabling quick dissemination of research findings. They have become an important source of information for stakeholders interested in COVID-19 research developments, including traditional media, social media, and policy makers.² However, concerns have been expressed that preprinted manuscripts are generally of lower quality than journal published articles due to the lack of peer review.³
- When conducting searches for any systematic review (SR), a balance needs to be struck between the work involved in screening large numbers of records, the frequency of the searching and the likelihood that eligible studies will be identified by means other than the database searches.

OBJECTIVES

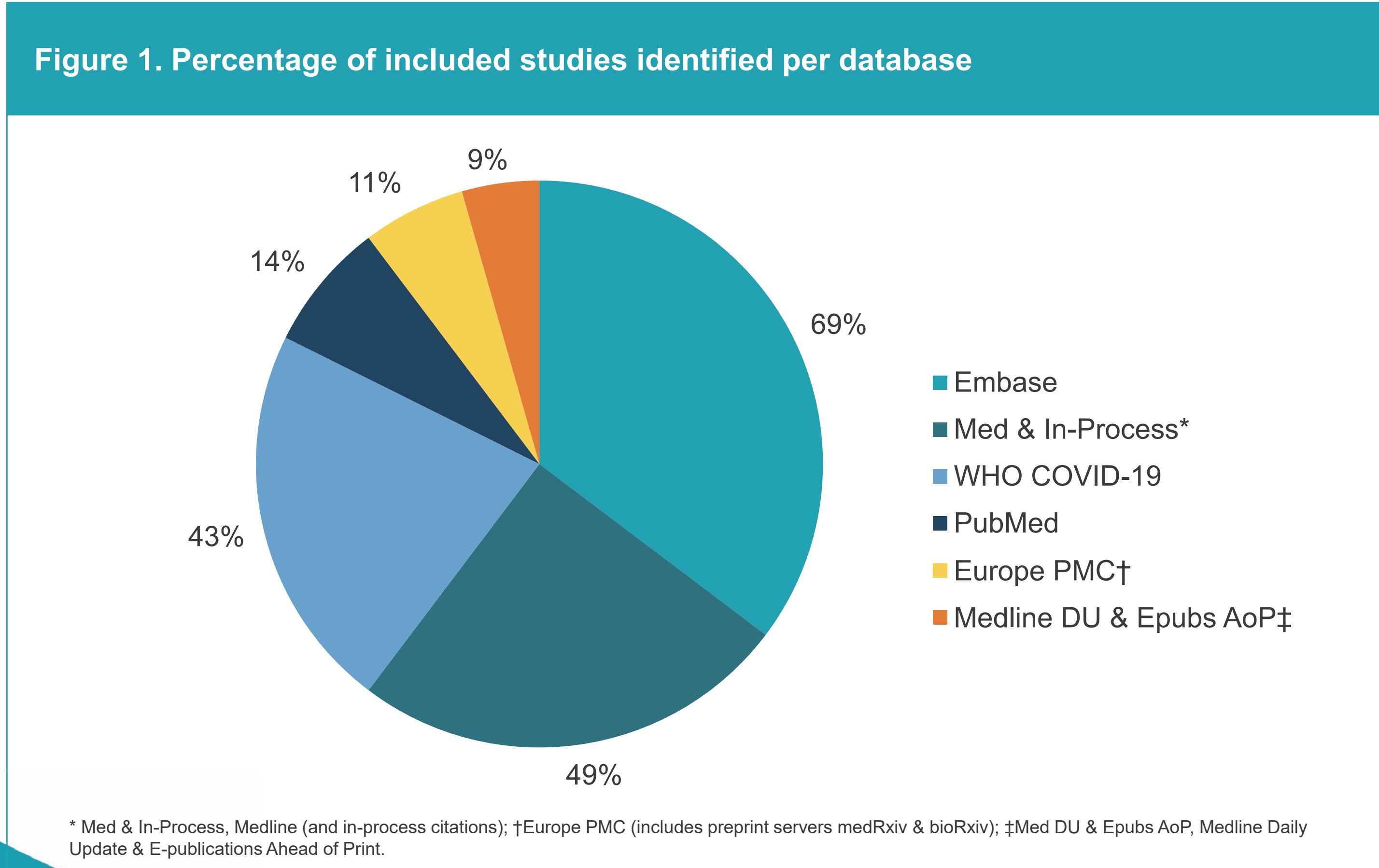
- To assess database yield to evaluate the optimal source combination and the contribution of preprint servers in a SR of post-COVID syndrome.
- To examine whether the recent surge in the publication of preprints and non-peer reviewed research has impacted study quality.

