

CORR Insights®: Outcome Selection and Methodological Quality of Major and Minor Shoulder Surgery Studies: A Scoping Review

Brian B. Gilmer MD

Where Are We Now?

Imagine a 15th-century European cartographer tasked with making a map of the New World. On ships returning from the Americas arrive daily reports, rumors, and sketches of a large and new frontier. But the information varies in quality and comes in different forms. The cartographer must take these non-numerical data points and form them into something to guide future explorations.

This CORR Insights® is a commentary on the article "Outcome Selection and Methodological Quality of Major and Minor Shoulder Surgery Studies: A Scoping Review" by El-Boghdadly and colleagues available at: DOI: 10.1097/CORR.0000000000000578.

The author certifies that neither he, nor any members of his immediate family, have any commercial associations (such as consultancies, stock ownership, equity interest, patent/licensing arrangements, etc.) that might pose a conflict of interest in connection with the submitted article.

The opinions expressed are those of the writers, and do not reflect the opinion or policy of CORR® or The Association of Bone and Joint Surgeons®.

B. B. Gilmer MD (✉), Mammoth Orthopedic Institute, 85 Sierra Park Rd. Mammoth Lakes, CA 93546 USA, Email: bbgilmer@gmail.com

All ICMJE Conflict of Interest Forms for authors and *Clinical Orthopaedics and Related Research*® editors and board members are on file with the publication and can be viewed on request.

The high volume of published studies is analogous to the opening of a broad, and loosely defined frontier, and the cartographer's task is not dissimilar from the aims of a scoping review, which synthesizes a broad topic, outlines existing knowledge, and identifies directions for further study.

Scoping reviews are already common among other subspecialties; however, orthopaedics has been slow to join the trend [4, 6, 8]. Arksey and O'Malley published the first scoping review framework in 2005 and defined its purpose as "to map rapidly the key concepts underpinning a research area and the main sources and types of evidence available" [1].

If that still seems vague, it may be worthwhile to identify what a scoping trial is not and define it by contrast. A scoping review differs from a systematic review because it does not focus on a specific clinical question and does not seek to minimize risks of bias. Unlike a meta-analysis, a scoping review does not quantitatively analyze or pool raw data from previous studies. And in contrast to a monograph-style ("book chapter") review article, which mainly summarizes the available evidence, a scoping review engages in specific (if qualitative) analysis.

B. B. Gilmer, Professor of Orthopedics and Sports Medicine, Mammoth Orthopedic Institute, Mammoth Lakes, CA, USA

In the current study, El-Boghdadly and colleagues [3] conducted a scoping trial in shoulder surgery to evaluate outcome measures used to later define a core set of shoulder outcomes tools. Their stated goal was to improve consistency in reporting and methodology, as well as to allow better comparisons to be made between studies.

In terms of scoping reviews, the current study [3] was modest in size (8750 records). By comparison, one scoping review on nursing interventions for cancer patients evaluated 22,450 records [2]. By any measure, these are substantial undertakings considering the amount of qualitative review involved.

El-Boghdadly et al [3] found that outcome-measure selection was inconsistent, with 20 different tools described for functional outcomes alone. Use of patient-centered outcome measures and patient satisfaction was relatively low despite these metrics being critical indicators of quality of care. Furthermore, the overall methodologic quality of included studies was low.

Where Do We Need To Go?

The findings of this study were not surprising to me. The authors discuss how a scoping review could lead to a process for developing a validated set of outcome measures for shoulder surgery that could promote more consistent reporting across studies.

CORR Insights

But what about that poor methodologic quality? A scoping trial does not directly address this problem, but it might provide an indirect solution.

In my opinion, one factor contributing to persistent low methodologic quality is the demand to “publish or perish”—that is the idea that one must continually publish to maintain or advance an academic career [7]. This dictum no longer only applies to career academicians but to medical students and residents because demonstrating an interest and involvement in conducting research are common measures for applications to residency programs and fellowships. The “demand” of students and residents to complete projects and achieve publication in the short time before their applications are due seems to promote a “supply” of low-quality studies.

