Lecture 2

Biostatistics

**Presentation of Data**

By

Dr. Lamya Al-Aazzawi

Data is pieces of information, such as numbers collected from measurement and counts obtained during research study known as data to give a full picture of classification data can be divided into two types

**Two types of data as follows:**

**1.Discrete data have** only one of a limitedset of values and are counted only in whole numbers. Discrete variables may include things like hair color, gender, and number. These data are qualitative in nature

**2.Continuous data are** measurements made from a value within a defined range. Variables a long continuum such as temperature, scores on test, and time. These data are quantitative in nature.

**Different scales of measurement are used for discreet and continuous data**

Discreet data can use nominal or ordinal.

* **Nominal scales** of measurement consist of named categories with no order. For example, females may be placed in category A and males in category B.
* **Ordinal scales** of measurement consist of categories of variables in which the categories are in order, but there is no equal or defined distance between them.

**Continuous data use interval and ration scales**

* **Interval scales** of measurement have equal distance between variables, but there is no true zero point (i.e., temperature on Fahrenheit thermometer)
* **Ratio scales** of measurement have equal intervals between the variables, but there is a meaningful zero point (i.e., height and weight)

Types of Data.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Types of data** | **Characteristics** | **Examples** | **Related Scales of Measurement** | **Appropriate data display** |
| Discrete | Limited set of values, representative as whole numbers, qualitative | Hair color, number of times a person brushes | Nominal (named categories, e.g. male or female  Ordinal (same as nominal but categories in order; stages of cancer | Bar graph |
|  |  |  |  |  |
| Continuous | Particular value within a range variable a long a continuum, quantitative | Temperature, test scores, time | Interval (same as ordinal plus equal distance between variables but no zero; e.g., Fahrenheit  Ratio (same as interval plus equal distance between variable with zero; e.g., height, weight | Histogram |

**Tabulation**

* General principles
* Use a clear and concise title that describes person, place, and time — what, where, and when — of the data in the table. Precede the title with a table number
* The table should be numerical e.g. table 1,2
* A Title should be given to each table which should be brief and explanatory
* The heading of columns or rows should be clear or concise
* The table should not be too large
* Foot notes may be given, where necessary providing explanatory notes or additional information

**Simple table**

When characteristics with values are presented in the form of table it is known as simple table

**Frequency distribution table**

* In the frequency distribution table, the data is first split up into convenient groups (class interval) and the number of items (frequency) which occur in each group is shown in adjacent columns
* Hence it is a table showing the frequency with which the values are distributed in different groups or classes with some defined characteristics

**Charts and Diagrams**

* Charts and diagrams are useful methods of presenting simple data.
* They have powerful impact on imagination of people.
* Gives information at a look
* Diagrams are better retained in memory than statistical table.

**Common diagrams**

* **Simple bar graph. It** is often used to display nominal or ordinal data that are discrete in nature.
* **Multiple diagram**
* **Histogram**. Although a type of bar graph is used most often to represent interval or ratio scaled variables that are continuous in nature
* **Frequency polygon. It** is used to present data that are continuous in nature
* **Scatter diagram.**

**Line diagram**

**Bar charts**

* The data presented is categorical
* Data is presented in the form of rectangular bar of equal breath
* Each bar represents one variant/attribute
* Suitable scale should be indicated and scale started from zero
* The bar may be vertical or horizontal

**Histogram**

This diagram is used to represent qualitative data of continuous type A histogram is a bar diagram without gap between the bars. It represents a frequency distribution

**Pie Diagram**

These are popularly used to show percentage breakdowns for qualitative data. It is so called because the entire graph looks like a pie and its components represent slices cut from a pie. A circle is divided into different sector corresponding to the frequencies of the variables in the distribution. This diagram cannot represent two or more data set