MSc (COMMUNITY MEDICINE/ COMMUNITY DENTISTRY) EXAMINATION
DECEMBER 2023

Date: 15th December 2023   **Time:** 9.00 am – 12.00 noon

PAPER I

Community Medicine candidates should answer **all six (06) questions in Parts A & B.**

Community Dentistry candidates should answer **all six (06) questions in Parts A & C.**

Each question should be answered in a separate book.

PART A

1. A case-control study was conducted to assess the early life risk factors associated with obesity among preschool children in Sri Lanka. In this study, age, sex and ethnicity were matched at group level. The sample included 71 cases and 142 controls. The cases and controls were defined according to the World Health Organization (WHO) growth standards. Birth and growth characteristics were extracted from the Child Health Development Records (CHDR). Data on infant feeding practices and maternal factors were obtained from the mother.

1.1. Explain the reasons for choosing a case-control study design to achieve the study objective.   (10 marks)

1.2. State the advantage of matching participants at group level for age, sex and ethnicity.   (05 marks)

1.3. State the advantage of having a 1:2 case-to-control ratio in the above study.   (05 marks)

1.4. Briefly describe two (02) types of bias that may have occurred in the above study and the measures that should have been taken to minimize them.
                                                                  (30 marks)

1.5. Table - 1 shows the comparison of birth weights of cases and controls.

Table – 1: Comparison of birth weights of cases and controls.

Characteristic	Cases		Controls		p value
	Mean	SD	Mean	SD	
Birth weight (kg)	3.1	0.3	3.0	0.6	0.065

    1.5.1. State, giving reasons, the most appropriate statistical test to compare the birth weights of cases and controls. (10 marks)

    1.5.2. Interpret the results of the comparison of birth weights of cases and controls. (10 marks)

1.6. Interpret the following results shown in Table – 2. (30 marks)

Table - 2: Factors associated with obesity of preschool children.

Factor	Odds ratio (OR)	95% confidence interval of OR
Maternal pre-pregnancy obesity	2.09	0.81 - 2.88
Breastfeeding beyond 2 years	0.18	0.06 - 0.57

2. A researcher is requested to conduct a cross-sectional study to assess the prevalence of vitamin D deficiency (VDD) and its relationship with dietary intake of vitamin D among elderly adults. He plans to obtain blood samples to determine the vitamin D level by measuring serum 25(OH)D concentration. A self-administered semi-quantitative food frequency questionnaire will also be used to determine the dietary intake of vitamin D in international units (IU) over a 30-day period.

2.1. List one (01) weakness of this study design in assessing the relationship of VDD with dietary intake of vitamin D. (10 marks)

2.2. Discuss the following errors that may occur in this study and measures that the researcher should take to minimize each. (40 marks)

    2.2.1. Sampling errors

    2.2.2. Measurement errors

2.3. After conducting this study among 100 elderly adults, the results showed that the prevalence of VDD (serum 25(OH)D level < 50 ng/mL) was 68%.
How different are these results compared to the prevalence of VDD of 54% reported in the general population? State your answer by performing a statistical test of significance.   (30 marks)

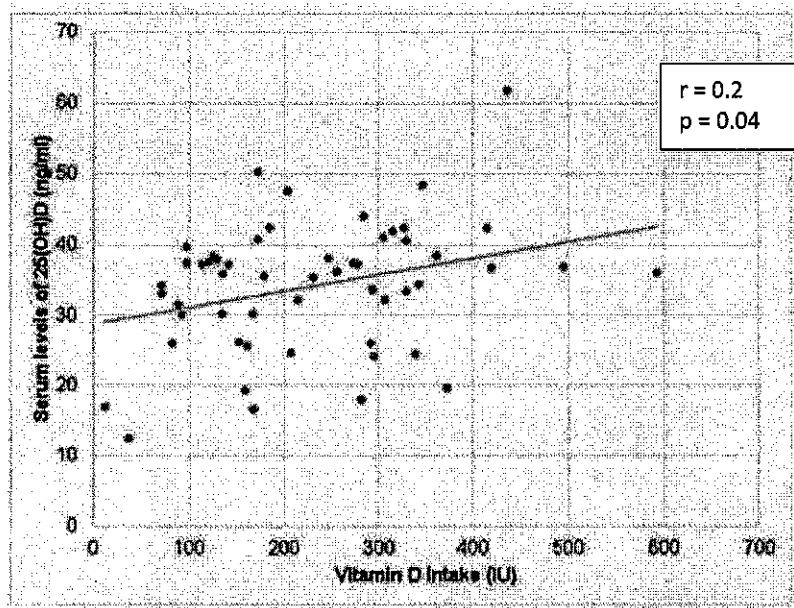2.4. Further results obtained in the study are illustrated in Figure – 1. Interpret the findings.   (20 marks)

