

The value of “traditional” reviews in the era of systematic reviewing

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Abstract

Reviews offer examinations of published material on a topic, and are becoming indispensable in keeping up with an exponentially growing rehabilitation literature. Adherents of the systematic reviews that support evidence-based practice have been quite dismissive of narrative (traditional, qualitative, non-systematic) reviews. However, the types of problems that plague the latter also may be found in systematic reviews, which in addition have problems of their own. It is argued here that reviews play a number of roles in scientific research and professional practice: pooling data, comparing research, synthesizing complementary studies, offering guidance in uncharted fields, and “translating” research between disciplinary traditions. For some of these purposes, systematic reviews are better; for others, only a narrative review is suitable. Both types can be improved to serve the reader better in keeping up with the literature.

Key words: Rehabilitation, Review Literature as Topic; Review [Publication Type]; Research

### The nature and value of reviews

A review is “a general survey (as of the events of a period); a critical evaluation (as of a book or play); a retrospective view or survey.”<sup>1</sup> MedLine provides a definition specific to the nature of the materials it indexes: as a publication type, a review is “an article or book published after examination of published material on a subject. It may be comprehensive to various degrees and the time range of material scrutinized may be broad or narrow, but the reviews most often desired [sic] are reviews of the current literature. The textual material examined may be equally broad and can encompass, in medicine specifically, clinical material as well as experimental research or case reports. State-of-the-art reviews tend to address more current matters.”<sup>2</sup> Review articles identify, arrange, and interpret the research and other information being presented in an ever-growing scientific literature, making it more accessible and understandable to the average practitioner and researcher.

Reviews are the types of publications that get the most attention among the various types of articles (case studies, editorials, primary research, etc.) found in health care professional and research publications, at least based on citation counts. Studies that track the number of later citations in all journals to a specific paper have found that reviews are cited more often (on average) than all other publication types,<sup>3-6</sup> although there are exceptions.<sup>7</sup> Within the category of “reviews”, meta-analyses and systematic reviews tend to have higher citation counts than other types.<sup>4,8,9</sup> It has been claimed that some journal editors see publication of review articles as a mechanism to improve their publication’s impact factor,<sup>6</sup> the now seemingly all-important measure of a journal’s value.

Readers who use published material for purposes that are *not* reflected in a paper trail, such as reading for one’s general continuing education or for application to a specific clinical problem, may also prefer review articles over other types. Reports on articles most frequently downloaded from a journal’s website suggest that reviews are also popular among readers at large.<sup>10-12</sup> One study found an “excellent correlation” (Spearman rho: 0.55) between the number of citations a paper had obtained and the number of reprint requests the author had received.<sup>13</sup>

Reviews summarize and sometimes critically assess published material in a particular area of professional practice, research methodology, etc. The reason for their popularity may be the fact that reading the review enables one to have an overview, if not a detailed knowledge of the area in question, as well as references to the most useful primary sources. Given the enormous numbers of papers published in health care and other professional practice, students as well as established practitioners need digests that enable them to become or remain up-to-date in fields relevant to their specialty. For instance, if one assumes that a rehabilitation practitioner reads one paper per hour, 24 hours per day, 365 days per year; 2002 was the last year he/she could keep up with the papers indexed in MedLine under “rehabilitation.” To keep up with 2007 publications indexed in MedLine (and this database omits many publications dealing with rehabilitation, especially those published in “allied health” journals), he/she would need to read each article in an estimated 41 minutes. Ketcham reports, based on Medline counts that one review is published for every eight original research reports.<sup>6</sup> Assuming that one never needs to refer back to an original paper, keeping up with reviews takes one-eighth the amount of time it takes keeping up with the entire literature. One might wonder whether too many reviews are being produced.<sup>6</sup>

Journals aimed at practitioners and researchers have been publishing reviews almost as long as these journals have existed. While some journals specialize in a particular report type (e.g. *Pragmatic case studies in psychotherapy*) most “generalist” journals publish reviews of

some type, and a few specialize in reviews (e.g. *Ageing research reviews* and the *Annual reviews* series.)

