Factors Influencing Health Literacy of Students in Health Science Curriculum: A Cross-sectional Study

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Abstracts

Background: University students in health science curriculum are the future medical professionals responsible for promoting health literacy to the patients. Thus, it is important to study the level of health literacy in these students.

Purpose: This study aimed to examine the factors influencing the health literacy of students in health science curriculum.

Methods: In this cross-sectional study, a total of 270 undergraduate students in health science curriculum was selected using stratified sampling method. Data were analyzed using Chi-square test, Pearson's correlation coefficient, and Stepwise-multiple regression analysis.

Results: Findings showed that 64.4% of the students had a moderate level of health literacy. Based on the multiple regression model, the significant predictors of health literacy were social support (Beta= 0.441, t= 8.264, *p*-value <.001), policy to promote health perception (Beta= 0.186, t= 3.482, *p*-value <.001), family relationship (Beta= 0.154, t= -4.691, *p*-value <.001) and the GPA (Beta= 0.125, t= 2.246, *p*-value <.001). Together, these four factors could predict 38.0% of the variance in the health literacy of students in health science curriculum.

Conclusion: The health literacy of students could be improved by encouraging social support from family and community, strengthening health promotion policies, and promoting good academic performance. Moreover, given the moderate level of health literacy observed in health science students, it is recommended that universities should incorporate more health literacy topics in their curriculum.

Keywords: *health literacy, students in health science curriculum, social support*

Introduction

Health Literacy (HL) is the ability to gain access to, understand and use information in ways that promote and maintain good health [1-3]. In 1998, the World Health Organization defined health literacy as cognitive and social skills that determine an individual's motivation and ability to access, understand, and use the health information to promote and always maintain good health for oneself [4]. In other words, health literacy is the ability of a person to obtain health information from different media channels, and to understand and recognize the obtained health information and use this information to promote and maintain one's good health [3,5]. Improving health literacy is important because it enables people to make informed choices about their health, and to take an active role in bringing about changes in the environments

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that shape their health [1].

University students in health science curriculum are considered important human resources for national development [6]. As future health professionals, they will be responsible for providing care to patients in all aspects - physically, mentally, emotionally, socially, spiritually, disease prevention and health promotion [7,8]. They also have to collaborate and coordinate with professional colleagues from different professions, including patients' relatives [9]. It is therefore the responsibility of higher education institutions to produce graduates with advanced academic and practical knowledge [10,11] enabling them to become effective health professionals in the future that need to look after patients [12].

Given the essential responsibility of health care professionals in the public health system, it is important to make sure that students have sufficient health literacy so they could educate patients to effectively take care of themselves. While these students take regular exams regarding anatomy and physiology, these are not sufficient to assess their knowledge of health literacy. Thus, there is a need to assess the health literacy level of undergraduate students in the health sciences curriculum in order to develop appropriate interventions in the curriculum depending on the outcome. Additionally, this will remind students of what they should know and will help professors in knowing which areas in health literacy they should focus on to achieve these goals. Therefore, the researcher will examine the factors influencing health literacy of students in health science curriculum.

Methods

In the study, a cross-sectional method was used to examine the factors influencing health literacy of students in health science curriculum.

Setting and Sample

This study was conducted at the College of Nursing and Health and College of Allied Health Sciences in a Thai university in the first semester of the academic year, April-May 2019. The researchers used G*power program to calculate the sample size using the following: a two-tailed hypothesis test, significance level of .05, and power of .80 which resulted in a sample size of 270 participants.

Ethical Consideration

The study was approved by the Ethics Committee of Suan Sunandha Rajabhat University and was carried out with written informed consent from the students. However, students who were not willing to participate could withdraw anytime.

