Iran J Psychiatry 2023; 18: 3: 311-318

Original Article

Translating and Testing the Validation of the Arabic Peer Mental Health Stigmatization Scale

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Abstract

Objective: Attitudes toward mental difficulties are influenced by culture, and different cultural backgrounds have different effects on people's behavior. This study aimed to prepare the Arabic version of the Peer Mental Health Stigmatization Scale (PMHSS) and validate it among Omani adolescents.
Method: The study was conducted from October 2020 to the end of February 2021. The 24-items PMHSS was translated into Arabic and tested in a sample of 369 adolescents from different governmental schools in Oman. Both exploratory factor analysis (a principal component analysis (PCA) technique with Varimax rotation) and confirmatory factor analysis were performed to examine the construct validity of the PMHSS.
Results: Confirmatory factor analysis was performed to examine the construct validity of the PMHSS. Cronbach's α was 0.86 for the total scale and 0.84 and 0.81 for awareness and agreement, respectively. Therefore, the goodness-of fit-indicators support the two-correlated factor 16-item model to measure stigma ($\chi 2$ / df = 2.64 ($p > 0.001$), GFI = 0.92, AGFI = 0.89, CFI = 0.90, IFI = 0.90, RMSEA = 0.067).
Conclusion: The Arabic version of the Peer Mental Health Stigmatization Scale (PMHSS) could assess adolescents' stigmatizing attitudes toward various types of mental health problems within the Arabic context, and it can be utilized by researchers in Arab countries to screen for stigmatizing attitudes and to suggest suitable, effective, and outcome-focused interventions based on its results.

Key words: *Adolescents; Mental Health; Oman; Social Stigma*

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Article Information:
Received Date: 2022/07/26, Revised Date: 2022/10/16, Accepted Date: 2022/12/12

The prevalence of mental health difficulties has increased in recent years, with 20% of adolescents suffering from mental difficulties (1-4). Untreated mental difficulties in adolescence can lead to social, behavioral, and academic issues, as well as deteriorating symptoms, and other health comorbidities. It can cause a high societal and personal burden because of delay or absence of help-seeking (5, 6). One of the major barriers to help-seeking behavior is the stigma associated with mental difficulties (5, 7), defined as a preconception that frequently leads to discrimination and has a profound effect on the lives of those who suffer from mental difficulties, making it difficult to maintain contact with mental health services (7, 8). The stigma of mental difficulties can be at both personal and public levels [8], and it has detrimental implications including low levels of hope, empowerment, self-esteem, self-efficacy, quality of life, and social support (9).

Adolescence is a significant developmental time in one's life during which adult qualities are formed, and understanding mental illness-related stigma during this period is crucial (10). Adolescents are vulnerable to negative stereotypes about mental difficulties in their surrounding environment (11). Research suggests that those with mental difficulties who have been prescribed medications worry about being different compared to their peers who are not taking medications. As a result, to avoid being teased, these adolescents keep their medication hidden and restrict their social interactions (11). A global study of 229 countries found that only 7% to 8% of adolescents in developed countries like the United States and Canada attached stigma to people with mental difficulties, compared to 15% to 16% in developing countries, where stigmatization, danger, and separation from patients with mental difficulties are commonplace (12).

Negative attitudes toward mental difficulties are influenced by culture, and different cultural backgrounds have different effects on people's behavior. For example, Latino and ethnic minority youth are less likely to report their mental health status to peers than non-Latino white youth (13) and experience more stigma from their families and peers (14). DuPont-Reyes, Villatoro (10) cross-sectionally examined the differences in stigma among adolescents across race, ethnicity, and gender to identify target groups and cultural factors for future anti-stigma interventions. The study revealed that there were significant differences between the different ethnicities based on their knowledge, positive attitudes, and behaviors toward colleagues with mental difficulties (10).

With respect to findings of previous studies, the surveys used were not specifically designed for adolescents (15, 16). That is, there is a dearth of studies specifically investigating the issue of stigma toward mental difficulties among adolescents, as the majority of studies have explored the public attitude irrespective of age (17, 18). The few studies found in the Western culture (19, 20) did not measure all the components of stigma (stereotypes, prejudice, discrimination, and low social status). However, McKeague, Hennessy (21) developed a valid and reliable scale: The Peer Mental Health Stigmatization Scale (PMHSS) to bridge this gap. This scale is one of the preliminary scales which was designed to explore all the components of the stigma. It also conceptually separates adolescents' impressions of social stigma from their own opinions about stigma. The survey is available in English (21) and Spanish (22).

