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BS (DT) 6th Semester

Assignment Research Methodology

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Attempt all questions. Each carries equal marks.

Question: 01

Nine students ---- of their scores.

Answer:

MEAN:

First we find mean of the given data or numbers. To find the mean, add up the number like;
 $50 + 79 + 70 + 48 + 90 + 68 + 89 + 92 + 77 = 663$.

663 is to obtain value of students test. Let's find the mean.

$$663/9 = 73.66$$

So, the mean is 73.66 of whole students.

MODE:

The repeating value is the mode of that data or number. So, here is no repeating value.

So no mode of this data or number

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MEDIAN:

Finding median now, total number in set is 9.

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

If we arrange this set of given data or number like

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

Its median is 77.

or,

In random form its median is 90.

Question: 02

Write a short --- research data.

Answer:

PRESENTATION OF RESEARCH DATA:

This refers to organization of data into tables, charts, graphs, so that logical and statistical conclusion can be derived from the collect measurements

Data may be present in 3 methods which are as follows.

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- Textual
- Tabular
- Graphs.

TEXTUAL PRESENTATION:

- The data gathered are present in paragraph form.
- Data can be written and read.
- It is the combination of text and figures.

TABULAR PRESENTATION:

- Mode of presentation data using the statistical table.
- A systematic and logical arrangement of data in the form of columns and rows with respect to the characteristics of the data.

GRAPHICAL PRESENTATION:

A chart is a graphical representation of data, in which "the data is represented by symbols, such as bars in a bar chart, lines in a line chart, or slices in a pie chart".

Kind of graphical presentation.

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BAR GRAPH:

used to show relationship between groups.

PIE OR CIRCLE CHART:

Can be used to display nominal and ordinary data.

HISTOGRAM GRAPH:

Histogram is a graphical representation that organizes a group of data points into user specified ranges. It is similar in appearance to a bar graph.

LINE GRAPH:

Most useful in displaying data that change continuously over time.

Question: 03

Differentiate --- with example.

Answer:

RELATIVE RISK:

- Incidence in exposed individuals
 $= a/a+b$.

Or proportion of exposed people

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people who developed the disease

• Incidence in non-exposed - individuals = $c/c+d$.

Or proportion of non-exposed people who develop disease

Relative Risk = $\frac{\text{incidence in exposed}}{\text{incidence in non-exposed}}$

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

Example:

For example you could have two groups of women. One group has a mother, sister or daughter who has had breast cancer. The other group does not have any close female relative who have had the disease.

The group with close family members who have had the disease or more likely to develop breast cancer.

ODDS RATIO:

Incidence cannot be measured in case control studies because we

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start with the diseased people (cases) and non-diseased people (controls), hence we calculate OR

Example:

For example in the treatment group the odds of an event is in the number of tutored students who failed a class / the number of students in the tutored group who passed all their classes.

The numerator is the same as that of a probability but the denominator here is different. It's not a measure of events out of all possible events. It is a ratio of events to non-events

You can switch back and forth between probability and odds both give you the same information just on different scale.

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Question: 04

What is meant by --- prevalence.

Answer:

PREVALENCE:

- Prevalence quantifies the proportion of individuals in a population who have the disease at a specific instant and provides an estimate of the probability (risk) that an individual will be ill at a point in time.
- The formula for calculating the prevalence $P = \frac{\text{number of existing cases of a disease}}{\text{total population}}$ (at a given in time)

POINT PREVALENCE:

- Prevalence can be thought of as the status of the disease in a population at a point in time and as such is also referred to as point prevalence.
- This "point" can refer to a specific point in calendar time

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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 developed during this time
e.g. Frequency of patients receiving psychiatric Rx between May 31 - Dec 31, 12

Question: 05

What is hypothesis --- steps?

Answer:

HYPOTHESIS:

A testable theory, or statement

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of belief used in evaluation of a population parameter of interest
e.g: Mean of proportion.

STEPS:

- 1 Statement of research question in terms of statistical 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 result.
- 3 Choosing an appropriate statistics
t test, z test for continuous data, chi square for proportions etc.
Test statistics is computed from the sample data and is used to determine whether the null hypothesis should be rejected or retained

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Test statistics generates p value
P value: Indicates the probability or likelihood of obtaining a result at least as extreme as that observed in a study by chance alone, assuming that there is truly no association between exposure and outcome under consideration.

By convention the p value is set at 0.05 level. Thus any value of p less than or equal to 0.05 indicates that there is at most a 5% probability of observing an association between exposure and outcome. If p value $>$ 0.05 do not reject the null hypothesis.