Figure - 1: Relationship between serum 25(OH)D level and vitamin D intake

3.

3.1. Age-adjusted mortality by causes in two ethnic groups in country X is shown in Table - 3.
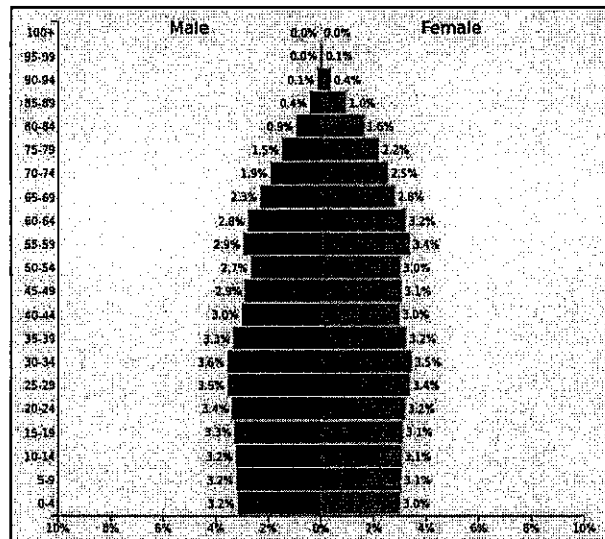
Table - 3: Age-adjusted mortality by causes in country X.

Cause of mortality	Age-adjusted mortality (per 100,000 population)		
	Country - X	Ethnic Group A	Ethnic Group B
All-cause mortality	705.0	810.0	692.5
Heart disease	345.0	580.5	330.5
Cerebrovascular disease	55.5	82.5	51.4
Respiratory disease	78.6	70.0	76.5
Unintentional injury	120.5	116.5	124.0
Malignant neoplasm	101.0	165.0	94.5

Explain the reason for using 'age-adjusted mortality rate' for this comparison. (10 marks)

3.1.2. Describe the mortality patterns observed in Table - 3. (15 marks)

3.1.3. Discuss four (04) possible reasons for the mortality patterns observed in the two ethnic groups in country X. (35 marks)

3.2. Projected population pyramid for Sri Lanka for the year 2040 is shown in Figure - 2:

Figure - 2: Projected population pyramid for Sri Lanka in 2040

3.2.1. List four (4) socio-economic implications of this demographic pattern. (10 marks)

3.2.2. Discuss the changes that should be introduced to the primary health care services to address the implications of this demographic pattern. (30 marks)

PART B

4.

4.1. October was declared as the health promoting school month in Sri Lanka in the year 2023.

4.1.1. List five (05) interventions delivered in a health promoting school.
(10 marks)

4.1.2. There were three (03) suicides committed by school-going adolescents in the year 2022 in a Medical Officer of Health (MOH) area. As the area MOH, outline the steps of a programme to prevent suicides among school-going adolescents through the health promoting school concept.
(40 marks)

4.2. Routine monitoring, surveillance and response related to child deaths are key activities at the Medical Officer of Health (MOH) level.

4.2.1. Outline the actions that should be undertaken by the MOH when an under 5-year child death is reported by the area Public Health Midwife.
(30 marks)

4.2.2. Discuss the challenges encountered in implementing the under 5-year child death surveillance at the MOH level.
(20 marks)

5.