In the Arabic context and following an extensive search of the literature, researchers were unable to identify an Arabic scale developed to test the stigma toward mental difficulties among adolescents. Hence, there is a need for a valid and reliable scale to test their attitudes. The researchers chose to translate the PMHSS as one of the preliminary instruments that is specifically designed for children and adolescents, but was only available in English and Spanish languages that are not understood by many Arab adolescents. Therefore, the aim of this study was to prepare the Arabic version of the PMHSS and validate it among Omani adolescents.

Materials and Methods

Study participants and setting

A convenience sampling technique was utilized to recruit school students who met the inclusion criteria: (1) being Omani, (2) having between 15 and 19 years of age, (3) being registered as a student during the data collection, and (4) being able to read and understand Arabic.

Data collection

Researchers collected the data in two stages. First, clustering sampling was used to select 11 government schools randomly from the 11 governorates in the Sultanate of Oman. Then, 369 school students were recruited. The research assistants met the schools' principals and briefed them about the study purpose and procedure. The school managers prepared a list of potential classes. The research assistants (n = 3) visited the classes and explained the study to the students. Participants who were interested received an envelope containing an information sheet, consent form and the self-reporting survey to be completed in their free time.

Sample size and study participants

The required samples for this cross-sectional descriptive study were selected from among school students. the sample size for factor analysis (both exploratory and confirmatory) depends on the total number of scale items and five to ten participants are recommended per item (23). The PMHSS consists of 16 items. Therefore, a sample size of 80 to 160 is needed. In the current study, of the 500 questionnaires that were distributed, 369 were returned, resulting in a 73.8% response rate. 369 Participants were adequate for this study. The study samples were randomly split into two sub-samples.

Exploratory factor analysis (EFA) was applied to examine the factor structure of the PMHSS in the first sub-sample (n = 185). Principal axis factoring (PAF) with oblimin rotation was used as the method for both extraction and rotation. Confirmatory factor analysis (CFA) was then applied to test the proposed factor structure of the PMHSS in the second sub-sample of the study (n = 184).

Ethical consideration

The study was ethically approved by the Ministry of Education's IRB (2819186833) and the Scientific Research Committee in the College of Nursing at Sultan Qaboos University (REC/2018-2019/1). All students under 16 were required to have their parents' written consent before participating in the research. Students were informed that their participation was voluntary, and that the confidentiality of their information would be maintained. They were instructed to complete the questionnaires voluntarily and to place them in a sealed envelope in the designated collection place at the administrative office in their school.

study tools

Demographics

Participants completed a demographic survey with questions about their age and gender, and the working status of their parents.

Peer Mental Health Stigmatization Scale (PMHSS)

The PMHSS is a 24-item self-reporting survey that assesses stigma. The scale is composed of three sub-scales: awareness (e.g., "Most people believe that teenagers with emotional or behavioral problems are dangerous"); stigma agreement (e.g., "I believe that teenagers with emotional or behavioral problems are dangerous"), and positive reactions (e.g., "I believe that teenagers with emotional or behavioral problems can get better"). Each sub-scale consisted of eight items (21). The responses are measured on a 5-point Likert scale where 1 = disagree completely and 5 = agree completely. The scale is valid and reliable with an overall Cronbach's alpha of 0.81(21).

Translation procedure

Initially, permission to use and translate the PMHSS was obtained from the instrument's authors, McKeague *et al.* (21). It was translated from English into Arabic following the World Health Organization's (WHO) scientific translation guidelines (24). First, a forward translation was conducted by a bilingual health professional who speaks fluent English and whose mother tongue language is Arabic. The purpose was to focus on conceptual rather than literal translations. Second, back translation was conducted by two groups of bilingual experts. The scale was translated back into English and compared with the original form, to check for any disparities. The back-translated version was confirmed by the authors of the PMHSS. Third, to ensure clarity, the scale was pre-tested on 30 school students. No problems were reported regarding the instruments' language; hence, researchers used the translated version.

Data analysis

The data was analyzed using SPSS V26 and AMOS V20. Descriptive statistics were used to describe the adolescents' characteristics. Based on the model of McKeague *et al.* (21) and Nearchou *et al.* (25), CFA was performed to examine the proposed factor structure and construct validity of the PMHSS. In CFA, the data was analyzed using the maximum likelihood method and multiple indices to verify the model's goodness of fit ($\chi 2/df$ is an indicator of fit when it is ≤ 3). Other popular fit statistics were utilized as well, including the comparative fit index (CFI), goodness-of-fit index (GFI), adjusted GFI, and incremental fit index (IFI). These indices have a possible range of 0 to 1, with higher values indicating better fit (26). When the root mean square of approximation (RMSEA) is greater than 1, the model should be rejected; and when it is less than .05, it suggests a close fit (26).