There are several potential benefits to utilizing medical students and residents to conduct scoping reviews. As noted previously the number of scoping trials in orthopedics remains small and the work required to perform them is large. Conducting a scoping review would provide trainees exposure to a wide breadth of literature over a broad topic promoting the development of expertise, understanding of quality, and fostering an interest in future studies. At least one study suggests that residents who publish during training are more likely to publish in their careers [5].

How Do We Get There?

Regarding creating a consistent outcome reporting measure for shoulder surgery,

the next and logical step to a scoping review is a followup study using the Delphi method. The Delphi method is a framework for generating consensus based on the results of several rounds of questionnaires sent to a panel of experts. Expert opinions are aggregated and shared with the group after each round. Essentially this is a process of sequentially distilling what is considered important. The distillate is processed again and again until only the most critical and essential components remain.

Regarding generating higher quality studies, perhaps more and better maps (scoping trials) will make for better planned research expeditions (high-quality studies) and possibly inspire better explorers (research-minded medical students and residents). Scoping trials can provide trainees an introduction to the literature, a sense of what is known, and what quality research is and is not.

Map making, like medicine, is not purely empirical. Raw data calls for understanding and interpretation. While a scoping review will not change my shoulder arthroscopy practice today, it may impact how I perform primary research, and that, in time, may shape my practice. There is a humanist irony to the use of scoping trials and the Delphi method as an extension of meta-analysis and statistical methods. While humans cannot process data as well as a computer, we are still better at interpreting what is important. As technologies evolve and big data get bigger, we would be wise to recruit motivated explorers and consult the

oracle of Delphi before putting our research vessels out to sea.

References

1. Arksey H, O'Malley L. Scoping studies: Towards a methodological framework. *Int J Soc Res Methodol*. 2005;8:19–32.
2. Charalambous A, Wells M, Campbell P, Torrens C, Östlund U, Oldenmenger W, Patiraki E, Sharp L, Nohavova I, Dome-nech-Climent N, Eicher M, Farrell C, Larsson M, Olsson C14, Simpson M, Wiseman T, Kelly D. A scoping review of trials of interventions led or delivered by cancer nurses. *Int J Nurs Stud*. 2018;86:36–43.
3. El-Boghdady K, Abdallah FW, Short A, Vorobeichik L, Memtsoudis SG, Chan VWS. Outcome selection and methodological quality of major and minor shoulder surgery studies: A scoping review. *Clin Orthop Relat Res*. [Published online ahead of print]. DOI: [10.1097/CORR.0000000000000578](https://doi.org/10.1097/CORR.0000000000000578).
4. Gagliardi AR, Fenech D, Eskicioglu C, Nathens AB, McLeod R. Factors influencing antibiotic prophylaxis for surgical site infection prevention in general surgery: A review of the literature. *Can J Surg*. 2009;52:481.
5. Macknin JB, Brown A, Marcus RE. Does research participation make a difference in residency training? *Clin Orthop Relat Res*. 2014;472:370–376.
6. Ogilvie I, Khoury H, Goetghebeur MM, El Khoury AC, Giaquinto C. Burden of community-acquired and nosocomial rotavirus gastroenteritis in the pediatric population of Western Europe: A scoping review. *BMC Infect Dis*. 2012;12:62.
7. Siegel MG, Brand JC, Rossi MJ, Lubowitz JH. “Publish or perish” promotes medical literature quantity over quality. *Arthroscopy*. 2018;34:2941–2942.
8. Surrey E, Carter CM, Soliman AM, Khan S, DiBenedetti DB, Snabes MC. Patient-completed or symptom-based screening tools for endometriosis: A scoping review. *Arch Gynecol Obstet*. 2017;296:153–165.