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Health Literacy Status and Its Determinants among School Teachers in Ahlone District, Yangon

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Abstract

Objective: Schools globally support public health goals alongside education; however, despite having supportive environment to get better access to reliable health information, teachers' participation in health promotion remains low, and their health literacy levels are still unclear, even though teacher health literacy is a key factor in fostering health behavior in schools. This study aimed to assess school teachers' health literacy status and explore its determinants among school teachers in Ahlone district, Yangon Region, Myanmar. Methods: A cross-sectional study was conducted among 355 school teachers in the Alone District, Yangon Region, using self-administered, culturally adapted Burmese translation of the European health literacy questionnaire (HLS-EU-Q47), a validated comprehensive health literacy survey tool. The study period was from December 2022 to February 2023. Multivariate logistic regression was used to determine the determinants of health literacy status. **Results:** Among school teachers, adequate health literacy was 107 (30.1%), and limited health literacy was 248 (69.9%). The results showed that the absence of anyone in family members who attended health related trainings [AOR: 0.37, 95%CI: 0.13, 0.98, p=0.047], and who watched health education movies sometimes [AOR: 0.32, 95%CI: 0.11, 0.88, p=0.027] were less likely to have adequate health literacy status compared with their counterparts among school teachers in this study. **Conclusion:** Only one-third of school teachers had adequate health literacy level in this study and therefore, providing health related trainings and encouragement of watching health education movies more frequently needs to be focused on increasing the health literacy status among school teachers.

Keywords: Determinants, Education, Health literacy, School teachers, School health

What was Known

- In Myanmar, limited studies on health literacy status among school teachers using European health literacy questionnaire (HLS-EU-Q47)
- Only the health literacy status of the general population was determined in 2017 in Myanmar

What's New and Next

- Health literacy status of school teachers in Yangon Region is estimated
- Determinants of health literacy status among school teachers can be explored
- This will help tailor health literacy promotion activities for the educational sector

Introduction

Health literacy (HL) fundamentally constitutes "the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health".[1] Health literacy (HL) is also regarded as a key determinant in health promotion.[2] There are three domains in health literacy and they are basic/ functional health literacy, communicative/ interactive literacy and critical literacy.[3] Although health literacy in most of the developed countries is adequate, it is still questionable in developing countries.[4] Schools throughout the world contribute to the achievement of public health goals in conjunction with their educational commitments[5]. It has been stated that teachers' health literacy is one of the strong predictors of promoting healthy behavior at schools.[6] As school health activities are regularly implemented at schools making their workplace a supportive environment to get access to reliable health information than the public. Previous literature showed that teachers searched health information out of various concerns, but it is still necessary to enhance health-information seeking pattern to shape a healthier society[7] since Teachers' health literacy is an important part of school health promotion programmes.[8] However, in Yangon region, teachers' involvement in health promoting school programmes was limited.[9] On the other hand, school teachers have the capability of influencing the future, knowledge, attitude, and behavior of school children.[9] In addition, teachers are not only subjects of school health efforts but also role models for students' health behaviors.[6] Due to all-day school and inclusion efforts, teachers increasingly faced with the health problems of students. At the same time, many teachers show their own significant health problems, often due to an enormous workload.[2] A study in Sri Lanka demonstrated that 32.5% of school teachers have limited health literacy.[10] Furthermore, there is a scarcity of data regarding the health literacy status of school teachers in Myanmar. Therefore, the health literacy status of school teachers is essential to be explored. In addition, it is also important to find out the determinants of health literacy among school teachers so that we can focus on health education programs to improve the health literacy status among them. Literature reveals that factors associated with poor health literacy among school teachers are younger age, fewer teaching service years, lower income, not being a member of health club / welfare group, recent visit to health practitioner.[10] For the general public, it can be said that health literacy level is determined by sociodemographic characteristics (such as age, income, years of education) and self-assessed health / self-perceived chronic disorders, physical activity level or physical limitation to perform daily activities, smoking, betel chewing.[11,13] The health literacy status of school teachers was assessed in this study using the HLS-EU-Q47, a thorough questionnaire created for the European Health Literacy Survey. This questionnaire is grounded in a conceptual framework and operationalized with a matrix with 12 dimensions, including four information processing domains (finding, understanding, judging, and applying) and three health domains (health care, disease prevention, and health promotion), which enabled comparisons within and between countries.[12] Ahlone District was selected purposively among the districts in Yangon region because it consists of schools which are distributed across both urban and peri-urban areas. This study seeks to answer: “What is the health literacy status of school teachers in Ahlone District and what are its key determinants?”. Hence, it is believed that the study results will serve as the basic information to further surveys related to health literacy and shed light on future school health programmes.

