

CHAPTER 1

Introduction

1.1 Introduction

In recent days Statistical Methods have been applied to different branches of sciences such as Biology, Agriculture, Medicine, etc., besides social sciences such as Economics, Sociology, Anthropology and technical subjects like Engineering, etc., in order to draw proper, valid conclusions from the research investigation, experiment and survey conducted. In most of the published research articles also we find lot of statistical treatment to the data collected which brings weightage and importance to the research article. Statistical analysis of data in a research investigation gives more validity, consistency and leads to generalization of the conclusions obtained from a sample. Statistical Methods applied in Genetics is well known.

The word 'Statistics' has been derived from a Latin word which means 'state' which means 'politically organized people', i.e., Government. Since Governments or kings in olden days used to collect relevant data on births and deaths, tax collection, defence personnel, import and export of goods, etc. 'Statistics' was identified with 'state' or Government. The word 'state' became 'statistics'.

'Statistics' word can be used as 'singular' or 'plural'. Statistics, when it is used as singular, is a science which deals with functions such as (i) Collection of data (ii) Classification of data (iii) Analysis of data, and (iv) Interpretation of data. Here data refers to information collected from the research experiment conducted in the laboratory, field or survey conducted in a village, district, state or country. Statistics when it is used in plural sense, refers to mere 'facts' and 'figures', e.g., the data or figures published in journals such as 'Economic Times', 'Financial Express'. Agricultural situation in India, demographic statistics, etc., are called statistics when it is used in plural sense. However, we deal in this book statistics used in singular sense.

Biostatistics: Application of statistical methods/techniques to biological data for analysis and drawing conclusions is known as biostatistics.

2 Biostatistics and Research Methodology

Statistics has to be handled carefully since if it is used properly and appropriately it gives valid and accurate conclusions. If it is not properly used in cases such as (i) data are not reliable (ii) computing spurious correlations between variables, and (iii) generalizing from a small sample to a large area or population without considering sampling errors involved.

The reliable data is basic necessity for application of statistical techniques just as strong foundation for multistoreyed building.

If it is ensured that data is reliable and is properly handled by a 'skilled statistician' the mistrust of statistics will disappear and, in place of it, precise and exact revelation of data will come up for reasonable conclusions.