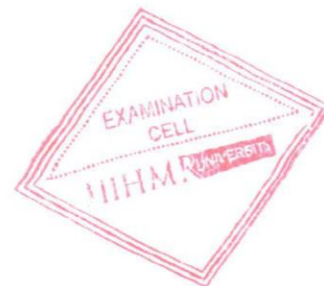


 IIHMR UNIVERSITY
MBA HOSPITAL AND HEALTH MANAGEMENT
(Health Stream)
II YEAR

APPLIED EPIDEMIOLOGY

FINAL EXAMINATION

August 4, 2016



Time: 2.00 Hours

Maximum Marks - 70

Instructions:

1. This question paper contains **09** printed sides including this page. Please ensure that you have received the complete paper.
2. Each question carries **2** marks.
3. Encircle the appropriate response for each question on this paper and return it to the invigilator at the end of the exam.

Roll Number

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Batch

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Date

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Signature of Invigilator _____

Marks Obtained

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Signature of Examiner _____

1. Which of the following health statistics would be most useful in selecting risk factors to target for intervention in order to have the greatest health impact, assuming that the planned interventions are equally effective but resources are limited?
 - a. Population Attributable Risk
 - b. Attributable Risk
 - c. Prevalence Rate
 - d. Relative risk of the disease
2. Prevalence of a disease can help us estimate all EXCEPT
 - a. Magnitude of the disease
 - b. Likelihood of the diagnosis
 - c. Positive predictive value of a screening test
 - d. Absolute Risk
3. All are types of descriptive studies EXCEPT
 - a. Case Reports
 - b. Ecologic Studies
 - c. Cohort Studies
 - d. Cross Sectional Studies
4. A Cross-sectional study that includes the entire population is referred to as a
 - a. Cohort Study
 - b. Longitudinal Study
 - c. Public opinion poll
 - d. Census
5. All are INCORRECT about Cross-sectional studies EXCEPT
 - a. Exposure and disease cannot be measured
 - b. Temporal Association can be determined
 - c. Incidence can be measured
 - d. Possible to estimate prevalence of disease

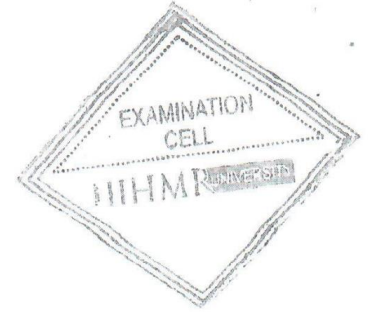


Question 6 and 7 are based on the following:

A cohort study reported that not eating fish had increased the risk for stroke. The table below shows the results of this study:

Eating Fish & Stroke			
Eating fish	Stroke present	Stroke absent	Total
Never	82	1549	1631
Almost daily	23	779	802
Total	105	2328	2433

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6. Attributable risk of the stroke due to non-eating of fish is:
- 4.3%
 - 1.45%
 - 2.2%
 - 1.75%
7. Population attributable risk of the stroke due to non-eating of fish is:
- 4.3%
 - 1.45%
 - 2.2%
 - 1.75%
8. You are assigned a task to measure of the burden of disease for Srilanka. Which type of study design you would consider:
- Cohort study
 - Cross sectional study
 - Case control study
 - Census
9. In practice of evidence based public health, which studies provides highest quality of evidences:
- Randomized Controlled Trials
 - Cohort Studies
 - Systemic Reviews and Meta analyses
 - Opinion of experts
10. Crude and age-adjusted mortality rates (per 1000,000 people) from Coronary Heart Disease are shown for India and the United States for 2000 in the following table:

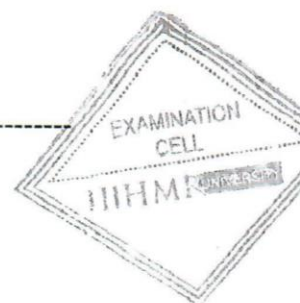
	Crude Mortality Rates	Age-Adjusted Mortality Rates
India	67.4	58.2
United States	316.3	131.4
Ratio, United States, India	4.7	2.3

