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ORIGINAL RESEARCH

Psychometric Properties of the Persian Version of Mental Health Literacy Scale

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Background: Due to the lack of an instrument to measure mental health literacy among Persian/Farsi speaking people, this study was conducted to examine the psychometric properties of the Persian version of the Mental Health Literacy Scale (P-MHLS).

Participants and Methods: The 2019 cross-sectional study with 992 participants was conducted in Tabriz, Iran. Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were performed to establish the construct validity of the P-MHLS. The internal consistency/reliability was estimated by computing Cronbach's coefficient alpha. Feasibility of the scale was examined and item response theory (IRT) models were applied to characterize the test items.

Results: An exploratory factor analysis of data resulted in five factors, which included 30 of the 35 items and accounted for 42.00% of the variance. The construct validity of the 5-factor model was supported by the results of our confirmatory factor analysis. The factors were the 1) ability to recognize mental disorders, 2) confidentiality of mental health practitioners, 3) skills of mental health information seeking, 4) beliefs about mental illnesses, and 5) attitudes toward patients with mental illness.

Conclusion: The study provides initial support for the use of the MHLS among Persian/Farsi speaking adults to assess mental health literacy.

Keywords: mental health literacy, reliability, validity

Introduction

Globally, mental disorders make up a third of the burden of illness among adolescents,[1] and 70% to 75% of adult mental health problems and disorders begin during adolescence.[2,3] Additionally, untreated mental disorders in adolescents are known to be a predictor of poor vocational achievements, problematic interpersonal and family functioning, and reduced life expectancy due to associated medical conditions.[4–7] Research shows, worldwide, between 70% and 80% of young people and adults do not receive the mental health care that they need.[8–10]

Despite the high global prevalence of mental illness,[11] a significant treatment gap remains between requiring and receiving the care.[12] One of the main reasons for this gap is low levels of the mental health literacy (MHL),[13,14] which refers to an individual's knowledge and ability to make sound mental health decisions in everyday life.[13] The MHL is considered a significant determinant of mental health;[15,16] however, it is a relatively new concept in health promotion research. Additionally, the MHL has been identified as an important determinant of public mental health,[13,16–18] a prerequisite for early recognition and intervention in mental disorders, and a focus of research for the past few decades.[19] Unfortunately, the

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overall level of knowledge about mental health is low.[20–22] For example, it is reported that a large number of people are unable to identify signs and symptoms of common disorders[21] and fail to participate in preventative and treatment programs that are designed to provide mental health services in low to middle-income countries.[23–25]

A systematic review of the literature showed that the knowledge of mental health and disorders, awareness of help-seeking guidelines, and reducing the stigma against mental illness at individual, community, and institutional levels may promote early identification of mental disorders, improve mental health outcomes, and increase participation in mental health services.[26–28] There is some evidence that adolescent girls have a higher prevalence of psychological disorder.[29,30] The girls are more vulnerable to the consequences of mothers' mental problems than are boys.[31,32] Additionally, lack of recognition of mental health problems among young people and their parents is a major barrier to help-seeking efforts.[33] Mothers play an important role in younger adolescents' development, especially among daughters;[34] as a result, maternal health literacy can empower women to address factors that affect outcomes for both mothers and children.[35–37]

Although the MHL is considered an important determinant of mental health and has the potential to benefit both the individual and the public,[15,16] its use in evidence-based practices and health promotion interventions has been limited.[38] O'Connor et al[39] conducted an extensive literature review and reported that most of the related investigations had not adequately addressed the psychometric properties of the measuring instruments. Additionally, they noted several important constructs (ie, disorder recognition, help and information-seeking behavior, risk factor identification, causes of mental illness, self-treatment/coping, and risk factors) had not been sufficiently investigated.

Due to the lack of an instrument to measure mental health literacy among Persian/Farsi speaking people, this study was conducted to examine the psychometric properties of the Persian version of the Mental Health Literacy Scale (P-MHLS).

