

Post Graduate Diploma in Management (Hospital & Health Management)

PGDM – 2024-2026 Batch

2nd Year – 3rd Semester End Examination

Subject & Code : Applied Epidemiology-HEM 702

Reg. No.:

Semester & Batch : III, 2024-2026

Date : 03-11-2025

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.
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Part A: Q.1 to Q.10

All questions are compulsory (10 X 2 Marks = 20 Marks)

1. Which of the following is NOT a measure of disease frequency?
 - a. Prevalence
 - b. Incidence
 - c. Proportion
 - d. Odds ratio
2. Which of the following epidemiological study designs is best for demonstrating causality?
 - a. Cross sectional analytical study
 - b. Case-control study
 - c. Randomized controlled trial
 - d. Case-crossover study
3. How are disability weights used in the calculation of DALYs?
 - a. To adjust for variations in life expectancy
 - b. To quantify the severity of different health conditions
 - c. To estimate the economic costs of diseases
 - d. To measure the prevalence of specific risk factors
4. The main purpose of disease screening is to
 - a. Diagnose disease in symptomatic individuals
 - b. Identify disease in asymptomatic individuals
 - c. Provide definitive treatment
 - d. Measure disease prevalence

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5. In a case-control study, individuals with a family history of heart disease are more likely to participate compared to those without a family history, leading to an overestimation of the association between common risk factors and heart disease. What type of bias is this?
 - a. Attrition bias
 - b. Selection bias
 - c. Observer bias
 - d. Recall bias
6. Which of the following is an example of syndromic surveillance?
 - a. Monitoring antibiotic resistance patterns
 - b. Conducting serological testing for infectious diseases
 - c. Tracking influenza-like illness in emergency departments
 - d. Collecting seropositivity reports from laboratories
7. In the initial stages of implementing a community health education program aimed at reducing childhood obesity, the program organizers conduct interviews and focus groups with parents, teachers, and community leaders to gather feedback on the program's materials and strategies. What type of evaluation did the organizers conduct here?
 - a. Impact evaluation
 - b. Formative evaluation
 - c. Endline evaluation
 - d. Cost-effectiveness evaluation
8. You are a public health officer investigating a recent outbreak in a community. After plotting the epidemic curve, you notice a sudden surge in cases over a short period, followed by a rapid decline. What type of epidemic is most likely occurring in this community?
 - a. Point source epidemic, indicating a single exposure event affecting many individuals
 - b. Common source epidemic, possibly from contaminated food or water
 - c. Propagated epidemic, likely transmitted person-to-person over time
 - d. Mixed epidemic, comprising elements of both common source and propagated transmission
9. What does the secondary attack rate measure in epidemiology?
 - a. The proportion of individuals who develop a disease after exposure to a primary case within a specified time period
 - b. The number of individuals who are diagnosed with a disease upon initial presentation to a healthcare facility
 - c. The rate at which individuals transmit a disease to others through direct contact
 - d. The likelihood of developing a disease based on genetic predisposition alone
10. A new screening test for lung cancer detects the disease on average 3 years earlier than when it is usually diagnosed by symptoms. In both screened and unscreened groups, patients die 7 years after the biological onset of the disease. However, survival after diagnosis appears to be 7 years in the screened group and 4 years in the unscreened group. Which of the following best explains this apparent improvement in survival?
 - a. Lead time bias
 - b. High specificity of the screening test
 - c. More severe disease in unscreened group
 - d. Screening actually prolongs life

Part B: Q.11 to Q.15

Attempt any four questions (4 X 5 Marks = 20 Marks)

11. What is a Rapid Response Team in the context of disease outbreaks? What are its composition and functions? (1+4)
12. Answer the following questions with respect to causal association:
 - a. Explain the concept of temporality with a suitable example (2)
 - b. If there is an association between number of samosas eaten and severity of heart disease, which criteria is this an example of? (1)
 - c. Is smoking a 'necessary' or 'sufficient' cause for lung cancer? Explain your answer. (2)
13. A maternal health programme introduced an incentive scheme for institutional delivery in 10 districts across India. Which study design would be appropriate for evaluating the programme's impact on institutional delivery rates, and why? Who would you include as study participants? (3+2)
14. What is the importance of critical appraisal of published literature? Name some checklists which can be used for critical appraisal of studies. (4+1)
15. Differentiate between passive, active, and sentinel surveillance systems. Discuss one situation where each type would be most appropriate. (5)

Part C: Q.16 to Q.19

Attempt any three questions (3 X 10 Marks = 30 Marks)

16. What is a logic model? Construct a logic model of any health programme of your choice, including suitable indicators for evaluation. (2+8)
17. Solve the following and interpret your answer:
 - a. In a case-crossover analysis of acute triggers for myocardial infarction, you included 100 survivors of acute myocardial infarction. On taking history regarding vigorous physical activity, you found that 30 of them were exposed in hazard period only, 10 were exposed in control period only, 25 were exposed in both hazard and control period and 35 were neither exposed in hazard period nor in control period. Was exposure to vigorous physical activity found to be associated with myocardial infarction in this study? (6)
 - b. In a boarding house inhabited by 100 children, 5 cases of measles occurred on 1/2/2018. After 2 weeks a second batch of 10 cases were detected. Assuming that 50% of the children were immunized against measles, determine the secondary attack rate of measles. (4)
18. A hospital-based case-control study is conducted to examine the association between pesticide exposure and Parkinson's disease. Cases are selected from neurology wards and consist of patients newly diagnosed with Parkinson's disease. Controls are selected from oncology wards of the same hospital. Information on pesticide exposure is obtained through self-administered questionnaires about past occupational and household use.
 - a. Identify and explain **two** possible sources of bias that could affect the validity of this study (5)
 - b. For each bias identified, propose a practical modification in study design or analysis to reduce or address the bias (5)
19. What is the chain of infection? Explain how it is useful in controlling an outbreak, with a suitable example. (5+5)