5.1. A newly established garment factory in Ratnapura district has 3080 permanent employees and 256 supporting staff. An ongoing upper respiratory tract infection outbreak due to Influenza A virus has been established with 158 employees reporting sick. The factory management seeks advice from the area Medical Officer of Health (MOH) to manage the situation.
Briefly describe the key measures that should be taken in managing the outbreak at this workplace.
(40 marks)

5.2. Describe the adverse impact of mismanagement of plastic waste in Sri Lanka.
(30 marks)

5.3. There is a medium-scale plastic item manufacturing plant in Galle district. Around 175 workers work in this plant and the working shift operates from 8.30 am to 5.30 pm. The Medical Officer of Health (MOH) has received complaints from the public in the area regarding the improper management of plastic waste generated in this plant.

As the area MOH, explain the measures that you should take to protect the workers and the neighbouring community from improper plastic waste management of this plant.
(30 marks)

6.

6.1. Describe the role of the Medical Officer of Health (MOH) in protecting and promoting breastfeeding during a natural disaster. (30 marks)

6.2.

6.2.1. List three (03) indicators used to monitor and evaluate the breastfeeding programme in Sri Lanka. (15 marks)

6.2.2. Briefly discuss the limitations in the use of one of the indicators in improving the breastfeeding programme in a district. (15 marks)

6.3. Sustainable Development Goals state that the Neonatal Mortality Rate (NMR) in Sri Lanka should be reduced to 4 per 1000 live births by 2030.

6.3.1. List five (05) leading causes of neonatal mortality in Sri Lanka.
(10 marks)

6.3.2. Discuss the strategies that could be adopted to prevent, control, and manage birth defects in in Sri Lanka. (30 marks)

Part - C

7. Fluoride varnish (2.26%) is an essential item for Preventive Oral Health Units catering to toddlers and children less than 6 years of age at high risk of dental caries.

7.1. Describe the modes of action of fluoride varnish in the prevention and control of dental caries in the above target group. (15 marks)

7.2. Describe the advantages of using fluoride varnish in the above target group.
(20 marks)

7.3. List three (03) indicators that may be used to assess the effectiveness of fluoride varnish in the prevention and control of dental caries. (15 marks)

7.4. A high prevalence of untreated dental caries was reported based on the Summary of School Medical Inspection in the year 2022 in a Medical Officer of Health (MOH) area. As the Regional Dental Surgeon (RDS), outline the steps of a programme that you would develop to prevent and control dental caries in this area through the health promoting school concept.
(50 marks)

8. School Dental Services is one of the preventive arms of dental services in Sri Lanka.

8.1. List the entry qualifications for the enrollment in the Higher Diploma in Dental Therapy course conducted by the Dental Therapist Training School of the Ministry of Health. (10 marks)

8.2. Name the technical and administrative supervisors of the School Dental Therapists. (10 marks)

8.3. Discuss the shortcomings and give suggestions to improve the School Dental Services in Sri Lanka. (40 marks)

8.4. As the Regional Dental Surgeon (RDS), outline the steps involved in organizing an outreach oral health programme for schools located in remote areas in your district. (40 marks)

9. According to the Global Oral Health Status Report 2022, there are significant oral health inequalities in Sri Lanka, with higher vulnerability among rural populations and those from lower socio-economic backgrounds.

9.1. Define the term 'oral health inequalities'. (10 marks)

9.2. Describe the contribution of low socio-economic status to oral health inequalities among Sri Lankans. (20 marks)

9.3. Discuss the impact of the economic crisis on oral health inequalities among Sri Lankans. (30 marks)

9.4. Discuss four (04) strategies to reduce inequalities in oral health among the rural preschool children in Sri Lanka. (40 marks)

Date: 18th December 2023   **Time:** 9.00 am – 12.00 noon

PAPER II

Candidates should answer **all six (06) questions.**
Each question should be answered in a separate book.

1.

1.1. List the data/information sources available at a Medical Officer of Health (MOH) office that can be used to assess the communicable disease surveillance and Adverse Events Following Immunization (AEFI) surveillance activities.

(20 marks)

1.2. As the Regional Epidemiologist, describe in detail how you would evaluate the following activities of a given MOH area in your district using the above data/information sources.

