

Role Of Health Literacy In The Prevention Of Emerging And Re-Emerging Diseases: Medical Students' Perception

Soe Moe¹, Han Ni², Arshad Hassen Mohamed³,
Adinegara Lutfi Abas¹ and Mila Nu Nu Htay^{1*}

Corresponding author email id: drmlnnh@gmail.com

Keywords: *Emerging diseases, Health Literacy, Malaysia, Medical students, Prevention, Re-emerging diseases, Qualitative*

ABSTRACT

Emerging and re-emerging diseases are major public health concerns worldwide. Medical students should acknowledge the importance of health literacy (HL) and effectively promote HL to the community, especially in the context of disease prevention and control measures. This pilot study aims to explore undergraduate medical students' perception of HL for the prevention and control of emerging and re-emerging infectious diseases. This study was conducted as a secondary data analysis of students' responses to pre-lecture preparation questions for the topic of emerging and re-emerging diseases in the undergraduate medical programme. The qualitative answers to pre-lecture preparation questions were extracted from Google form and analyzed as thematic analysis by using RQDA software. A total of 18 students' qualitative answers were analyzed and five salient themes were identified: Importance of HL in community, Benefits of competent HL in community, Role of HL in disease prevention, Strategies to improve HL in community and Suggestions for focus on HL promotion activities. The students appreciated the benefits and importance of HL, especially in the prevention and control of infectious diseases. Strategies to improve HL in the community should be initiated from school health education and further developed through social media, mass media, and community campaigns while collaborating with non-governmental organizations. HL promotion activities should encourage self-education, critical thinking, and utilization of credible sources. Students considered that underprivileged and low-income populations should be targeted for these interventions. Medical

¹ Department of Community Medicine, Faculty of Medicine, Manipal University College Malaysia

² Faculty of Medical Sciences, Newcastle University Medicine, Malaysia

³ Faculty of Medicine, Manipal University College Malaysia

students appreciated the importance of HL for disease prevention and control and suggested educational interventions or campaigns to promote HL in the community.

INTRODUCTION

Emerging and re-emerging diseases are one of the major public health concerns worldwide (1). According to the National Institute Allergy and Infectious Diseases, emerging infectious diseases are defined as “infectious diseases that have newly appeared in a population or have existed but are rapidly increasing in incidence or geographic range” (2). Newly emerging diseases such as acquired immunodeficiency syndrome (AIDS), severe acute respiratory syndrome (SARS), Zika virus infections and the COVID-19 pandemic cause public health threats with a significant burden on the healthcare system (3).

Meanwhile, re-emerging diseases are “diseases that once were major health problems globally or in a particular country, and then declined dramatically, but are again becoming health problems for a significant proportion of the population” (2). A growing concern of drug-resistant strains is a public health problem related to the re-emergence of drug-resistant tuberculosis (4). Climate change is a contributing factor to the resurgence of some diseases, including malaria and cholera (5).

Causes of emerging and re-emerging diseases are directly or indirectly related to human behaviour and activities (1, 6). A review by Castro-Sánchez et al. (2016) reported that inappropriate human behaviours, including low vaccine acceptance, unsafe sex practices, delay or lack of seeking appropriate health care, non-compliance with medication, and irrational use of antibiotics, were related to limited or insufficient HL in the community (7). It is supported by the recent evidence that re-emerging elephantiasis was found to be significantly associated (OR 2.18, 95% CI 0.37-6.69) with poor HL (8). Therefore, it is essential to plan strategies for the prevention and control of emerging and re-emerging diseases with a broader scope, including surveillance, early detection or diagnosis, therapeutic measures, and vaccines (3).

Simultaneously, community awareness and engagement are essential for public health preventive measures (9). It is crucial to enhance knowledge and self-practice of recommended preventive measures in the community, such as personal protection, vaccination and healthcare seeking (10). To be fully engaged in these public health prevention measures, access to credible and adequate information or guidance is of utmost importance (7). Moreover, people’s critical evaluation and appraisal of health-related information are crucial to overcome the spreading of myths, rumours and misinformation (11). The concept of a person’s HL encompasses having knowledge of health and healthcare, self-efficacy in processing and using health information, and the ability to maintain health via self-management and utilization of healthcare services (12).

Healthcare providers' perception of HL and its role in disease prevention and control is also important for the success of health plans and activities (13, 14). Limited awareness of the importance of HL among healthcare professionals might hinder the incorporation of HL promotion in the community (14).

HL is independent of educational level, as a study reported that professionals have a limited understanding of HL and the consequences of low HL for their patients in Australia, New Zealand and Canada (15). Macabasco-O'Connell conducted a qualitative study and revealed that nursing students' knowledge and perception of the role of HL in patient health outcomes is limited (16).

