

# Medical Science without Statistics

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## Abstract

Medical science is a science of life and life is full of uncertainties and statistics has some concepts, tools and techniques to measure the degree of uncertainties. Primarily, statistics is a science, which deals with such phenomena where the occurrence of events cannot be predicted with certainty. So is with human life where nothing can be predicted with certainty.

Statistics is not merely conversion of data into information by way of summarization and generalization; it extends its wings to model building, prediction, projection etc. in the face of variability and uncertainty. When a doctor says to a patient 'there is more than 95% chance that you will be cured', it contains some essence of statistics. Doctor by analyzing here quantifies the degree of uncertainty. Though, a doctor influenced by statistician may rather like to say 'there is less than 5% chance that you will not be cured.' More often, in our daily life we use to quantify the level of uncertainty in occurrences of any event of interest by way of our observations, wisdom, perception and vision. Though this type of conclusion is not arrived on statistical principles yet, it carries the spirit of statistics. In this way everybody in life many times finds involuntarily connected with statistics.

Some medical students and even young researchers think what is the relationship between medical science and statistics and if they accept the relationship; they may like to know why statistics is taught to them. Knowledge of statistics to medical students is required not only to enable them to present, analyze and interpret data while carrying out their own research work but also to understand the correct meaning and validity of statistical findings reported by other researchers.

Statisticians are not doctors but their work may be viewed like those doctors specialized in pathology, radiology etc.

who conduct various tests and give expert opinion enabling physicians and surgeons in taking accurate decision. As medical students are taught radiology and pathology they can understand various test reports but as practicing doctor they may need opinion of experts in testing. More elaborately, when a patient comes to a doctor and shows x-ray plate, the doctor understands the problem even when the written expert opinion of radiologist is not shown to him. Similarly, medical students are taught statistics to understand the results of some commonly used statistical tests like t, F, chi-square, z, ANOVA etc. that they face while doing research and reading publications.

It may not be expected from doctors to be expert in statistics but they should be made capable of understanding the basic statistical methodology. An introductory course in statistics to medical students will be like giving vaccines to them so that later in their career when encountered with statistical tools and techniques they may not succumb. However, it is compelling me to quote here the statement of D.G. Altman "amazingly, it is widely considered acceptable for medical researchers to be ignorant of statistics. Many are not ashamed (and some seem proud) to admit that they don't know anything about statistics".<sup>1</sup> Yet in the end the optimistic statement of Martin Bland is worth quoting here "medical students may not like statistics, but as doctors they will".<sup>2</sup>

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## References

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2. Bland JM. Medical students may not like statistics but as doctors they will. British Medical Journal 1998; 316: 1674.

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