

BASIC STATISTICS IN MEDICAL PRACTICE

Pages with reference to book, From 252 To 254

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REPRESENTATION OF DATA

Tabulation, is a method of condensing and representing statistical data in an intelligible form. Many people do not like to represent their data in figures could be avoided. This purpose is achieved by representing statistical data visually. Which is known as “Graphical Representation¹. Such visual representation can be divided into two main groups i.e., graphs and diagrams. The basic difference between a graph and a diagram is that a graph is a representation of data by continuous curve, while a diagram is one, two or three dimensional form of visual representation.

There are several kinds of diagram/chart and graph which are used for presentation of data².

1. Simple Bar chart
2. Dot Frequency graph
3. Multiple Bar chart
4. Pyramid Bar chart
5. Histogram
6. Frequency Polygon
7. Pie chart Simple Bar chart

1.Simple Bar chart

This is the most useful and widely used form of graphical presentation. It is used to compare two or more co-ordinate items. Comparison is based on direct linear values. The length of the bar is determined by the value of each category. The bar are usually arranged according to relative magnitude of items, for example

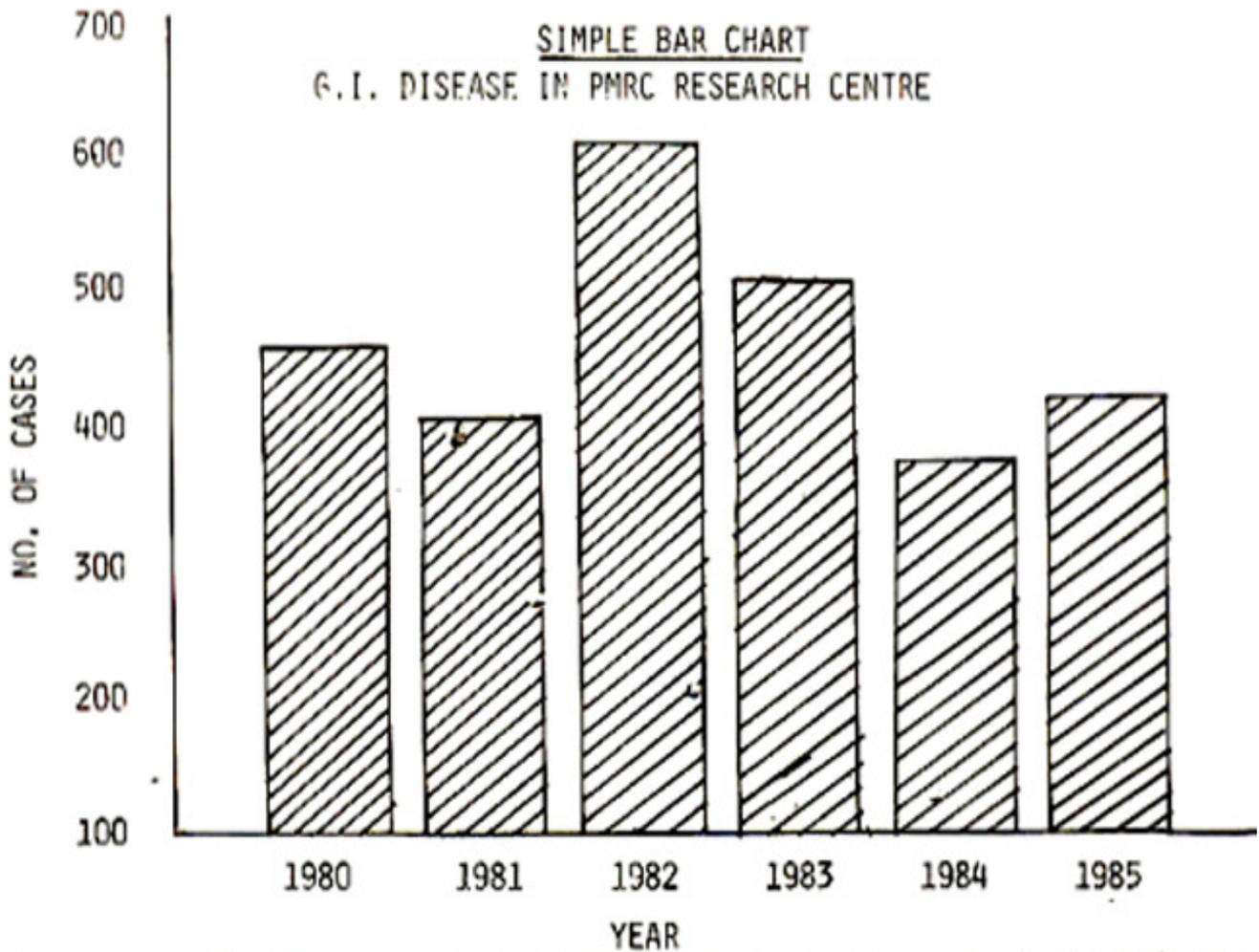


Figure1. Simple Bar Chart G.I. disease in PMRC Research Centre.

figure 1 represents the number of cases of Gastrointestinal disease in 6 years in PMRC Research centre. A bar is assigned to each year on the X-axis and Y-daxis represents number of malignant cases.

2. Dot Frequency graph

This graph is used in cases where data is not grouped in intervals, for example consider the percent distribution of healing in duodenal ulcer cases in relation to site of ulcer.

