A modified version of the Mental Health Literacy Scale (MHLS) in Iranian people

CURRENT STATUS: UNDER REVIEW

Mahboobeh Nejatian
Gonabad University of Medical Sciences

Hadi Tehrani
Mashhad University of Medical Sciences

Vahideh Momenian
Ferdowsi University of Mashhad

Alireza Jafari
Mashhad University of Medical Sciences

Corresponding Author
jafari.ar94@gmail.com
ORCID: https://orcid.org/0000-0003-1390-9830

DOI: 10.21203/rs.3.rs-15814/v2

SUBJECT AREAS
Psychiatry

KEYWORDS
Mental health literacy, Validity, Reliability, Psychometric, Confirmatory factor analysis, Measures, public population, Persian, MHLS
Abstract

Background: The risk rate for the lifetime prevalence of any mental disorder is 50%, and the prevalence of mental disorders is increasing. This study aimed to evaluate the Mental Health Literacy Scale (MHLS) in Iranian people.

Methods: This cross-sectional study was conducted with a multi-stage sampling method with the participation of 1273 people in the general population. After searching and reviewing various sources, the research team decided to use the questionnaire of MHLS with 35 items and 6 attributes that measured and developed by O’Connor et al. The face, content, and construct validity (Confirmatory factor analysis) were used for validation of MHLS. McDonald’s omega coefficient and Cronbach’s alpha coefficient were used to calculate the reliability of MHLS. Confirmatory factor analysis was performed using AMOS software Version 24.

Results: In the CFA test, the six items were deleted and the final modified version of the MHLS included a total of 29 items with six attributes consisted of (a) knowledge of where to seek information (4 items), (b) ability to recognize disorders (8 items), (c) knowledge of self-treatment (2 items), (d) knowledge of risk factors and causes (2 items), (e) attitudes that promote recognition or appropriate help-seeking behavior (10 items), and (f) knowledge of professional help available (3 items). Based on the results of reliability, McDonald’s omega and Cronbach’s alpha for all attributes of MHLS were 0.797 and 0.789 respectively.

Conclusion: Due to the lack of appropriate instruments for measuring mental health literacy in the Iranian population, the modified version of MHLS with 29 items and 6 attributes is a valid and reliable instrument for measuring mental health literacy in the public population.

Background

World Health Organization (WHO) reported that 8% (586 million) of the global population suffer from mental disorders [1]. Results of survey mental disorders in 28 countries by WHO was show that mental disorders were commonly occurring in all people countries and the prevalence of mental disorders was estimated at 18.1–36.1% [2]. Therefore, individuals will confront directly to anybody with mental disorders throughout their lifetime, and understanding mental disorders are essential
because it affects one’s attitude and behavior toward the individual affected [3]. Also, MHL is an important factor in obtaining supportive behaviors [4].

The results of a study in chin showed that the 1-month and lifetime prevalence of severe mental illness was 9.35% and 10.10%, respectively [5]. Based on the results of a meta-analysis in Iran, the prevalence of psychiatric disorders was 31.03%[6]. Another study in Iran showed that the prevalence of anxiety disorders was 15.6% and the three most prevalent anxiety disorders were obsessive-compulsive disorder (5.1%), generalized anxiety disorder (5.2%), and social phobia (3.2%), respectively [7].

In a study conducted in Iran, after performing psychological tests and evaluations on individuals who reported themselves as having no psychological problems (70.8%), about 17.3% of them were diagnosed with various psychological problems [8]. Also, the results of various studies in Iran reported that the prevalence of mental disorders in adolescents ranging from 28.1 to 73% [9, 10]. Mental disorders need more attention because of the increased economic burden on the community/family, the increased emotional burden on the families, increased social stigma the suffering for the individual and the reduction in their productivity [11]. Based on the evidence the global burden of mental disorder accounts for 32.4% of years lived with disability (YLDs) and 13.0% of disability-adjusted life years (DALYs) were estimated [12].

