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Subject

Research Methodology

Q4:- What is meant by prevalence in research? Also explain point & period prevalence?

Ans: Prevalence:-

* Prevalence quantifies the proportion of individuals in a population who have the disease at a specific instant & provides an estimate of the probability (risk) that an individual will be ill at a point in time.

* The formula for calculating the prevalence of a disease / Total population (at a given point in time)

$$P = \frac{\text{number of existing cases}}{\text{Total population}}$$

→ Point prevalence:-

* Prevalence can be thought of as the status of the disease in a population at a point in time & as such is also referred to as point prevalence.

* This "point" can refer to a specific point in calendar time or to a fixed point in the course of events that varies in real time from person to person, such as the onset of menopause or puberty or the third postoperative day.

→ Period prevalence:-

* It represents the proportion of cases that exist within a population at any point during a specified period of time.

* The numerator thus includes cases that were present at the start of the period plus new cases that developing during this time.

Example:- Frequency of patients receiving psychiatric Rx between May 31 - Dec 01-08

Q No ③

Ans:-Mean:-

Given Data:-

48, 50, 68, 70, 77, 79, 89, 90, 92

Mean Formula:-

$$\text{Mean} = \frac{\sum x}{n}$$

By putting value:-

$$\text{Mean} = \frac{663}{9}$$

$$\boxed{\text{Mean} = 73.66}$$

Median:-

$$\text{Median} = \frac{n+1}{2}$$

$$\text{Median} = \frac{9+1}{2}$$

Median = 5th term in given data.

$$\boxed{\text{Median} = 77}$$

(when data is arranged in order of
lowest to greatest)

Mode:-

Mode = 0 because there is no repetition of data in a set of given observation.

Q5:- What is Hypothesis?
Also explain different steps in testing of Hypothesis?

Ans:- Hypothesis:-

A testable theory, or statement of belief used in evaluation of a population parameter of interest
example:- Mean or proportion.

→ Suppose a study is being conducted to answer questions about differences b/w two regimens for the management of diarrhea in children.
→ The sugar based modern ORS and the time tested indigenous herbal solution made from locally available herbs.

→ Steps in Testing of Hypothesis:-

(1) Statement of research questions in terms of statistical hypothesis (Null & alternate hypothesis)

(2) Selection of an appropriate level of significance. The significance level is the risk we are willing to take that a sample which showed a difference was misleading. 5% significance level means that we are ready to take a 5% chance of wrong results.

(3) Performing calculations & obtaining p value.

Drawing conclusions, rejecting null hypothesis if the p value is less than the set significance level.

Q3:- Differentiate b/w Relative risk and odd ratio with example?

Ans: Relative Risk:-

Incidence in exposed individuals
 $S = a/a+b$ or proportion of exposed people who developed the disease.

Incidence in non-exposed individuals
 $S = c/c+d$ or proportion of non-exposed people who develop disease.

$$\text{Relative Risk} = \frac{\text{Incidence in exposed}}{\text{Incidence in Non-exposed}}$$

$$RR = \frac{a/a+b}{c/c+d}$$

Example:-

	CHD ⁺	CHD ⁻	Total
Smoker	112	176	288
Non-Smoker	88	224	312

$$\begin{aligned} \text{Incidence in exposed} &= a/a+b = \\ &= 112/288 = 0.38 \end{aligned}$$

$$\begin{aligned} \text{Incidence in non-exposed} &= c/c+d = \\ &= 88/312 = 0.28 \end{aligned}$$

$$RR = 0.38 / 0.28 = 1.38$$

⇒ Odds Ratio:-

Incidence cannot be measured in Case Control Studies b/c we start with the diseased people (cases) & non diseased people (control)
Hence we calculate or

Example:-

	Case	Control
Exposed	a	b
Non-Exposed	c	d

$$OR = \frac{a/c}{b/d} \text{ or } \frac{ad}{bc}$$

	Case	Control	Total
Exposed	140 a	370 b	510
Non-Exposed	40 c	234 d	274

$$\text{odds} = 140/40 = 3.5$$

$$\text{odds} = 370/234 = 1.6$$

$$\text{or} = 3.5/1.6 = \boxed{2.2}$$

Compared to the control the odds of being a passive smoker are 2.2 in a breast case.

Q2:- Write a short note on presentation of research data?

Ans:- Presentation of Data:-

Data once collected should be presented in a such as to be easily understood -

The style of presentation depends of course - on type of data.

Data can be presented in a frequency tables charts, graph etc.

→ Frequency Tables :-

In a frequency table data is presented in a tabular form. It gives the frequency with which a particular value appears in the data.

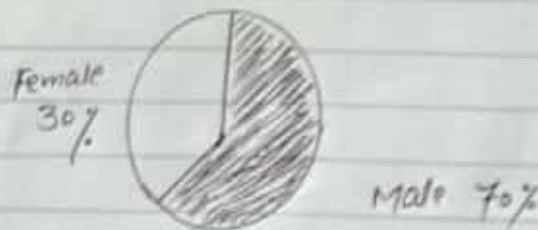
	f	Percent %	v-Percent	Cumulative percent
Strongly disagree	2	2.0	2.0	2.0
Disagree	13	13.0	13.0	15.0
Average	26	26.0	26.0	41.0
Agree	26	26.0	26.0	67.0
Strongly agree	33	33.0	33.0	100.7
Total	100	100.0	100.0	

→ Graph:-

Graph is another way to summarize and display data -
 Through the use of graphic representation of numerical data - Graph should be designed so that they convey at a single glance the general patterns in a set of data.

→ Pie Chart:-

pie chart can also be used to display nominal or ordinal ratio.
 → Gender Distributions



→ Histogram:-

A histogram describe a frequency distribution for quantitative data.