

FACULTY OF ALLIED HEALTH SCIENCES, UNIVERSITY OF RUHUNA Department of Medical Laboratory Science Year End Examination - Year 2 - 9th Batch Statistics, Research Methodology (MLS 2102) - SEQ

Time: 10.00 a.m. - 12.00 noon

Duration: 2 hours

Answer all questions

Date: 16th December 2019

Index Number:

1. A researcher is interested in identifying whether there is a gender difference in the prevalence of chronic kidney disease in adults in Anuradhapura district. A representative sample of 400 adults (200 male and 200 female) was investigated. Fifty (50) men and 40 women in this sample were found to be positive for chronic kidney disease.

| 1.1 Write null and alternative hypothesis. | (10 marks) |
|--|------------|
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

| 1.2. Test the null hypothesis at 5% level. | (15 marks) |
|--|------------|
| (Chi square table value at 5% level is 3.84) | |

2 0 FEB 202

Page 1 of 6

2. Read the following abstract and answer the questions

Abstract

All blood cells (white blood cells [WBC], red blood cells [RBC] and platelets) can play a role in atherosclerosis. Complete blood count (CBC) is widely available in clinical practice but utility as potential risk factors for cardiovascular disease (CVD) is uncertain. Our aim was to assess the associations of pre-diagnostic CBC with incidence of CVD in 14,362 adults free of CVD and aged 47.8 (\pm 11.7) years at baseline, followed-up for 11.4 years (992 incident cases). Cox proportional hazards regressions were used to estimate HRs and 95%CI. Comparing the top (T3) to bottom (T1) tertile, increased total WBC, lymphocyte, monocyte and neutrophil counts were associated with higher CVD risk: 1.31 (1.10; 1.55), 1.20 (1.02; 1.41), 1.21 (1.03; 1.41) and 1.24 (1.05; 1.47), as well as mean corpuscular volume (MCV: 1.23 [1.04; 1.46]) and red cell distribution width (RDW: 1.22 [1.03; 1.44]). Platelets displayed an association for count values above the clinically normal range: 1.49 (1.00; 2.22). To conclude, total and differential WBC count, MCV, RDW and platelet count likely play a role in the aetiology of CVD but only WBC provide a modest improvement for the prediction of 10-year CVD risk over traditional CVD risk factors in a general population.

| 2.1 What is the type of research design used in this research? | (05 marks) |
|---|------------|
| | |
| ······ | |
| | |
| | |
| | |
| | |
| | |
| 2.2 What does "aged 47.8 (\pm 11.7) years at baseline" mean? | (10 marks) |
| 2.2 What does "aged 47.8 (±11.7) years at baseline" mean? | (10 marks) |
| 2.2 What does "aged 47.8 (±11.7) years at baseline" mean? | (10 marks) |
| 2.2 What does "aged 47.8 (±11.7) years at baseline" mean? | (10 marks) |
| 2.2 What does "aged 47.8 (±11.7) years at baseline" mean? | (10 marks) |
| 2.2 What does "aged 47.8 (±11.7) years at baseline" mean? | (10 marks) |
| 2.2 What does "aged 47.8 (±11.7) years at baseline" mean? | (10 marks) |
| 2.2 What does "aged 47.8 (±11.7) years at baseline" mean? | (10 marks) |

Page 3 of 6

2 O FEB 2828

2.3 Describe the meaning of "mean corpuscular volume (MCV: 1.23 [1.04; 1.46])" (10 marks)

| | * |
|---|---|
| | |
| | |
| | |
| *************************************** | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | ••••••••••••••••••••••••••••••••••••••• |
| | |
| | |
| *************************************** | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | * |
| | |
| | |
| | |
| | • |
| | |

3. Read the following abstract and answer the questions

Abstract

The risk of cardiovascular disease has been reported to have a linear relationship with LDL levels. Additionally, the currently recommended LDL target goal of 70 mg/dl does not diminish the CV risk entirely leaving behind some residual risk. Previous attempts to maximally lower the LDL levels with statin monotherapy have met dejection due to the increased side effects associated with the treatment. Nevertheless, with the new advancements in clinical medicine, it has now become possible to bring down the LDL levels to as low as 15 mg/dl using PCSK9 monoclonal antibodies alone or in combination with statins. The development of inclisiran, siRNA silencer targeting PCSK9 gene, is a one step forward in these endeavors. Moreover, various studies aiming to lower the CV risk and mortality by lowering LDL levels have demonstrated encouraging results. The current challenge is to explore this arena to redefine the target LDL levels, if required, to avoid any suboptimal treatment. After thorough literature search in the PubMed, Embase, Scopus, and Google Scholar, we present this article to provide a brief overview of the safety and efficacy of lowering LDL below the current goal.

3.1 Explain in your own words the sentence "The risk of cardiovascular disease has been reported to have a linear relationship with LDL levels". (10 marks)

Page 4 of 6

| 3.2 What type of study is this? | (05 marks) |
|---|--|
| | |
| | |
| | |
| | |
| | |
| <u></u> | |
| | |
| 3.3 List four web sources that the authors in this article have used fo | or this study. <i>(10 marks)</i> |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| . Discuss briefly two research ethical principles that you have learned | d. (25 marks) |
| | |
| | |
| | |
| | |
| | and and an and an and an and an and an and and |
| | Kar and B |
| | / 1 5 2 × X |
| | |
| Page 5 of 6 | 11 CEB 2029 |

Ø,

()