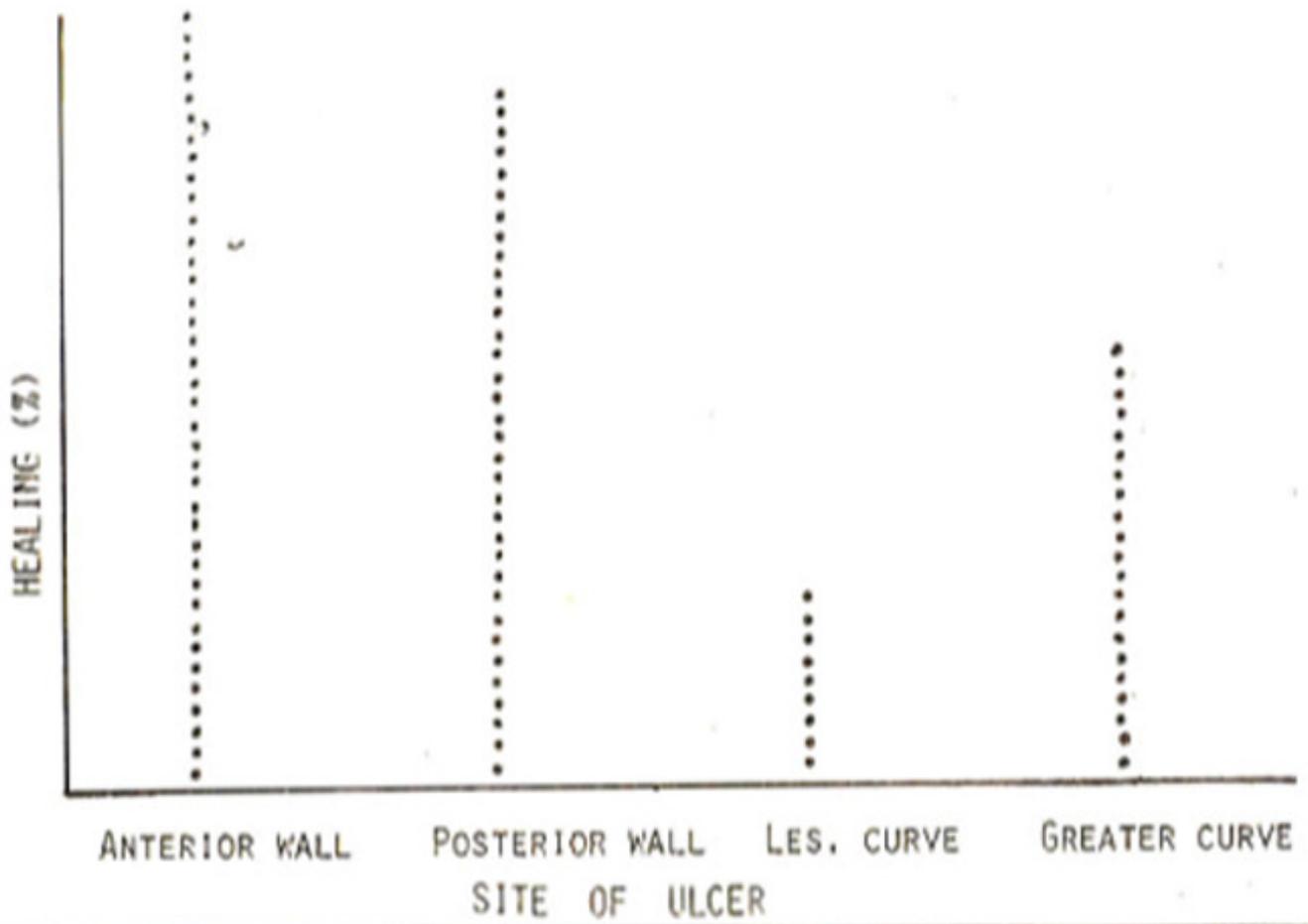


Figure 2. Dot Frequency Graph.

Figure 2 the number of healed patients is represented by dot. One dot represents a frequency of 1, 2 dots represent a frequency of 2 and so on.

3. Multiple Bar chart

This is also known as grouped bar or compound bar chart. It is used for comparing magnitudes of two or more categories for example to see the relation of site of ulcer to pain, bleeding and perforation (Figure 3).

