Description

Biostatistics in clinical research is important to collect, analyze, present, and interpret data. It finds applications in various fields such as epidemiology, clinical trials, population genetics, systems biology, and more. In clinical research, it helps in making decisions regarding the efficacy and safety of a drug, line of treatment, or therapy.

This ebook gives an overview of the concepts in hypothesis testing, error types, power and sample size, interpreting relationship among variables, and multiplicity issue in clinical trials. This ebook will offer structured and comprehensive information to early-stage clinical researchers and students who are interested in learning about the use and interpretation of biostatistical data in clinical studies. This information will also help readers who want to understand the statistical approach and methods used in scientific research papers.

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Here's what you can expect from "A Quick Guide to Biostatistics in Clinical Research".

Hypothesis

A research process starts with identifying a gap in the knowledge area and framing a hypothesis to validate the prediction. In this section of the ebook, we will look at

1. Definition and types of hypothesis
2. Characteristics of a good hypothesis
3. Study designs

Hypothesis Testing

A hypothesis will be accepted or rejected based on the interpretation of supporting data. In this section, we will learn about

1. Interpretation using p-value
2. Misinterpretation of p-value

Types of Errors

Sometimes, researchers may arrive at a wrong conclusion. In this section, we will learn about

1. Types of errors
2. How do these errors arise

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Power of a Statistical Test

Power of a statistical test is important to evaluate the likelihood of detecting an effect when it exists. In this section, we will look at

1. Defining and interpreting power
2. Factors influencing the power of a test

Sample Size

It is important to determine the appropriate sample size for a clinical researcher to observe the desired/predicted effect. In this section, we will look at

1. Understanding sample size
2. Factors affecting sample size

Relative Risk & Odds Ratio

Relative risks and odds ratio are important parameters in epidemiology studies to arrive at a conclusion based on an association between an outcome and exposure. In this section, we will learn about

1. Understanding relative risk and odds ratio
2. Calculating these parameters

Correlation & Regression

Correlation and regression are important in evaluating the nature and strength of a relationship among different independent variables. In this section, we will learn about

1. Understanding correlation and regression
2. Interpreting results

Multiplicity Issue

Many times, clinical trials face issues due to multiple endpoints, subgroups or statistical tests, resulting in the false impression of relationships and associations. In this section, we will learn about

1. Why multiplicity issue arises and its implications
2. Few ways to handle this issue

This e-book is a quick guide to biostatistics for early-stage researchers, clinicians, and students.

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Category

1. Free Resources

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