Psychometric Properties of the Thai Mental Health Literacy Scale in Sixth-Year Medical Students

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ABSTRACT

Objective: To assess the psychometric properties of the Thai Mental Health Literacy Scale (TMHLS) in sixth-year medical students.

Materials and Methods: By using the purposive sampling method, we enrolled 202 participants in this study. Descriptive statistics were used to analyze demographic data. The index of item-objective congruence (IOC) was used to verify content validity. Exploratory factor analysis (EFA) was performed to establish the construct validity of the TMHLS. The internal consistency was estimated by computing Cronbach's coefficient alpha.

Results: The TMHLS had good content validity (IOC=.85) and construct validity. The EFA resulted in five factors, which included 32 of the 35 items and accounted for 46.86% of the variance. The factors were the ability to recognize mental disorders; confidentiality of mental health practitioners; skills of mental health information seeking; beliefs about mental illnesses; and attitudes toward patients with mental illness. The reliability coefficient of the TMHLS total test was .851, and reliability coefficient in subdomains were range from .197 to .872. Individuals who had a mental health professional as an intimate contact and individuals who had a history of seeking help from mental health professional(s) in person showed significantly higher mental health literacy than those who did not.

Conclusions: The TMHLS has good psychometric properties. Dynamic knowledge transfer and exchange with a close mental health professional should be applied to promote mental health literacy in medical students.

Keywords: assessment; experience; help-seeking; medical externs; professional; reliability; validity (Siriraj Med J 2022; 74: 100-107)

INTRODUCTION

Mental health problems have been increasing throughout the world[1], with young adults being the most affected group. Thirty percent of them have mental disorders while the remaining are also at risk.[2] Because of poor mental health literacy, high mental health problems and low engagement in help-seeking behaviors were reported in these individuals.[3-7]

Mental health literacy reduces the risk of developing mental disorders along with increasing help-seeking behaviors.[8] People with high mental health literacy will be able to recognize, manage, and prevent mental health problems. Oppositely, people with low mental health literacy may not be able to appropriately manage and often end up with more serious complications.[9] Unfortunately, there is no assessment tool for mental health literacy in Thai at the time.

Sixth-year medical students were targeted in this study because they were young adults at risk of mental disorders[2,10-11] who already gained mental experiences that may affect their mental health literacy.[12-13]

Due to the lack of an instrument to measure mental health literacy among Thai people, this study aimed to assess the psychometric properties of the Thai mental

health literacy scale (TMHLS) in sixth-year medical students who may exemplify the young adults at risk of mental disorder.

MATERIALS AND METHODS
Participants
The number of participants in this study was determined by the Cochran formula.[14] We enrolled 250 sixth-year medical students from the Faculty of Medicine Siriraj Hospital in Bangkok who had registered for the first semester in academic year 2017 and voluntarily answered the questionnaires using purposive sampling method.

Tools
A demographic questionnaire was used to collect data from participants including gender, age, sources of mental health experiences, and their mental illness if applicable.

The translation of mental health literacy scale (MHLS)
The MHLS was translated to Thai under the supervision of a language expert. The index of item-objective congruence (IOC) was used to verify content validity by three mental health experts: one psychiatrist and one licensed clinical psychologist from the Department of Psychiatry, Faculty of Medicine Siriraj Hospital; and one licensed clinical psychologist from the Faculty of Psychology, Chulalongkorn University. All mental health experts discussed the translated version until reaching a consensus. The Thai mental health literacy scale (TMHLS) was finally completed following expert opinion.

The TMHLS is a self-reporting questionnaire with 35 items covering six attributes of mental health literacy: the ability to recognize a disorder; knowledge of where to seek information; knowledge of risk factors and causes; knowledge of self-treatment; knowledge of professional help available and attitudes that promote recognition or appropriate help-seeking behavior. The total score is the summation of all items. Therefore, the maximum score is 160 whereas the minimum score is 35. A higher score means greater mental health literacy.