The commonness of mental disorders in the general population means that most people are directly faced with a mental health problem, but most of them do not have the knowledge and skills required to assist them [13]. Generally, mental disorders of the individuals lead to their shorter lifetime [14]. Mental health literacy (MHL), is an important predictor of positive health outcomes [15]. MHL refer to “focuses on knowledge and strategies to obtain and maintain good mental health, knowledge about mental disorders and related treatments, strategies to decrease stigma and enhancement of help-seeking efficacy” [15]. MHL includes six attributes of the ability to recognize specific disorders, knowledge of professional help available, knowing how to seek mental health information, knowledge of self-treatments, knowledge of risk factors and causes, and attitudes that promote recognition and appropriate help-seeking [16].
The term MHL was used in 1997 to describe knowledge and beliefs related to mental disorders that help diagnose, manage, and prevent them. The concept of mental health requires increasing general knowledge about mental health and disorders since it is a prerequisite for early diagnosis and intervention in mental disorders [13, 17, 18].

A recent finding in a study on Canadian young adults showed that MHL of individuals is very poor [13]. Study findings in Chinese people showed that MHL was inadequate and, only 18.6% were able to accurately recognize the specific mental disorder depicted, 25.5 accurate recognition of depression and 11.2% accurate recognition of schizophrenia [19]. The results of a study on Iranian medical sciences students showed that 64.4% of people were unable to recognize the mental disorder and 36% did not know where to help-seeking about mental disorders [8]. Another study conducted in Iran showed that depression literacy was low and 48.5% cannot recognize the mental disorder and 47.15% didn't intend to seek help [20].

The mental health researches to date showed that many people have poor MHL because they do not know psychological problems, or have negative attitudes about their treatment or effectiveness of the treatments. Whereas high MHL has several advantages such as prevention, early diagnosis and intervention, and attenuation of symptoms related to mental disorders, MHL is recognized as a prerequisite for early diagnosis, and intervention in mental disorders [13]. The results showed if people had positive attitudes about help-seeking, and perceived need for treatment significantly and independently predicted the use of psychotherapy over time by them [21].

Given the increasing prevalence of mental disorders and the necessity of appropriate MHL in society, there is a need for an appropriate instrument to evaluate the level of MHL, but at the time of this study were not found a valid and reliable instrument for measuring MHL in Iranian people. All available instruments in Iran just measured public health literacy and did not specifically measure MHL. After searching and reviewing various sources, the research team decided to use the questionnaire of MHLS with 35 items and 6 attributes that measured and developed by O'Connor et al [22]. Therefore, this study aimed to evaluate the MHLS in the general population of Gonabad, Iran.
This cross-sectional study conducted to evaluate the validity and reliability of the Iranian version of
the MHLS with the participation of 1273 individuals of the general population in Gonabad, Iran in
2019.

**Sample size and sampling method**

The sample size with the 0.95% confidence level, proportion 0.48 the accuracy of 0.03, and
Considering 20% of sample loss, was estimated at 1273 subjects [20]. The sampling in this study was
conducted by multistage. Initially, the number of community health centers and the population of
each center were determined. In the next step, each center was considered as one class and the
sample size was determined according to the population of each class. Samples were then randomly
selected from each center. It should be noted that the questionnaire for illiterate participants was
completed by the interviewer. Inclusion criteria were age over 18 years old, not having any physical
or mental disorder, written informed consent to participate in the study and residence in Gonabad
city.

**Instruments**

Data collection tools included demographic section and Mental Health Literacy Scale (MHLS).

A. **Demographic questionnaire:** This questionnaire includes questions on gender, age,
occupation, level of education, marital status, etc.

B. **MHLS:** This questionnaire was the development and evaluation by O'Connor et al. in
2015[22]. This questionnaire has 35 questions and 6 attributes. Also, these attributes
were review and adapted with studies of Jorm [4], Griffiths et al., [23] and Jorm et al
[16].

C. **Ability to recognize disorders:** This attribute has 8 questions that are assessed by
a 4-point Likert scale (highly rare, rarely, likely, very likely). This attribute refers to
“the ability to correctly identify features of a disorder, a specific disorder or category
of disorders”.

D. **Knowledge of risk factors and causes:** This attribute is assessed with 2 questions
and a four-option scale (highly rare, rarely, likely, very likely). This attribute refers to “knowledge of environmental, social, familial or biological factors that increase the risk of developing a mental illness”.

E. **Knowledge of self-treatment:** This attribute is measured by two questions and a four-option scale (not very useful, not useful, useful, very useful). This attribute refers to “knowledge of typical treatments recommended by mental health professionals and activities that an individual can conduct”.

F. **Knowledge of professional help available:** This attribute consists of 3 questions that are measured on a four-option scale (highly rare, rarely, likely, very likely). This attribute refers to “knowledge of mental health professionals and the services they provide”.

