PRODUCT 1: TRAINING MATERIAL FOR MEDICAL DOCTOR (MD) PROGRAMME TEACHING

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1.0 Preamble

Overall goal: To develop a framework to help medical students more deeply understand complexities and nuances around disinformation / misinformation.

Specific product: A problem-based learning (PBL) exemplar for early years medical training that involves elements of a case study, learning objectives, questions for group discussion, exposure to social media, and an assessment tool for understanding the bases for misinformation and disinformation.

How product supports building a trusted network: This prototype product can be further developed, re-contextualized and adapted for other related disciplines where training is required for specific content and honing students' skills to recognise and address misinformation and disinformation.

2.0 Problem-Based Learning Exemplar for Early Years MD Programme

2.1 Introduction

A key integrating feature in the early years of medicine courses in Southeast Asia and other countries is the case-based method of teaching, known as **Problem-Based Learning PBL** (1,2)

PBL sessions provide a context for the course objectives and content, thereby creating in students an awareness of the relevance of the curriculum and its components to medicine and medical practice. These sessions are essential elements in small group teaching and learning. Typically, each PBL tutor has 10-14 students in a group. This learning method is designed to:

- Develop clinical reasoning, critical thinking and decision-making strategies
- Prepare for lifelong learning, as an adult learner
- Encourage good communication skills, active listening, and participation
- Increase confidence to question, express ideas and opinions

- Promote effective teamwork and collaborative learning.

2.2 Development of a new PBL focused on addressing misinformation and disinformation about infectious disease (e.g.,Covid19)

This module is an example of what can be developed for pre-clinical training to address elements of an infectious disease (Covid-19) including diagnostics, viral pathogenicity, epidemiology, management, vaccination programmes and doctor-patient communication.

In Parts A and B, students are encouraged to discuss the situation presented in the case narrative, identify scientific and clinical details that may be relevant to both the case and integrated curriculum content.

In Part C, students explore different characteristics of mis- and disinformation, find short videos that exemplify those characteristics prior to the final session, and then consider their implications based on questions generated by a resources document produced by the U.S. National Academies of Sciences, Engineering, and Medicine.

2.3 New PBL Outline: MARYAM GETS A NASTY INFECTION (Parts A, B and C, 90 min)

Learning Objectives:

Objective 1: Explain the clinical presentation, diagnosis and principles of management of COVID-19. (Coronavirus Infectious Disease; the “19” designates the year the virus was first discovered).

Objective 2: Demonstrate an ability to clinically distinguish between COVID and other types of viral respiratory infections.

Objective 3: Frame appropriate responses to patients when they present misinformation or disinformation during consultation.

Objective 4: Describe the steps involved with the epidemiology and investigation of an outbreak (epidemic or pandemic).

Objective 5: Evaluate Covid-19-related information from online sources, select preferences and categorise information as credible or misinformation or disinformation.

Excerpts of the scenario we developed. This can be any ‘scenario based’ teaching and learning activity.

Part A provides some initial information about Mariam (the patient) and her family that can be expanded upon to develop a full scenario.

Part A – “Mariam and her husband Hasri just returned from spending a week with Mariam’s parents in Taiping. It was the school holiday break and their three children had clamoured to “balik kampung” (literally, return to the village) to be with their grandparents during that time. When Mariam woke the next morning, she felt miserable; her forehead was burning hot, she had a severe headache, trouble breathing, and her ability to taste breakfast was

diminished. She took over-the-counter medications and returned to her workplace. Mariam went to see her doctor and Dr. Lim asked questions, including a detailed history, and discovered that a friend who briefly visited was coughing and sneezing. Upon examination, the doctor found a sore throat, and raised temperature and pulmonary rates. There was no history of a cough with blood-stained sputum, no burning upon urination or pain in her abdomen, or infected pharynx. The doctor was concerned about COVID-19 and ordered tests, which proved to be positive. This is a notifiable disease."

Part B provides an example of how disinformation can be spread through social media that touches on religious sentiment among the public. This part can be further expanded so that it forms a coherent narrative that links with Part A.

Part B – Fortunately, Mariam survived her bout with Covid even though no vaccine was available at the time that she contracted it. Her husband, Hasri, and their children managed to avoid contracting the disease by practicing strict social distancing and wearing medical grade masks during the time that Mariam was contagious. When several vaccines were shown to be both safe and effective and became widely available, Mariam's physician urged that she and her husband receive the vaccine as soon as possible. The physician also urged that Mariam's children also be vaccinated as soon as the vaccines were approved for their age group.

