IIHMR DELHI | INTERNATIONAL INSTITUTE OF HEALTH MANAGEMENT RESEARCH

Post Graduate Diploma in Management (Hospital & Health Management)

PGDM – 2024-26 Batch

1st Year – 1st Semester End Examination

Subject & Code	:	**Essentials of Epidemiology (EE)-CC 605**	**Reg. No.**	:	
Semester & Batch	:	**I, 2024-26**	**Date**	:	**30-12-2024**
Time & Duration	:	**10:30 A.M.-01:30 P.M. (3 Hrs.)**	**Max. Marks**	:	**70**

Instructions:

- Budget your time as per the marks given for each question and write your answer accordingly.
- Don't write anything on the Question Paper except writing your Registration No.
- Mobile Phones are not allowed even for computations.

Part A: Q.1 to Q.10 all questions are compulsory (10 X 2 Marks = 20 Marks)
One liner, MCQs, True/False

1. Which of the following elements is NOT emphasized in John M. Last's definition of epidemiology?
- ***a)*** Systematic study of the frequency and pattern of health events
- ***b)*** Focus on health interventions to control diseases in populations
- ***c)*** Observation of health events in individual patients
- ***d)*** The identification of factors that influence health and disease outcomes

2. Which of the following statements best defines a ratio in the context of disease frequency?
- **a)** The number of new cases divided by the total population.
- **b)** The comparison of the number of cases in one group to the number in another group.
- **c)** The proportion of individuals affected by a disease.
- **d)** The average age of patients diagnosed with a disease.

3. Which of the following statements best describes the difference between descriptive and analytical epidemiology?
- **a)** Descriptive epidemiology focuses on the "who, what, where, and when" of disease occurrence, while analytical epidemiology investigates the "how" and "why" to determine risk factors and causation.
- **b)** Descriptive epidemiology only examines disease frequency, while analytical epidemiology solely focuses on the population at risk.
- **c)** Descriptive epidemiology uses complex statistical models, while analytical epidemiology relies on simple counts and rates.
- **d)** Descriptive epidemiology is concerned with individual case studies, while analytical epidemiology looks at entire populations.

Contd…2..

4. In which scenario would a case series be particularly useful?

a) When exploring rare diseases
b) When establishing new treatment protocols
c) When comparing the effectiveness of two medications
d) When assessing the safety of a new drug in a large population

5. Which of the following best describes an analytical cross-sectional study?

a) It evaluates the prevalence of a disease without comparing groups.
b) It examines the relationship between exposure and outcome within a population at one time.
c) It involves a longitudinal approach to track changes over time.
d) It randomly assigns subjects to different interventions.

6. A clinical trial is conducted to evaluate a new drug's effectiveness in reducing blood pressure. Participants are randomly assigned to receive either the new drug or a placebo. After six months, researchers compare the blood pressure readings of both groups. What type of study design is being utilized?

a) Cohort Study
b) Quasi-Experimental Study
c) Randomized Controlled Trial
d) Analytical Cross-Sectional Study

7. Assertion and Reasoning

Assertion:

Quasi-experimental designs do not involve random assignment of participants to treatment and control groups.

Reasoning:

These designs are often employed when random assignment is not feasible or ethical, and they typically rely on naturally occurring groups for comparison.

Choose the correct option:

a) Both the assertion and reasoning are correct, and the reasoning correctly explains the assertion.
b) Both the assertion and reasoning are correct, but the reasoning does not correctly explain the assertion.
c) The assertion is correct, but the reasoning is incorrect.
d) The assertion is incorrect, but the reasoning is correct.

8. Assertion and Reasoning

Assertion (A):

Matching is a technique used to control for confounding variables in observational research by pairing participants based on shared characteristics.

Reasoning (R):

By pairing participants from different groups based on similar characteristics, matching ensures that the groups are comparable and eliminates bias from confounding variables.

Contd…3..

Choose the correct option:

a) Both the assertion and reasoning are correct, and the reasoning correctly explains the assertion.
b) Both the assertion and reasoning are correct, but the reasoning does not correctly explain the assertion.
c) The assertion is correct, but the reasoning is incorrect.
d) The assertion is incorrect, but the reasoning is correct.