1.2.1. Communicable disease surveillance.   (60 marks)

1.2.2. AEFI surveillance.   (20 marks)

2. As a Medical Officer of Health (MOH) in a suburban area, you observed a rapid increase in cases of Dengue fever in the area.

2.1. State how you would verify the existence of an outbreak of Dengue fever in the area.   (10 marks)

2.2. Outline the steps that you would take immediately to control the outbreak.

(20 marks)

2.3. Describe the relevant advices that you would provide in order to minimize the incidence of Dengue fever at:

2.3.1. household level.   (20 marks)

2.3.2. community level.   (20 marks)

2.4. If you are invited to represent a forum in developing a district-level action plan on prevention and control of Dengue fever, briefly describe 5 key strategies you would suggest to be included in the action plan.   (30 marks)

3. In the past, the concept of palliative care was limited to patients with cancers. There is a growing demand for palliative care in Sri Lanka.

3.1. Define palliative care. (15 marks)

3.2. Describe barriers to providing palliative care for patients with non-communicable diseases (NCDs) in Sri Lanka. (40 marks)

3.3. Critically discuss the role of the Public Health Nursing Officer (PHNO) in providing services for NCD patients with palliative care needs.
(45 marks)

4.

4.1. A student from grade 7 fainted following aTd vaccination at a School Medical Inspection (SMI). Subsequently, two more students fainted. One of them was taken to the nearest hospital by the MOH. This created panic among the other students, teachers and parents and some started accusing the SMI team of injecting students with "low quality vaccines".

    4.1.1. As the MOH, what is the communication strategy you would use for communicating with these panic-stricken persons at the time?
(05 marks)

    4.1.2. State, giving reasons, the rationale for choosing the above communication strategy? (15 marks)

    4.1.3. Briefly describe three (03) key points you would communicate in this situation. (30 marks)

4.2. Research has shown that breastfeeding practices among working mothers are suboptimal. Outline the audience segmentation process in developing a Social-Behaviour Change Communication (SBCC) strategy to improve the above practice. (20 marks)

4.3. The Public Health Midwife (PHM) should work with other field-based stakeholders in her area. Discuss the importance of inter-sectoral collaboration in improving nutrition of mothers and children in the community.
(30 marks)

5.

5.1. In Sri Lanka, many people are pushed into poverty with restricted access to healthcare due to the current economic crisis. The economic crisis has a significant impact on healthcare delivery. This requires exploring better ways of investing existing funds in health services.

    5.1.1. List two (02) reasons for conducting a situation analysis when developing a health financing policy. (10 marks)

    5.1.2. List five (05) data sources that can be used to gather evidence to identify the problems in financing for health. (10 marks)

    5.1.3. List the stakeholders to be involved in developing a health financing policy. (20 marks)

5.2. Outline the line of communication for a request made by a Public Health Midwife to obtain a transfer from a Medical Officer of Health (MOH) office in Colombo district to a MOH office in Gampaha district. (15 marks)

5.3. A Medical Officer of Health (MOH) has received a complaint from a resident regarding a Public Health Inspector (PHI) causing verbal harassment during inspection of a house for dengue mosquito breeding sites.

    5.3.1. Describe the procedure that should be followed in conducting a preliminary inquiry on this complaint at the MOH level. (30 marks)

    5.3.2. The preliminary inquiry suggests that the PHI has committed the alleged offence. State further actions that should be taken by the MOH.
    (15 marks)

6.

6.1. Outbound labour migration is rising in Sri Lanka due to the recent economic crisis. In addition, there are issues related to those who return to the country due to loss of their overseas jobs.

    6.1.1. Describe why outbound migrants are more vulnerable to health issues than when they were in Sri Lanka. (30 marks)

    6.1.2. Discuss the challenges in addressing the health issues of those who return to the country due to loss of their overseas jobs. (30 marks)

6.2. Garment industries in Sri Lanka are encountering significant challenges due to the current economic crisis in the country and globally. As such, employees are faced with numerous mental health issues.
Describe the measures that you would take to improve mental wellbeing of the garment industry employees in Sri Lanka at individual and workplace levels. (40 marks)