However, "Mariam's husband Hasri, said family would be better off not being vaccinated.* He was informed by a social media group that the vaccines were dangerous, derived from porcine sources, unsuitable for Muslims, and should be avoided because it was forbidden (*haram*). Mariam then told the doctor that she would rest more and add more pepper to their food at home as a Covid-19 preventative."

Example questions for discussion: Mapped to learning objectives (LO) which can be evaluated in formative or summative assessments.

Q1 What are some of the possible explanations for each of this patient's symptoms and why? [LO 1]

Q2 How is Covid-19 diagnosed, managed and prevented? [LO 1]

Q3 What are the differences between a viral infection and bacterial infection? Why is it important for medical students to understand and recognize the differences between bacterial and viral disorders? [LO 2]

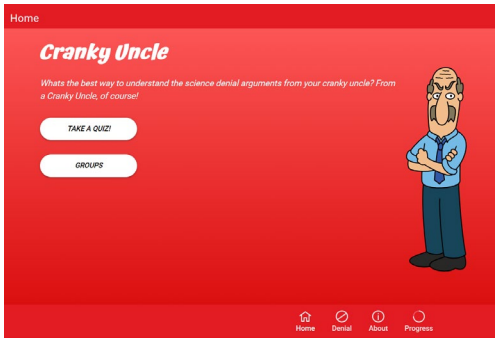
Q4 How should Dr. Lim address Maryam's concerns about vaccination? [LO 3]

Q5 What questions should Dr. Lim ask to determine if Maryam's information regarding the Covid-19 vaccine is correct? [LO 4]

Q6 What resources should Dr. Lim share with Maryam to help ensure that the information she is receiving is correct and not disinformation / misinformation? [LO 5]

Q7 Outline the Ministry of Health Malaysia (WHO, other country) Covid-19 strategic plan. [LO 6]

Part C – THE MIS/DISINFORMATION GAME:



At the end of the session on Part B, students will be introduced to the website https://crankyuncle.com/

This website enables users to learn more about various kinds of mis- and disinformation, including:

- Fake experts
- Logical fallacies
- Impossible expectations
- Cherry picking
- Conspiracy theories

Depending on the instructor's preference, learners will then be allowed to select one of these areas of mis/information to explore further or they will be randomly assigned to explore one of them. Depending on class size, the instructor can decide whether to allow students to work individually or in small groups for the following assignment to be completed before the next class:

During the ensuing week, each student or group of students will complete the exercises in Cranky Uncle for the type of disinformation they selected. Based on these exercises, individuals or groups will then search the internet for **one** short video clip (< 5 minutes) that displays the kinds of mis- or dis-information described for their selected category by Cranky Uncle. If students are working in a group, prior to the next class they will select **one** of the videos they found to represent the type of mis/disinformation they explored.

During the next class session, videos from each category of mis- or disinformation will be shown. Depending on the instructor's preference, all videos will be shown prior to discussion about them or discussion can ensue after each video is displayed.

Class discussion will then explore the following broad questions, based on *A Guide for Scientists to Identify and Address Misinformation* from the U.S. National Academies of Sciences, Engineering, and Medicine (3)

Q1 - Could the claim cause significant harm or damage to public health, national security, or other social systems, either directly or indirectly through influencing individual behaviours?

Q2 - Can scientific knowledge or analysis counter a particular claim?

Q3 - Do scientific knowledge or data exist to provide accurate and defensible scientific information to counter a particular claim? What are some sources of that scientific information? Will patients be able to understand them easily?

Q4 - Could addressing a particular claim amplify it, resulting in greater, rather than reduced, harm?

Instructors may also wish to consult this Guide for more specific questions that they can use as points of discussion with students.

After this session, the tutor and PBL group will wrap up by generating a quick Mind Map recapping the salient points of the session.

References :

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   https://doi.org/10.1016/j.hpe.2016.01.004.

2. Problem based learning ethos and approach for MED 1100 Introduction to Medical Practice, Monash University MD programme.

3. National Academies of Sciences, Engineering, and Medicine. 2022. *Addressing Inaccurate and Misleading Information About Biological Threats Through Scientific Collaboration and Communication in Southeast Asia*. Washington, DC: The National Academies Press. https://doi.org/10.17226/26466.