G. **Knowledge of where to seek information:** This attribute consists of 4 questions that measure with a 5-option Likert scale (strongly disagree, disagree, no opinion, agree, strongly agree). This attribute refers to “knowledge of where to access information and capacity to do so”.

H. **Attitudes that promote recognition or appropriate help-seeking behavior:**

This attribute is with 16 questions and a 5-option Likert scale [(strongly disagree, disagree, no opinion, agree, strongly agree) or (definitely willing, probably willing, no opinion, probably unwilling, definitely unwilling). This attribute refers to “attitudes that impact on the recognition of disorders and willingness to engage in help-seeking behavior”.

In this questionnaire, the lowest score is 35 and the highest score is 160, and higher scores indicate better MHL. The validity and reliability of this questionnaire were evaluated in the O’Connor study.

The internal consistency of this scale was measured by Cronbach’s alpha (Cronbach's alpha= 0.873)
Translation and cultural adaptation

Firstly, the English version of the questionnaire was forward-translated into the Persian language by three faculty members and then reconciled. Then one skilled English expert who was not familiar with the specialized English text of psychology translated the text backward into English. The English text of the backward-translation was re-translated into the Persian language by three psychology professors fluent in the English language. Then, the final Persian version was prepared by adjusting the first Persian translated version of the questionnaire and making the necessary corrections. The validity and reliability of the questionnaire were then evaluated.

Validation

Given that the standard questionnaire has been used and translated, quantitative content validity and quantitative face validity were not required to be measured [24]. In this study, the validity of the questionnaire was assessed by qualitative face validity and qualitative content validity.

Qualitative face validity

For this purpose, the Persian questionnaire was given to two faculty members fluent in English language and specialized vocabulary to evaluate the final Persian version of the questionnaire in terms of clarity (use of simple and comprehensible words), common language application (avoidance of the specialized and technical words). If required, changes were made to the used metrics to make it simpler and more comprehensible. Also, for knowing the comments of audiences, a face-to-face interview was conducted with some of the individuals in the target group to find out any difficulty in understanding of the words and phrases, the appropriateness and relevance of the items, the likelihood of ambiguity and misunderstandings, or any failure in conceptualization. In case of problems, their comments were applied to the questionnaire.

Qualitative content validity

To evaluate the validity, the questionnaire was provided to 20 experts and specialists (Psychology specialists and Health education experts) to assess grammar, use of appropriate words, the importance of items, the correct placement of items, and the time for completion of the designed
instrument. After collecting the expert evaluation results, necessary changes were made in consultation with the members of the research team.

**Confirmatory factor analysis (CFA)**

CFA was used to evaluate the Construct validity assessment. Before to CFA, data were analyzed using Mahalanobis statistics for the outliers. The normality of data was also evaluated using skewness and kurtosis. CFA was performed using AMOS version 24 software. *To obtain an acceptable model, questions with poor internal consistency were removed from the questionnaire. Based on the results, to obtain an acceptable final model, questions with a factor loading less than 0.3 can be deleted* [25]. The assessment of the model was conducted using the following fit indices: Chi-square ratio to the degree of freedom (x2/df); root means square residual (RMR); root means the square error of approximation (RMSEA); goodness of fit index (GFI); adjusted goodness of fit index (AGFI); parsimonious normed fit index (PNFI); parsimony comparative fit index (PCFI); incremental fit index (IFI); parsimony goodness-of-fit index (PGFI); comparative fit index (CFI); and parsimonious normed fit index (PNFI) [26-28]. The model was acceptable if the (x2/df) <5, RMSEA and RMR ≤ 0.08, PCFI, PNFI and PGFI>0.5, AGFI > 0.8, and other indices of IFI, GFI, CFI > 0.9 [26-29].

**Reliability assessment**

*Mcdonald’s omega coefficient and Cronbach’s alpha coefficient were used to assess the internal consistency of the questionnaire and each of the attributes separately. The JASP (Version 0.11.1) software and SPSS v22 were used to calculate the amount of McDonald’s omega coefficient and Cronbach’s alpha coefficient, respectively. McDonald’s omega coefficient provides a more accurate approximation than Cronbach’s alpha coefficient* [31]. *Based on the results, when developing a new measure, the value of the reliability coefficient above 0.70 is routinely considered acceptable* [32]. *Based on the results of the Wallston study, Cronbach’s alpha coefficient of 0.6 was considered as the minimum acceptance criterion for the internal reliability of the questionnaire* [30]. *The lower values of Mcdonald’s omega coefficient and Cronbach’s alpha coefficient be related to their low number of items is some attributes* [32]. A summary of the modifying of MHLS is presented in Fig 1.