Statistical analyses
All statistical analyses were performed by PASW 18.0.[16] Descriptive statistics were used to analyze demographic data. The IOC was used to verify content validity. The factor solution was determined based on the number of eigenvalues greater than one.[17] We conducted the exploratory factor analysis (EFA) using .30 as a factor loading criterion[18], five to ten participants per item[19], and a minimum sample size of 200.[20-21] The EFA began with an initial analysis run to obtain eigenvalues for each factor in the data. The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy test and Bartlett's Test of Sphericity were executed to determine construct validity and to confirm those data were appropriate. The KMO test was used to verify the sampling adequacy for the analysis, and Bartlett's Test of Sphericity was used to determine if correlations between items were sufficiently large for EFA. Bartlett's Test of Sphericity should reach a statistical significance of less than .05 in order to conduct an EFA. The reliability of an instrument is concerned with the consistency, stability, and dependability of the scores.[22] For this reason, the internal consistency was tested using Cronbach's alpha for each competency.

RESULTS
The sixth-year medical students
Two-hundred and two of the 250 participants (80.8%) answered the questionnaires. The majority of respondents were female (n=133; 65.8%) aged between 22-24 years (M = 23, SD = 0.46). Psychiatric rotation was the most popular source of their mental health experience (n=190; 94.1%). Thirteen out of 202 medical students had major depressive disorder (6.4%), the most common diagnoses among the samples (Table 1).

The psychometric properties of the Thai mental health literacy scale (TMHLS)
Content validity
The first-round IOC of the TMHLS was .67 with 9 of 35 items (items number 2, 3, 5, 6, 7, 8, 15, 20 and 24) defined as required revision (IOC > .05). After revision of those 9 items, content validity in the second round increased to .85. However, 4 of 9 items (items number 3, 5, 15 and 20) were still defined as required revision (IOC > .05).

Construct Validity
The EFA revealed five meaningful constructs emerged, namely, ability to recognize mental disorders (item 1, 2, 3, 4, 5, 6, 7, 8); confidentiality of mental health practitioners (item 22, 23, 25, 26, 27, 28); skills of mental health information seeking (item 16, 17, 18, 19); beliefs about mental illnesses (item 9, 11, 12, 13, 20, 21, 24); and attitudes toward patient with mental illness (item 29, 30, 31, 32, 33, 34, 35), which accounted for 46.86% of the cumulative variance. Three items (item 10, 14 and 15) did not load on any of the factors (Table 2).

Reliability
Total Cronbach's alpha coefficient of the TMHLS

TABLE 1. Demographic data of the sixth-year medical students (n=202).

Attributes		Frequency (n)	Percent (%)
Response rates		202	80.8
Sex	Female	133	65.8
	Male	69	34.2
Age (years)	22	22	10.9
	23	158	78.2
	24	22	10.9
(M =23, SD = 0.46, Range 22-24 years)			
Sources of mental health experiences			
(Mutual items and answers reasonable)			
• Fifth-year rotation (psychiatry)		190	94.1
• Media (internet/ newspaper/ television)		139	68.8
• Having family members or friends with mental disorder(s)		110	54.5
• Self-experience of mental disorder(s)		31	15.3
• Having a mental health professional as an intimate contact		29	14.4
• History of seeking help from mental health professional(s) in person		19	9.4
• History of seeking help from mental health professional(s) for family members or friends		16	7.9
Types of mental illness			
• Major depressive disorder (MDD)		13	6.4
• Panic disorder		3	1.5
• Adjustment disorder		2	1
• Attention deficit hyperactivity disorder (ADHD)		2	1
• Bipolar disorder		1	0.5
• Premenstrual dysphoric disorder (PMDD)		1	0.5
• Relationship problems		1	0.5
• Unspecified		8	4

was .851. Still, there were 6 items (items 9, 10, 11, 12, 15 and 20) in the reliability coefficients of all items that do not meet the criterion (CITC < .20). The Cronbach's alpha if item deleted was .872 which was in the same interval before withdrawing the 6 items. The Cronbach's alpha if item deleted for each item was slightly different from the Cronbach's alpha of all items. Therefore, all items that do not meet the criterion still remain (Table 3). The reliability coefficient in subdomains of TMHLS were range from .197 to .872 (Table 4).