Results

Demographics

The study sample comprised of 369 adolescents aged between 15 and 19 years (M = 16.75, SD = 1.35). Most of the participants, that is 268 (72.6%), were female, and 281 (76.2%) of the participants' mothers and 131 (35.5%) of their fathers did not work (Table 1).

Table 1. Characteristics of Adolescents Participated in This Study to Validate the Arabic Peer Mental Health Stigmatization Scale

Variable	N (%)	M (SD)
Age		16.75 (1.35)
Gender		
Male	101(27.4)	
Female	268(72.6)	
Mother's job status		
Unemployed	281(76.2)	
Working	88(23.8)	
Father's job status		
Unemployed	131(35.5)	
Working	238(64.5)	

Content validity

Content validity was tested using the lawshi formula. Scale items were reviewed by 8 experts. The content validity ratio (CVR) index ranged from 0.78 to 0.92, and the content validity index (CVI) = 0.85, which were acceptable values for that number of raters (27).

Convergent validity

Convergent validity is assessed by the average variance extracted (AVE) of each factor (table 3) (28). Awareness AVE = 0.401, and agreement AVE = 0.349, and these values are acceptable since composite reliability (CR) is greater than 0.6 (29).

Discriminant validity

Discriminant validity was also assessed by comparing the square root of AVE with inter construct correlation. The square root of AVE of awareness and agreement are 0.633 and 0.591 respectively, which are greater than 0.489 (inter construct correlation) (30) and represent good discriminant validity.

Construct validity

Confirmatory Factor Analysis (CFA) was conducted between correlated and independent two-factor models (Table 2). The CFA fit indices (Comparative fit index (CFI), Root Mean Square Error of Approximation (RMSEA), Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Incremental Fit Index(IFI) for the correlated two-factor models were better than the independent two-factors model; hence, the researchers decided to continue with the correlated model.

Table 2. Confirmatory Factor Analysis: Fit Indices for Correlated and Independent Two-Factor Models for Arabic Peer Mental Health Stigmatization Scale

	χ^2 /df	*p*-value	GFI	AGFI	CFI	IFI	RMSEA
Correlated factors	2.64	< 0.001	0.92	0.89	0.90	0.90	0.067
Independent factors	3.28	< 0.001	0.90	0.87	0.86	0.87	0.079

Both EFA and CFA were also performed to examine the proposed factor structure and construct validity. In EFA, with a two-component solution, the correlation matrix revealed an adequate coefficient < 0.3, and Kaiser–Meyer–Olkin (KMO) = 0.83, which is larger than the recommended value of 0.6 (31). In addition, Bartletts test of sphericity reached statistical significance (chi square = 889.56, P > 0.001), which supported the factorability of the correlation matrix (32), and the principal axis factoring method was used for extraction of dimensions with a percentage of cumulative variance of 38.1. Awareness items factor loading ranged from 0.429 to 0.809 and agreement items factor loading ranged from 0.364 to 0.724, which represent a good construct validity.

Reliability

A corrected item-total correlation ranged from 0.39 to 0.66 for awareness, from 0.39 to 0.63 for agreement, and from 0.34 to 0.68 for positive reactions. Hence, no items were removed from the original scale (Table 3).

Table 3. Corrected Item-Total Correlation, Cronbach's α, Split Half, Spearman Brown Coefficient, Average Variance Extracted, and Composite Reliability

	Corrected item-total correlation	Cronbach's α	Split half	Spearman-Brown coefficient	Average variance extracted (AVE)	Composite reliability (CR)
Item 4	0.63	0.84	0.82	0.82	0.401	0.84
Item 16	0.64					
Item 21	0.64					
Item 15	0.68					
Item 5	0.58					
Item 13	0.57					
Item 3	0.51					
Item 1	0.34					
Item 10	0.66	0.81	0.78	0.78	0.349	0.81
Item 6	0.65					
Item 7	0.61					
Item 9	0.61					
Item 8	0.60					
Item 11	0.52					
Item 12	0.50					
Item 2	0.39					

CFA, employing the moment structure, was implemented on the 2-factor and 16-items model to decide if the actual data fit Nearchou *et al.'s* (25) model. In Figure 1, latent variables are depicted by ellipses, indicators by rectangles, and measurement errors by circles. The two factors (awareness and agreement) identified the structural model, and factors are connected by a double-headed arrow portraying the inter-correlations between them. The standardized regression weights showing the links between factors and their corresponding items (the coefficients on the path) are depicted by single-headed arrows from ellipses to rectangles. The measurement error associated with each item is also depicted by single-headed arrows from circles to rectangles.