Results
The mean (standard deviation) age of the participants in this study was 31.17 (10.13), and 58% (n=732) of participants were female and 68.8% (n=864) were married. Most of them had an associate/bachelor’s degree (57.9%) and a high school diploma (29.9%). In this study, 79.5% (n=936) of the participants were residents in the city and most of them were self-employed (38.4%) (Table 1). The mean (SD) of the total MHLS was 97.99 (11.47).

**Validation (Face and content validity)**

After completing the translation process of the questionnaire, the face and content validity were assessed by the qualitative method. In the face validity and content validity, 7 items and 9 were corrected, respectively (Fig 1).

**Confirmatory factor analysis (CFA)**

The results of the CFA analysis showed that the CR value of each question was above 1.96 and the significance level of all questions was less than 0.001. The goodness of fit for these six attributes model was acceptable: $X^2/df=4.110$, $RMR=0.049$, $RMSEA=0.048$, $PCFI=0.780$, $PGFI=0.758$, $PNFI=0.754$, $AGFI=0.910$, $GFI=0.927$, $GFI=0.901$, and $IFI=0.901$ (Table 2). In the CFA stage, to obtain an acceptable final model, 6 questions with a factor loading less than 0.3 were deleted (Table 3). The factor loading value of each question is visible in Table 3 and Fig 2.

The final version of the MHLS included a total of 29 items, which consisted knowledge of where to seek information (4 items), knowledge of self-treatment (2 items), ability to recognize disorders (8 items), attitudes that promote recognition or appropriate help-seeking behavior (10 items), knowledge of risk factors and causes (2 items), and knowledge of professional help available (3 items) (Table 4). Details attributes of MHLS are available in Table 4.

**Reliability**

McDonald’s omega for all questions MHLS attributes includes the ability to recognize disorders, knowledge of where to seek information, knowledge of risk factors, knowledge of self-treatment, knowledge of professional help available, attitudes that promote recognition or appropriate help-seeking behavior, were 0.797, 0.734, 0.652, 0.601, 0.602, 0.643, and 0.874 respectively (Table 4). Cronbach's alpha for all questions MHLS attributes includes the ability to recognize disorders,
knowledge of where to seek information, knowledge of risk factors, knowledge of self-treatment, knowledge of professional help available, attitudes that promote recognition or appropriate help-seeking behavior, were 0.789, 0.700, 0.630, 0.600, 0.600, 0.640, and 0.800 respectively (Table 4).

Discussion

This study aimed to evaluate the Mental Health Literacy Scale (MHLS) in Iranian general people. There is no specified instrument for evaluating MHL in Iran, and no study was conducted on psychometrically the MHLS. One of the features of this instrument is measuring different aspects of MHL and can be efficiently measured with a short time and self-administered. In the present study, this instrument was completed by most participants without any problems in a short time. Therefore, this instrument seems to be useful for measuring the MHL of different age groups in society. Using this tool can be used to measure MHL and identify low literacy individuals in any attribute and design and implement intervention programs for them.

In the present study, this 35 items questionnaire was evaluated and modified. After evaluation of the questionnaire, 6 questions were finally omitted and the modified version of MHLS with 29 items and 6 attributes was approved. In the present study for assess the reliability of the instrument, McDonald’s omega coefficient, and Cronbach's alpha coefficient were used and calculated 0.797 and 0.789 respectively. McDonald’s omega coefficient similar to Cronbach's Alpha, but the omega coefficient provides a more accurate approximation of a scale’s reliability, and that the omega coefficient is almost always higher than Cronbach’s alpha coefficient [31]. Based on the many study results, McDonald’s omega coefficient is a more sensible index of internal consistency than Cronbach’s alpha and other alternatives [31, 33, 34]. Based on the results when developing a new measure, the value of the reliability coefficient above 0.70 is routinely considered acceptable[32].

