Meta-analysis is victim to Chinese academic and educational systems

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Received 25 September 2012; accepted 26 September 2012

The originator of the meta-analysis certainly did not predict that his invention would be so popular in today’s China. According to our literature survey\textsuperscript{1} and to Ding Xiang Yuan (the most popular biomedical online forum in China),\textsuperscript{2} the number of meta-analysis articles published by Chinese investigators in the international peer-reviewed journals indexed by the PubMed database has increased dramatically during the past decade. Moreover, the growth rate of meta-analysis articles in China was significantly higher than the global level in the last 3 years.\textsuperscript{1,2} Meta-analysis has almost become a synonym for evidence-based medicine (EBM) in China. The EBM section is full of daily posts on meta-analysis, which reflects a great deal of enthusiasm among Chinese doctors and students for learning meta-analysis. Concern has been expressed that China would become a leading producer of mass produced meta-analysis papers.\textsuperscript{3} In fact, the number of meta-analysis articles published by Chinese authors in 2010 was only one-seventh of those from the United States, based on the findings of our study.\textsuperscript{1}

A meta-analysis involves pooling the outcomes from a series of similar studies to obtain a summary estimate of an effect, not a simple average of the data at that level.\textsuperscript{4} A meta-analysis is a versatile and powerful tool in systematically summarizing available evidence, especially when results of individual studies are conflicting or inconclusive. Rigorously conducted meta-analyses are beneficial to evidence-based decision making, both in clinical practice and on the health policy level.\textsuperscript{5} Many world-renowned medical journals, such as The Lancet, The Journal of the American Medical Association, British Medical Journal, and Annals of Internal Medicine, annually publish a certain amount of high-quality meta-analysis articles.

Why is meta-analysis highly attractive to the Chinese? The answer is that we need it. Recently in China, the international publications indexed by the Journal Citation Reports (so-called SCI papers) have become the gold standard in the academic evaluation system.\textsuperscript{6,7} For example, almost all the Chinese medical colleges insist that Ph.D. students must publish at least one SCI paper before they can graduate. Generally, postgraduates doing basic or clinical research take 3 years to complete their program and to publish their work. Those who perform a meta-analysis could publish a SCI paper within 3 months. Students of course have favored such a cost-effective method in order to ensure graduation. They have judged that meta-analysis is easy to be grasped and published in an ordinary journal for Chinese authors. Students do not need to spend a lot of time in doing experiments or collecting patient data; they can put together a SCI paper swiftly by doing some literature searches and taking statistics.\textsuperscript{3} Chinese doctors have also considered meta-analysis as a shortcut to promotion and award-winning. Chinese physicians and surgeons are probably experience higher levels of stress than do their colleagues around the world; this is particularly the case among Chinese physicians and

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surgeons in the teaching hospitals affiliated with universities or the large hospitals in big cities. They must balance heavy clinical work and scientific research and rationally allocate their time between bed and bench. They would prefer to conduct a meta-analysis with a low-input way rather than doing basic experiments in cell lines and animals that they are not good at. Moreover, the paucity of public funding sources to support clinical trials in China may prevent clinicians from doing clinical research that they really love. We believe that, under the current circumstances, the meta-analysis is the best option to generate scientific publications in the short term for Chinese doctors.

On the contrary, some scholars in China are strongly opposed to the meta-analysis. Such scholars have treated those who published meta-analysis articles as opportunists and considered this opportunistic behavior as an obstacle to the development of original research. We feel that this view is somewhat exaggerated. Of all the studies published in Medline in 2010, the proportion of meta-analyses was about 1.3%. In itself, the meta-analysis is neither good nor bad. It is simply a tool for exploring clinical evidence, rather than being a tool serving the motivation of publishing papers. It is also an effective method for problem based study. Chinese doctors and students should make good use of this weapon of EBM, according to the international guidelines and statements, and produce more high-quality meta-analyses. Otherwise, the meta-analysis is victim to Chinese academic and educational systems.

References