Medical students are the future healthcare providers to the community. Therefore, medical students should understand the importance of HL and effectively promote HL in the community, especially in the context of disease prevention and control measures. A study among nursing students to explore their understanding of HL and their experiences in health promotion activities revealed some challenges such as unsupported clinical settings for health promotion activities, infodemic causing patients to deal with multiple sources, language barriers, and the inability of patients to seek health information (14).

However, medical students' perceptions of the importance of HL for the prevention of epidemic and pandemic infectious diseases are still lacking and need to be explored. Therefore, this study aimed to explore undergraduate medical students' perceptions of HL for the prevention and control of emerging and re-emerging infectious diseases.

METHODS

Study design and setting

This study was conducted among medical students in a private medical university in Malaysia during March 2023.

Study population and data retrieval

The secondary data of the medical students' pre-lecture preparation answers were retrieved and utilized in this study. During their fourth year, medical students need to attend a lecture on emerging and re-emerging diseases. Two days before the lecture class, pre-reading materials were distributed to the students. The reading materials are "The challenge of emerging and re-emerging infectious diseases" (3) and "HL and infectious diseases: why does it matter?" (7).

After that, the students were asked to share their knowledge and perception of the emerging, re-emerging role of HL for the prevention and control measures. A Google form was used to collect the students' answers as the pre-lecture preparation. From the Google form, the qualitative data of the student's answers to the open-ended questions

on their opinion on the role of general population HL in the prevention and control of emerging and re-emerging diseases and how to improve community HL was retrieved and included in the analysis. The students' names and IDs were not included in the data retrieval to ensure anonymity.

Data analysis

Qualitative data was analyzed according to Braun and Clerk's (2006) 6-step guide for thematic analysis (17) using RQDA software (version 3.20). The data was retrieved from the Google form and saved in the word document. The data was familiarized by reading and re-reading the students' answers. After that, the relevant codes were generated by two independent researchers on the team. The coding was reviewed and checked by two researchers to ascertain the generation of relevant codes.

The similarities and differences in coding were grouped together to form relevant themes and reviewed by the team members. Finally, the themes were finalized with the generation of clear and relevant names for each theme (17).

Ethical approval

The ethical approval was granted by the Research Ethics Committee, Manipal University College Malaysia for the utilization of students' pre-lecture preparation answers (Ethics approval no: 008/2023).

RESULTS

Thematic analysis identified five salient themes as follows: (1) Importance of HL in the community, (2) Benefits of competent HL in the community, (3) Role of HL in disease prevention, (4) Strategies to improve HL in the community, and (5) Suggestions for focus on HL promotion activities.

1. Importance of HL in the community

This theme captured participants' perceptions of the importance of HL in the community. Since improving HL in community plays an important role, advocacy from the healthcare provider and relevant parties are needed. Participants revealed their perceptions as follows:

"It plays a major role since it educates people with all kinds of educational levels and social backgrounds (P 3)"

“Should be advocated and talked about more (on HL) (P 14)”

Furthermore, participants recognized the improvement of HL awareness in the community.

“Generally, the population are getting more aware and improving their knowledge on this. (P 15)”

2. Benefits of competent HL in the community

This theme captured participants’ perceptions of the benefits of competent HL.

Improving HL in the community will be beneficial for lowering the prevalence of certain diseases, prevention of risk factors, and improving self-care and management. Participants expressed their perception of the benefits of competent HL as follows:

“The higher the HL of the general population, the less likely certain diseases are to occur (P 1)”

“They will have some knowledge as to identify which modifiable factors to prevent emerging diseases (P 6)”

“It informs them about what needs to be done to prevent and stay protected as well as how to manage once contracted. (P 3)”

Participants recognized the benefit of HL to shift attention from traditional methods to evidence-based healthy behaviours:

“Stop following the ancient methods and keep updated with the current knowledge to live a healthy life. (5)”

3. Role of HL in disease prevention

Competent HL plays an important role in the prevention and control of diseases. Participants in our study pointed out that commitment, contribution, and community involvement were necessary to achieve beneficial outcomes.