In a study by Noroozi et al, the Cronbach’s alpha for total attributes of MHLS was 0.74 [35]. In a study conducted by O’Connor, the MHLS was designed based on other questionnaires in this field, and the 55-item questionnaire was evaluated, which after psychometric evaluation of the questionnaire, finally the MHLS with 35-item and six attributes were confirmed and Cronbach's alpha of 0.879 and test-retest reliability of 0.797 was reported [22].
In a study conducted by Jung et al with the aim of development and reliability assessment of an instrument for evaluating MHL, the results of the exploratory factor analysis discovered three factors for the 26-item questionnaire. The results of CFA showed that the proposed model has a good fit in the stage of CFA. Also, Cronbach’s alpha for the first factor (knowledge-oriented MHL), the second factor (Beliefs-oriented MHL) and the third factor (resource-oriented MHL) were reported as 0.76, 0.77 and 0.84, respectively [36]. The results of a systematic review examined the tools available in the field of evaluation of MHL showed that the MHLS used in the present study is an acceptable tool for evaluating MHL in individuals [37].

The first attribute of this instrument was “the ability to recognize disorders”. This attribute was confirmed by 8 items, Omega 0.734, alpha 0.700 and factor loading 0.433 to 0.615. A study finding showed that many public people are not able to recognize specific disorders or different types of mental disorders [4]. The results of a study conducted by Jorm and et all in Australia showed that people had a better ability to recognize depression and schizophrenia were more likely to receive a wide range of interventions including assistance from mental health professionals, psychotherapy, medications, and psychiatric admissions [38]. Also, evidence showed that the ability to correctly recognize a mental disorder was related to less refer to informal sources for seeking help, increased preference to seek information/help from mental health professionals and mental health services [39].

The second attribute of this instrument was “knowledge of where to seek information”. This attribute was confirmed by 8 items, Omega 0.652, alpha 0.630 and factor loading 0.639 to 0.699. The results of a study in China showed that people have high intentions to seek mental health services but they have low knowledge about help sources and do not know where to seek potential help sources [40]. Based on the results a systematic review study, improved knowledge about mental disorders/mental health, where to seek help and treatment, improved the mental health outcomes and increase the use of mental health services by people [41].

The third attribute of this instrument was “knowledge of risk factors”. This attribute was confirmed by 8 items, Omega 0.601 alpha 0.600 and factor loading 0.270 to 0.422. Undoubtedly, one of the less well-regarded aspects of MHL has been prevention. We know more about the risk factors for other
diseases than the risk factors for mental disorders, and people must know about the modifiable risk factors for mental disorders [42]. People who have more knowledge of risk factors and risk settings are better able to take preventative activities [43]. The results of a study in China showed that people who more learned about the mental disease had more knowledge about mental health [44].

The fourth attribute of this instrument was “knowledge of self-treatment”. This attribute was confirmed by 8 items, Omega 0.602, alpha 0.600 and factor loading 0.516 to 0.752. The ability to diagnose a mental disorder is useful, but the individual must have knowledge about evidence-based treatments available [42]. The results of the Thompson study in Australia showed that the most important reason for psychiatric patients to delay treatment was the lack of knowledge of available treatments [45].

The fifth attribute of this instrument was “knowledge of professional help available”. This attribute was confirmed by 8 items, Omega 0.643, alpha 0.640 and factor loading 0.354 to 0.731. Another important attribute of MHL is knowledge about professional help available in the community for the treatment of mental disorders [45]. Based on the results, most people with a mental disorder do not receive any treatment from health care service because they don’t know about how to access available treatment [46].

The sixth attribute of this instrument was “attitudes that promote recognition or appropriate help-seeking behavior”. This attribute was confirmed by 8 items, Omega 0.874, alpha 0.800 and factor loading 0.355 to 0.887. Results of a randomized controlled trial showed that the intervention of web-based depression literacy had a significant decrease in the stigmatizing attitudes of depressed patients with severe symptoms [23]. Study findings by Reynders and et all showed that people have more positive attitudes toward help-seeking and experience less self-stigma have fewer psychological problems and prevent these problems [47].

Strengths and Limitations

One of the strengths of this study is its conduction in the general population, with different age groups and social classes. The large sample size is another power of this study. Given the confirmation of the validity of the MHLS in this study and the applicability of this questionnaire to
assess the level of MHL in different groups of society, it is recommended to use this questionnaire to assess the MHL of different target groups for educational, clinical and research purposes. Also, due to being new in this questionnaire, it is recommended that the psychometric of this questionnaire be evaluated in other studies and with various target populations.

