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Review

Systematic reviews in integrative medicine: A clinician's guide to publication

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ABSTRACT

The role of evidence-based medicine in integrative medicine is becoming increasingly important, and with this increasing comes a need for succinct summaries of research evidence. Systematic reviews are essential to summarise evidence relating to efficacy and safety of healthcare and to summarise health care trends and phenomena accurately and reliably. However, reviews can bring with them numerous biases and methodological issues, particularly related to the sourcing of information used, and therefore need to be conducted in a systematic and methodical process. Specialised fields such as integrative medicine bring with them their own unique challenges in conducting an accurate and reliable review. This article describes practical and academic insights into writing a systematic review for publication.

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1. Introduction

Evidence-based medicine (EBM) focuses on ensuring that clinical decisions about individual patients are made on the basis of the most up-to-date, solid, reliable scientific evidence, and is equally as important for integrative medicine as it is for any other clinical field [1]. Whilst available research evidence, clinical experience and patient needs and expectations are *all* important considerations in EBM, access to contemporary research summaries are an essential part of this process. However, the growth and decentralisation of medical research literature occurs at an increasing rate, adding millions of research papers each year to the body of medical knowledge [2]. Such growth is clearly unwieldy and inaccessible for most clinicians, and clinical reviews have become increasingly important as a method of keeping up to date with research developments in clinical practice. Systematic reviews in particular are essential tools for summarising evidence accurately and reliably. In an era in which EBM is becoming increasingly important, systematic reviews help clinicians keep up to date; provide evidence for policy and decision makers; provide valuable starting points for clinical practice guidelines and provide summaries of previous research for funders and researchers.

1.1. What is a systematic review?

In its most basic definition, a systematic review is a comprehensive high-level summary of primary research on a specific research question that attempts to identify, select, synthesise, and appraise all high quality evidence relevant to that specific question [3,4]. Before systematic reviews become the norm, authors were free to pick and choose the research papers that supported their particular viewpoint. This clearly biased approach led to reviews that in turn led to poor decisions being made about healthcare – as highlighted by Antman et al.'s seminal *JAMA* study comparing meta-analyses results with clinical expert opinions on the treatment of myocardial infarction [5]. The systematic review was specifically developed to try to reduce the influence of the reviewer's own individual bias, and does so by deciding in advance what evidence to include and how it should be used. Just as case reports become a more important research tool once standardised approaches to case reports had been developed [6], reviews become more accepted and integrated into EBM once clear standards had been developed, and are now near the top of the research evidence hierarchy [3,4]. Many journals, including *Advances in Integrative Medicine*, are increasingly hesitant to publish non-systematic reviews, as not only may they be intentionally or unintentionally biased, but the lack of methodical and systematic process make them difficult to replicate, update or compare.

1.2. Other types of systematic reviews and meta-analyses

Some reviews are called 'critical reviews' or 'integrative reviews'. These are an extension of systematic reviews, and differ largely where the research question will not return the same kinds of studies or have multiple outcome measures over differing methodologies, which requires additional critical analysis of results. However, they remain systematic and employ the same methodological process as any other systematic review. For example, exploring the factors associated with integrative medicine use in rural areas [7] or the indirect risks associated with integrative medicine use [8] may require a critical review as they will report findings of multiple studies using multiple methodologies, whereas exploring the impact of a specific integrative therapy (e.g. yoga) that are most effective at treating a specific condition (e.g. depression) [9] will require a systematic review as the studies will report only the findings from interventional studies.

Although the terms are often used interchangeably, systematic reviews and meta-analyses are not the same. A meta-analysis utilises statistical methods to quantitatively evaluate pooled data from single studies. Often, meta-analyses are included as part of systematic reviews. Heterogeneity is also a factor that differentiates systematic reviews from meta-analyses. It would be wholly inappropriate – from a statistical point of view – to pool dissimilar studies in a meta-analysis, but it may be appropriate to undertake a systematic, critical or integrative review. The issue of heterogeneity ought to be considered before developing a research question, as it can be a double-edged sword which improves external validity at the cost of internal validity. In other words, the more narrow the inclusion criteria the more homogenous the data will become, but this necessitates exclusion of patients with certain characteristics and exposures (e.g. multiple medications), which may make the results less generalisable.

Recently, there has been focus on conducting systematic reviews of systematic reviews, as the amount of information (and reviews) available becomes overwhelming [10]. However, these can be problematic. Systematic reviews do have considerable weaknesses – notably that they can come to quite contrasting conclusions depending on the quality control tools or scales used in assessing trials [11]. These scales have rarely been tested for inter-rater variability, there is generally lack of agreement between scales as to what is being measured, and scales differ considerable on number of items included and the importance of each item. Yet these tools and scales are highly relevant to the outcomes of systematic reviews, as they determine which trials will be incorporated in the review. For example, analysis of the efficacy of homoeopathy as a treatment has been demonstrated to show it can be both highly effective or highly ineffective depending on which trials are included or excluded in a review based on differing interpretations of quality scales [12]. The strength of a systematic review – using a unified approach to evaluate and assess numerous articles on a given topic – is lost when comparing *across* systematic reviews, as systematic reviews are usually as heterogeneous as individual articles, but are harder to systematically synthesise in a coherent, concise and rigorous manner.

2. Finding and reviewing the literature

The fidelity and value of a literature review rests heavily upon the process undertaken in both finding and reviewing the literature in question. Whilst there are guidelines which outline the process of reporting a literature review when preparing a manuscript for publication (e.g. the PRISMA statement), these guidelines are only of value if the correct process has been followed from the start. The following steps should be followed when undertaking a literature review to ensure the result is as comprehensive and relevant as possible.

2.1. Clarifying the question

A clear and descriptive research question should be articulated from the outset to allow the research team to build the search terms and identify the appropriate evaluation tools. To develop a research question the specific topic must be identified. In addition, the research team needs to determine whether date or language restrictions will be applied. Date restrictions are used when a literature review has been already been conducted in the past and the intended review is an update on this previous work, or changes between historical and contemporary practices in the field would detract from the overall findings if combined. Whilst it is common for review articles to restrict primarily to English language articles,