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Mountains of Evidence

Mary I. Fisher
University of Dayton, mary.fisher@udayton.edu

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Mary Insana Fisher, PT, PhD

Board-certified Clinical Specialist in Orthopedic Physical Therapy and Certified Lymphedema Therapist; Editor-in-Chief, *Rehabilitation Oncology*; and Associate Professor, Department of Physical Therapy, University of Dayton, Dayton, OH

A recent bibliographic analysis reported that rehabilitation research grew by 56% comparing the period of 2008-2017 to an earlier period of 1964-1973, and physical therapy modalities research grew by 39% for that same period.[1] In totality, between 2008-2017, over 367,000 research articles in both rehabilitation and physical therapy modalities were published.[1]

These numbers are overwhelming. When seeking the best rehabilitative strategy for treating arm morbidity among women treated for breast cancer, how is a student, or a health care provider, to sift through hundreds of citations to find out what the literature supports as best treatment? A quick PubMed search using "breast cancer" and "upper extremity" and "treatment" yielded 419 results. The sheer number of published studies presents challenges to summarizing the body of evidence, and ultimately, to translating evidence into practice. A way to encapsulate the evidence so that practitioners can quickly digest scientific findings to use in clinical decision making is needed.

Systematic reviews are the CliffsNotes version of reading all the citations found when searching the literature. The purpose of a systematic review is to identify, critically appraise, and summarize available evidence on a clinical topic in order to develop new theories or move clinical care toward that which is supported by the evidence.[2,3] A meta-analysis, a systematic review on steroids, statistically analyzes the pooled data from the included studies to measure effect.[3] Together, these tools provide clinicians with quick and important summaries of the mountain of evidence on a topic of interest to support evidence based practice. Clinicians, faced with ever

decreasing time outside of direct patient care and increasing productivity expectations, use systematic reviews as a means to quickly learn about a clinical topic and make clinical judgements for the individuals they treat. Yet, the information contained in systematic reviews is only as good as the original studies included in the review. Systematic reviews, too, are being published at an unprecedented rate. One source evaluating a sample of published articles in PubMed between 2000-2019 estimated a staggering 28,000+ systematic reviews published in 2019, translating to over 80 systematic reviews published *EACH DAY*.[4] This begs the question – with the breakneck speed at which original research *and* systematic reviews are being conducted and published, who is the watch-dog ensuring quality?

With the publication rates of systematic reviews skyrocketing, Leslie Allison, PT, PhD, Editor-in-Chief of *Geriatric Physical Therapy*, opined that the quality of the reviews do not always meet expectations.[5] Several critical components of the research process are required for high quality systematic reviews. One such component is that the literature search is systematic, comprehensive, and transparent.[3,6] Without transparency of the review, one cannot assess whether all necessary steps were taken, and ultimately puts the findings of the review in question.[6] Another key feature of systematic reviews is that the included studies are assessed for bias, a measure of quality, generally using a validated tool. Indeed, this is a key component of the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) standards, which are oft-cited as a requirement for publication.[7] Yet, frequently recommendations made by the authors of systematic reviews do not take into account the level of bias of original research. That is, while bias of included articles may be assessed and reported on, the amount of bias is not always taken into consideration when making final recommendations. As an editor, I frequently see systematic reviews that include studies with high bias. While several publications provide guidance on how to conduct systematic reviews[2,3,8,9] the clarity in assessing study quality, and how to make recommendations based on the findings, is

lacking. This overlooked link between study quality and recommendations becomes a significant issue for clinicians who look to systematic reviews for information to make clinical decisions, only to find that they cannot trust the review to provide them with valid information to make such decisions.[5,10]

The watch-dog must be the scientific community itself. Researchers conducting systematic reviews need to understand all aspects of this particular research design, from defining the clinical question using the PICO framework, detailing inclusion and exclusion criteria, systematically and transparently searching the literature, clearly assessing bias of included studies, to, ultimately, making recommendations for clinical care based only on the best available evidence. Researchers need to be able to draw summative conclusions based on high quality studies with low bias. The peer review process is an important step in verifying that the methodology of systematic reviews is sound. Not only should manuscripts follow PRISMA guidelines[7] for reporting on the conduct of the review, but peer reviewers need to ensure that transparency in methodology is evident, that best evidence is included (and conversely, weak studies are excluded), and that conclusions drawn by the authors are appropriate.

Following in the footsteps of *The Journal of Geriatric Physical Therapy*, the editors of *Rehabilitation Oncology* seek systematic reviews that consider the bias of the articles, and make recommendations based only on those articles with high quality and low bias. These expectations will be clarified in the coming months with updates to our Instructions for Authors. As we seek to continue to improve clinical care of the individual with cancer, we must continue to strive to improve the quality of the evidence for clinical practice.

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