Which of the following measures is preferable for comparing the mortality rate from heart disease in the two countries

- Age adjusted rates
- Crude rates
- Age specific rates
- Ratio of crude rates

11. Following table shows the relative frequency of newly reported cancers of specific sites in two populations:

Site of Cancer	Percent of Total	
	Population A	Population B
Lung	10.0	6.7
Breast	30.0	20.0
Uterus	25.0	16.7
All Other	35.0	56.6
Total: All sites	100.0	100.0



The inference that population A seems to be more prone to cancer of the lung of the lung, breast, and uterus than is population B is

- a. Correct
 - b. Incorrect because of failure to distinguish between incidence and prevalence
 - c. Incorrect because a proportion is used when a rate is required to support the inference
 - d. Incorrect because there is no control or comparison group.
12. All are selection bias except:
- a. Referral bias
 - b. Non-response
 - c. Diagnosis
 - d. Inability to provide accurate and precise response
13. Case Control studies are suitable when:
- e. Disease is rare and exposure is common
 - f. Disease is common and exposure is rare
 - g. Disease is common and exposure is rare
 - h. Disease is rare and exposure is rare

Question 14 and 15 are based on the following:

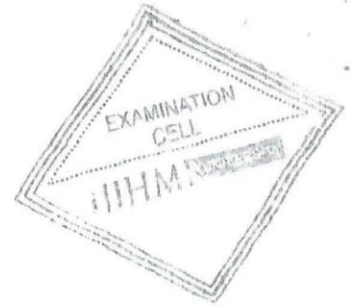
Shapiro et al. (1979) conducted a Case Control study to evaluate the association between recent use of Oral Contraceptives and Myocardial Infarction. The data is provided in the table below:

Relation of Myocardial Infarction (MI) to Recent Oral Contraceptive (OC) Use

OC	MI	Controls
Yes	29	135
No	205	1607
Total	234	1742

14. The crude Odd Ratio is:

- a. 2.01
- b. 1.68
- c. 1.98
- d. 0.62



15. Would you like to calculate adjusted Odds Ratio for the following, except:

- a. Smoking
- b. Age
- c. Blood Pressure
- d. Place of residence

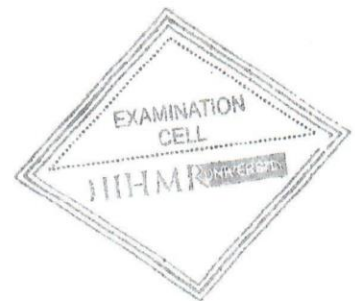
16. The Authors performed stratified analysis according to age. The table below provides Age-Specific OR of Myocardial Infarction (MI) to Recent Oral Contraceptive (OC) Use

Age (yrs.)	Recent OC use	MI	Controls	Estimated age-specific Relative Risk (OR)
25-29	Yes	4	62	7.2
	No	2	224	
30-34	Yes	9	33	8.9
	No	12	390	
35-39	Yes	4	26	1.5
	No	33	330	
40-44	Yes	6	9	3.7
	No	65	362	
45-49	Yes	6	5	3.9
	No	93	301	
Total		234	1742	

Is there a Confounding Effect of Age? Which is the correct statement?

- a. There is no confounding effect of age on association between oral contraceptives and myocardial infarction as it not associated with the OC use and MI.
- b. Age has confounded the association between OC use and MI as the strata specific Odd Ratio in different stratum is different than the Crude Odds Ratio.
- c. No conclusion can be drawn from the given data.
- d. Confounding cannot be detected by age stratified Odds ratio.