Participants and Methods

Subject Selection

The study was cross-sectional in nature, delimited to the mothers of female high school children, and conducted between February and April 2019 in Tabriz, Iran. The sample size estimation was based on the recommendation of having five (5) to ten (10) subjects per the scale's items.[40] We employed multistage sampling. Specifically, out of the five (5) educational districts in Tabriz, one (1) was selected at random, followed by selecting three (3) high schools within the same geographic location in the district. The mothers of all 7th to 9th graders (n = 1030) were invited to participate in the study, of which, 992 met the inclusion criteria of living with the child and being literate, and voluntarily agreed to take part in data collection. A survey questionnaire was used, which took 20 to 30 minutes to complete by the participants. The study was conducted in accordance with the ethical standards in the 1964 Declaration of Helsinki and its later amendments. All participants signed informed consent forms. Permission to conduct the study was obtained from the Ethical Research Committee of Tabriz University of Medical Sciences (#IR.TBZMED.REC.1397.527).

Translation Validity

The MHLS was developed to assess knowledge of a range of areas in mental health and attitudes toward mental health and help-seeking behaviors.[41] The translation of the MHLS from English to Persian (Farsi) was conducted based on the international guidelines.[9] First, two bilingual native Iranians with knowledge of social science and psychology performed the translation independently. Second, the two translators and the primary investigator (PI) discussed the translated version until reaching a consensus. Third, the Persian (Farsi) version was independently back-translated into English by two professionals in English language translation who were not aware of the original English version. Fourth, all translations were reviewed by a panel of experts, consisting of a psychologist, a psychometrician, a neurologist, two health education specialists, and the translators, who approved the content validity of the P-MHLS, which was later pilot-tested for its utility by 30 mothers who were excluded from the main study.

Persian Mental Health Literacy Scale (P-MHLS)

The P-MHLS is a self-reported tool, consisting of 35 items rated on a 4-point (1–4) or a 5-point (1–5) Likert-type scaling, with 12 reverse-coded (10, 12, 15, 20–28) items. The theoretical range for the total score is 35 to 160, higher scores indicate higher levels of mental health literacy.

Statistical Analysis

All analyses were conducted, using the STATA 14 (Stata Corp, College Station, TX). Descriptive statistics were used to summarize and organize the data. Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were performed. The structural equation modeling (SEM) utilized maximum-likelihood estimates.[42] Skewness and Kurtosis were examined to examine the normality of the distributions. The level of significance was set, a priori, at 0.05.

Construct Validity

The EFA and CFA were performed to examine the construct validity of the P-MHLS, utilizing two subsamples of 496 and 496, respectively. The sampling adequacy was examined by Kaiser–Meyer–Olkin (KMO) test, and 0.70 was used as an indicator of satisfactory EFA. In addition, the correlation matrix was tested with Bartlett's test of sphericity, which ruled out the identity matrix. The factor loading of at least 0.30 was considered as acceptable, and eigenvalues greater than 1.00 determined the factor.[43]

To assess how well the EFA-extracted model fit the observed data, a CFA was performed, using the method of weighted least squares for estimation. The asymptotic covariance matrix was considered a weighted matrix. The input consisted of a covariance matrix of the data. The following indicators of goodness of fit were used: root-mean-square error of approximation (RMSEA) < 0.08, comparative fit index (CFI) ≥ 0.90, Tucker–Lewis index (TLI) ≥ 0.90, and standardized root-mean-square residual (SRMSR) < 0.08.[44]

Reliability

We used Cronbach's coefficient alpha to estimate the reliability/internal consistency of the scale. The theoretical range is 0.00 to 1.00.

Feasibility

To assess the feasibility of the measures, the percentages of possible minimum and maximum scores were computed as floor and ceiling effects, respectively. Less than 15% was considered adequate.

IRT Model

Item response theory (IRT) models were utilized to characterize the test items based on their discrimination and difficulty indices. A discrimination index is used to describe the sensitivity of the test to differentiate among severity of the characteristics. The purpose of the difficulty index is to identify the level of a perceived problem needed to achieve a 50% probability of choosing a particular score[45] and contributes to the overall information provided by the test.[42]

Results

A Profile of Subjects

The study's participants were mothers of 992 adolescents, mostly housewives (82.70%) with one child (52.40%), four family members (60.00%), and moderate economic status (63.60%). The level of education ranged from primary school to university with high school diploma as the mode (47.30%). Approximately, one-third could neither identify children's mental problems nor access assistance (26.30% and 31.00%, respectively). Results are summarized in Table 1.

