

Research in Health: Systematic Review and Meta-analysis

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Received date: March 10, 2016; Accepted date: March 15, 2016; Published date: March 18, 2016

Editorial

The last few decades signify an important period for the advancement of various types of research related to human health. This scientific evolution allowed curing or minimizing human diseases. It is a consensual fact that many laboratory experiments in animals and humans have brought significant advances for the development of medicine, dentistry, and other fields; furthermore, concurrently with this development in experimental research methods, ethical standards have evolved to regulate the development of research in animals and humans.

In reviewing the scientific literature on health, it is possible to observe that some studies will not be carried out again because of their infringement on ethical norms. However, all scientific evolution has resulted in advances for humanity, mainly in terms of reduced cost and duration of treatment. The contemporary science of health aims to provide "evidence-based medicine," which directs clinical practices based on scientific evidence; in this regard there are different methods of research that are useful for clinical evaluation.

Currently there are defined protocols for conducting randomized controlled trials in humans to analyze the most significant diseases, treatments, and surgical techniques. In fact, there is a large body of scientific evidence to support research through clinical studies and appreciation for randomized, double-blind, placebo-controlled clinical trials are increasing. These research studies in most cases show very important conclusions for health.

Another great benefit for health is the development of technologies in the area of computer simulation, especially the

methodology of three-dimensional finite elements, which has allowed the development of software in simulated tests with the aim of reproducing an experimental clinical situation in a computer simulation environment. This improvement is very important for science, since these computer simulation methodologies show trends that can further explain and promote understanding of the results of clinical studies.

Currently, there is great interest in conducting studies to improve scientific evidence in medicine/dentistry, represented by the development of systematic reviews with meta-analyses. At this point, the advancements to Internet access around the world are allowing researchers to readily access clinical trials and other research; therefore it is possible to conduct a systematic review study in order to answer a specific question in healthcare. A systematic review (secondary study), when well designed, can clarify important questions in health and consequently produce significant improvements and lower spending in public health. Systematic reviews with meta-analyses present a statistical analysis that allows the formation of important conclusions based on primary studies (clinical trials).

Finally, this is a very opportune time to conduct medical/dentistry research because accessibility to the Internet and advances in databases have allowed the generation of a research archive that is available online and all the time to any researcher in the world. This new condition facilitates the use of well-designed clinical trials and systematic reviews with meta-analyses in order to clarify existing questions in the different specialties, thus allowing scientific advancement of the field of health.