“Everyone will be more aware of their surroundings and current health status, thereby taking precautions to prevent transmission of the disease (18)”

“Without the contribution and cooperation of the general population, it is not possible to curb these diseases (P 4)”

“They should be educated and be keen on knowing/learning what is beneficial for them. (P 5)”

4. Strategies to improve HL in the community

This theme captured various strategies that the participants considered to be effective in improving HL in the community. Basically, participants reported educational campaigns and activities were needed in the community. Since childhood is the foundation of health beliefs and behaviours, these interventions should be initiated in schools. Participants discussed their point of view as follows:

“Introducing the idea of HL since schools, the government should start campaigns and workshops (P 4)”

“HL on common communicable and non-communicable diseases have to be promoted more from school age so that they will have some knowledge as to identify which modifiable factors to prevent emerging diseases (P 6)”

“HL can be improved through the provision of information, effective communication, and structured education (P 2)”

The role of mass media and online campaigns become popular in this era; participants shared their opinions as follows:

“The health organizations should promote understanding through multiple mediums such as social media, radio, television so that the general public are aware of this issue. (P 9)”

Participants are also aware of the importance of collaboration with the respective Non-Governmental Organizations (NGOs) and other sectors to improve the effectiveness and reach of the campaigns:

“Have famous people talk more about the importance of HL as the public is more likely to follow them (P 1)”

“NGOs should educate the public by making more campaigns and spreading awareness regarding this issue (P 9)”

5. Suggestion for focus on HL promotion activities

Participants considered that HL promotion interventions should include not only knowledge on prevention, but also to encourage to search from credible sources, critical thinking, and decision-making process.

“Educate the public to choose credible sources of information and to filter out others (P 7)”

“In my opinion, in the course of prevention and control of diseases, the general population has a role of self-education, critical thinking, cooperating with measurements suggested or implemented by health care authorities in order to make informed choices and prevent diseases at least at a primary level (P 8)”

Meanwhile, participants noted that targeted interventions for the promotion of HL competency might be needed for underprivileged and low-income populations:

“The more general HL programs are done, the more awareness they will create among the society especially those who are underprivileged and living in a low economic society. (P 3)”

DISCUSSION

This study was conducted among undergraduate medical students at a university in Malaysia and aimed at understanding the perspectives of future healthcare providers about the role of HL in the prevention of emerging and re-emerging diseases. HL of a person is defined as a person’s ability to comprehend information on health and healthcare for their benefit as well as those around them, then utilize it confidently and comfortably in their day-to-day activities (18).

An important aspect identified in our study is the knowledge that competent HL at a community level ensures that the public is more aware of what needs to be done to prevent catching a disease as well as how to stay protected if they contract the disease. Interestingly, a similar finding was reported in a study conducted in Vietnam by Nguyen et al. (2020), where higher HL was associated with a better status of health and well-being among medical students (19).

One of the major themes that was identified in this study is that HL should be improved at a community level as it benefits people of all ages and educational backgrounds. In agreement with our study, a review conducted by Nutbeam & Lloyd (2021) concluded a similar finding. Improved HL at a community level ensures that individuals are able to understand health information better and act on it, leading to more informed health decisions (20). This can result in increased engagement with healthcare services, which plays an important role in the prevention of emerging and re-emerging diseases.

Participants of this study concurred that educational campaigns and initiatives to improve HL should be started in primary and secondary schools. A study among college students in the USA done by Patil et al. (2021) demonstrated similar findings with the belief that promoting health education and HL at the grassroots level ensures the develop a stronger understanding and appreciation of knowledge of diseases as well as the strength to ascertain accurate information in the community (21).

Publishing information on diseases through official channels on social media, which enhances the accuracy of the information provided and gives a medium for members of the public to obtain reliable information, is an important strategy to improve the HL of the community (21). While vaccines play an important role in treating and preventing

diseases, the concept of utilising public health strategies promoted by NGOs and other stakeholders in the healthcare system to improve HL as a 'social vaccine' to comprehend and apply information about preventing diseases is a vital initiative too as this ensures the community is equipped with valuable knowledge (22). These are also important themes that have been identified in our study.

Our study has some limitations. Firstly, it was a secondary data analysis of qualitative data from pre-lecture preparation questions. Therefore, it might not be able to explore in-depth students' perceptions of the role of health literacy in the prevention of emerging and re-emerging diseases. Secondly, data triangulation was not established as qualitative data was collected from a single source of information.

However, this study captures the important aspects of their understanding of HL in the era of emerging and re-emerging diseases. In conclusion, medical students appreciated the importance of HL for disease prevention and control. They also suggested educational interventions and campaigns for promoting HL in the community.

Further qualitative studies from other parts of Malaysia and globally are recommended for a better understanding and insight from medical students as well as their willingness to contribute to HL-promoting strategies for patients and the community.