### **Systematic reviews and “traditional” reviews**

With the emergence of meta-analyses in psychology and other fields in the 1970s, a new type of review emerged: the systematic review. In the 1990s this review type received additional attention from and was codified by advocates of evidence-based practice (EBP) (or the empirically supported treatment movement,) defined (for the field of medicine) as “the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients.”<sup>14</sup> Best evidence is identified by combing the literature to find relevant research. While there is no shared definition of a systematic review, there is general agreement on the following steps:<sup>8, 15-18</sup>

1. Formulate a focused (clinical) question.
2. Develop a method of locating relevant evidence, including explicit criteria addressing content and methodological quality.
3. Develop methods for abstracting, summarizing and synthesizing the evidence.
4. Locate the relevant studies and assess their methodological validity or quality.
5. Abstract and synthesize the relevant information. This may be done qualitatively, or quantitatively, in which case the systematic review is a meta-analysis.
6. Draw conclusions for practice, policy or future research, which are based narrowly on the evidence, taking into account its quantity, quality and consistency.

The systematic review methodology has been developed best for synthesizing quantitative research whether focusing on treatment, diagnosis, prognosis or issues of cost-effectiveness.<sup>19</sup> Methods for synthesizing qualitative research reports are emerging, and ways of combining the uncombinable, qualitative and quantitative studies, are being explored.<sup>20, 21</sup>

Systematic reviews have become very popular, to the degree that the label is given (by their authors) to a number of reviews which may have in an appendix the search strings used in the literature searches, but otherwise do not deserve the designation.<sup>22</sup> To distinguish them from true “systematic” types, traditional reviews now are called qualitative,<sup>23</sup> traditional,<sup>24</sup> narrative,<sup>24, 25</sup> or non-systematic<sup>26, 27</sup> reviews.

### **Criticism of traditional reviews**

The systematic review differs from traditional, narrative reviews, which may lack a focused question, rarely develop a methodology that is peer-reviewed, seldom use forms for abstracting data or have independent abstraction of evidence by two or more reviewers, and in making recommendations may go well beyond the evidence in the literature. Adherents of the systematic review methodology have become dismissive of narrative reviews, accusing them of a number of limitations, including being inconsistent with the evidence, lagging behind the evidence, and being inconsistent with one another.<sup>28</sup> The “evidence” in this connection is the quantitative data, especially effect sizes, that can be gleaned from primary (original) research reports. The inconsistency with the evidence is blamed on biases that can creep into narrative reviews, when selecting the studies to be included, and when interpreting the results of the combined studies.<sup>16, 29, 30</sup> In fact, by selectively including studies, narrative review authors may not identify or discuss inconsistencies in outcomes between primary studies,<sup>29</sup> let alone that they use advanced statistical methods to calculate a single effect size over a number of studies all addressing the same question. In some instances, “nose counting” may be the level of

sophistication used to decide whether a treatment is effective, that is, counting the number of studies having a statistically significant finding or not.<sup>15</sup> To quote Bent et al.: “In traditional narrative reviews, authors pick and choose the studies they discuss and the depth at which they discuss them. Consciously or not, their biases and interests in the field affect how they present the findings of the individual studies.”<sup>31</sup>

Case studies support these claims. Antman et al.’s,<sup>32</sup> has received considerable attention and is frequently quoted by epistemological purists.<sup>8, 9, 15, 17, 28, 29, 33-36</sup> Antman and his colleagues compared the results of their meta-analysis of randomized controlled trials (RCTs) of treatments for myocardial infarction to the recommendations of clinical experts published in chapters and review articles. They found that the experts did not mention some of the clearly effective treatments, and still recommended some therapies that had been proven harmful. In another well-known study, Schmidt and Gøtzsche compared 70 reviews addressing interventions against house dust mites for people with asthma.<sup>30</sup> They concluded that almost all of these narrative reviews were biased, and that their recommendations were at odds with a systematic review on the topic. Ladhani and Williams reached a similar conclusion with regard to treatments for postherpetic neuralgia after comparing 10 traditional reviews with one systematic review. They concluded that in the former, “much of the qualitative synthesis was based on the predetermined preferences of authors.”<sup>29</sup> Neihouse and Priske extracted the references given in reviews, and determined that up to 24% had been misquoted. Often, the discussion section rather than the results section was quoted.<sup>37</sup> Bollini et al. reviewed narrative review articles on adherence to pharmacological treatment of depression, and concluded that they were characterized by an incomplete critical appraisal of the evidence.<sup>38</sup> Mulrow et al. reviewed a sample of reviews published in leading medical journals, and demonstrated that most fell short of the standards for systematic reviews.<sup>39</sup> Ten years later, the situation had improved, but not by much, according to McAlister and her colleagues.<sup>40</sup>