Materials and Methods

1. *Study Population and setting*

A cross-sectional study was conducted at schools in Ahlone District, Yangon Region during October 2022 to February 2023. The required sample size was calculated based on the assumption that the proportion of individuals with adequate health literacy is 26.2% which was obtained from the results of school teachers in Turkey.[8] Using the precision (margin of error of 5% (d=0.05) and a 95% confidence level (z=1.96), the sample size was estimated using the formula for a single proportion:

$$n = \frac{z^2_{1-\frac{\alpha}{2}} pq}{d^2}$$

$$n = \frac{(1.96)^2 \times 0.262 \times (1-0.262)}{0.05^2} = 298$$

After considering 10% non-response rate or loss to follow-up, minimum required sample size was 328. However, in this study, all school teachers from all schools in Ahlone District who give informed consent were involved and 355 school teachers were involved in this study.

All school teachers of both male and female from primary, middle, and high schools in Ahlone District who gave written informed consent were involved in this study, except headmasters (heads of the schools) and teachers who were on leave or on duty trips at the time of data collection. The response rate was (96.9%) among school teachers from total of 62 schools.

2. Data Collection Procedure

After receiving the ethical approval, headmasters from the selected schools were contacted and requested to arrange for collecting the data from the school teachers at private places in their respective schools during their leisure time. After receiving the written informed consent, all school teachers were also thoroughly informed about the study, and self-administered questionnaires were used to assess the health literacy status of school teachers. The Ministry of Health (Myanmar)'s preventive measures for COVID-19 infection transmission were followed in all data collection processes.

3. Research Measurement Tools

To determine the level of health literacy among school teachers, the European health literacy questionnaire (HLS-EU-Q47) was used which is a validated comprehensive health literacy survey tool for the general public in several Asian countries and Burmese version of HLS-EU-Q47 questionnaire was used in this study with the permission from the authorized person.[14] Validity and reliability of the HLS-EU-Q47 can be found elsewhere,[12] where Cronbach's alpha for the 47 items was 0.96 for Myanmar version of questionnaire.

4. Data Management and Statistical Analysis

Based on the HLS-EU score, participants were divided into four levels of health literacy as ‘inadequate’, 'problematic', 'sufficient' and 'excellent' which in turn was also shown as a dichotomous outcome (0 = ‘limited’ Vs 1 = 'adequate’ health literacy). Therefore, the primary outcome (interesting outcome) of the study was the health literacy status among school teachers from Alone district, Yangon and it is a binary outcome: whether it is sufficient/adequate or limited health literacy. The secondary outcome was the classification of health literacy in 4 levels: excellent, sufficient, problematic, inadequate. Regarding the scoring of the questionnaire, total scores for 47 items of HLS-EU were calculated, and the mean scores of each individual were determined. Then, index scores were calculated by using this formula: $Index = (mean - 1) \times \left(\frac{50}{3}\right)$. Based on that, HL was divided into four categories: inadequate (0–25), problematic (26–33), sufficient (34–42) and excellent (43–50), and HL was dichotomized into ‘sufficient/adequate’ and ‘limited’ based on a cut-off value of 34, as defined by the HLS-EU.[15]

The potential factors to be determined in this study are age, education, teaching grade, total service year, per capita income, frequency of searching health information on the internet, attending health workshops, reported current health status, presence of health insurance, frequency of going to GP within 6 months, frequency of watching health education movies, presence of medical professional or who attended health-related training, presence of anyone to accompany during clinic visit, difficulty in fees, difficulty in time, difficulty in transport, comparison of health status with others.

Frequencies of searching health information on the internet, watching HE movies or attending health-related workshop/training were asked to the school teachers as self-rated frequencies: “Often”, “Sometimes”, “Rarely”, and “Never”.

Presence of medical professional or who attended health-related training was measured in binary response of “yes or no” on whether there is any health- or medical-professional in the family (or) whether there is anyone who attended health- or medical-related training.
Health education movies are short films or videos made by official health organizations such as the Ministry of Health or the non-governmental organizations, and either broadcasted on television channels or shared on social media and organizational websites.

After data collection, the data was checked daily, and data entry was carried out using Microsoft Excel. Double-checking of data was conducted for accuracy. After that, data cleaning, management, and analysis were done by using Stata 14.2 software. Categorical variables were presented with frequency (percent), and continuous variables were described by mean (±SD) or median (IQR). In determining the factors associated with health literacy (primary outcome that has 2 levels of sufficient/adequate or limited), the Chi-square test was used and those factors of p-value less than 0.2 in the bivariate analysis were added into the multivariate logistic regression to adjust the confounding variables and *p*-value less than 0.05 is termed as statistically significant in this study.

