

Name: Zeeshan Ali shah

ID: 13954

Subject: Research Methodology

BS dental

Semester 6th

Final exam

Q#1: Nine students take a test.....

Ans: Means:

Means= 48,50, 68,70,77, 79,89,90,92= 663/9

Mean=663/9 = 73.66

Mode:

No mode

Median:

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

Median= 77.

Q#2: Write a short note on presentation of research data.

Ans: Presentation of data this refers to the organization of data into tables, graphs or charts, so that logical and statistical conclusion can be delivered from the collected measurements.

Tabular presentation method of presentation data using the statistical table.

Q#3: Differentiate between relative risk and odd ratio with example?

Ans: 1. Relative risk.

- Incidence in exposed individual

$S = a/a + b$  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.

Relative risk= Incidence in exposed/ incidence in non exposed.

$$RR = (a/a+ b)/ (c/c+d)$$

Example:-	CHD+	CHD-	Total
Smoker	112	176	288
Non smoker	88	223	312

Incidence in exposed=  $a/a+ b = 112/288 = 0.38$  Incidence in non exposed=  $c/c+d = 88/ 312= 0.28$

$$RR = 0.38 / 0.28= 1.38$$

## 2. Odds Ratio:

Incidence cannot be measured in case control studies because we start with the disease people ( cases) and non disease people ( control), hence we calculate or example:-

	Case	Control	
Exposed	a	b	a+b
Non exposed	c	d	c+d

OR =  $(a/c)/ (b/d)$ . Or  $ad/bc$

			Total
Exposed	140a	370b	510
Non exposed	40c	234d	274

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

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

$$OR = 3.5/ 1.6 = 2.2$$

Compared to the control the odds of being a passive smoker are  $2.2 >$  in ca brest case.

Qs#4: what is ment by prevalence in research? Also..... .

Ans: 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 point 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 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 on 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 plus new cases that developed during this time.

E.g:- Frequency of patients receiving psychiatric Rx between May 31-dec 01 2008.

Qs#5: What is Hypothesis? Also explain..... . .

Ans: Hypothesis:-

A testable Theory, or statement of belief used in evaluation of a population parameter of interest e.g. mean or proportion.

1. Steps in Hypothesis testing:

- Statement of research question in terms of statistical Hypothesis ( Null and 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. Steps in Hypothesis testing:

Choosing an appropriate statistics test, z test for proportional etc. Test statistics is computed from the sample data and is used to determine whether the null hypothesis should be rejected or retained. Test statistics generates P value.

P value:- Indicates the probability or likelihood of obtaining a result at least as extreme as assuming that there is truly no association between exposure and outcome under consideration.

Performing calculations and obtaining P value.

Drawing conclusions rejecting new hypothesis if the P value is less than the set significance level.

á alpha and B beta error

|Accept HO Hypothesis |

| true HO Hypothesis correct Decision |

| False HO Hypothesis wrong decision B error|

| Reject HO Hypothesis | wrong decision a error|

| Correct Decision |