Conclusions
According to the results of this study, due to a lack of appropriate tools for evaluating MHL in the Iranian population, the modified version of MHLS with 29 items and 6 attributes is a suitable instrument for assessing MHL in individuals. Due to the shortness and ease of use, this instrument can be used to measure the level of MHL in different groups of society and to identify people with low MHL. Identifying people with insufficient MHL levels enables mental health services to design and implement appropriate mental health intervention programs and prevent the prevalence of mental disorders in the community.

Abbreviations
MHLS: Mental Health Literacy Scale; MHL: Mental Health Literacy; CFA: Confirmatory factor analysis; YLDs: Years lived with disability; DALYs: Disability-adjusted life years; AR: Ability to recognize disorders; SI: Knowledge of how to seek information; RF: Knowledge of risk factors; ST: Knowledge of self-treatment; PH: Knowledge of professional help available; A: Attitudes that promote recognition or appropriate help seeking behavior.

Declarations
Ethics approval and consent to participate
This study is based on a research project approved by the Ethics Committee of Mashhad University of Medical Sciences with the ethics code of IR.MUMS.REC.1398.095. All participants signed a written informed consent. All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable.

Consent to publish
Not applicable

Availability of data and materials
The data sets used and/or analyzed during the current study were available from the corresponding author on reasonable request.

**Competing interests**

The authors have no conflicts of interest

**Funding**

No financial support was received for this study.

**Authors’ contributions**

Authors MN, HT, VM and AJ designed the study. MN, HT, VM and AJ participated in the conception of the study. MN and AJ managed and conducted the statistical analyses and interpreted the data. MN, AJ, VM and HT wrote the first draft and MN, HT and AJ revised it to make the final manuscript. All authors have approved the final manuscript.

**Acknowledgments**

We would like to thanks all people who assisted the authors to run this research project.

**References**

1. Organization WH: *Depression and other common mental disorders: global health estimates*. In.: World Health Organization; 2017.

2. Kessler RC, Aguilar-Gaxiola S, Alonso J, Chatterji S, Lee S, Ustün TB: *The WHO World Mental Health (WMH) Surveys*. *Psychiatrie (Stuttg)* 2009, 6(1):5-9.

3. Kessler RC, McGonagle KA, Zhao S, Nelson CB, Hughes M, Eshleman S, Wittchen H-U, Kendler KS: *Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States: results from the National Comorbidity Survey*. *Archives of general psychiatry* 1994, 51(1):8-19.

4. Jorm AF: *Mental health literacy: Public knowledge and beliefs about mental disorders*. *The British Journal of Psychiatry* 2000, 177(5):396-401.

5. Wang D, Ma J, Tan L, Chen Y, Li X, Tian X, Zhou X, Liu X: *Epidemiology of severe mental illness in Hunan province in central China during 2014-2015: A*
multistage cross-sectional study. *PLOS ONE* 2017, **12**(11):e0188312.

6. Taheri Mirghaed M, Abolghasem Gorji H, Panahi S: *Prevalence of Psychiatric Disorders in Iran: A Systematic Review and Meta-analysis*. *Int J Prev Med* 2020, **11**:21.

7. Hajebi A, Motevalian SA, Rahimi-Movaghar A, Sharifi V, Amin-Esmaeili M, Radgoodarzi R, Hefazi M: *Major anxiety disorders in Iran: prevalence, sociodemographic correlates and service utilization*. *BMC Psychiatry* 2018, **18**(1):261.

8. Sayarifard A, Ghadirian L, Mohit A, Eftekhari M, Badpa M, Rajabi F: *Assessing mental health literacy: What medical sciences students’ know about depression*. *Medical journal of the Islamic Republic of Iran* 2015, **29**:161.

9. Dadkhah B, Mohammadi M, Mozaffari N: *Mental health status of the students in Ardabil university of medical sciences, 2004*. *Journal of Ardabil University of Medical Sciences* 2006, **6**(1):31-36.

10. Masoudzadeh A, Khalilian A, Ashrafi M, Kimiabigi K: *The midtrimester mean arterial pressure in the prediction of pre-eclampsia*. *Journal of Mazandaran University of Medical Sciences* 2004, **14**(45):74-83.