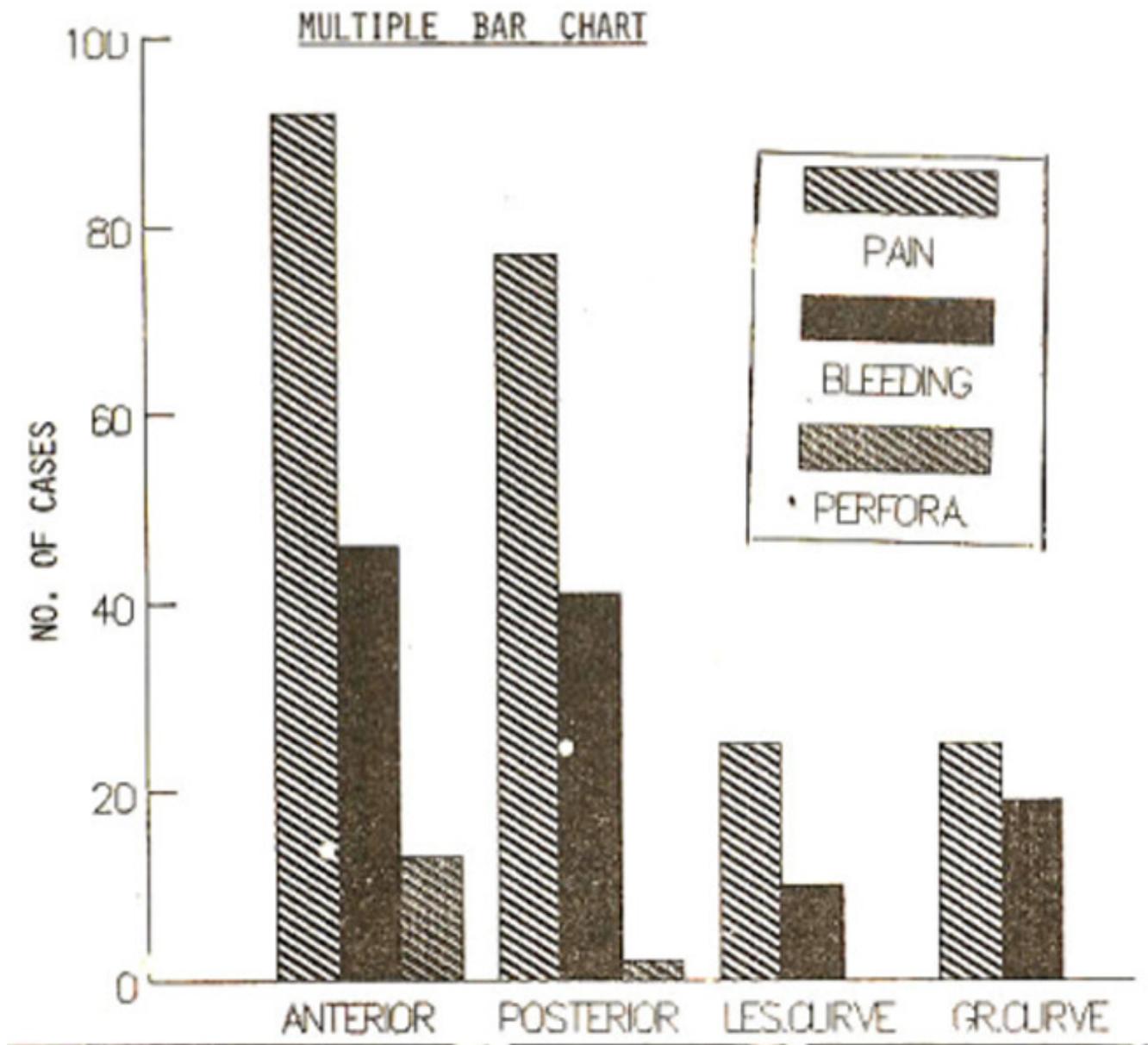


Figure 3. Multiple Bar Chart.

4. Pyramid Bar chart

The age and sex pyramid is basically a two way or bilateral histogram. It is used to show certain types of population data with X & Y-axis reversed. It is seen from the chart that class intervals are indicated by vertical axis and the numerical or percentage frequency by the horizontal axis. In a normal population the general configuration of this chart is pyramidal or triangular. This appears quite evident as the population in higher age groups is normally much less than in other groups (Figure 4).