17. In vaccine trial 2,000 randomly selected children two years of age were given polio vaccine against poliomyelitis. The vaccinated children were followed for 10 years for occurrence of the poliomyelitis. Of these, 80% were never afflicted with the disease. Which is the most correct conclusion regarding the efficacy of the vaccine?
- a. The vaccine is an excellent one because of the high rate of immunization.
 - b. No conclusion is possible since there was no comparison group of non-vaccinated children.
 - c. The vaccine is not very effective because it should have produced a higher immunization rate.
 - d. No conclusion is possible since no test of statistical significance was performed.
18. A "double blind" randomized study of a vaccine is one in which:
- a. The study group receives the vaccine and the control group receives a placebo.
 - b. Neither observer nor subjects know the nature of the placebo.
 - c. Neither observer nor subjects know which subject receives the vaccine and which receives a placebo.
 - d. Neither the study group nor the control group knows the identity of the observers.
19. A study of all women aged 20 to 25 years old in a large industrial state found that the annual rate of new cases of cervical cancer in women who used oral contraceptives was 5/100,000 and that it was 2/100,000 in those who did not use oral contraceptives. On the basis of these data, the inference that taking oral contraceptives causes cervical cancer is
- a. Correct
 - b. Incorrect due to failure to distinguish between incidence and prevalence
 - c. Incorrect due to failure to adjust for possible difference in age distributions of users and nonusers
 - d. Incorrect because a proportion is used.



Questions 20, 21, 22 and 23

A Cohort study was conducted for assessing risk of breast cancer among women. 5000 women were using hormones and 8000 were not using hormones. The data on incidence of breast cancer is given in the following table:

	Develop Breast Cancer	Did not develop Breast Cancer	Total
Used Hormones	125	4875	5000
Non-Smokers	40	7960	8000

20. Incidence rate of Breast Cancer among hormone users is

- a) 2.5
- b) 1.0
- a. 2.8
- b. 3.8

21. The Relative Risk is:

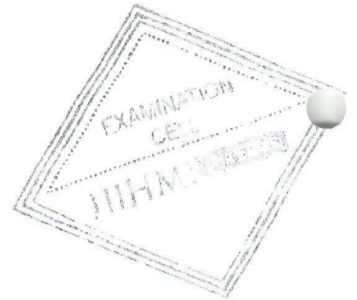
- a) 5.0
- b) 2.5
- c) 7.2
- d) 10.0

22. Odds Ratio is

- a) 1.6
- b) 2.8
- c) 5.9
- d) 5.1

23. Attributable Risk (%) is

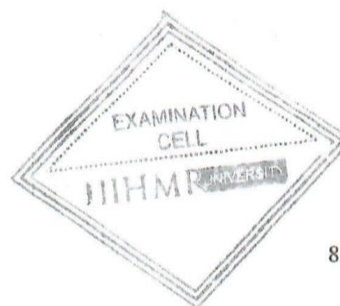
- a) 37.9
- b) 60.0
- c) 80.0
- d) 44.0



24. A multivariate logistic regression analysis was conducted to evaluate the effect of periconceptional use of Folic Acid among women and factors such as maternal education age, parity, H/O previous NTD, smoking etc. The results are given table below:

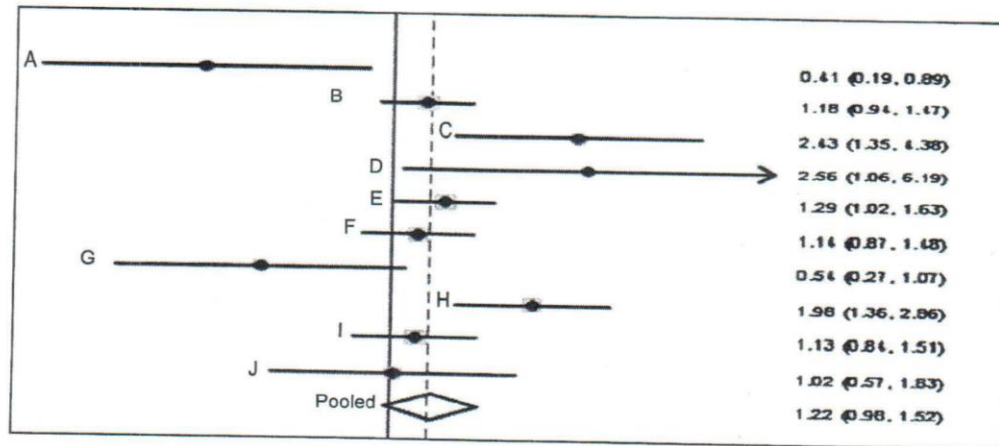
	Odd Ratio	Confidence Interval (95%)
Folic Acid Use	0.3	0.15 – 0.63
Parity	1.4	0.63 – 4.5
Previous NTD	5.9	2.33 – 14.0
Maternal Age	1.3	0.16 – 11.5
Smoking	0.91	0.42 – 1.20
Education (High School)	0.8	0.43 – 1.62

