



Q1. Discuss measures (techniques) to reduce bias in epidemiological studies? (5 marks)

Q2. What are the situations when the odds ratio obtained in a case control study is a good approximation of the relative risk in the population? (5 marks)

Q3. There was an association between smoking & lung cancer; does this association represent a causal effect relationship? Mention criteria for approval? (10 marks)

Q4. A cohort study was conducted to investigate the association between smoking & diabetes mellitus (DM) in a population-based sample of adults. (The data illustrated in the provided table)

Coffee use	Diabetes mellitus (DM)		Total
	Yes	No	
yes	500	9500	10000
No	200	19800	20000

- What is the relative risk (RR) Associated with coffee use? (5 marks)
- Calculate the risk (rate) difference? (5 marks)
- What is the etiologic fraction? (5 marks)
- Determine the population etiologic fraction? (5 marks)

Q5. Mention whether there is increase, decrease or no change for incidence, prevalence & duration for the following situations: (20 marks, 5 marks each)

- A new treatment helps people recover/cure faster
- A new strain of flu kills people rapidly
- New strain of flu lasts 2 weeks instead of 1 week
- A new viral strain is more infectious than previous strain & spread faster

Q6. Choose one best answer (1 mark each total 40)

1. One thousand women, who performed antenatal care at Al Galaa Hospital, included one hundred smokers. On delivery 240 newborn were of low birth weight, 75 of them belongs to the smoking mothers. The incidence of low birth weight among non-smoking mothers is:
 - a. 165 per thousand
 - b. 90 per thousand
 - c. 75 per thousand
 - d. Cannot be estimated from this study
 - e. None of the above
2. One thousand women, who performed antenatal care at Al Galaa Hospital, included one hundred smokers. On delivery 240 newborn were of low birth weight, 75 of them belongs to the smoking mothers. The low birth weight incidence among smokers is larger than incidence among non-smokers by
 - a. 7.5 times
 - b. 0.45 times
 - c. 7.5 per thousand
 - d. 0.11 times
 - e. None of the above
3. Age, systolic blood pressure and height are examples of
 - a. Qualitative variable
 - b. Discrete variable
 - c. Ordinal variable
 - d. Binary variable
 - e. Continuous variable
4. Sex, smoking and disease status can be presented as
 - a. Qualitative variable
 - b. Discrete variable
 - c. Ordinal variable
 - d. Binary variable
 - e. Continuous variable
5. Systolic blood pressure can be presented as
 - a. Continuous variable
 - b. Qualitative variable
 - c. Ordinal variable
 - d. Binary variable
 - e. All of the above

6. Likert scale is usually considered an example of
 - a. Continuous variable
 - b. Discrete variable
 - c. Ordinal variable
 - d. Binary variable
 - e. None of the above
7. Social class and educational level are examples of
 - a. Qualitative variable
 - b. Discrete variable
 - c. Ordinal variable
 - d. Binary variable
 - e. Continuous variable
8. A bar chart can be used to graphically represent
 - a. Educational level of a sample of rural Egyptian women
 - b. Contraceptive methods used by the sample in (a)
 - c. Number of children in the sample in (a)
 - d. All of the above
 - e. None of the above
9. A histogram can be used to graphically represent
 - a. Qualitative variable
 - b. Discrete variable
 - c. Ordinal variable
 - d. Binary variable
 - e. Continuous variable
10. A likert scale is best suitable to express
 - a. Smoking status of an individual
 - b. Diseases associated with smoking
 - c. Age at starting smoking
 - d. Attitude towards smoking
 - e. Knowledge of the side effects of cigarettes
11. The median and inter-quartile range are best suited to describe
 - a. Data with a high coefficient of variation
 - b. Positively skewed data
 - c. Negatively skewed data
 - d. Data with extreme values
 - e. All of the above

12. The median and inter-quartile range are represented graphically by
- Pie chart
 - Dot Plot
 - Bar chart
 - Box and whisker chart
 - None of the above
13. Length of stay (LOS) in Intensive Care Unit (ICU) is positively distributed, which of the following statement may be right
- Mean = 4.1 days and Median = 3 days
 - Mean = Median = 3 days
 - Mean = 3.5 days and Median = 4 days
 - None of the above
 - All of the above
14. Which of the following is NOT a measure of scatter
- Inter-quartile range
 - Standard deviation
 - Variance
 - Coefficient of variation
 - Midrange
15. The area under the normal distribution curve and between the mean and mean \pm one standard deviation is
- 14%
 - 24%
 - 34%
 - 68%
 - 95%
16. If systolic blood pressure is normally distributed with mean = 120 mmHg and standard deviation = 5 mmHg, the probability to find an individual from that population whose SBP = 135 mmHg or higher is equal to
- 0.03%
 - 0.05%
 - 5%
 - 0.02%
 - 0.15%
17. If serum cholesterol in apparently healthy individuals is normally distributed with mean = 180 mg% and standard deviation = 4 mmHg, the probability to find an individual from that population whose serum cholesterol is above 176 mg% is equal to
- 54%
 - 84%
 - 74%
 - 94%
 - 34%

