IIHMR DELHI | INTERNATIONAL INSTITUTE OF HEALTH MANAGEMENT RESEARCH

Post Graduate Diploma in Management (Hospital & Health Management)
PGDM – 2022-24 Batch

Term – 2nd Year - 4th Term Examinations

Course & Code	:	**Applied Epidemiology-HEM 702**	**Reg. No.**	:	
Term & Batch	:	**IV, 2022-24**	**Date**	:	**September 20, 2023**
Duration	:	**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.

Instructions:

- **Section A must be attempted either on the first page or on the last page of your answer sheet.**
- **In Section B, all sub-questions of a particular question MUST BE ATTEMPTED TOGETHER one after the other. Any sub-question that is answered separately WILL NOT BE MARKED.**

SECTION A: ATTEMPT ALL QUESTIONS (20 marks)

Please write the option as well as the answer (e.g.- b. RCT)

1. A researcher wants to compare death rates of 192 countries. What measure should s/he use? (1)
   a. Crude death rate
   b. Standard mortality ratio
   c. Standardized death rate
   d. Any of the above

2. Which of these measures is used to measure disease burden in the Global Burden of Disease study? (1)
   a. Quality adjusted life years
   b. Prevalence of disease
   c. Proportional mortality rate
   d. Disability adjusted life years

3. Which measure of association is commonly used in case control studies? (1)
   a. Odds ratio
   b. Relative risk
   c. P value
   d. Correlation coefficient

Contd…2..

4. Which of the following is an essential criterion for establishing causality? (1)
   a. Strength of association
   b. Specificity of association
   c. Dose response relationship
   d. Temporal relationship

5. Which of the following study designs is most appropriate for establishing causality? (1)
   a. Ecological study
   b. Case control study
   c. Cohort study
   d. Randomized controlled trial

6. When associations observed in population groups in ecological studies are applied at an individual level, this type of error is known as: (1)
   a. Volunteer bias
   b. Ecological fallacy
   c. Effect modification
   d. Sampling error

7. Compare between case control and cohort study and answer the following questions. (1*4=4)
   i. Which study design is not appropriate to study rare diseases?
   ii. Which study design is suitable to assess temporality?
   iii. Which study design involves fewer study subjects?
   iv. Which study design cannot yield information about diseases other than the disease under study?

8. Why should we avoid errors/biases in conducting epidemiological studies? (1)
   a. Because they affect internal validity
   b. Because they affect external validity
   c. Both a and b
   d. None of the above

9. Increasing sample size can reduce: (1)
   a. Sampling error
   b. Confounding
   c. Selection bias
   d. All of the above

10. Secondary attack rate can determine: (1)
   a. Severity of the disease
   b. Communicability of the disease
   c. Killing power of the disease
   d. All of the above

11. Which of the following is **FALSE** about epidemic curve? (1)
   a. It depicts the geographical distribution of cases of disease during an outbreak
   b. It can provide clues about mode of transmission
   c. It can provide information about incubation period of the disease
   d. It can provide insights into the source of infection

Contd…3..

12. A researcher wants to assess whether intense physical activity can lead to sudden cardiac arrest. Which design is most appropriate? (1)

a. Randomized controlled trial
b. Cohort study
c. Qualitative study
d. Case crossover study

13. You have to prepare a logic model for evaluating malaria control programme. Write one example each of indicators which can be used to evaluate: (1*5=5)

i. Input
ii. Process
iii. Output
iv. Outcome
v. Impact

SECTION B: ATTEMPT ANY FIVE QUESTIONS (5 x 10 marks = 50 marks)

1. Answer briefly in bullet points: (10 marks)

a. What is the importance of critical appraisal of published research studies? What are its applications? **(1+1.5)**
b. What is 'matching' in case control studies? How is a matched case control study analysed? **(1+1.5)**
c. What is an epidemic? Define 'index case' in an epidemic. **(1+1.5)**
d. What is volunteer bias? How can it affect the results of a study? **(1+1.5)**

2. Answer the following questions: (10 marks)

a. In a cohort study, 70 out of 500 smokers and 20 out of 1000 non-smokers included in the study developed lung cancer
    i. Calculate Attributable risk **(2)**
    ii. Interpret your result **(1)**
b. A study was done to find out whether any association exists between intake of oral contraceptive pills and heart disease. 55 women with heart disease and 55 individual matched controls without heart disease were selected. All women were interviewed regarding history of OCP use. The following information was obtained:
    - In 20 pairs of women, both had history of OCP use.
    - In 15 pairs of women, only the cases had history of OCP use.
    - In 5 pairs of women, only the controls had history of OCP use.
    - In 10 pairs of women, neither had history of OCP use.
        i. Calculate the odds ratio **(2)**
        ii. Interpret your result **(1)**
c. In a boarding school inhabited by 100 children, 5 cases of measles occurred on 1st December 2022. After 2 weeks a second batch of 10 cases were detected. A rapid survey revealed that 15% of the children were immunized against measles. Determine:
    i. The serial interval of the outbreak **(2)**
    ii. Secondary attack rate of measles. **(2)**

Contd…4..

3. **Answer the following: (10 marks)**
    a. An outbreak of diarrhoeal disease occurred in an urbanized village in Delhi. Describe the steps of outbreak investigation with respect to this case.

4. **Answer the following: (10 marks)**
    a. Describe the steps you will undertake to plan and conduct the evaluation of any National Health Programme of your choice in a state in India.

5. **Answer the following questions: (10 marks)**
    a. What is meant by disease surveillance? **(2)**
    b. What are the objectives of disease surveillance? **(4)**
    c. Differentiate between active and passive surveillance with examples. **(4)**

6. **Which study design will you use in the following research studies? JUSTIFY your answers. 1 mark for study design and 1.5 marks for justification. (4 x 2.5 marks = 10 marks)**
    a. A study is planned to determine the association between breastfeeding and breast cancer. The hypothesis is that women who breastfeed are at lower risk of developing breast cancer later in life.
    b. A researcher wants to assess the various sociodemographic, socioeconomic, cultural and other factors associated with household burns among adult women.
    c. A study is planned to determine whether a new infection control programme launched in few hospitals in the city are effective in reducing hospital associated infections.
    d. A researcher wants to undertake a study to explore whether clean household cooking fuel use is associated with lower rates of infant mortality.