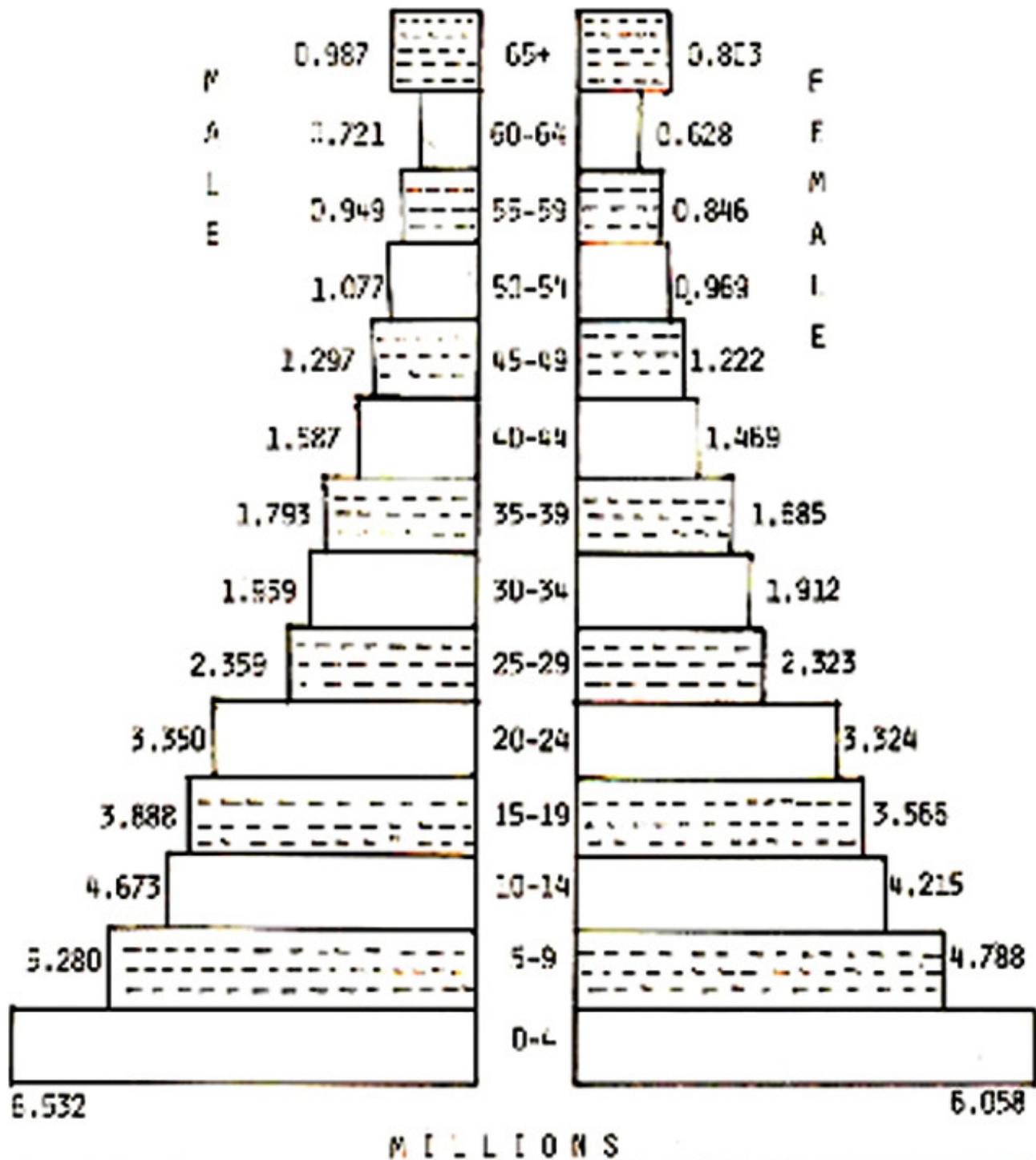


Figure 4. Pyramid Bar Chart. Pakistan population-1975 by age and sex.

5. Histogram

The Histogram is similar to the bar graph but there are no spaces between the bars. it is usually used to illustrate the frequency distribution. In a histogram the group boundaries are marked off with a uniform scale on the horizontal axis and the frequencies are