Research Instruments

There were six instruments used in this study including: 1) demographic data consisted of 5 items, 2) family relationship; this instrument developed by Suksatan, et. al. [13] consisted of 12 items and the internal consistency by Cronbach's alpha coefficient was 0.80, 3) peer's relationship; consisted of 5 items and the internal consistency by Cronbach's alpha coefficient was 0.78, 4) social support, developed by Boonvarasatit, Homsin, Srisuriyawet [14] consisted of 16 items and the internal consistency by Cronbach's alpha coefficient was 0.90, 5) perceived health promotion policy consisted of 10 items and the internal consistency by Cronbach's alpha coefficient was 0.92, and 6) health literacy, this instrument developed by Nutbeam [1] and Prabsangob [15] consisted of 14 items and the internal consistency of the questionnaire by Cronbach's alpha coefficient was 0.94.

Data collection

After obtaining their permission, students who met the inclusion criteria and agreed to participate were approached at the classroom for explanation about the study purpose and processes, receiving the information sheets and signing a consent form. Then, each student completed the questionnaires in around 10-20 minutes, without interruption during data gathering.

Data analysis

The researchers used descriptive statistics to describe the demographic characteristics of the participants. Pearson correlation coefficient was conducted to examine correlations of all health literacy variables and also used multiple regression analysis to examine the factors influencing health literacy of students in health science curriculum. The assumptions of multiple regression including normal distribution, multicollinearity, and heteroscedasticity [16] were examined and outliers were deleted for violating the assumptions.

Research Result

Characteristics of participants

In total, 270 undergraduate students in health science curriculum were investigated. Majority of the participants were female, 62.4%, the average age was 20.12 ± 0.241 years (Mean ± SD), and the grade point average (GPA) was 2.86 ± 0.42 (Mean ± SD). The largest percentage of participants were the students in the college of allied health sciences (53.8%), the majority of participants lived in the northeast region (24.5%), and the majority of students earned an average monthly income from their parents were 156 - 312 US dollar (52.8 %).

Determinants of health literacy

The researchers found that 64.4% of participants have a moderate level of health literacy. In each category namely critical health literacy, interactive health literacy, and functional health literacy, the percentage of students with moderate levels of health literacy were 61.5, 60.3, and 57.8 percent respectively (Table 1).

Table 1: Number and percentage of health literacy of health science students (n = 270)

Health literacy	Mean	S.D.	n (%)		
			High	Moderate	Low
Functional health literacy	9.84	1.82	82 (30.3)	156 (57.8)	32 (11.9)
Interactive health literacy	18.78	3.45	79 (29.2)	163 (60.3)	28 (10.5)
Critical health literacy	14.62	2.67	88 (32.6)	166 (61.5)	16 (5.9)
Overall	39.02	7.23	74 (27.4)	174 (64.4)	22 (8.2)

The factors associated with health literacy

In terms of gender, college education, and the parenting styles of health science students, the researchers found that gender has a statistically significant relationship via Chi-square analysis (*p*-value = 0.024). However, parenting styles and college education have no relationship with health literacy.

The results of the analysis regarding the age, GPA, average monthly income, family relationships, social support, and perceived health promotion policy of health science students, as analyzed by Pearson's Product Moment Correlation Coefficient, the authors found that GPA (r = 0.142), family relationships (r = 0.360), social support (r = 0.224) and perceived health promotion policies (r = 0.302) have a statistically significant relationship via Pearson's Product Moment Correlation Coefficient analysis (*p*-value < 0.05). However, age factor (r = -0.106) and average monthly income have no correlation with health literacy (Table 2).

Table 2: Summary of the Pearson's Product Moment Correlation Coefficient between individual factors, interpersonal factors, institutional factors, public policy level factors, and health literacy of health science students (n = 270)

Factors	Pearson's Product Moment Correlation Coefficient	*p-value*
Individual factors		
Age	-0.104	0.68
GPA	0.142	< 0.001*

Cont... **Table 2: Summary of the Pearson's Product Moment Correlation Coefficient between individual factors, interpersonal factors, institutional factors, public policy level factors, and health literacy of health science students (n = 270)**