The EFA portion of the study utilized the data from half of the 992 participants and employed Varimax rotation, because we had conceptualized that the underlying constructs were independent of each other. The KMO measure of sampling adequacy was 0.80 and Bartlett's Test of Sphericity was statistically significant, suggesting that the correlation matrix was suitable for factor analysis. Five (5) meaningful constructs/factors emerged, namely, 1) ability to recognize mental disorders (11 items), 2) confidentiality of mental health practitioners (9 items), 3) skills of mental health information seeking (4 items), 4) beliefs about mental illnesses (4 items), and 5) attitudes toward patient with mental illness (2 items), which accounted for 42.00% of the cumulative variance. Five items did not load on any of the factors. Results are summarized in Table 2.

Feasibility and Reliability

The percentages of the ceiling and floor scores, utilizing the data from all participants, were less than 15.00% for the five (5) factors, attesting to the feasibility of the P-MHLS. Skew and Kurtosis coefficients did not suggest departure from normality. Reliability coefficients ranged from 0.61 to 0.82. Item total correlation coefficients ranged from 0.05 (items 10) to 0.42 (item 7). Results are summarized in Table 3.

Table 1 A Profile of the Subjects (n = 992)

Variables	Total N (%)
Child's birth order	
1	520 (52.40)
2	374 (37.70)
3	78 (7.90)
≥4	20 (2.00)
Number of family members	
2	9 (0.90)
3	200 (20.20)
4	595 (60.00)
≥5	188 (19.00)
Occupation	
Housewife	820 (82.70)
Employed	172 (17.30)
Literacy level	
Primary education	82 (8.30)
Secondary education	216 (21.80)
Diploma	469 (47.30)
University	225 (22.70)
Economic status	
Very good	38 (3.80)
Good	234 (23.60)
Moderate	631 (63.60)
Low	78 (7.90)
Very low	11 (1.10)
Ability to identify children's mental problems	
Very good	363 (36.60)
Good	367 (37.00)
Moderate	182 (18.30)
Low	59 (5.90)
Very low	21 (2.10)
Ability to identify resources for help search	
Very good	292 (29.40)
Good	396 (39.90)
Moderate	207 (20.90)
Low	81 (8.20)
Very low	16 (1.60)

Construct Validity

The CFA potion of the investigation utilized the other half of the observations and results showed that the model fit the data. Specifically, the following indices were obtained: RMSEA = 0.04, TLI = 0.91, CFI = 0.92, and SRMSR = 0.05. Results are shown in Table 4 and Figure 1.

Table 2 Factor Structure of the Persian Mental Health Literacy Scale (n = 496)

Items	F1	F5	F3	F4	F2
MHL4	0.67				
MHL7	0.66				
MHL6	0.65				
MHL2	0.61				
MHL5	0.61				
MHL1	0.57				
MHL3	0.54				
MHL13	0.51				
MHL8	0.51				
MHL11	0.38				
MHL9	0.37				
MHL31		0.83			
MHL32		0.77			
MHL30		0.71			
MHL33		0.59			
MHL29		0.54			
MHL35		0.52			
MHL34		0.43			
MHL24		0.32			
MHL23		0.30			
MHL19			0.70		
MHL18			0.60		
MHL17			0.56		
MHL16			0.52		
MHL28				0.63	
MHL27				0.55	
MHL26				0.48	
MHL25				0.43	
MHL15					0.41
MHL14					0.38

Abbreviations: 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 A Summary of the Characteristics of the Factors (n = 992)

Factors (Subscales)	Number of Items	Range	Mean (SD)	Kurtosis	Skewness	Floor Effect (%)	Ceiling Effect (%)	Cronbach α
F1	11	11–44	28.59 (5.77)	−0.06	−0.01	0.20	0.50	0.82
F2	9	9–45	20.24 (5.61)	−0.31	0.32	0.00	0.00	0.62
F3	4	4–20	13.77 (3.17)	0.36	−0.55	1.00	2.20	0.72
F4	4	4–20	16.04 (2.66)	1.47	−0.78	0.20	9.80	0.61
F5	2	2–8	4.79 (1.68)	−0.68	0.02	12.90	7.10	0.80

Table 4 The Confirmatory Factor Analysis Indices of the Persian Mental Health Literacy Scale (n = 496)

Measure	TLI	SRMSR	CFI	RMSEA
MHLS	0.91	0.05	0.92	0.04

Abbreviations: TLI, Tucker–Lewis index; SRMSR, standardized root-mean-square residual; CFI, comparative fit index; RMSEA, root-mean-square error of approximation.