METHODS

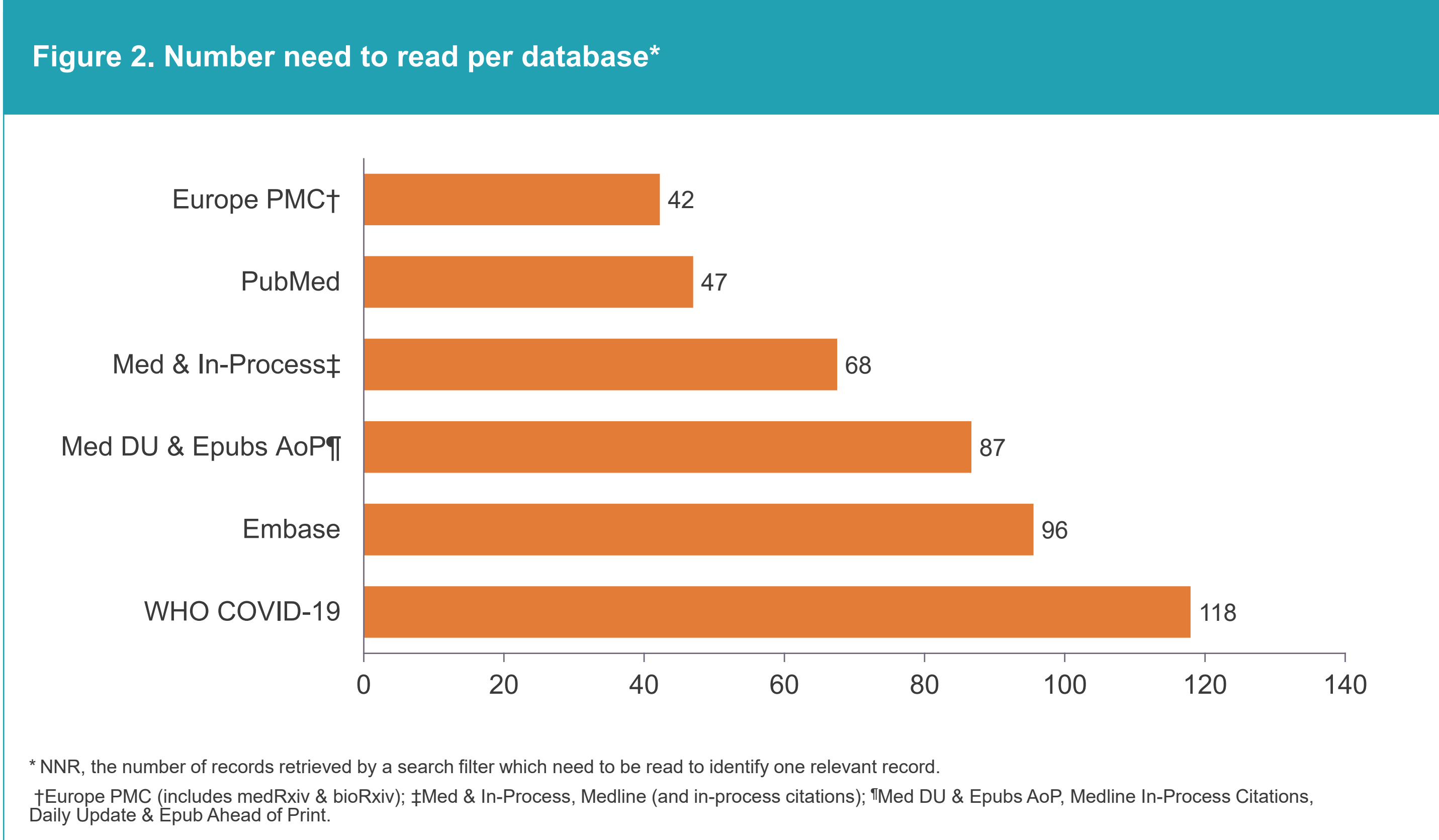
- Six databases were searched to identify eligible studies for a SR of post-COVID syndrome. The search strategies were structured using search terms for post-COVID syndrome in combination with appropriate study design filters. The search strategies were developed specifically for each database and the keywords adapted according to the configuration of each database. Searches were not limited by publication status (unpublished, published, in press, and in progress). A date limit of 2020 onwards was used. All searching was conducted on 22nd and 23rd March 2022. Electronic searches were supplemented by hand searching, which included reviewing the reference list and citation tracking of included studies.
- Unique contribution (%), precision, recall, proportion of preprints, and numbers needed to read (NNR) were calculated for each database, as was the optimal combination of databases to identify all the included studies.
- Quality assessment of included studies was carried out using a modified Newcastle-Ottawa scale (NOS). The NOS is a tool to assess the quality of non-randomised studies in terms of the selection and comparability of the study groups and the ascertainment of the study outcomes. It was modified to allow assessment of both case control and cohort studies included in the SR. Each study was given a score out of 9, 4 based on selection, 2 for compatibility and 3 for outcomes. Studies with NOS scores 0–3, 4–6 and 7–9 were considered high, moderate and low risk of bias, respectively.

