

Systematic Reviews by Stephanie Tierney
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Systematic reviews are “concise summaries of the best available evidence that address sharply defined clinical questions” (Mulrow, Cook and Davidoff, 1998: 1). They are referred to as secondary forms of research because they gather, analyse and collate findings from a number of primary studies (e.g. single randomised controlled trials [RCTs]). Systematic reviews differ from traditional narrative reviews because they attempt to undertake an exhaustive search for all relevant research in relation to a predefined question and involve clear inclusion and exclusion criteria, in terms of studies that will be accepted (e.g. only RCTs; only studies involving individuals of a certain age group). “Without a requirement that reviewers clearly specify inclusion criteria and then exhaustively include all studies that fit these criteria, reviewers may consciously or unconsciously decide to include studies that favour their own biases and ignore those that do not” (Slavin, 1995: 10). This does not mean that value judgements can be totally isolated from the review process, but ensures that reviewers have to be explicit about procedures used in the review, giving readers enough information about studies so they can gain a good understanding of the original research (Slavin, 1995). Hence, the employment of a systematic review and the scientific strategies associated with it should provide a critical synthesis of relevant studies in a way that limits bias and random errors (Cook, Mulrow and Haynes, 1998).

For academics and researchers, systematic reviews can highlight whether specific treatments work best with particular populations and illustrate any gaps in a field of study or recurrent methodological flaws in existing research. Busy professionals can benefit from such reviews, which present them with a collated, appraised set of findings from a wide range of studies. Similarly, service providers can take advantage of these types of investigation when assessing how best to employ available resources. However, commentators warn against using findings from systematic reviews in a mechanical manner, without considering a client’s circumstances, personal preferences and values (Cook, Mulrow and Haynes, 1998).

Practitioners and service providers need to have a developed critical appraisal capacity to evaluate the findings of systematic reviews, as they would with other research. Different reviews may produce conflicting results. The type of patients involved (e.g. severe, intermediate, or mild cases; previous experiences of treatment), how an intervention is administered (e.g. duration, frequency, intensity), and the outcomes measured will all have an influence on study results, and may explain variations between reviews (Meade and Richardson, 1997). (To critically appraise a systematic review see <http://www.phru.nhs.uk/Doc Links/S.Reviews%20Appraisal%20Tool.pdf>).

A systematic review relies on findings from good quality primary studies, which can act as an obstacle to this method of investigation. Although RCTs are considered to produce the most valid findings in terms of the effectiveness of interventions, a paucity of such designs may call for the use of other research methods to provide answers to a question (Counsell, 1998; Meade and Richardson, 1998). When other designs are included in a systematic review, the attributive confidence associated with the results from such methods needs to be established. People conducting a systematic review must assess the quality of a study by examining how far its design, content and analysis have helped or hindered the minimisation of bias. Reviewers must carefully and critically appraise the evidence because the inclusion of biased primary studies can provide misleading final results (Meade and Richardson, 1998). It should be noted that the quality of studies is on a continuum, and that “evidence from well-conducted studies with ‘weaker’ designs may be more robust than evidence from poorly conducted studies with more ‘rigorous’ designs” (Mulrow, Longhorne and Grimshaw, 1998: 108).

Meta-analysis

One way of examining data from a systematic review is via a meta-analysis, which involves synthesising quantitative data produced in single studies; it is a statistical technique used to combine outcomes from several studies to produce a summary result. The benefit of a meta-analysis is that by synthesising data from a number of studies, it can help to overcome the problem of papers with contradictory results. In addition, putting together findings of several studies means that results from a larger number of participants are considered. Incorporating a meta-analysis into a systematic review helps a researcher to present the best overall estimate of an intervention’s effectiveness, based on findings from more than one study. For further information about conducting a systematic review and meta-analysis, visit the Cochrane Collaboration website (www.cochrane.org).



References

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