

Study titles

While reading some of the randomized clinical trials published in highly prestigious journals, which are expected to shape our daily practice, I usually felt a discomfort, but I did not know how to put this into words. However this issue of mine has resolved. At an international scientific meeting in the United States of America in January, an American colleague asked a question that contained the words that I could not express.

Guidelines form the framework for our daily practices of diagnosis and treatment in light of up-to-date data. These guidelines do this using the study data, and they evaluate these studies following a hierarchy by considering their designs. Well-designed and conducted randomized controlled trials, which are included in the guidelines written by the European and American cardiology associations frequently consulted by us, are the most valuable studies, and they are referred to as level A evidence.

I cannot make any comments regarding the other medical fields, but current cardiological diagnosis and treatment have largely reduced the mortality and morbidity rates in many diseases. Thus, thousands of patients should be monitored to ensure that a new medicine or a method will solely be effective in reducing mortality or morbidity. It is also obvious that a study like this will be costly. The sponsors of these studies, the firms that develop new medicines and methods, will not undertake such an economic burden. In order to increase the event rates composite end points including mortality are generated and by doing this significant differences between the novel and standard care could be achieved by enrolling reasonable number of cases in the studies. The fact that both the sponsor of the study (mostly the industry) and expert scientist of the field take part in determining composite end points leaves no doubt about their reliability.

Again, combining clinical events as end points in randomized controlled studies is acceptable and reliable. However, the issue I mentioned at the beginning of this letter does not arise from this subject. It arises from the way the results are presented.

As an example I want to mention about a post hoc analysis of a study, the original issue of which was published in the New England Journal of Medicine in November 2016, was published in *Circulation*, another prestigious journal. This analysis examined death and rehospitalization, which did not constitute the primary end points of the study. Its abstract ends with the following phrase: "...associated with a reduced risk of all-cause mortality or recurrent hospitalization for adverse events compared with standard-of-care." As the American colleague who helps clear the confusion in my head would say, this sentence assists in marketing. A doctor who will only read the abstract will assume that the new medicine will reduce the rate of all-cause mortality. However, when examined in detail, the article shows that with all-cause mortality and rehospitalization selected as the primary end point, rehospitalization made all the difference. On the contrary, although it did not reach statistical significance there was a 16% increase in all cause mortality with the new therapy. Considering that the abstract ends with a sentence like this, isn't this a bit irritating?

It is possible to find many similar studies where the results, titles or the ways the study is presented are compared to those of other studies. For a proper interpretation of a study, one must separately revise the elements of the primary end points, subgroup analyses, p values, confidence intervals, relative risk, absolute risk, and NNT and NNH values with a critical approach. This is the way to get rid of overestimation, in other words, marketing methods.

Science starts with thinking. Those who assess a scientific report without thinking face the risk of being misguided. Science is meaningless without thinking, and thinking is meaningless without science.

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