IRT Model

The P-MHLS items were summed so that higher scores reflected better levels of mental health literacy. The overall fit of the model was found to be adequate (Chi-square = 356.42, df = 160, $p < 0.05$). The items and parameter estimates are summarized in Table 5.

Discussion

The primary purpose of the study was to examine and document the psychometric properties of a Persian version of the Mental Health Literacy Scale (P-MHLS). The scale consisted of 35 items. The setting was Tabriz, Iran, and data were obtained from a sample of mothers.

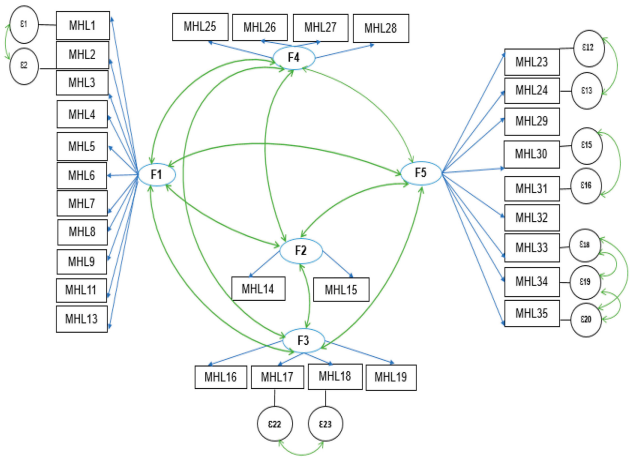

Figure 1 Confirmatory factor analysis of the five-factor model of the P-MHLS.

An exploratory factor analysis of data resulted in five factors, which included 30 of the 35 items and accounted for 42.00% of the variance. The construct validity of the 5-factor model was supported by the results of our confirmatory factor analysis. The factors were the 1) ability to recognize mental disorders, 2) confidentiality of mental health practitioners, 3) skills of mental health information seeking, 4) beliefs about mental illnesses, and 5) attitudes toward patients with mental illness. Unlike the original study, items 10, 12, 20, 21, and 22 did not load on any factor, which could have been due to the participants' perspectives of mental health and inadequate awareness of the importance of the subject matter.

The internal consistency of the MHLS has been reported by O'Connor et al[41] and Caldwell et al.[46] Although the overall internal consistency of the P-MHLS was satisfactory (Table 5), it was less than the recommended 0.70 for 2nd and 4th factors; however, we kept them in the model because of their meaningfulness. These five factors were similar to the original MHLS's six factors. The slight differences could have been due to cultural characteristics of the study's participants. Culture may underlie presentation of sets of symptoms that are specific to certain societies or culture-bound syndromes. Actually, culture can influence the meanings that people impart to their disease, as well as the stigma associated with such illnesses.[47] The feasibility of the P-MHLS was supported by the percentages of floor and ceiling effects, which were less than 15.00% for the total and subscale scores.

Strengths and Limitations

Our study has considerable strengths, including a large sample size that led to a powerful factor analysis of the data. The study also has some limitations. The setting was a major city and participants were the mothers of females, which limited the generalizability/external validity of the

Table 5 IRT Calibration Results of the Persian Mental Health Literacy Scale Item Bank (N= 992)