5. Ethical Consideration

Before conducting the research, permission from the relevant authorities had also been obtained. All identities of the teachers were kept confidential, and the findings from this study were used only for research purposes. Their involvement in the study will not affect their career. All the data files were protected with a password, and only the authorized persons of this study have access to them.

Results

1. Background characteristics

In bivariate analysis, age, education, total service year, presence of family member of health or medical professional or who attended health or medical related training and frequency of watching educational movies and frequency of searching any health information through the internet, Frequency of attending any health-related workshop or training were associated with health literacy status among school teachers. The younger age group, higher education, less total service year, presence of family member of health or medical professional or who attended health or medical related training, those who watched more frequent health education movies and those who frequently searched the health information through the internet, those who attended health-related workshop or training frequently had more adequate health literacy status than their counterparts (Table 1).

Table 1 Characteristic of school teachers (n = 355)

Exposure	**Items**	**Limited Health Literacy** Frequency (%)	**Adequate Health Literacy** Frequency (%)	P^a
Age (Completed years)	20-40 years	88 (60.3)	58 (39.7)	0.001
	41-50 years	26 (83.9)	5 (16.1)	
	51-60 years	71(81.6)	16(18.4)	
	>60 years	2(66.7)	1(33.3)	
Sex	Male	15 (83.3)	3 (16.7)	0.201
	Female	233 (69.1)	104 (30.9)	
Marital Status	Single	116 (67.8)	55 (32.2)	0.423
	Married/Divorced/Widowed	132 (71.7)	52 (28.3)	
Highest Education	High school level	2(66.7)	1(33.3)	0.012
	University	10(43.5)	13(56.5)	
	Graduate / Post-graduate	236(71.7)	93(28.3)	
Teaching Grades	Primary school teacher	108 (64.7)	59 (35.3)	0.066
	Middle school teacher	70 (71.2)	32 (28.8)	
	High school teacher	61 (79.2)	16 (20.8)	
Total Service Year (n=344)	≤10 years	59(52.7)	53(47.3)	<0.001
	>10 to ≤20 years	75(72.8)	28(27.2)	
	>20 to ≤30 years	27(79.4)	7(20.6)	
	>30 years	78(82.1)	17(17.9)	
Per Capita Income (n=333)	1st Quantile	61 (67.0)	30 (32.9)	0.089
	2nd Quantile	77 (74.8)	26 (25.2)	
	3rd Quantile	45 (80.4)	11 (19.6)	
	4th Quantile	52 (62.7)	31 (37.4)	

[a]Chi-square test

Table 2 Characteristic of school teachers (n = 355) (Cont.)

Exposure	**Items**	**Limited Health Literacy**	**Adequate Health Literacy**	***P*[a]**
		Frequency (%)	**Frequency (%)**	
Presence of family member, of health or medical professional, or who attended health or medical-related training	Presence	24 (55.8)	19 (44.2)	0.032
	Absence	224 (71.8)	88 (28.2)	
Presence of family members who had chronic diseases (>6 months duration)	No	201 (72.3)	77 (27.7)	0.057
	Yes	47 (61.0)	30 (38.9)	
Frequency of watching health education movies (n=354)	Often	23 (44.2)	29 (55.8)	<0.001
	Sometimes	177 (77.3)	52 (22.7)	
	Rarely	36 (62.1)	22 (37.9)	
	Never	11 (73.3)	4 (26.7)	
Frequency of searching for any health information on the internet	Often	47 (54.0)	40 (45.9)	0.003
	Sometimes	144 (75.4)	47 (24.6)	
	Rarely	32 (72.7)	12 (27.3)	
	Never	25 (75.8)	8 (24.2)	
Frequency of attending any health-related workshop or training	Often	2 (20.0)	8 (80.0)	0.011
	Sometimes	68 (70.1)	29 (29.9)	
	Rarely	56 (72.7)	21 (27.3)	
	Never	122 (71.4)	49 (28.7)	
School clinic duty	Often	8 (57.1)	6 (42.9)	0.668
	Sometimes	35 (68.6)	16 (31.4)	
	Rarely	15 (65.2)	8 (34.8)	
	Never	190 (71.2)	77 (28.8)	

[a]Chi-square test

2. Primary outcome: Health literacy status

The primary outcome of this study is health literacy status and 107 (30.1%) had adequate health literacy [sufficient health literacy (21.4%) and excellent 31 (8.7%)] and 248 (69.9%) had limited health literacy [inadequate health literacy (84 (23.7%) and problematic health literacy (46.2%)] (Table 2).