11. Ahmadvand A, Sepehrmanesh Z, Ghoreyshi F, Assarian F, Moosavi GA, Saee R, Etesam F: *Prevalence of Mental Disorders in General Population of Kashan City*. *Iranian Journal of Epidemiology* 2010, **6**(2):16-24.

12. Vigo D, Thornicroft G, Atun R: *Estimating the true global burden of mental illness*. *The Lancet Psychiatry* 2016, **3**(2):171-178.

13. Marcus M, Westra H, Group MMR: *Mental health literacy in Canadian young adults: results of a national survey*. *Canadian Journal of Community Mental Health* 2012, **31**(1):1-15.

14. Hannerz H, Borgå P, Borritz M: *Life expectancies for individuals with psychiatric
diagnoses. *Public health* 2001, **115**(5):328-337.

15. Wei Y, McGrath PJ, Hayden J, Kutcher S: Measurement properties of mental health literacy tools measuring help-seeking: A systematic review. *Journal of Mental Health* 2017, **26**(6):543-555.

16. Jorm AF, Korten AE, Jacomb PA, Christensen H, Rodgers B, Pollitt P: “Mental health literacy”: a survey of the public's ability to recognise mental disorders and their beliefs about the effectiveness of treatment. *Medical journal of Australia* 1997, **166**(4):182-186.

17. Reavley NJ, Morgan AJ, Jorm AF: Development of scales to assess mental health literacy relating to recognition of and interventions for depression, anxiety disorders and schizophrenia/psychosis. *Australian & New Zealand Journal of Psychiatry* 2014, **48**(1):61-69.

18. Waldmann T, Staiger T, Oexle N, Rüsch N: Mental health literacy and help-seeking among unemployed people with mental health problems. *Journal of Mental Health* 2019:1-7.

19. Huang D, Yang LH, Pescosolido BA: Understanding the public’s profile of mental health literacy in China: a nationwide study. *BMC Psychiatry* 2019, **19**(1):20.

20. Ghadirian L, Sayarifard A: Depression literacy in urban and suburban residents of Tehran, the Capital of Iran; Recognition, help seeking and stigmatizing attitude and the predicting factors. *International journal of preventive medicine* 2019, **10**.

21. Bonabi H, Müller M, Ajdacic-Gross V, Eisele J, Rodgers S, Seifritz E, Rössler W, Rüsch N: Mental Health Literacy, Attitudes to Help Seeking, and Perceived Need as Predictors of Mental Health Service Use: A Longitudinal Study. *The Journal of nervous and mental disease* 2016, **204**(4):321-324.
22. O’Connor M, Casey L: The Mental Health Literacy Scale (MHLS): A new scale-based measure of mental health literacy. Psychiatry research 2015, 229(1-2):511-516.

23. Griffiths KM, Christensen H, Jorm AF, Evans K, Groves C: Effect of web-based depression literacy and cognitive-behavioural therapy interventions on stigmatising attitudes to depression: randomised controlled trial. The British journal of psychiatry: the journal of mental science 2004, 185:342-349.

24. Taghizadeh Z, Ebadi A, Montazeri A, Shahvari Z, Tavousi M, Bagherzadeh R: Psychometric properties of health related measures. Part 1: Translation, development, and content and face validity. Payesh 2017, 16(3):343-357.

25. Ellis JL: Factor analysis and item analysis. Applying Statistics in Behavioural Research 2017:11-59.

26. Henry JW, Stone RW: A structural equation model of end-user satisfaction with a computer-based medical information system. Information Resources Management Journal (IRMJ) 1994, 7(3):21-33.

27. Kline R: Details of path analysis. Principles and practice of structural equation modeling. In.: New York: Guilford; 2005.

28. Lomax RG, Schumacker RE: A beginner’s guide to structural equation modeling: psychology press; 2004.

29. Schreiber JB, Nora A, Stage FK, Barlow EA, King J: Reporting structural equation modeling and confirmatory factor analysis results: A review. The Journal of educational research 2006, 99(6):323-338.

30. Jomeen J, Martin CR: A psychometric evaluation of form C of the Multidimensional Health Locus of Control (MHLC-C) Scale during early pregnancy. Psychology, health & medicine 2005, 10(2):202-214.
31. Revelle W, Zinbarg RE: *Coefficients alpha, beta, omega, and the glb: Comments on Sijtsma*. *Psychometrika* 2009, 74(1):145.