The mental health literacy in sixth-year medical students

The medical students' mean score of mental health literacy was 123.09 (S.D. ± 11.55, 95% CI = 121.49–124.69). Multiple comparisons of our participants' mental health experiences showed having intimate contact with a mental

TABLE 2. Factor structure of the Thai Mental Health Literacy Scale (TMHLS).

Item	F1	F2	F3	F4	F5
Q8	.866				
Q5	.831				
Q7	.752				
Q3	.714				
Q6	.696				
Q4	.662				
Q1	.648				
Q2	.540				
Q28		.697			
Q27		.683			
Q26		.612			
Q22		.529			
Q25		.524			
Q23		.397			
Q19			.799		
Q17			.791		
Q16			.753		
Q18			.634		
Q11				.558	
Q20				-.502	
Q21				-.461	
Q24				-.442	
Q13				.422	
Q12				-.351	
Q9				.337	
Q33					.781
Q32					.775
Q30					.758
Q31					.747
Q34					.725
Q35					.725
Q29					.724

Note: F1 =ability to recognize mental disorders, F2 = confidentiality of mental health practitioners, F3 = skills of mental health information seeking, F4 = beliefs about mental illnesses, F5 = attitudes toward patient with mental illness

TABLE 3. Reliability coefficients of all 35 Items from the Thai Mental Health Literacy Scale (TMHLS).

Items	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1	120.0050	127.146	.388	.847
2	120.1608	126.206	.440	.845
3	119.7186	127.203	.444	.846
4	120.0101	125.677	.442	.845
5	119.6734	125.160	.509	.844
6	120.0151	127.096	.339	.848
7	119.8442	126.263	.402	.846
8	119.6482	124.320	.544	.843
9	120.1709	132.405	.124**	.853
10	120.4121	136.213	-.122**	.857
11	119.9447	133.113	.089**	.853
12	120.6783	133.586	.028**	.856
13	119.9146	130.887	.223	.850
14	119.6131	128.370	.394	.847
15	120.3568	131.443	.140**	.853
16	119.1005	129.444	.318	.848
17	119.1256	129.878	.295	.849
18	118.9447	129.578	.292	.849
19	118.8543	129.085	.399	.847
20	120.4472	131.945	.077**	.857
21	119.2563	125.616	.367	.847
22	118.9095	126.770	.384	.847
23	119.1859	126.657	.413	.846
24	118.9548	124.649	.492	.844
25	119.3920	129.179	.254	.850
26	118.7286	126.936	.420	.846
27	118.7337	127.762	.414	.846
28	118.6734	128.504	.374	.847
29	120.4573	125.886	.411	.846
30	119.7688	125.360	.461	.845
31	119.3618	123.444	.572	.842
32	119.5879	124.233	.494	.844
33	120.4874	124.776	.414	.846
34	120.0050	124.601	.401	.846
35	119.6784	124.957	.454	.845

**Items that have corrected item-total correlation less than 2 are not pass the criterion.

TABLE 4. Reliability coefficients in subdomain and total of the Thai Mental Health Literacy Scale (TMHLS).

Factors (subdomain)	Number of Items	Cronbach's Alpha coefficient
F1	8	.867
F2	6	.683
F3	4	.782
F4	7	.197
F5	7	.873

Note: F1 =ability to recognize mental disorders, F2 = confidentiality of mental health practitioners, F3 = skills of mental health information seeking, F4 = beliefs about mental illnesses, F5 = attitudes toward patient with mental illness; Total Cronbach's alpha coefficient =.851

health professional and a history of seeking help from a mental health professional(s) in person significantly correlated with the participants' mental health literacy score. The mental health literacy of individuals who had intimate contact with a mental health professional was significantly higher than those who did not (mean±SD was 127.41±13.96 and 122.37±10.99, respectively; t (200) = 2.196, p < .05). Likewise, mental health literacy of individuals who had a history of seeking help from mental health professional(s) in person was higher than those who did not (mean±SD was 128.84±10.25 and 122.50±11.55, respectively; t (200) = 2.302, p < .05.) (Table 5).

TABLE 5. The comparison of mental health literacy by mental health experiences.

