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Effect of sample size on research outcomes

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A good statistical study is one that is well designed and leads to valid conclusion. The two major factors affecting the power of a study are the sample size and the effect size. The power of a statistical test is the probability that a test will reject the null hypothesis when the null hypothesis is false. Similarly, confidence interval conveys the amount of uncertainty associated with an estimate. It is the chance that the confidence interval (margin of error around the estimate) will contain with estimated value. A narrower margin of error requires a larger sample size. Samples should not be either too big or too small since both have limitations that can compromise the conclusions drawn from the studies. Too small a sample may prevent the findings from being generalized, whereas too large a sample may increase the detection of differences, emphasizing statistical differences that are not clinically relevant. Thus, an appropriate determination of the sample size used in a study is a crucial step since the design of a study to the research outcomes. The aim of this paper is to discuss the major impacts of sample size on research outcomes with some interesting examples.

Biography

Prabhaker Mishra has completed PhD in Statistics entitled "Statistical study of human vulnerability and risk assessment of natural hazards in Orissa" and Senior Research Fellowship project on Natural Hazards and Disasters. He has published 31 research papers in various national/international journals. His expertise area is applied and medical statistics.

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