RESULTS

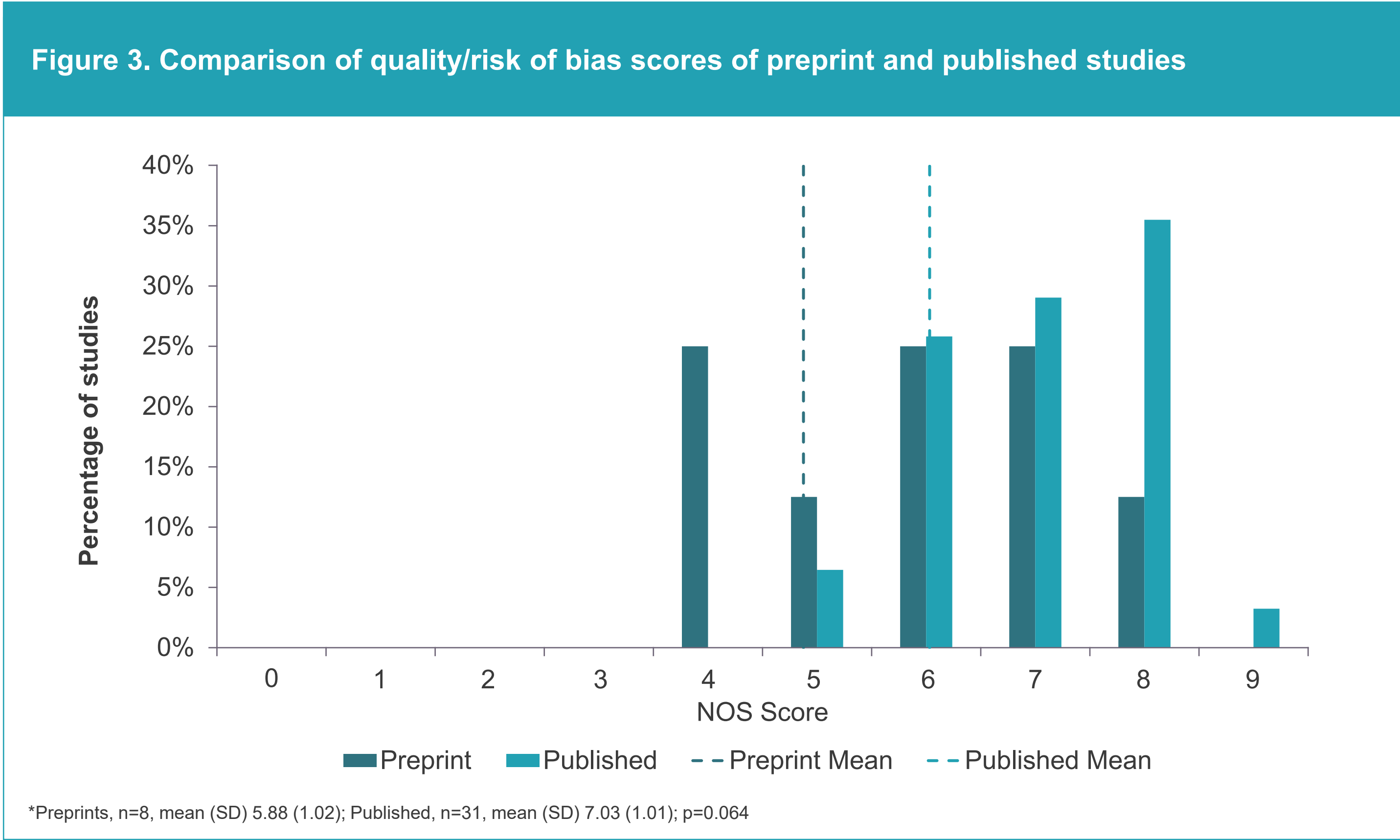
- Of 39 included studies, 11 were preprints at the time of searching (03/22), and 8 remained preprints at data extraction (06/22).
- Embase retrieved 69% of the included studies, whereas Medline Daily Update/Epubs Ahead-of-Print and Europe PMC had the lowest yield (11% and 9% respectively) (**Figure 1**). Four studies were found by handsearching.



- The WHO COVID-19 database contributed the greatest number of unique references (n=8) and all preprints (n=11).
- The most effective combination of databases was Embase and WHO COVID-19 with 90% recall (NNR 111) (**Figure 2**). Adding handsearching increased recall to 100%.



- Overall mean study quality was lower in the studies that remained as preprints [n=8, mean (SD) 5.88 (1.02)] than the accepted publications [n=31 mean (SD) 7.03 (1.01)], however this difference was not significant (p=0.064) (**Figure 3**). No studies were considered high risk of bias, 15 were moderate and 24 were of low risk.



DISCUSSION

- Although we identified the combination of databases providing the optimal yield of included studies at the time of searching (March 2022), we would not go as far as to recommend that only those resources are searched for SRs of post-COVID syndrome. As with any systematic review, it is important to minimise bias when prospectively planning SR searches.
- Study results published during the COVID-19 pandemic have been used to inform government policy in many countries. The rapid availability of preprints via non-profit online servers, at the expense of peer review, became the norm, and evidence syntheses have drawn on preprint servers as a source for emergent COVID-19 literature.⁴
- Comparison of risk of bias scores between preprint and peer-reviewed studies found no significant difference in quality, although a low number of preprint studies were included in our review. A quality assessment of three rapid reviews has also found very little difference in methodological quality between journal articles and preprints, but no significance testing was conducted.⁵ Exclusion of preprints also has the potential to alter the overall findings of reviews.⁵

CONCLUSIONS

- Preprint servers make a valuable contribution to SRs of post-COVID syndrome. While the WHO COVID-19 database provided the most comprehensive results, handsearching continues to play an important role in evidence identification. We found there was no significant difference in study quality between preprints versus peer-reviewed articles.

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