Table 3 Distribution of health literacy status among school teachers

Level of Health Literacy	Frequency (%)	95% CI
Adequate Health Literacy	107 (30.1)	(25.4, 35.2)
Sufficient	76 (21.4)	(17.3, 26.0)
Excellent	31 (8.7)	(6.0, 12.2)
Limited Health Literacy	248 (69.9)	(64.8, 74.6)
Inadequate	84 (23.7)	(19.3, 28.4)
Problematic	164 (46.2)	(40.9, 51.5)

3. Level of health literacy in different domains

The proportion of adequate health literacy was found to be the largest in the healthcare domain by 31.5%, and the smallest in the disease prevention domain by 27.6% (Figure 1).

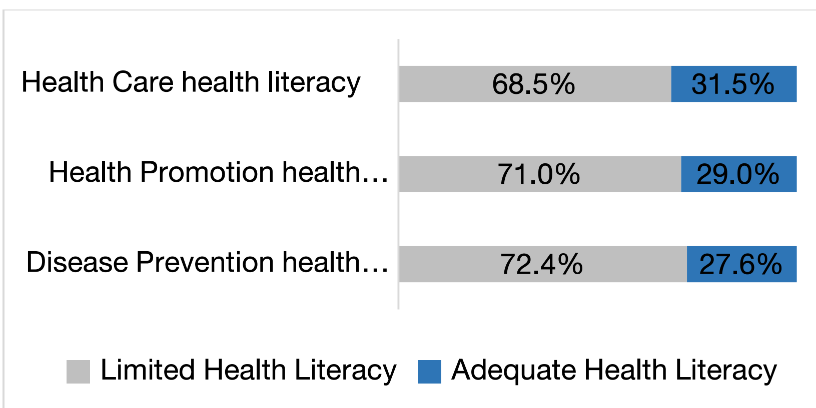

Figure 1 Distribution of the study population by the two-level health literacy in different domains

4. Health Literacy Status with HLS-EU-Q47 matrix

HLS-EU-Q47 matrix was illustrated for mapping of the four dimensions (access, understand, appraise, and apply) against the three domains of health literacy (healthcare, disease prevention, and health promotion), with mean scores. Scores were measured using a 4-point scale (1=very difficult, 2=difficult, 3=easy, 4=very easy). In the health care domain, the lowest score was observed in the "access" category, while the "apply" category received the highest score. For the disease prevention domain, "appraise" had the lowest score, and "apply" had the highest score. In the health promotion domain, the highest scores were found in the "understand" and "appraise" categories, whereas "apply" received the lowest score (Table 3).

Table 3 Domains of health literacy using HLS-EU-Q47 Matrix

Question Number	Domain	Mean Scores (SD)			
		Assess	**Understand**	**Appraise**	**Apply**
Q1-16	Health Care	2.7 (0.6)	2.9 (0.6)	2.8 (0.5)	3.0 (0.5)
Q17-31	Disease prevention	2.9 (0.6)	3.0 (0.6)	2.5 (0.6)	3.0 (0.6)
Q32-47	Health promotion	2.9 (0.5)	3.0 (0.6)	3.0 (0.6)	2.8 (0.6)

SD, Standard Deviation

Scoring: 1=Very Difficult, 2=Difficult, 3=Easy, 4= Very Easy

5. Determinants of health literacy status

Multivariable analysis (multivariate logistic regression) revealed that there were two significant determinants after adjusting for potential confounders (those with *p*-value <0.2 from bivariate analyses). Absence of anyone in family members who attended health-related trainings had a 63% less odds of adequate health literacy [AOR: 0.37, 95%CI: 0.13, 0.98, *p*=0.047] than those who have such a relative or family member. When compared with those who watched the health education movies often, those who watched them sometimes had 70% less odds of adequate health literacy (AOR 0.3; 95%CI 0.1, 0.9) (*p*=0.027) (Table 4).

Table 4 Multivariable analysis for the determinant of health literacy status among school teachers (n=290)

Variables	**Total (%)**	**AOR (95% CI)**	***P*** [a]
Presence of medical professional or who attended health-related training			
Absence	254 (87.6)	0.37 (0.13,0.98)	
Presence	36 (12.4)	1	0.047
Frequency of watching HE movies			
Often	42 (14.5)	1	
Sometime	189 (65.2)	0.32 (0.11, 0.87)	0.027
Rarely	49 (16.9)	0.96 (0.26, 3.46)	0.953
Never	10 (3.5)	1.67 (0.26, 10.45)	0.579

AOR, Adjusted Odds Ratio; CI, Confidence Interval; [a]Multivariate logistic regression

*Age, Education, teaching grade, total service year, per capita income, searching health information on the internet, attending health workshops, reported current health status, presence of health insurance, frequency of going to GP within 6 months, presence of anyone to accompany during clinic visit, difficulty in fees, difficulty in time, difficulty in transport, comparison of health status with others were adjusted.