The goodness-of-fit indices model returned acceptable results; hence, the indicators support the correlated two-factor 16-item model to measure stigma ($\chi 2$ /df = 2.64 (P > 0.001), GFI = 0.92, AGFI = 0.89, CFI = 0.90, IFI = 0.90, RMSEA = 0.067).

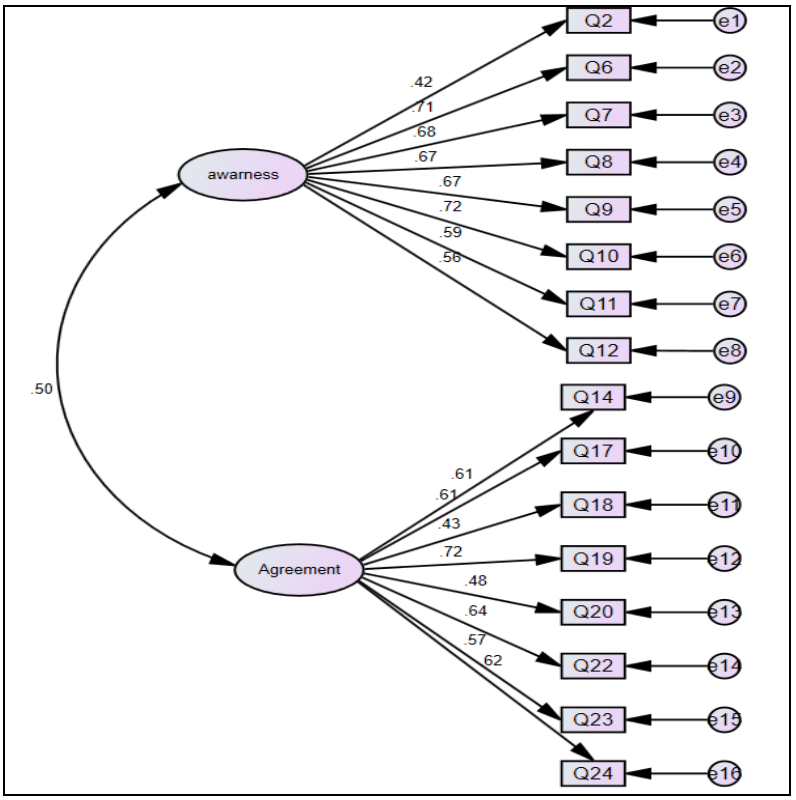

Figure 1. The Results of the Final Confirmatory Factor Analysis (CFA) for Two Correlated Factors for the Arabic Peer Mental Health Stigmatization Scale

Composite reliability (CR)

Split half and spearman brown coefficient were calculated to check the composite reliability. All values were greater than 0.75 (table 3), which represent acceptable values to establish composite reliability.

Lastly, normative scores for the PMHSS subscales were calculated. That is, the mean of the stigma agreement subscale among Omani Adolescents was 19.89, which is slightly higher than the mean in the original version of PMHSS (18.55). Furthermore, the mean of stigma awareness in the current study was 22.54, which is lower than the mean in the original version (23.81) (21).

Discussion

Since the concept of stigma is a representation of the discrimination faced by people with mental health problems, the PMHSS was first developed to measure stereotypes, prejudice, discrimination, and low social status dimensions of stigma at the same time (21). The PMHSS is a superior scale compared with other scales (19, 20) as it measures the stigma from various dimensions. Therefore, researchers in the current study prepared the Arabic version of the PMHSS and validated it among Omani adolescents. The Arabic version of the PMHSS was valid and reliable for utilization among adolescents in Arab countries. This scale was also valid and reliable among children and adolescents who speak English (21) and Spanish (22) languages. This scale will be a reference for researchers in the Arab world to be used among children and adolescents, as it is the first of its kind.

Stigma is an important construct in youth mental health research (33), but despite its increasing recognition, it remains under-researched and under-documented. McKeague, Hennessy (21) developed the PMHSS to bridge the gap. Therefore, in order to tackle stigma in the

mental health field, it is important to validate the existing measuring instruments such as PMHSS. In addition, the use of validated self-report tools to assess stigma may enrich knowledge about this phenomenon and identify the areas for intervention.

