**Grand Assignment**

**DPT 6th semester**

**Course Title: Teaching Methodology and community medicine**

**Instructor: Dr. M. Shahzeb khan (PT)**

**Marks: 20**

**Note:**

**INTERNAL ASSESSMENT MARKS WILL BE GIVEN ON BASIS OF GRAND ASSIGNMENT**

**Topics**

**Q1:** How will you conduct “Case Control study”

Explain it with Example

**ANS:**

**CASE CONTROL STUDY:**

**Definition:**

Case-control and cohort studies are observational studies that lie near the middle of the hierarchy of evidence. These types of studies, along with randomised controlled trials, constitute analytical studies. It is a type of observational study in which two existing groups differing in outcome are identified and compared on the basis of some supposed causal attribute. It is suitable for rare diseases.

**Purpose of Case Control Studies:**

1. To determine whether or not an association exists between a disease and a particular risk factor.
2. To start with a group of people with disease and work back to see whether a possible risk factor may be the cause.
3. It may be the first step in testing a hypothesis. If positive, it can then be tested in a cohort study.

**Control group selection:**

Controls need not be in good health; inclusion of sick people is sometimes appropriate, as the control group should represent those at risk of becoming a case. Controls can carry the same disease as the experimental group, but of another grade/severity, therefore being different from the outcome of interest. However, because the difference between the cases and the controls will be smaller, this results in a lower [power](https://en.wikipedia.org/wiki/Statistical_power) to detect an exposure effect.

**STEPS IN CONDUCTING CASE CONTROL STUDIES:**

**STEP#1:** Define, determine and select cases of your research interest. Controls must have as similar a background as possible to the cases, except that they do not have the outcome in question. They should come from the same population as the cases.

**STEP#2:** Select the appropriate controls. This is a very important step. Get this wrong and you introduce bias into the study. Controls should represent the population that the cases come from (i.e. they should be at risk of becoming new cases).

**STEP#3:** Measure the exposure status in both cases and control. The measurement of the exposure(s) must be collected in a comparable way for cases and controls.

**STEP#4:** Analyse and interpret any difference for the statistical significance.

**EXAMPLES:**

1. [This study](https://www.ncbi.nlm.nih.gov/sites/entrez?orig_db=PubMed&db=pubmed&cmd=Search&TransSchema=title&term=Autoimmune%20and%20chronic%20inflammatory%20disorders%20and%20risk%20of%20non-hodgkin%20lymphoma%20by%20subtype) for non-Hodgkin lymphoma found a connection between the disease and inflammatory disorders like Celiac and rheumatoid arthritis.
2. [This study](http://cebp.aacrjournals.org/content/10/11/1219.long)investigated how increased consumption of fruits and vegetables protects against Cervical Intraepithelial Neoplasia.
3. [This INTERHEART study](https://www.ncbi.nlm.nih.gov/pubmed/16920470) looked at second hand tobacco smoke and increased risk of myocardial infarction.

**Q2:** How will you conduct “Cohort study”

Explain it with Example

ANS)

**COHORT STUDY**

**DEFINITION:**

A cohort study is a particular form of longitudinal study that samples a cohort (a group of people who share a defining characteristic, typically those who experienced a common event in a selected period, such as birth or graduation), performing a cross-section at intervals through time. a type of medical research used to investigate the causes of disease and to establish links between risk factors and health outcomes.

**EXPLANATION:**

* The word cohort means a group of people. Retrospective cohort studies look at data that already exist and try to identify risk factors for particular conditions. Interpretations are limited because the researchers cannot go back and gather missing data. These long-term studies are sometimes called longitudinal studies.
* In a prospective cohort study, researchers raise a question and form a hypothesis about what might cause a disease.
* Then they observe a group of people, known as the cohort, over a period of time. This may take several years. They collect data that may be relevant to the disease.
* In this way, they aim to detect any changes in health linked to the possible risk factors they have identified.

For example, scientists may ask participants to record specific lifestyle details over the course of a study. Then, they can analyze any possible correlations between lifestyle factors and disease.

**STEPS FOR THE CONDUCTION OF COHORT STUDY:**

There arefive steps in a cohort study:

1. ***SELECTION OF STUDY POPULATION:***

Identify the study subjects; i.e. the cohort population.

1. ***OBTAINING DATA:***

Obtain baseline data on the exposure; measure the exposure at the start. (The exposure may be a particular event, a permanent state or a reversible state.)

1. ***SELECTION OF COMPARISON:***

Select a sub-classification of the cohort—the unexposed control cohort—to be the comparison group.

1. ***FOLLOW UP:***

Measure the outcomes using records, interviews or examinations. (Note: Outcomes must be defined in advance and should be specific and measurable.)

1. ***ANALYSIS:***

Do the data analysis where the outcomes are assessed and compared.

**Cohort Effect Example**

Lets say you were conducting [cross sectional research](https://www.statisticshowto.com/experimental-design/#CrossResearch) (a method that compares different age groups at the same point in time) to find out how basic mathematics ability improves with age. You give the same basic math standardized test to groups of students who are 7-years-old, 14-years-old, and 21-years-old. You get the following [mean](https://www.statisticshowto.com/mean/)results:

* 7-years-old: 24% correct
* 14-years-old: 48% correct
* 21-years-old: 72% correct

ALL THE STUDENTS ARE REQUESTED TO UPLOAD YOUR ASSINGMENT BEFORE FINAL TERM EXAM