shown on the vertical axis. A histogram is made by drawing vertical lines at the limits of class intervals and forming a series of continuous rectangular columns. The area of each rectangle represents the respective class frequency, for example see figure 5,

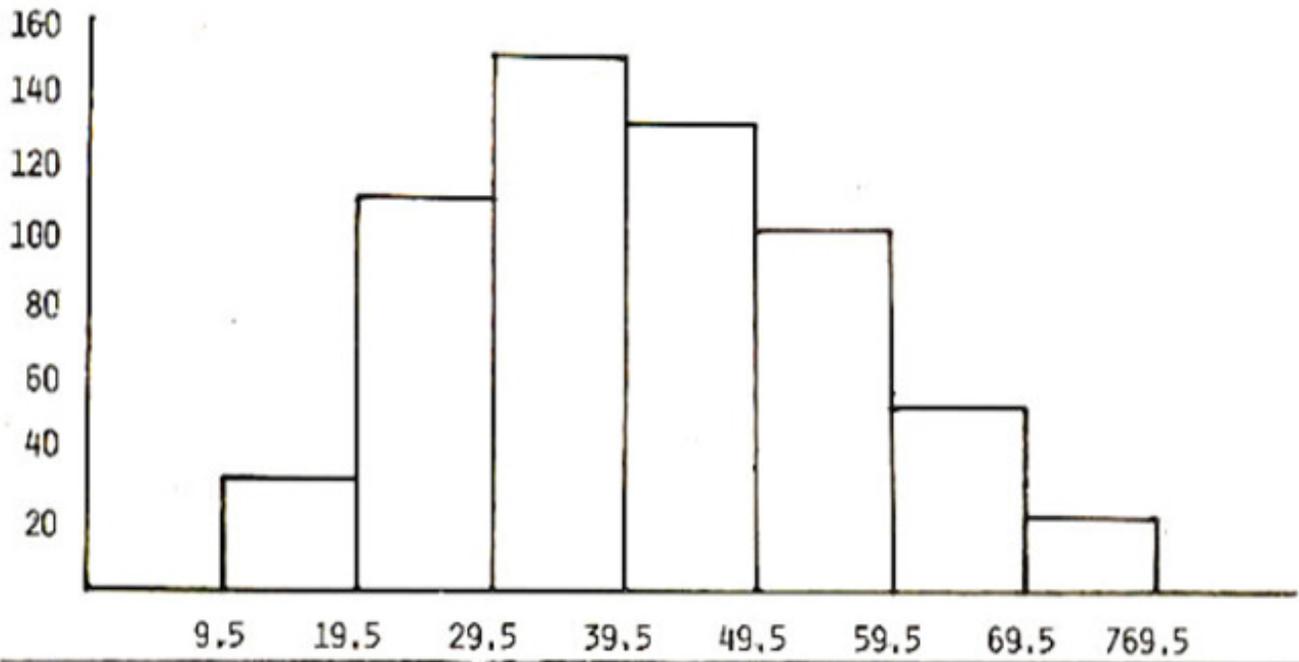


Figure 5. Histogram. Frequency Distribution of duodenal ulcer in different age group.