Discussion

Health literacy can influence health behaviour and the use of health services, which can affect health outcomes and the health costs in society.[16] While many research on health literacy has focused on the general population and patients, attention should be specific to the occupational groups, such as school teachers. As influential figures in shaping the health behaviors and knowledge of children and adolescents, school teachers play a pivotal role in promoting health literacy within the education system. This study revealed the health literacy status among school teachers in Ahlone District, Yangon Region, and explored its determinants. Consistent with findings from previous research,[8,13] only one-third of the school teachers had adequate health literacy status among school teachers, and the reasons might be the weakness in focusing on health education in their training, and due to their busy working environment. The univariate analysis indicated that school teachers of younger age had more adequate health literacy level in this study, and similar results were found in a study conducted in Colombo, Sri Lanka.[10] The reason might be due to that they were greater comfortable with technology and had more exposure to health information through the media. In addition, we found that school teachers' health literacy levels varied by the frequency of watching health education movies. In this study, school teachers who watched health education movies more frequently had higher health literacy levels, and this is consistent with the Myanmar study conducted in 2015, where they stated that watching medical-related TV series was a significant determinant of health literacy.[13] However, a contradictory finding was seen in the study conducted in Turkey.[17] The reason is not clear, and further studies need to be conducted for a detailed explanation. However, our finding was also consistent with a systematic review in which watching more health-related TV programs was significantly associated with higher health literacy.[18] Thus, giving health information through movies and series might be an efficient way of improving health literacy among school teachers. Moreover, health literacy status was also determined by the presence of a relative or family member who attended a health-related training or is a medical professional in this study. A study also mentioned that individuals in families that include a health professional are more likely to engage in preventive health care, live longer, and are less likely to suffer from chronic conditions.[19] This shows that it is worth having a relative or family member who is working in health-related fields or who has ever been to a health-related training program. This unfolds the need for the introduction of such training to the community and/or expansion of such training programs.

This HLS-EU questionnaire applied in this study includes four information processing domains (finding, understanding, judging, and applying) and three health domains (health care, disease prevention, and health promotion).[12] By observing into each health domain, school teachers in the current study had the least adequate health literacy in the domain of disease prevention health literacy, and the proportion of adequate health literacy for the domain of healthcare health literacy is the highest of all three domains assessed, and this result was supported by a study from Colombo, Sri Lanka.[10] Before providing health education and interventions, health care providers must first understand their patients' health literacy[12] and similarly, by knowing the school teacher's health literacy status and the domain of least adequate health literacy level, the required health education programs or interventions need to be provided to increase the health literacy level among school teachers. Improving health literacy status among teachers is essential for achieving broader public health goals, and the interventions aimed at enhancing teachers' health literacy can lead to more effective school-based health promotion programs and improved student health outcomes.

As a limitation, the study was conducted among school teachers in only one district in the Yangon Region, and that district contains the townships that span across urban and suburban areas of the Yangon Region. Hence, our study may not represent the school teachers in the outskirts of Yangon, and the results from this study can only be generalized to the school teachers in the same setting. In addition, information bias, particularly recall bias, that teachers may not accurately remember or report past experiences related to health information and health-related decisions.

Conclusion

One-third of school teachers had adequate health literacy levels in this study, and watching health education movies and the presence of a medical professional as a family member were associated with more adequate health literacy levels in this study. Therefore, health education programs and encouragement of frequent watching of health education movies need to be focused on increasing the health literacy status among school teachers. Moreover, the results of the study will be distributed to the relevant stakeholders and policymakers, who can use them as baseline information in the future planning of the programs to improve the health literacy status among school teachers.

Ethical Approval Statement

Ethical approval was obtained from the University of Public Health Institutional Review Board [UPH-IRB (2022/IR/2)] on 27th December 2022.

Author Contributions

SMML, KLM, and NAT conceived and provided the study design. SMML and KLM supervised data collection. SMML and NAT integrated research idea, conducted data management and statistical analysis, and drafted the manuscript. All authors reviewed and approved the manuscript.

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Conflicts of Interest

The authors declare no competing interest.

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