### **Criticism of systematic reviews**

Instead of the traditional review, written typically by an expert at the request of a journal editor, and based on the contents of the writer’s “file drawer,” evidence-based practice adherents offer the systematic review as a research project, albeit one whose subjects are published and unpublished studies rather than humans. This research project starts like all research with a good question, develops a protocol to answer that question, collects and analyzes the data to draw conclusions. This, it is claimed, is the only way to collect all relevant studies, evaluate them systematically and objectively, and give all evidence its proper due. Combining studies mathematically allows for precise estimates of effect sizes; heterogeneity of study outcomes can be addressed, and new research hypotheses may emerge to be addressed by new primary research.<sup>35</sup> The Cochrane collaboration published a detailed handbook with guidance for reviewers,<sup>41</sup> as have other groups sponsoring systematic reviews, e.g. the American Association of Neurology.<sup>42</sup> The QUOROM statement has been developed to make reporting of systematic reviews more complete and informative for the reader.<sup>43</sup>

However, systematic reviews have their own unique problems. In spite of claims that anyone with substantive knowledge in a particular area and a basic understanding of research methodology can complete a systematic review, there are multiple ways the synthesis, analysis and reporting can go wrong.<sup>44</sup> A number of reviews of systematic reviews have pointed out errors in collecting, evaluating, summarizing and reporting evidence.<sup>45-47</sup> In addition to method

errors, e.g., in finding and assessing the “gray” (fugitive) literature, or in dealing with heterogeneity in a meta-analysis, the following problems with systematic reviews occur:

- Systematic reviews of treatment studies often limit themselves to RCTs, and are apt to only recommend “more research,” when there are no RCTs or the published ones are deemed to be of low quality.<sup>48</sup>
- Whether the studies aggregated consist of RCTs only, or include other designs, most research, especially medical research, on interventions tends to select for treatment a pool of subjects that has no or few co-morbidities, in order to be able to better demonstrate a treatment effect. While improving internal validity, this diminishes external validity, and often the findings of a primary study or of the studies pooled in a systematic review cannot be generalized but to a very small percentage of the population with the condition for which the treatment was developed.
- Systematic reviews that claim to be based on a protocol often have major deviations from that protocol, especially in the methods used.<sup>49</sup>
- Many systematic reviews rely on outcomes reported in the primary studies that provide no help in clinical decision making by the practitioner.<sup>12, 50, 51</sup> Loke and Derry suggest that non-systematic reviews derive their popularity from the fact that the experts who write them do not hesitate to make practical recommendations,<sup>12</sup> however biased those may be.
- Adverse effects of treatments often are not addressed in systematic reviews, which tend to focus exclusively on effect size issues of alternative treatments.
- Similarly, most systematic reviews tend to ignore issues of cost and the cost-effectiveness of alternative decisions on diagnosis or treatment.
- Many systematic reviews are hard to understand and require sustained concentration in their many pages dedicated to methodological purity. Their rigid structure, detachment from clinical practice, and failure to address the values that should come into play in deciding between alternatives<sup>36</sup> may be another reason narrative reviews continue to be published.
- In many clinical areas systematic reviews have a short half-life.<sup>52</sup> Unfortunately, this is not a particular concern within rehabilitation as the number of primary studies in this area tends to grow slowly
- Most damning, a surprising degree of subjective interpretation appears to be used in summarizing evidence and making recommendations.<sup>53, 54</sup>

Interpretive subjectivity may explain why in a number of clinical areas, systematic reviews have been published which contradict one another. Many of these disagreements result from methodological decisions made in the review protocol (e.g., whether or not to search for unpublished studies; whether or not to exclude studies with poor methodological quality),<sup>55</sup> while others result from errors that have been made in implementing the protocol.