where data used are the frequency of duodenal ulcer by 10 years age groups, along the X-axis age groups have been taken and percentages have been shown along the Y-axis. The size of various class intervals is equal and heights of histogram are proportional to the frequencies of various class intervals. The maximum frequency of the duodenal ulcer is in the age group 30-39 years.

6. Frequency Polygon

Some times a frequency is also used to graph a frequency distribution. It is like a histogram in its vertical and horizontal scales. It is drawn by connecting the middle points of upper bases of the histogram bars. The middle points are joined by means of a smooth free hand curve. The curve in most of the cases is bell shaped (Figure 6).

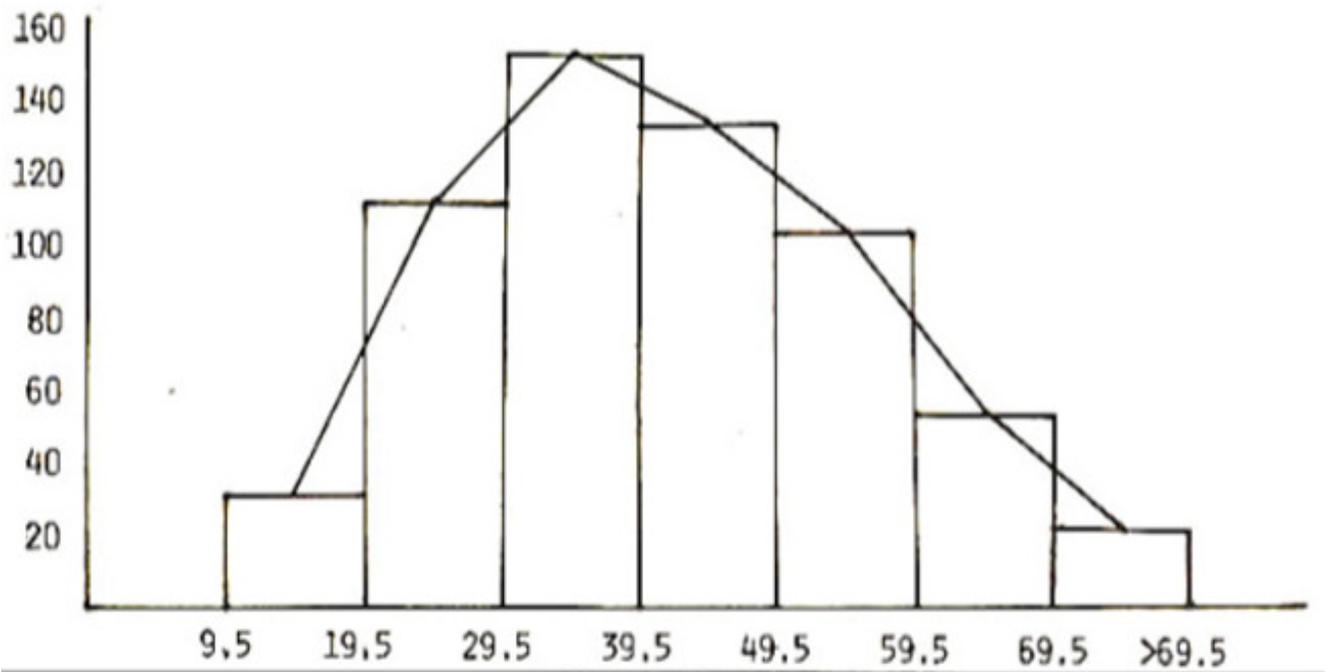


Figure 6. Frequency Polygon. Frequency distribution of duodenal ulcer in different age groups.

7. Pie Chart

It is easier to make comparisons of various components with each other and with the whole with pie or sector chart. It is not only difficult to compare area segments but also difficult to label them properly specially when there are many segments.