18. Height of adult men in a population is normally distributed with a mean of 165 cm. and a standard deviation =9 cm. the military Air Forces' regulations not to enroll men shorter than 174 cm. what is the proportion of men that will be eligible to join Air Forces?
- 0.16%
 - 16%
 - 1.60%
 - 0.0016%
 - 0.016%
19. Systolic blood pressure is normally distributed in a population with a mean of 120 mmHg and standard deviation of 5 mmHg. The middle 95% of that population have a systolic blood pressure between
- 110 mmHg and 120 mmHg
 - 110 mmHg and 130 mmHg
 - 110 mmHg and 140 mmHg
 - 110 mmHg and 150 mmHg
 - 120 mmHg and 140 mmHg
20. If the incidence of Diabetes Mellitus (Type II) is increasing continuously Egypt, this means
- The population is increasing every year
 - The new health care system prologs the life of diabetics
 - Dietary habits of Egyptian is changing
 - Life expectancy at birth is increasing
 - All of the above
21. A new treatment which prevent most of the fatal complications of Diabetes Mellitus is introduced into the market. We expect to see
- Drop in the incidence of DM
 - Drop in the prevalence of DM
 - Rise in the incidence of DM
 - Rise in the prevalence of DM
 - None of the above
22. An odds ratio of 2 measures the degree of association between smoking and Ischemic Heart Disease (IHD) in a small community which means that
- The number of IHD cases is twice the number of healthy individuals in that community
 - The prevalence of smoking is 20%
 - IHD is a minor health problem in that community
 - The risk of IHD is doubled if the person is a smoker
 - None of the above

23. If the population includes minority groups, the best method of sampling to ensure the inclusion of members of such groups is
- A simple random sample
 - A stratified sample
 - A simple cluster sample
 - A two-stage cluster sample
 - A convenient sample
24. Incidence rate is a good indicator for
- Monitor treatment effect
 - Evaluate primary prevention activity
 - The best indicator for disease control
 - Mortality assessment
 - None of the above
25. Type I error or level of α means:
- Probability of rejecting a false Null Hypothesis
 - Probability of rejecting a correct Null Hypothesis
 - Probability of not rejecting a correct Null Hypothesis
 - Probability of not rejecting a false Null Hypothesis
 - None of the above
26. A Pearson correlation coefficient of ZERO between two variables indicates
- Absence of any relationship between the two variables
 - Absence of causal relationship between the two variables
 - Absence of linear relationship between the two variables
 - All of the above
 - None of the above
27. A Chi-squared is used to assess
- The degree of association between two categorical variables
 - The degree of association between two continuous variables
 - The degree of association between two binary variables
 - The role of chance as a cause of the association between two categorical variables
 - The role of chance as a cause of the association between two continuous variable

28. To exclude the effect of parity on the outcome of pregnancy in smoking and non-smoking mothers, a case control study with 100 non-smoking mothers and 50 smoking mothers is conducted with frequency matching on parity. The outcome measured was the birth weight. What is the applicable significance test?
- Chi-squared test
 - McNemar's test
 - Two Independent samples t-test
 - Paired t-test
 - ANOVA
29. Confounding effect can be avoided in the stage of analysis using
- A large sample size
 - Use of non-parametric statistical methods
 - Stratification
 - Using a stratified sampling method
 - ANOVA
30. Standard deviation is
- Measure of location
 - Used only when data has extremes of values
 - Measure of dispersion
 - Used in morbidity statistics
 - Good parameter for ordinal data
31. In a sample survey of school children in rural Upper Egypt, 10 schools were selected randomly from all primary schools. One class is selected from each school and all the students attending the class the day of the survey were selected.
- this is a simple random sample
 - this is a stratified sample
 - this is a simple cluster sample
 - this is a two-stage cluster sample
 - None of the above
32. A multistage random sample survey of 500 school children, 100 had schistosomiasis, 250 were anemic, and 50 had both anemia and schistosomiasis Find out the best statement.
- The anemia prevalence is 50%
 - Anemia and schistosomiasis are associated.
 - The prevalence of Schistosomiasis is 20%
 - Anemia is more prevalent than schistosomiasis.
 - These school children are malnourished
33. New screening test for breast cancer was evaluated using 200 women, One hundred of whom were positive for mammography. This new test gave positive results for 120 women, 90 of them were among the mammography positives. The test sensitivity is:
- 90%
 - 30%
 - 70%
 - 100%
 - Cannot be determined by the available data

34. New screening test for breast cancer was evaluated using 200 women, One hundred of whom were positive for mammography. This new test gave positive results for 120 women, 90 of them were among the mammography positives. The test specificity is:
- 90%
 - 30%
 - 70%
 - 100%
 - Cannot be determined by the available data
35. The Mean age of the following group of diabetics (24 23 25 35 34 45 67 14 26 12) is :
- 30.5
 - 25.5
 - 45
 - 26.8
 - None of the above
36. The Modal age of the following group of diabetics (24 23 25 35 34 45 67 14 26 12) is
- 30.5
 - 25.5
 - 45
 - 26.8
 - The data has no mode
37. The median age of the following group of diabetics (24 23 25 35 34 45 67 14 26 12) is
- 30.5
 - 25.5
 - 45
 - 26.8
 - None of the above
38. The exam test scores of 15 students were recorded in ascending order as follows:
4, 7, 7, 9, 10, 11, 13, 15, 15, 15, 17, 17, 19, 19, 20. The mode is:
- 15
 - 17
 - 19
39. The best study design for rare exposures is
- Prospective study
 - Retrospective study
 - Double blind experimental studies
40. The relative risk can be calculated as risk estimate from:
- Cohort studies
 - Cross sectional studies
 - Case control studies

With my best wishes to you