### **Both narrative and systematic reviews have their role**

Systematic reviews have not reached a level of quality or utility such that they should replace the traditional form of narrative review, it would seem. However, putting it in an either-or format presents a false dichotomy. The purpose of a review is synthesis: combining the reports from multiple authors to create a “greater whole.” Hammersley distinguishes five meanings of the term, all of which deserve the adjective “systematic:”<sup>24</sup>

1. Aggregating or pooling of data.

2. Identifying studies which are replications of one another.

Both of these definitions are applicable to “systematic reviews.” In the case of pooling, finding unpublished or gray literature studies makes sense, so as to have as large a sample of studies addressing the treatment or diagnostic test, or prognostic data, as possible, to derive the best estimate of the effect size possible. If heterogeneity in outcomes is found, the goal may be to differentiate the studies in subgroups that are as similar as possible in terms of patient population, treatment variation, outcome measures and/or methodological characteristics, and determine effect sizes for subgroups of studies using subgroup analysis, meta-regression or similar methods.

3. Conducting comparative analysis of existing investigations to develop or test theories.

4. Developing a “bigger picture” by combining complementary (not similar) studies into a map.

This often is the primary purpose of narrative reviews, to lay out the most recent and best knowledge of various aspects of a problem. For instance, an article aimed at non-specialists may describe the pathology, etiology, acute care, and rehabilitation of spinal cord injury. Written by an expert, such a report assists the non-specialist to treat these patients, and to refer them to a specialist when appropriate. The “bigger picture” may also synthesize other types of primary studies – e.g., a comparative description of the treatment of traumatic brain injury in different countries, or the description of the historical development of treatments and care patterns of cerebral palsy. Both types of reviews are based on current and historical documents, often supplemented by the personal experience of the writer. In fact, the experience and expertise often is why authors are invited to contribute a paper or chapter, and the editor and presumably readers appreciate this type of essay precisely because the selection and integration of findings and descriptions from earlier publications reflects a personal viewpoint.

5. Translating the findings of one group of studies into the terms of another, to facilitate the understanding of a phenomenon that is approached in different disciplines that have their own terminology or methodological traditions. Comparing and contrasting could lead to new insights and new ways of approaching the issue that is of benefit to both disciplines.

These three types of synthesis are likely to start with a very broad question. Hammersley stresses that in contrast with the first two, they do not necessarily benefit from a pre-determined protocol that sets forth the procedures to be followed. They “involve a more inductive approach, in which the reviewer may reformulate the focus of the review in the course of doing it.”<sup>24 p4</sup> In addition, he sees a role for reviews that do not attempt “synthesis” to any significant degree; these could provide judgments about what we do and do not know, based on the evaluation of carefully selected studies where selection may go well beyond a mechanistic classification of basic design characteristics and their findings. Other reviews could focus on methodological issues and describe how we might improve research. These reviews can be “systematic” in one of the traditional meanings of that term: methodical, thorough, coherent, manifesting a set of principles.<sup>22</sup>

One might add various other types of “reviews” to those listed above. For example, clinicians want guidance for the treatment of newly discovered disorders. When no primary studies on diagnosis, prognosis or treatment have been published, there is no basis for a systematic review. However, there may be benefit to a “review” article in which an experienced clinician offers a conceptual understanding of the problem, makes suggestions for treatment based on analogies with other, better understood problems, and offers guidance for assessment and management.

There is a role for all these types of reviews in advancing practice and research. “To say that traditional reviews are unfocused because they don’t concentrate on a specific question is like complaining that a map is of no use because it covers a wider area than the one we are currently interested in.”<sup>24 p 4-5</sup> Applying Mulrow et al.’s 10 criteria<sup>39</sup> to assess the quality of review articles to any and all reviews would be foolish. These criteria are relevant mostly to reviews that start with a focused question a practitioner might ask, specifying:

- The population and setting (e.g., patients with a traumatic brain injury undergoing acute rehabilitation)
- A condition of interest (e.g., deep vein thrombosis)
- The treatment(s) or test(s) being considered (elastic stockings, or venography)
- One or more specific outcomes (development of pulmonary embolism, or specificity and sensitivity of a diagnosis of deep vein thrombosis)

The PICO format (problem, intervention, comparison and outcome) is used by other systematic reviews focusing on a clinical question.<sup>22</sup>