Item-ID	Mean (SD)	Item-Total Correlation	Cronbach's Alpha If Deleted	IRT				
				Item Discrimination	B1	B2	B3	B4
MHL1	2.50 (0.86)	0.30	0.73	1.26	−1.91	−0.07	2.04	—
MHL2	2.65 (0.84)	0.32	0.73	1.46	−2.06	−0.38	1.60	—
MHL3	2.79 (0.89)	0.31	0.73	1.14	−2.48	−0.65	1.31	—
MHL4	2.56 (0.86)	0.36	0.73	1.60	−1.74	−0.18	1.64	—
MHL5	2.48 (0.82)	0.35	0.73	1.42	−1.85	−0.05	2.10	—
MHL6	2.38 (0.85)	0.40	0.73	1.76	−1.37	0.09	2.00	—
MHL7	2.37 (0.90)	0.42	0.73	1.61	−1.30	0.18	1.82	—
MHL8	2.38 (1.08)	0.34	0.73	1.13	−0.98	−0.06	1.69	—
MHL9	2.86 (0.89)	0.27	0.73	0.84	−3.09	−1.12	1.50	—
MHL10	2.46 (0.87)	0.05	0.74	0.29	−6.78	0.54	6.69	—
MHL11	2.93 (0.84)	0.25	0.73	0.80	−3.67	−1.45	1.48	—
MHL12	2.68 (0.88)	0.07	0.74	0.32	−7.00	−1.17	4.58	—
MHL13	2.68 (0.89)	0.38	0.73	1.23	−2.02	−0.55	1.62	—
MHL14	2.38 (0.99)	0.18	0.74	0.45	−2.88	0.31	4.15	—
MHL15	2.42 (0.98)	0.11	0.74	0.34	−4.05	0.36	5.16	—
MHL16	3.24 (1.04)	0.29	0.73	0.57	−4.76	−2.33	0.34	4.31
MHL17	3.36 (1.11)	0.23	0.74	0.47	−5.59	−2.70	−0.38	4.34
MHL18	3.63 (1.08)	0.25	0.73	0.60	−4.96	−2.90	−1.22	2.56
MHL19	3.54 (1.04)	0.23	0.74	0.53	−5.85	−3.04	−1.07	3.53
MHL20	2.33 (1.08)	0.10	0.75	−0.16	7.60	−3.97	−10.07	−19.71
MHL21	2.95 (1.17)	0.10	0.74	−0.06	38.43	6.42	−9.93	−39.88
MHL22	3.55 (1.09)	0.14	0.74	0.35	−9.24	−4.27	−1.10	4.11
MHL23	3.20 (1.11)	0.18	0.74	−0.07	36.74	14.70	−4.12	−29.52
MHL24	3.58 (1.15)	0.32	0.73	0.26	−11.21	−5.38	−1.72	4.67
MHL25	3.89 (0.95)	0.17	0.74	0.25	−14.82	−9.43	−4.38	4.25
MHL26	3.74 (1.17)	0.18	0.74	0.33	−9.33	−4.31	−2.68	2.63
MHL27	4.29 (0.86)	0.28	0.73	0.61	−6.57	−5.06	−3.86	0.28
MHL28	4.12 (0.91)	0.29	0.73	0.54	−7.19	−5.22	−3.01	0.99
MHL29	2.56 (1.10)	0.28	0.73	−0.03	41.54	2.81	−41.20	−99.04
MHL30	2.35 (1.16)	0.36	0.73	0.04	−17.86	6.71	29.62	78.93
MHL31	2.25 (1.10)	0.34	0.73	−0.04	19.82	−10.57	−43.89	−108.40
MHL32	1.94 (1.02)	0.26	0.73	−0.17	1.54	−5.86	−13.90	−25.27
MHL33	1.33 (0.66)	0.16	0.74	−0.28	−4.08	−9.06	−16.43	−20.74
MHL34	1.35 (0.74)	0.07	0.74	−0.34	−3.77	−6.48	−11.48	−15.03
MHL35	1.66 (0.90)	0.21	0.74	−0.15	−1.58	−11.24	−19.29	−34.64

Note: The first option to answer each question in the GRM model is as a reference category.
Abbreviations: MHL, mental health literacy; IRT, item response theory; GRM, graded response model.

findings. Hence, direct and systematics replication of the study is recommended so that the results may be generalized to other populations. Due to the lack of other similar standard instruments in the literature, we could not critically examine the Persian version of the MHLS. Additionally, because of the non-experimental nature of the study, no causal inferences were drawn.

Conclusions

The current study provides initial support for the use of the MHLS among Persian/Farsi speaking adults to assess mental health literacy. Further research is recommended for cross-cultural validation of the instrument to widen its application for comparison purposes and addressing the sensitivity, feasibility and predictive validity of the scale.

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Disclosure

No potential conflicts of interest was reported by the authors.

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