Factors	**Pearson's Product Moment Correlation Coefficient**	***p-value***
Average monthly income	0.263	0.062
Interpersonal factors		
Family relationship	0.360	< 0.001*
Institutional factors		
Social support	0.224	< 0.001*
Public policy level factors		
Policy to promote health perception	0.302	< 0.001*

*Significant at *p*-value < 0.05

Prediction of intention

The factors influencing health literacy of health science students, were obtained through analysis between personal factors, interpersonal factors, institutional factors, and public policy level factors by Stepwise Multiple Regression. The researchers found that the four variables namely social support, policy to promote health perception, family relationship and GPA are significant predictors of health literacy based on their Beta values which are 0.441, 0.186, 0.154, 0.128 respectively. Overall, these variables can predict the health literacy of health science students by 38.0% (Table 3).

Table 3: Multiple correlation coefficient between predicted variables and health literacy of health science students by the stepwise multiple regression (n = 270)

Predicting factors	**B**	**Beta**	**SE (b)**	**t**	**p-value**
Social support	0.762	0.441	0.284	8.264	<0.001*
Policy to promote health perception	0.663	0.186	0.327	3.482	<0.001*
Family relationship	0.365	0.154	0.337	-4.691	<0.001*
GPA	-0.638	0.128	0.360	2.246	<0.001*
Constant = 70.230					

*significant at *p*-value < .001, $R^2 = 0.380$

Discussion

This study applied the theoretical framework of the social ecological model for predicting the factors influencing health literacy of students in health science curriculum. Results indicated that 38.0% of the variance in health literacy can be predicted and explained by the four variables which are social support, policy to promote health perception, family relationship, and GPA. The most predictive factors in health literacy were social support, such as peers, family, and professors, which enable students to manage themselves more healthily [17,18]. The findings are consistent with that of Parashar [19] who found that living together with people with good health and sufficient intelligence would help support

that person to be healthy. In addition, these results also closely corroborate with that of Kara Kaşıkçı, Alberto [20] who found that social support from family members, friends and health personnel such as physical, emotional, informational, and counseling support were correlated with health literacy. The researchers found that perceived health promotion policy is correlated with health literacy. This factor can predict students' health literacy because it enables them to recognize that government policies for adolescent development is very important. Moreover, the students who are continuously supported by their families, peers, and professors are likely to have good awareness. In fact, Noonil, Aekwarangkoon [21] found that children and youths who are actively participating in school and community activities tend to have positive life assets.

Results showed that family relationships were the third factor that can predict the health literacy of students in the health sciences curriculum. The findings agree with that of Begoray, Wharf-Higgins, MacDonald [22] who found that having good family relationships leads to good health outcomes. In addition, it will lead to self-management as well [23] while the support provided by health personnel has little effect on oneself [24,25]. Moreover, GPA is also an important predictor of health literacy. Since GPA is an indicator of the students' academic performance, this also correlates to their ability to acquire health literacy. In fact, Jaiboon et. al. [26] studied 174 students and they found that students with very good grades were knowledgeable, interested in learning, and always diligent in seeking new knowledge, which makes the children in these group have more health disputes regarding reading than children with low and moderate grades has statistical significance at *p*-value .05 [27]. According to Aunprom-Me and Aunprom-Me [28], there is a positive correlation (r = .278, *p*-value = .006) between GPA in their study of 98 fourth year nursing students.

Conclusion

This study provides evidence that social support, policy to promote health perception, family relationship, and GPA are important factors that determine the health literacy of students in health science curriculum. Therefore, healthcare providers, families, and professors should consider these factors in developing interventions to promote the health literacy of students in health science curriculum. Interestingly, we found that the majority of the university students in health science programs have only a moderate level of health literacy. This suggests that universities should incorporate more health literacy topics in their curriculum. It is also likely that students in another profession such as engineering, arts, business and social sciences would have a relatively lower health literacy. Thus, it is recommended that universities should incorporate health literacy in their curriculums as well.

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Conflict of Interest *:* The authors declare that there is no conflict of interest.

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