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Communications

Study/Experimental/Research Design: Much More Than Statistics

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Abstract

Context: The purpose of study, experimental, or research design in scientific manuscripts has changed significantly over the years. It has evolved from an explanation of the design of the experiment (ie, data gathering or acquisition) to an explanation of the statistical analysis. This practice makes "Methods" sections hard to read and understand.

Objective: To clarify the difference between study design and statistical analysis, to show the advantages of a properly written study design on article comprehension, and to encourage authors to correctly describe study designs.

Description: The role of study design is explored from the introduction of the concept by Fisher through modern-day scientists and the *AMA Manual of Style*. At one time, when experiments were simpler, the study design and statistical design were identical or very similar. With the complex research that is common today, which often includes manipulating variables to create new variables and the multiple (and different) analyses of a single data set, data collection is very different than statistical design. Thus, both a study design and a statistical design are necessary.

Advantages: Scientific manuscripts will be much easier to read and comprehend. A proper experimental design serves as a road map to the study methods, helping readers to understand more clearly how the data were obtained and, therefore, assisting them in properly analyzing the results.

Keywords: scientific writing, scholarly communication

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< Previous Next >

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top