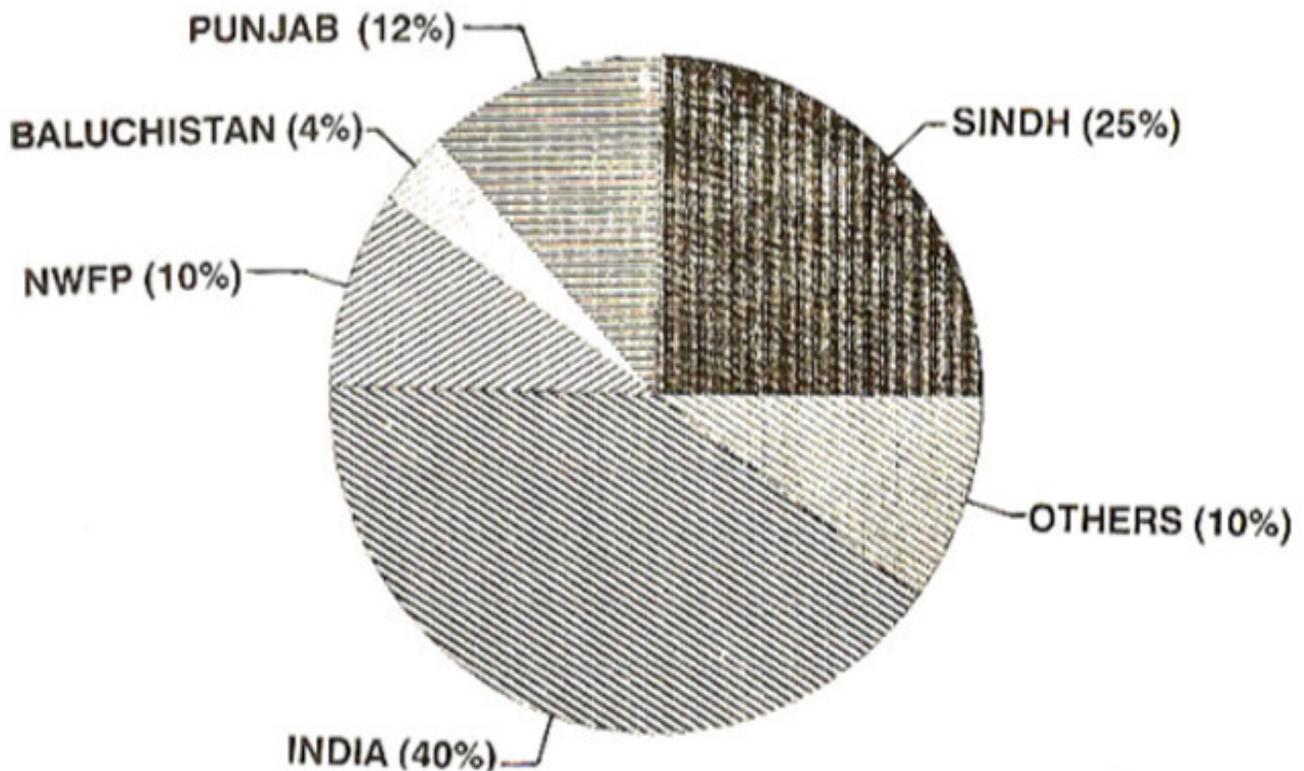


Figure 7. Pie-chart. Percentage of different place of birth in duodenal ulcer patient in PMRC.

Figure 7 represents the percentages of different place of birth in duodenal ulcer disease in PMRC Research Centre. The circle has been divided into five sectors i.e. 1. Sind, 2. Punjab, 3. Baluchistan, 4. NWFP, 5. India, 6. Others. The whole circle represents that total contribution is equal to 100. Percentages have been calculated for different sectors.

REFERENCES

1. Chaudhiy, S.M. Introduction to Statistical meow Part-I, Markazi Kutub Khana, Urdu Bazar, Lahore, 1975; pp. 25-26.
2. Siddiqui, M.A., Presentation of data in Medical Research. Pakistan Medical Research Council, Minhas House Annex; PECHS, Karachi, pp.4-27.