EDITORIAL

Welcoming systematic reviews to the *Journal of the Medical Library Association*

DOI: http://dx.doi.org/10.3163/1536-5050.102.3.001

Scientists began to favor systematic reviews in the 1990s as a means of overcoming some of the limitations of classic review articles. The Cochrane Collaboration defines systematic reviews as a form of synthesis that examines a predefined question or issue using systematic, explicit methods to identify the list of studies to be included, critically appraise and filter the research, and collect data from these studies to generate a replicable review [1]. In spite of their growing popularity in the medical community and the frequent involvement of librarians in their creation, librarians seem to have been slow to take complete advantage of this important tool to further their own profession.

Ioannidis has argued that ''most research findings are false for most research designs and most fields'' [2]. Good science should be reproducible: following the highly publicized initial reports, no other laboratory could make cold fusion happen, although some are apparently still trying. Wikipedia has a useful lay summary of that situation [3]. Scientists, policy makers, and the public can have more confidence that a result is true when another laboratory is able to replicate it, that is, independently repeat a published experiment and come to the same result. If they cannot, the result might be a fluke or due to some subtle thing the original laboratory did when they ran the experiment. That is called bias. When I teach groups about bias, I use the scope note for the Medical Subject Headings (MeSH) term ''Bias, Epidemiology'' as my definition, which begins: ''Any deviation of results or inferences from the truth, or processes leading to such deviation'' [4]. Problems that can bias a systematic review include a search that finds some types of relevant evidence but not others, or uses imprecise inclusion criteria, so that those screening the search results inadvertently include some irrelevant evidence or inadvertently exclude some relevant material. In addition, if the studies that are found and included are biased themselves because the study designs or methodologies were weak, the systematic review can arrive at the wrong conclusion.

In health sciences librarianship, librarians often teach sessions on finding the evidence and typically show a slide of an evidence pyramid. Because systematic reviews take into account more than one study on the same topic (that replication thing I mentioned) and because robust methods have been developed over the years to protect systematic reviews against bias, they appear at or near the top of the pyramid. It only makes sense that librarians use this powerful method ourselves to advance the practice of health sciences librarianship by synthesizing all the evidence on an issue or problem that we face.

In this regard, the *Journal of the Medical Library Association (JMLA)* recently added systematic reviews as a distinct article type, providing guidance on the preparation of manuscripts in the *JMLA* Information for Authors [5]. I was delighted to see this addition. But I was also concerned that the *JMLA* did not adopt a reporting standard, such as Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) [6] or Meta-Analysis of Observational Studies in Epidemiology (MOOSE) [7], designed to guide the reporting of systematic reviews. Reporting standards have been developed to ensure that all elements that a reader would need, either to critically appraise the conduct of a study or to attempt to replicate its results, are reported. The first major reporting standard was for randomized controlled trials, the strongest study design for primary studies. That was Consolidated Standards for Reporting Trials (CONSORT), which was revised and updated in 2010 [8]. Similar standards have been developed for other study designs, and there is evidence that endorsement of a reporting standard by a journal improves the quality of the reporting [9, 10].

I have been involved in PRISMA's development, so I am very familiar with all the nuances of reporting systematic reviews. When I approached *JMLA* Editor Susan Starr to discuss *JMLA* endorsement, she challenged me to address some of the issues facing librarians as we do our reviews. One of those issues is that to complete PRISMA, it would seem that we must not only be able to report how we found the primary research, but also how we critically appraised it through a formal risk of bias assessment of it, for example. To do this, the reviewer not only needs to understand systematic review methodology, but also the methodologies of the included studies. Personally, I think that is a reasonable expectation. Another issue for librarians is whether systematic reviews in our field are really amenable to the sort of detailed and structured reporting that is common in systematic reviews of health sciences topics.

To find out, I identified those papers already published in the *JMLA* that met the first PRISMA checklist item: they had the word ''systematic review'' in the title. I found four such reports, published between 2004 and 2013 [11–14]. I sat down with a cup of coffee and examined them to see how many of the twenty-seven checklist items were reported. All in all, the reporting was pretty good. The only item that was never reported was whether a protocol existed to guide the review and where it might be found; however, protocol registration, designed to reduce wasted effort through overlapping reviews and to keep reviewers from leaving out some results, is a fairly new idea, and these papers were published over the course of the last ten years.

