

LETTERS TO THE EDITOR

Reporting checklist for methodological, that is, research on research studies is urgently needed

Granholm et al. [1] have written a nice commentary regarding transparent and systematic reporting of meta-epidemiological studies. The authors have responded to the lamentation that editors and reviewers ask authors of methodological studies to fill-out Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) reporting guideline checklist [2].

My line of thinking is that methodological studies (i.e., research on research; meta-research) are not systematic reviews (SRs), and that PRISMA checklist is not suitable for them. Development of the PRISMA checklist was a major milestone for reporting of SRs [3], but it is not a one-size-fits-all solution for various types of reviews with elements of systematicity. PRISMA extension for scoping reviews was developed subsequently [4], and development of PRISMA extension for rapid reviews is underway [5]. Furthermore, the EQUATOR network currently lists development of multiple other extensions of PRISMA checklist [6].

I would disagree with Granholm et al. that methods studies are “essentially a subtype of systematic reviews” because the aim of SRs is to appraise and summarize evidence on a certain topic, and methodological studies have completely different aim—such studies are not synthesizing evidence in included studies, but extracting completely different information, and making conclusions that may help create better designed and better reported studies in the future.

Although SRs and methodological studies may use similar methodological approach in terms of being systematic (i.e., screening literature and extracting data by two independent authors) and transparent (i.e., reporting a PRISMA flow chart of study inclusion, reporting included and excluded studies, with reasons, etc.), they are not the same types of studies. For example, for methodological studies there may be no need to engage in designing and conducting extensive search strategies in myriad information sources to test a hypothesis. In addition, it may be less relevant for such studies to have very recent search date.

However, I fully agree with Granholm et al. that an extension of the PRISMA statement for meta-epidemiological studies or a stand-alone guideline would be welcome to help make methodological studies well reported and reproducible.

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Transparent and systematic reporting of meta-epidemiological studies



In a recent letter published in *Journal of Clinical Epidemiology* [1], Professor Livia Puljak argues that methodological studies are not systematic reviews, and it is inappropriate for journals and reviewers to request that such studies are reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) checklist [2].

Some differences between conventional systematic reviews of healthcare interventions and meta-epidemiological

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studies of methodological topics exist; however, we nevertheless argue that similarities are extensive. The PRISMA checklist provides a sound and familiar template for transparent and systematic reporting of meta-epidemiological studies even when the unit of analysis is not individual patients, and the research questions are related to methodological aspects.

The Cochrane Handbook outlines five key characteristics of systematic reviews: (1) clear objectives and predefined eligibility criteria, (2) explicit reproducible methodology, (3) systematic search, (4) assessment of the validity of findings in the included studies, and (5) systematic presentation and synthesis of study characteristics and findings [3].

These characteristics are also prerequisites for trustworthy meta-epidemiological studies, and such studies are essentially a subtype of systematic reviews. Despite differences in the exact methods used (e.g., to assess the validity of findings), transparent and systematic reporting is essential. A prepublished protocol; a comprehensive and reproducible search strategy; a clearly defined and transparent data collection process; duplicate study assessment and data extraction, transparent statistical methodology, prespecification and thorough description of sensitivity analyses, a balanced discussion recognizing study limitations and putting the study into context, and transparent reporting of funding sources are additional characteristics of trustworthy meta-epidemiological studies, which are all included in the PRISMA checklist [2].

The PRISMA checklists [2,4] are easily applied to meta-epidemiological studies [5–7]. As for conventional systematic reviews, every checklist item may not always be applicable, in which case authors can simply state this.

Murad and Wang previously adapted the PRISMA checklist to meta-epidemiological studies [8], and most items differ only slightly from the regular checklist [2]. Additional items could be suggested, for example, as statistical methods used in meta-epidemiological studies differ more than those applied in regular systematic reviews, further items regarding statistics could be valuable, including the availability of complete datasets and statistical analysis code [9].

An official extension of the PRISMA statement for meta-epidemiological studies may be warranted. For now, we suggest that the regular PRISMA checklists (or the adapted version by Murad and Wang) are used in meta-epidemiological research, as it facilitates transparent and systematic planning and reporting.

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Research-on-research studies or methodological studies are primary research

Journal of Clinical Epidemiology has recently published a study of Faggion and Diaz Cavero [1], in which the authors presented types of primary and secondary research. According to the article, secondary research includes two categories—overviews and systematic reviews, whereas primary research includes three categories: human research (e.g., clinical trials, cohort, case series, and so on), animal research, and in vitro research [1]. Although the aim of the study was obviously not to classify all types of research conducted nowadays, this figure glaringly omits classifying the exact type of study that the Faggion and Diaz Cavero [1] have reported in their article. These kinds of studies have been called “research-on-research” studies or methodological studies [2], and their purpose is not to collate and summarize existing evidence that is presented in primary study reports; that is, these types of studies are not systematic reviews [2]. Instead, research-on-research or methodological studies use existing evidence, including (but not limited) to published articles or protocol registries, to analyze and create new data that are not related to the original aim of reports that are subject to analysis.

As Gene V. Glass put it in 1976: “*Primary analysis is the original analysis of data in a research study. Secondary analysis is the re-analysis of data for the purpose of answering the original research question with better statistical techniques, or answering new questions with old data.*” The data analyzed in methodological studies would not exist without researchers creating them *de novo* from reports that are units of analysis. Therefore, methodological studies about evidence (i.e., research on research) should also be considered primary research and included in classifications of primary research types.

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How can metaresearch be classified?

We would like to thank Dr Puljak for her interest in our article and for providing an interesting point for discussion regarding the classification of the types of primary and secondary research reported in our study.

Dr Puljak suggests that metaresearch (or research on research) should be considered primary research, instead of secondary research [1]. However, the interpretation of the definitions of primary and secondary research may be challenging. For example, some authors suggest that secondary research uses existing data for analysis and/or synthesis, and primary research is an “activity that generates new, primary data.” [2]. However, metaresearch generates new data using existing data in the form of published materials (in most cases), resulting in a gray area. For example, a hypothetical metaresearch question on the evaluation of the association between risk of bias and the size of the treatment effect estimates in studies published in systematic reviews might be viewed as a source of new data (primary research), but it uses existing data (secondary research). Cochrane [3] defines “secondary study” as “a study of studies: a review of individual studies (each of which is called a primary study).” Again, a meta-research study may be considered a “study of studies” because it also extracts and evaluates information from primary studies. Thus, metaresearch may be seen as secondary analysis, as the definition “answering new questions with old data” [4] suggests.

A figure on primary and secondary research was presented in our article [5] to provide the reader with a chronological scenario about how the data are published (without any hierarchical differences regarding the importance of this research). Primary research is the first published, and secondary research is published posteriorly.

Although the issue on the classification of metaresearch is outside the main scope of our published article, it provides an interesting topic for further discussion within the research methodology community. One could argue that an easier classification for secondary research based on the assessment of what already exists is a more pragmatic approach. We also agree that a metaresearch study is not a classic systematic review on effectiveness or harm of interventions. However, metaresearch is also sensitive to biases; therefore, this type of research should provide a systematic approach to addressing the existing data used to generate new data.