9. The Iceberg Phenomenon suggests that the visible symptoms of a problem represent the majority of the issue, while the deeper, underlying causes are often visible and easy to identify **(True/ False)**

10. In the Epidemiological Triad, the "agent" refers to the factors within the environment that promote the spread of disease, while the "host" refers to the environmental conditions that allow the disease to occur. **(True/ False)**

Part B: Q.11 to Q.15 attempt any four questions (4 X 5 Marks = 20 Marks)
Short Notes

11. This concept refers to the process used to establish whether an exposure leads to a specific health outcome, taking into account several criteria, such as strength, consistency, and biological plausibility. This concept is crucial in determining if an association between exposure and disease is causal.
Identify the concept and write a short note on it.

12. This technique is primarily used in clinical trials and experimental studies to ensure that each participant has an equal chance of being assigned to any of the study groups, thus minimizing bias. It is considered the gold standard for controlling confounding variables.
Identify the concept and write a short note on it.

13. These two terms describe factors that can alter the interpretation of study results. One refers to a variable that distorts the observed association between exposure and disease, while the other refers to a factor that changes the magnitude or direction of an association between the exposure and the outcome. Identify these concepts and explain the difference between them. Provide examples.

14. Epidemiology relies on certain fundamental elements to understand the distribution and determinants of health-related events in populations. These elements help in investigating the patterns and causes of disease. Identify the components of epidemiology and discuss their significance in understanding disease in populations.

15. This process is applied when comparing disease rates between populations that differ in structure (e.g., age or sex). It involves adjusting the rates to eliminate the influence of those variables, allowing for fairer comparisons.
Identify the concept and discuss why it is important when comparing rates across different populations or time periods.

Contd…4..

Part C: Q.16 to Q.20 attempt any three questions (3 X 10 Marks = 30 Marks)
Long Notes

16. In a hospital based case control study of the relationship between rheumatoid arthritis and oral contraceptive (OCP) use, the cases consist of a random sample of 100 women with rheumatoid arthritis undergoing treatment at one of the five outpatient clinics.

A) Suggest an appropriate control group for this study
B) What is the outcome variable and how might it be measured, what will be measure of association?
C) Explain in details about the Limitation and strength of such study design
D) List potential sources of bias that may compromise the conclusions of the study

17. An outbreak of food poisoning occurs in a group of students who attended a back-to-school party. The following data summarizes data obtained from 200 students who were at the party.

	Ill	Total students
Ate fried rice	90	120
Did not eat fried rice	20	80

A) What is the probability that a student becomes ill after eating fried rice?
B) What is the probability that a student who does not eat fried rice falls ill?
C) What is the probability that a student who attended the party becomes ill?
D) Explain the concept of rate, ratio, proportion and percentage with example.

18. A study is carried out to evaluate the association between alcohol consumption and death from all causes. The investigator conducting the study classifies 4550 subjects according to their monthly alcohol consumption: abstainers, light drinkers, moderate and heavy drinkers. Study participants are followed for a 10 year period, and deaths from all causes are recorded in the table below:

	Condition at the end of the study	
Alcohol consumption	Dead	Alive
Abstain	300	900
Light	500	2000
Moderate	120	380
Heavy	175	175

A) What type of design was used for the study?
B) Calculate the Relative Risk (RR) of death from any cause for a heavy drinker compared to a light drinker.
C) Calculate the RR of death from any cause for a heavy drinker compared to an abstainer
D) Explain what is RR and OR.

Contd…5..

19. One hundred children known to have been exposed to high levels of lead during the first 12 months of life were followed for 15 years; 40 developed an affective disorder. A similar group of 100 children who were not exposed to high levels during the first 12 months of life were also followed over the same time period. Five of these children developed an affective disorder.

A) Prepare a 2x2 table to present the data
B) What is the incidence of affective disorders among those exposed to high levels of lead during the first 12 months of life?
C) What is the RR and OR of developing an effective disorder for those exposed to high levels of lead compared to those not exposed?

20. You have been assigned to assess the prevalence of anemia among the workers in Goyala Dairy. You are also tasked with identifying risk factors associated with anemia in this group.

a) What study design would you choose to determine the prevalence of anemia in the Goyala Dairy population? Justify your choice.

b) Explain the steps involved.

c) How would you analyze the data to calculate the prevalence of anemia? What measures of association might be relevant to identify risk factors for anemia in this population?

d) Discuss the potential strengths and limitations of your chosen study design, and any ethical considerations you would need to address in conducting the study.