As Collins and Fauser argue, however, “for some review topics the strengths of the systematic review may turn into weaknesses.”<sup>56</sup> What they call the “narrative thread” might get lost in the strictures of the systematic review procedures. The trade-off for broader coverage and more creative synthesis should be a decreased focus on explicitly stated and followed “objective” methods. “Form should follow function,”<sup>22</sup> and the purpose of the review should determine what literature is used, and how. (cf. also <sup>6, 57</sup>)

For instance, Rotstein and Laupacis sketch the difference between systematic reviews and health technology assessments, also known as biomedical technology assessments.<sup>58</sup> They note that the latter may include studies which do not offer the “best” methodological evidence, but instead address topics of interest to policy makers, even if the evidence is “suboptimal.” The needs of policy makers may lead to the inclusion of studies that are broad in scope, and would be not “combinable” from the narrow scope imposed by scientists’ interests. Economic evaluations are key in these types of assessments, while they ordinarily are excluded from systematic reviews. Whereas the latter almost never make explicit policy recommendations, health technology assessments may include these, offering policy options or explicit recommendations.

## Conclusion

The scientific literature is growing faster than any practitioner, policy maker or researcher can keep up with, and reviews play a crucial role in summarizing and synthesizing the knowledge base. However, there is not one review type that fits all purposes of these users and the many other audiences authors may address, including patients. The “systematic review” is appropriate when a number of studies have approached the same question, and have produced results that appear combinable. Given a focused question, such systematic reviews are the best method of reaching an answer, determining an effect size for a treatment or diagnostic procedure, that is the most specific for a population or for various subgroups. However, there are a number of ways the methods and reports of such reviews can be improved to make them more useful for their intended audiences. In addition to the listed above, Leff and Conley suggest the following criteria for “good” reviews:<sup>59</sup>

- Conciseness: they should condense the evidence into messages that stakeholders can absorb in the limited time they have available

- Precision: they should make clear the probabilistic nature of research findings, and include information on not just the magnitude of an effect and the confidence interval, but also on its clinical significance
- Person centeredness: they should enable users to find the most relevant information available about the individuals or groups they have an interest in
- Implementation orientation: in rehabilitation and mental health fields, where treatment consists of much more than prescribing a medication, documentation should include training materials, manuals and fidelity measures to help practitioners make the step from accepting that a particular treatment is the best (for a specific problem, in a specific group,) to actually implementing it accurately – a question of knowledge translation
- Comprehensibility: the focus in reporting to a non-researcher audience should be on comprehensible language

Other types of review, which start off with a broad question that may lead to a more creative synthesis of the findings of a number of studies, might benefit from improvements that can be borrowed from the systematic review tradition. While they all might address the questions the authors set out to answer, more explicit information as to how relevant information was collected (a “search strategy,”) and how judgments were made as to the nature (content) and quality (methodology) of the studies would help the audience to evaluate what a review offers them. (cf also <sup>22</sup>) As “bias” (creative selection and combination) is a major concern about narrative reviews, it would benefit readers if reviewers make explicit their values, preferences and assumptions early in the review. Collins and Fauser suggest that authors might “arrange the subject matter in a series of objective questions, each section based on specified procedures for search, relevance and validity and tied to other sections by appropriate descriptive links.”<sup>56</sup>

Editors or organizations that commission narrative reviews can contribute to their quality and trustworthiness by making sure that reviewers have no financial or other conflicts of interest, and possibly by pairing as authors individuals with opinions, preferences, assumptions, scientific training backgrounds that are known to be divergent. Requiring their reviewers or reviewer teams to use the mechanisms suggested in the last paragraph as possible methods of reducing bias and improving systematicity might also be beneficial.

Whatever type of review one is preparing or reading, a traditional one or a systematic review, one should remember that the available evidence is always flawed to some degree, and that even the most expert and methodologically sophisticated reviewers make errors. The purpose of reviews is to provide readers with a synthesis of previous research. To the degree that practical decisions about patient care, policy, and research initiatives are to be based on this synthesis, the reader should remember that “The essence of wisdom is the ability to make the right decisions on the basis of inadequate evidence” (Alan Gregg, as quoted by Burton<sup>60</sup>).



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