Mental health experiences	n	$\bar{x}$	S.D.	t	p
Media (internet/ newspaper/ television)					
have	139	123.98	11.94	1.622	.106
not have	63	121.14	10.49		
Having family members or friends with a mental illness					
have	110	123.83	11.78	.986	.325
not have	92	122.22	11.28		
Self-experience of mental disorder(s)					
have	31	126.16	10.13	1.612	.108
not have	171	122.54	11.74		
Having a mental health professional as an intimate contact					
have	29	127.41	13.96	2.196*	.029
not have	173	122.37	10.99		
History of seeking help from mental health professional(s) in person					
have	19	128.84	10.25	2.302*	.022
not have	183	122.50	11.55		
History of seeking help from mental health professional(s) for family members or friends					
have	16	124.94	10.85	.664	.507
not have	186	122.94	11.63		

* p < .05

DISCUSSION

The sixth-year medical students

Major depressive disorder was the most common diagnosis in this study which was in accordance with previous Thai, Malaysian and Chinese Studies.[23-25]

The Psychometric properties of the Thai mental health literacy scale (TMHLS)

The TMHLS has good validity. The content validity by the IOC in the second-round was .85, and only 4 out of 9 items needed to be revised. According to the original study[15] that stated measurement cannot assess all attributes of mental health literacy when some of the items needed to be removed, all items were used in the scale altogether. Consistent with a previous Persian study[26], the EFA of data resulted in five meaningful factors that were similar to the original ones[15], and accounted for 46.86% of the variance. The trivial differences could have been due to cultural diversities of the participants. Socioeconomic status, cultural and language variances interact with health literacy.[27]

Total Cronbach's alpha coefficient of the TMHLS was .851 which was considered in a good criterion. The reliability coefficient in subdomains were range from .197 to .872. Still, there were 6 items that did not meet the criterion. The Cronbach's alpha if item deleted for each item was slightly different from the Cronbach's alpha of all items. According to the original study[15] that stated the measurement cannot assess all attributes of mental health literacy when some of the items needed to be removed. Therefore, those 6 items that do not meet the criterion were persevered.

The mental health literacy in sixth-year medical students

The mental health literacy of our medical students was aligned but slightly lower than a prior British study.[13] Our score was marginally inferior than an Australian study exploring university students.[15] This may uncover differences in mental health literacy between developing and developed countries. The necessity of mental health literacy acknowledgement in village health workers was mentioned in a previous Thai study.[28] A South African study urged for mental health education in healthcare professionals.[29] Language deviance and questionnaire format may also be responsible for the different results.

Our participants had already gained mental health experiences that may affect their mental health literacy. Previous works also showed higher mental health literacy in individuals who encountered mental health problems than the individuals who did not.[12,30] The more exposure someone has, the more mentally health literate they are.[12]

Consistent with the original study[15], the mental health literacy of individuals who had a history of seeking help from mental health professional(s) in person was higher than those who did not. Dynamic knowledge transfer and exchange with a close mental health professional, like in family businesses[31], could be a reason for higher mental health literacy of individuals who had a mental health professional as an intimate partner than those who did not.

The questionnaire comments

The main concern about the TMHLS was the complexity and clarity of the questions. However, the items that should be allocated were not mentioned. A separate version of TMHLS between medical students and general population was advised. Although some participants described the questionnaire as easy and clear to answer, an equal number expressed the overly theoretical concerns. Some of them requested more attitude questions.

Limitations

Information and recall bias may have been presented in this observational descriptive cross-sectional study. Based on purposive sampling method, the results cannot legitimize any generalizations. We did not perform back-translation process; hence the quality assurance of the TMHLS should be concerned. As the EFA is not a sufficient tool to test the theoretical foundations of the instrument, a confirmatory factor analysis (CFA) should be conducted to further the knowledge in this area. Since we used Cronbach's alpha for reliability testing, the interitem covariance and the measurement assumptions error could be considered as the alpha value cannot be equivalent with the reliability of the test score. Additional studies in other population are recommended to validate this instrument to widen its application.

CONCLUSION

The TMHLS has good validity and reliability. Dynamic knowledge transfer and exchange with a close mental health professional should be applied to promote mental health literacy in medical students.

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