

Meta-analysis in evidence

Recently the *New England Journal Medicine* an original article that may mislead some readers¹. The study compared 12 randomized trials to 19 meta-analyses performed previously and state that the meta-analysis would lead to the adoption of ineffective treatment or rejection of useful treatment in most of the treatments studied. The analysis was based only on statistically significant effects, ignoring the relevance and meaning of the confidence intervals.

It is important to emphasize that a meta-analysis is a mathematical syntheses of the results of two or more studies that have addressed the same hypothesis, and a systematic review is an overview using explicit and reproducible methods, and may be followed by a meta-analysis or not.

The most important objective of a systematic review or a well-executed meta-analysis is to obtain data, based on the best evidence existing (published or not), with which we can attempt to check what we know with some level of certainty about a subject (for example, a treatment); what we really do not know, due to the absence of good evidence; and what we are uncertain about². Therefore, this refereed study¹ may have significant bias because, usually, large trials are developed after a meta-analysis that has left some level of uncertainty which is clinically important.

It is possible to observe this kind of disagreement between systematic review based on small trials and the necessary subsequent large trials without any surprise^{3,4,5}.

Cappelleri et al⁶ in an article published in the *JAMA*, evaluated the results of large clinical trials vs the pooled results of smaller trials. They found, by random effects calculations, agreement between large and smaller trials in 90% of the meta-analysis selected by the sample size approach and in 82% of the meta-analysis selected by the statistical power approach.

Publications of the Cochrane Collaboration or of the Antithrombotic Trialists Collaboration, or others could help provide better understanding of systematic review for the reader. We would like to refer those interested to a recent issue of the *British Medical Journal*⁷, where Naylor, in the Editorial, starts with the subtitle "Meta-analyses is an important contribution to research and practice but it is not a panacea" and concludes: "In summary, meta-analysis has made and continues to make major contributions to medical research, clinical decision-making and standards of research reportage"... In the same issue there are more interesting information on systematic review interpretation and evidence based medicine⁸.

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* MD, PhD, MCE
 Chaiman, Department of Internal Medicine, Escola Paulista de Medicina, Editor, São Paulo Medical Journal.

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