**Research Methodology**

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**Programme BS Dental**

**Semester 6th**

**Submitted to Dr. Attaullah**

**Term mid Term Assignment**

Section A.

Note: Highlight the correct option of the given MCQs from section A. attempt all 3 questions from section B.

1. **You may remember that three years ago there was a multistate outbreak of illnesses caused by a specific and unusual strain of Listeria monocytogenes. As part of the investigation of this outbreak, CDC workers checked the food histories of 20 patients infected with the outbreak strain and compared them with the food histories of 20 patients infected with other Listeria strains. This study design is best described as which one of the following:**
2. Analytical, experimental
3. observational, case-control
4. Analytical, observational,
5. cohort Descriptive
6. **A published study follows a large group of women with untreated dysplasia of the uterine cervix, documenting the number who improve, stay unchanged, or progress into cervical cancer. This study design is best described as which one of the following:**
7. Analytic, experimental
8. Analytic, observational, cohort
9. Analytic, observational, case/control
10. Descriptive, observational
11. **A community assesses a random sample of its residents by telephone questionnaire. Obesity is strongly associated with diagnosed diabetes. This study design is best described as which one of the following:**
12. Case-control
13. Cohort
14. Cross-sectional
15. Experimental
16. **Based on a list of residents from election rolls, 2/3 of men in a large city are invited (including repeated educational urgings) and 1/3 of men are not invited to be screened by PSA blood test for prostate cancer. Over the next 10 years the two groups are compared as to the rate of death from prostate cancer. This study design is best described as which one of the following:**
17. Case-control
18. Cohort
19. Cross-sectional
20. Experimental
21. **In a case-control study of alcohol intake and bladder cancer, cases and matched controls are each interviewed by interviewers who are not blinded as to whether the subject is a case or a** **control. Many of the interviewers are in fact convinced that drinking alcohol is a cause of bladder cancer. Is this likely to represent a bias?**
22. No, because the interviewers can't affect whether the subjects are considered cases or controls; that's already decided
23. Yes, but it's hard to predict the direction of the bias.
24. Yes, and would predispose to a rejection of the null hypothesis.
25. Yes, and would predispose to an acceptance of the null hypothesis.
26. **Interviewing all members of a given population is called:**
27. a sample.
28. a Gallup poll.
29. a census.
30. a Nielsen audit.
31. **Sampling means following a sequence of stages. Which ONE of the following stages should come before the others?**
32. Proceed with the fieldwork.
33. Find suitable source for the population members.
34. Define the people of interest.
35. Examine the objective of the study.
36. **Which ONE of these sampling methods is a probability method?**
37. Purposive.
38. Judgement.
39. Convenience.
40. Simple random.
41. **Which ONE of the following is the benefit of using simple random sampling?**
42. We can calculate the accuracy of the results.
43. The results are always representative.
44. Interviewers can choose respondents freely.
45. Informants can refuse to participate.
46. **Which ONE of the following is the main problem with using non-probability sampling techniques?**
47. The expense.
48. The results are never representative.
49. Human judgement error.
50. Informants can refuse to participate.
51. **Which ONE of the following is the best - but an often unused - way to decide on sample size?**
52. By using industry standards.
53. By calculation.
54. By 'building blocks'.
55. By budget available.
56. **Which ONE of the following methods is generally used in qualitative sampling?**
57. Random digit dialling.
58. purposive.
59. Stratified random.
60. Simple random.
61. **The median of 7, 6, 4, 8, 2, 5, 11 is**
62. 6
63. 12
64. 11
65. 4
66. **Number which occurs most frequently in a set of numbers is**
67. mean
68. median
69. mode
70. None of above
71. **The mode of 12, 17, 16, 14, 13, 16, 11,** 14 is
72. 13
73. 11
74. 14
75. 14 and 16

Section B

**Q 2: Explain cohort study and types of cohort study design in detail.**

**Ans**:

**Cohort study**: Word cohort have its origin from French and from Latin meaning encloser, enclosed group, to grasp etc. It is the type of study design in which we sample cohort (that as the group of individuals who have something in common) used to estimate the relative risks, disease risks, and incidence rate. it is one of the analytical studies used to provide more evidence so the researcher can be able to either refuse or support association between any assumed cause and effect/disease.

**Types of cohort study:**

On the basis of when and how the individuals are added to the study these are three types.

1. **Prospective Cohort studies**: In this type of study, the research identifies the cohort and follow these subjects through time. The study starts as the cause is determined and subject is followed in future to determine whether the subject will develop the effect/disease or not. Follow up is conducted to determine and record development of any outcome associated with the cause of interest.
2. **Retrospective cohort studies**: It is also known as historical cohort. The investigator looks back in time and collect enough data from the past in which the outcome is already occurred before the investigation is started. Retrospective study has both limitations and benefits. Limitations are like investigator will not be able to reduce confounding and bias. Advantages are it is cost effective and faster.
3. **Ambidirectional Cohort studies**: Type of cohort study in which has both retrospective and prospective phases of the study.

**Q3: Define Sample and Explain types of Non-Probability sampling.**

**Ans**:

**Sampling**: the process by which a small representative part (sample) is taken from large group (the sampling population) to become to derive information of interest from population.

**Sample**: Sample is small group of subjects from whole population by scientific method represent whole population.

**Classification of sampling techniques**:

1. Nonprobability Sampling techniques.
2. Probability Sampling techniques.

1. **Nonprobability Sampling techniques**: sampling technique in which all the individuals in the population do not have equal chances to be selected. The true random sampling is about impossible to be achieved. Due to some limitations which make random sampling unachievable researcher then prefers nonprobability sampling.

1. **Convenience sampling**: The most common type of sampling among all techniques of sampling is convenience sampling. Subjects are selected because they are easily accessible. This type of sampling often leads to bias. Advantages of convenience sampling are, it is cost effective, less time consuming, and easily accessible. zz
2. **Judgmental sampling**: Also called purposive sampling. Sample are chosen by researcher who researcher think would be appropriate to be subject of his/her study.
3. **Quota sampling**: Strata is considered as a basis by the researcher to select a sample. Samples selection control number of subjects by criterion (one or more)
4. **Snowball sampling**: It is like referral system. The first responder leads investigator to subjects of investigator’s interest which may be difficult for investigator to be found. This type of sampling technique is useful in disease with rare cases.

**Q4: Define and explain Data and types of data.**

**Ans**:

**Data**: facts and figures of a quantity recorded systematically.

**Types of data**

1. **Qualitative data**: It represents characteristics and attributes.
   1. **Nominal data**: Numbers given to some observations or values these numbers are only labels. It can only count but not ordered or measured. E.g. Sexes, eye colors.
   2. **Ordinal data**: Values that are capable of being align in order or can be put in ranking.
2. **Quantitative data**: Measurable quantities which can be calculated and numerically represented.
   1. **Continuous:** data that can take values between two whole numbers. It can be like measured not to be counted.
   2. **Discrete**: quantities that can take only specific values. More related to like counting.

Types of data depending on the source.

1. **Primary data**: the data that investigator collect for the first time directly. No statistical operations are done on the primary data therefore are considered as pure.
2. **Secondary data**: The data that were collected by someone else in the past and used by investigator on which statistical tools are applied before.