25. Which of the following inference is NOT CORRECT?
- Folic Acid use was associated with significant reduction in risk of NTD independent of all other factors.
 - Women having a H/O previous NTD had 5.9 higher risk of NTDs irrespective of Folic Use
 - Folic Use was not associated with reduction of risk of NTDs.
 - Maternal age, parity and smoking were not associated with the increased risk of NTDs.
26. Information Bias can be minimized by all, EXCEPT
- Appropriate measurement of exposure
 - Proper training of data collectors in data collection
 - Appropriate analysis of data according to previous knowledge of hypothesis
 - Proper selection of study subjects
27. Julia A. et al (2003) conducted Systemic Review of 665 publications to determine the magnitude of risk reduction achieved by smoking cessation in patients with CHD. The Crude Relative Risk (RR) was 0.64 with 95% confidence interval [CI], 0.58-0.71) among those stopped smoking. Conclusion that the smoking cessation is associated 36% reduction:
- Correct
 - Incorrect
 - No effect smoking cessation in reduction of risk of CHD among smokers
 - None of the above
28. What are the threats to validity of results in the above referred Systematic Review, EXCEPT:
- Types of study design
 - Characteristics of population and study subjects
 - Heterogeneity of study and study subjects
 - Comparability of methods of data collection



Questions 29 and 30

A Meta-analysis to explore association between alcohol drinking and gastric cancer risk was conducted based on PubMed search of articles published up to June 2010 and identified 10 Case-Control studies. (Tramacere I. 2011). Crude Odds Ratios from these studies are presented in the figure below.



29. Which of the following statement is correct?
- Conclusion that Alcohol drinking is associated with increased risk of gastric cancer
 - Conclusion that Alcohol drinking is NOT associated with increased risk of gastric cancer as overall pooled Odd Ratio is not significant.
 - Conclusions that there is an increased risk since some of the studies have shown Odd Ratio more than 1.
 - No conclusion can be drawn
30. Some case-control studies showed negative and positive association between the Risk of gastric cancer with alcohol use. This might have happened because of:
- Sampling error and sample size
 - Selection bias resulting from selection of prevalent or incident cases
 - Information bias due to inappropriate measurement of exposure (alcohol)
 - All above
31. Disease Surveillance can be used for the following EXCEPT:
- Monitoring of disease over a period time
 - Tracking progress of health program implementation
 - Measuring trends of disease and developing projections for future disease burden
 - Measuring incidence of the disease.



32. Which is the correct statement about evaluation?
- a. Making of a judgement of merit and value of program interventions
 - b. Situational analysis of a health program and intervention
 - c. Testing hypothesis
 - d. Need assessment for planning health programs
33. Which of the following causes cerebral malaria?
- a. P. Vivax
 - b. P. Malariae
 - c. P. Ovale
 - d. P. Falciparum
34. Which domain of the “policy” is directly related to epidemiology?
- a. Values
 - b. Ideology
 - c. Evidence
 - d. Politics
35. The extent to which a specific health care treatment, service, procedure, program, or other intervention does what it is intended to do when used in a community-dwelling population is termed its:
- a. Efficacy
 - b. Effectiveness
 - c. Effect modification
 - d. Efficiency

.....Paper concluded. Please hand over to the invigilator before leaving examination hall.....