There were some consistently well-reported aspects: All four systematic reviews gave an accounting of the number of records found, screened, and included. One had a PRISMA flow diagram [11], the preferred way to report this information. Other areas of strength were the discussions and conclusions, which universally reported a summary of the evidence, limitations of the systematic review, and placement of the general interpretation of results in the context of other evidence, sometimes with implications for further research. One of the reviews combined results across studies [14], and two critically appraised the included studies [12, 13]. One element that is useful in our field, but rarely reported in health sciences systematic reviews, is a bibliometric analysis of the relevant literature. Two of these reviews included a brief bibliometric analysis of the contributing literature [11, 14], which I noted under PRISMA item 23, additional analysis.

Shockingly, the search transcript for at least one database was provided in only one of the reviews [13]. No one would have been able to replicate the searches for the other three, and because of that, those reviews would not likely be acceptable for publication in a major medical journal. For these three, we do not know the search dates either, and these are important both for updating and for letting readers assess the currency of the evidence being reported. Also, only one systematic review clearly reported the number of reviewers assessing each record for eligibility [13]. Across the four reviews that I examined, the inclusion criteria were often a little vague. Unfortunately, these poorly reported elements represent the elements that make reviews systematic. When I step back and think about this, I realize that, given the way these reviews are reported, we cannot really be sure that these are not just standard literature reviews with a little more energetic effort to find relevant material, as evidenced by the multiple databases searched and additional efforts to find relevant studies.

I believe that, since all systematic reviews should include a librarian [15], we should be familiar with what constitutes a high standard of conduct and reporting of systematic reviews. This enables us to advise clients who wish to undertake a systematic review despite their relative inexperience (indeed, this was one of the emerging roles for librarians described in one of the *JMLA* systematic reviews [11]). At a minimum, we must get the search strategy and search dates right and report them clearly. And this is exactly where this series of systematic reviews has fallen down: in the parts we should be best at and where other researchers rely on our professional skills.

PRISMA is a reporting standard. It does not tell you how you should do the review. It only asks that you report what you did clearly. Therefore, it does not oblige you to undertake a numeric synthesis of results in meta-analysis. It also does not require you to undertake a risk of bias assessment for a narrative report of a program. It does not require you to prepare and register a protocol. For that matter, it also does not require you to do a search. But for each of these elements, the reporting standard does suggest that if you did them, you should say so, and it gives guidance on how to optimally report them. Going through the checklist, ideally before starting your review, gives a solid framework to guide your thinking about what you will want to be able to report, and this can guide your planning and record keeping. It prompts you to think about how you are going to assess the studies found through the search. Should two reviewers examine each study against the formal inclusion criteria? And what will those criteria be? What will you do if the reviewers do not agree? In fact, working backward from a reporting standard is a great way to develop a protocol.

With the introduction of systematic reviews as a category of article, this journal has also provided instructions to authors on how to prepare them and their length. While the requested elements are much less detailed than PRISMA's, the word count is generous: 5,000 words. Of the PRISMA-endorsing journals, *Pediatrics* limits systematic review articles to 4,000 words, *JAMA* to 3,500 words, and the *Lancet* to 3,000 words. So the *JMLA* word count should not be a barrier to full and adequate reporting! Interestingly, the *New England Journal of Medicine* does not endorse PRISMA, does not provide instructions for systematic review authors, and publishes very few systematic reviews.

What next? I hope I have shown that the sorts of systematic reviews that librarians do and that the *JMLA* publishes can be fully and transparently reported in accordance with PRISMA guidance. I would encourage you to undertake systematic reviews, do them well, report them well, and submit them to the *JMLA* for consideration.

Margaret Sampson, AHIP, msampson@cheo.on.ca, Manager, Library Services, Children's Hospital of Eastern Ontario, 401 Smyth Road, Ottawa, ON, K1H 8L1, Canada

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