REFERENCES

1. Chala B, Hamde F. Emerging and Re-emerging Vector-Borne Infectious Diseases and the Challenges for Control: A Review. *Front Public Health*. 2021;9:715759.
2. National Institute of Allergy and Infectious Diseases. NIAID Emerging Infectious Diseases/Pathogens 2023. <https://www.niaid.nih.gov/research/emerging-infectious-diseases-pathogens>.
3. Morens DM, Folkers GK, Fauci AS. The challenge of emerging and re-emerging infectious diseases. *Nature*. 2004;430(6996):242-9.
4. Quaglio G, Demotes-Mainard J, Loddenkemper R. Emerging and re-emerging infectious diseases: a continuous challenge for Europe. *Eur Respir J*. 40. England2012. p. 1312-4.
5. Gilmore B, Ndejjo R, Tchetchia A, de Claro V, Mago E, Diallo AA, et al. Community engagement for COVID-19 prevention and control: a rapid evidence synthesis. *BMJ Glob Health*. 2020;5(10).
6. Church DL. Major factors affecting the emergence and re-emergence of infectious diseases. *Clin Lab Med*. 2004;24(3):559-86.
7. Castro-Sánchez E, Chang PWS, Vila-Candel R, Escobedo AA, Holmes AH. Health literacy and infectious diseases: why does it matter? *Int J Infect Dis*. 2016;43:103-10.
8. Nabela D, Fera D, Sriwahyuni S, Mulyana A. Relationship Between Health Literacy and Re-emerging Elephantiasis in Aceh Barat. *J-Kesmas: Jurnal Fakultas Kesehatan Masyarakat (The Indonesian Journal of Public Health)*. 2021;8:12.

9. Gilmore RC, Young G, Schleicher SM, Fine RE, Berry MP, Schwartzberg LS. Adherence to Guideline-Concordant Neoadjuvant Chemotherapy Delivery for HER2-Positive Breast Cancer Patients in the Community Setting: An Institutional Analysis. *Annals of Surgical Oncology*. 2021;28(SUPPL 2):S304.
10. Marais F, Minkler M, Gibson N, Mwau B, Mehtar S, Ogunsola F, et al. A community-engaged infection prevention and control approach to Ebola. *Health Promot Int*. 2016;31(2):440-9.
11. Chong YY, Cheng HY, Chan HYL, Chien WT, Wong SYS. COVID-19 pandemic, infodemic and the role of eHealth literacy. *Int J Nurs Stud*. 2020;108:103644.
12. Liu C, Wang D, Jiang J, Wang X, Chen H, Ju X, et al. What is the meaning of health literacy? A systematic review and qualitative synthesis. *Fam Med Community Health*. 2020;8(2).
13. Greaney ML, Wallington SF, Rampa S, Vigliotti VS, Cummings CA. Assessing health professionals' perception of health literacy in Rhode Island community health centers: a qualitative study. *BMC Public Health*. 2020;20(1):1289.
14. Zanchetta MS, Poureslami IM. Health literacy within the reality of immigrants' culture and language. *Can J Public Health*. 2006;97 Suppl 2:S26-30.
15. Lambert M, Luke J, Downey B, Crengle S, Kelaher M, Reid S, et al. Health literacy: health professionals' understandings and their perceptions of barriers that Indigenous patients encounter. *BMC Health Services Research*. 2014;14(1):614.
16. Macabasco-O'Connell A, Fry-Bowers EK. Knowledge and perceptions of health literacy among nursing professionals. *J Health Commun*. 2011;16 Suppl 3:295-307.
17. Braun V, Clarke V. Using thematic analysis in psychology. *Qualitative Research in Psychology*. 2006;3(2):77-101.
18. Osborne RH, Elmer S, Hawkins M, Cheng CC, Batterham RW, Dias S, et al. Health literacy development is central to the prevention and control of non-communicable diseases. *BMJ Glob Health*. 2022;7(12).
19. Nguyen HT, Do BN, Pham KM, Kim GB, Dam HTB, Nguyen TT, et al. Fear of COVID-19 Scale-Associations of Its Scores with Health Literacy and Health-Related Behaviors among Medical Students. *Int J Environ Res Public Health*. 2020;17(11).
20. Nutbeam D, Lloyd JE. Understanding and Responding to Health Literacy as a Social Determinant of Health. *Annu Rev Public Health*. 2021;42:159-73.
21. Patil U, Kostareva U, Hadley M, Manganello JA, Okan O, Dadaczynski K, et al. Health Literacy, Digital Health Literacy, and COVID-19 Pandemic Attitudes and Behaviors in U.S. College Students: Implications for Interventions. *Int J Environ Res Public Health*. 2021;18(6).
22. Okan O, Messer M, Levin-Zamir D, Paakkari L, Sørensen K. Health literacy as a social vaccine in the COVID-19 pandemic. *Health Promot Int*. 2023;38(4).