When measuring the quality of the instrument, i.e., the internal consistency, Cronbach's α was 0.86 for the total scale, and 0.84 and 0.81 for the sub-scales of awareness and agreement, respectively. This means that the items related to the respective sub-scales in the translated version represent the same construct and correspond those obtained by de la Higuera-Romero *et al.* (22). Moreover, all items of the PMHSS show a good internal consistency in our sample and reflect the same construct when measuring the peer mental health stigma. Other validations of the instrument showed similar internal consistency, although with a marginally lower Cronbach's α of 0.81 (21), and 0.79 to 0.72 for the sub-scales of stigma awareness and stigma agreement, respectively (25).

The goodness-of-fit indicators support the two-factor 16-item model of measuring stigma. The reduction of items or factors has been investigated recently by Nearchou *et al.* (25) who validated the instrument in a young cohort of 12-25 year olds, and created the PMHSS-R. Their shorter version of the PMHSS aimed to retain the core principles of stigma at the same time as reducing participant burden without undermining the theoretical integrity. The factorial validity of the stigma measure was greatly improved, although further research is needed to examine its utility in relation to specific mental disorders.

In addition, although the instrument has been translated and validated in few different languages such as Spanish (22) and English (21), testing of its factorial equivalence in the Arab culture has not been done previously. It appears that there are regional, national, and cultural disparities in, for example, the reported prevalence of mental illnesses that might be due to different conceptual frameworks regarding health and the causes of mental illnesses, particularly if cultural groups disagree or dispute about a pattern of illness symptoms (35). These frameworks may affect beliefs about mental illnesses and the stigmatization of affected people (36). Thus, translation of available instruments and measurement of their cultural invariance need to be tested. The current study's results suggest that PMHSS is suitable for use among adolescents of Arab populations based on the instrument's Arabic version's validity and reliability.

Factor Analysis is a method suitable for capturing the structure of latent factors underlying data, whereas PCA is a method for data reduction (37). We conducted CFA using the moment structure (38) and implemented it on the two-factor and 16-items model. The analysis strengthened the two-factor solution (awareness and agreement) and showed significant inter-correlation between these factors. Further, the AVE of each factor was used to test the convergent validity and the suggesting adequate convergent validity. This indicates that the measure does capture the common construct, in this case the stigma (39), which is similar to the findings of McKeague *et al.* (21) and Nearchou *et al.* (25).

The mean of the stigma agreement subscale was 19.89, which was higher than the mean in the original version of the PMHSS (18.55). However, the mean of stigma awareness in the current study was 22.54, which is lower than the mean in the original version (23.81) (21). That is, the level of stigma agreement and awareness among the Omani adolescents is high, which is consistent with previous literature (33). Accordingly, there is a need for an immediate action plan to revert the stigma toward people with mental illnesses.

Limitation

To evaluate interventional outcomes, it is necessary to use psychometrically reliable tools to determine the nature and severity of various forms of stigma to develop research that attempts to lessen stigma and encourage help-seeking behavior. In fact, a systematic literature review emphasized the need for additional research on the efficacy of stigma measures (40) including the PMHSS. The founders of the PMHSS (21) underlined the usefulness and acceptance of the PMHSS with young people; however, they did not look at its factorial validity.

The current study investigated the construct validity of this scale and thus provided a useful association between the scale and the two sub-scales of awareness and agreement. Another major contribution of the current study is that the PMHSS has been translated and validated in Arabic for the first time among a representative population of adolescents.

The current study did not come without limitations. That is, data were collected from adolescents who are students in public schools. Future studies are recommended to be conducted among a large sample of adolescents who are students in public and private schools and among illiterate adolescents. Estimating the convergent validity of PMHSS with another scale that measures stigma is also required. conducting test-retest reliability in the future on the same sample and at different points in time is also crucial.

Conclusion

The need for more cross-cultural research to evaluate the stigma toward mental illnesses among children and adolescents is increasing, and future studies are highly recommended. We believe that the Arabic version of the instrument could be adapted to accommodate the assessment of adolescents' stigmatizing attitudes towards various types of mental health problems. In addition, the Arabic version of PMHSS is valid and reliable, and it can be utilized by researchers in Arab countries to screen for stigmatizing attitudes and to suggest suitable, effective, and outcome focused interventions. We also suggest further testing of the

current Arabic version in order to confirm validity and clinical usefulness among various populations of children and adolescents.

Acknowledgment

This study received an internal grant from the Sultan Qaboos University (IG/CON/FACN/20/03).

Conflict of Interest

None.

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