32. Viladrich C, Angulo-Brunet A, Doval E: *A journey around alpha and omega to estimate internal consistency reliability*. *Annals of Psychology* 2017, 33(3):755-782.

33. Graham JM: *Congeneric and (essentially) tau-equivalent estimates of score reliability: What they are and how to use them*. *Educational and psychological measurement* 2006, 66(6):930-944.

34. Dunn TJ, Baguley T, Brunsden V: *From alpha to omega: A practical solution to the pervasive problem of internal consistency estimation*. *British journal of psychology* 2014, 105(3):399-412.

35. Noroozi A, Khademolhosseini F, Lari H, Tahmasebi R: *The mediator role of mental health literacy in the relationship between demographic variables and health-promoting behaviours*. *Iranian Journal of Psychiatry and Behavioral Sciences* 2018, 12(2):e12603.

36. Jung H, von Sternberg K, Davis K: *Expanding a measure of mental health literacy: Development and validation of a multicomponent mental health literacy measure*. *Psychiatry research* 2016, 243:278-286.

37. Wei Y, McGrath PJ, Hayden J, Kutcher S: *Measurement properties of tools measuring mental health knowledge: a systematic review*. *BMC psychiatry* 2016, 16(1):297.

38. Jorm AF, Christensen H, Griffiths KM: *The public's ability to recognize mental disorders and their beliefs about treatment: changes in Australia over 8 years*. *The Australian and New Zealand journal of psychiatry* 2006, 40(1):36-41.

39. Picco L, Abdin E, Pang S, Vaingankar JA, Jeyagurunathan A, Chong SA, Subramaniam
M: Association between recognition and help-seeking preferences and stigma towards people with mental illness. Epidemiology and psychiatric sciences 2018, 27(1):84-93.

40. Yu Y, Liu ZW, Hu M, Liu HM, Yang JP, Zhou L, Xiao SY: Mental Health Help-Seeking Intentions and Preferences of Rural Chinese Adults. PloS one 2015, 10(11):e0141889.

41. Wei Y, McGrath PJ, Hayden J, Kutcher S: Mental health literacy measures evaluating knowledge, attitudes and help-seeking: a scoping review. BMC psychiatry 2015, 15:291-291.

42. Jorm AF: Mental health literacy: empowering the community to take action for better mental health. American psychologist 2012, 67(3):231.

43. Dev A, Gupta S, Sharma KK, Chadda RK: Awareness of mental disorders among youth in Delhi. Current Medicine Research and Practice 2017, 7(3):84-89.

44. Li J, Zhang M-M, Zhao L, Li W-Q, Mu J-L, Zhang Z-H: Evaluation of attitudes and knowledge toward mental disorders in a sample of the Chinese population using a web-based approach. BMC psychiatry 2018, 18(1):367-367.

45. Thompson A, Hunt C, Issakidis C: Why wait? Reasons for delay and prompts to seek help for mental health problems in an Australian clinical sample. Social psychiatry and psychiatric epidemiology 2004, 39(10):810-817.

46. Henderson C, Evans-Lacko S, Thornicroft G: Mental illness stigma, help seeking, and public health programs. American journal of public health 2013, 103(5):777-780.

47. Reynders A, Kerkhof AJ, Molenberghs G, Van Audenhove C: Attitudes and stigma in relation to help-seeking intentions for psychological problems in low and high suicide rate regions. Social psychiatry and psychiatric epidemiology 2014,
Tables

Table 1. Frequency distribution of demographic characteristics (n = 1273)

| Variables                  | N   | %  |
|----------------------------|-----|----|
| Gender                     |     |    |
| Male                       | 53  | 42 |
| Female                     | 73  | 58 |
| Marital status             |     |    |
| Marriage                   | 86  | 68 |
| Single                     | 39  | 31 |
| Education level            |     |    |
| Elementary                 | 38  | 3.2|
| Diploma                    | 36  | 2.9|
| Associate or Bachelor's Degree | 70  | 57.9|
| Master's degree or High degree | 10  | 9|
| Residence                  |     |    |
| Urban                      | 93  | 79.5|
| Rural                      | 24  | 20.5|
| Occupation                 |     |    |
| Housewife                  | 21  | 17.4|
| Employed                   | 36  | 30 |
| Self-employed              | 46  | 38.4|
| labor                      | 10  | 8.3|
| Unemployed                 | 71  | 5.9|

Table 2. The model fit indicators of MHLS

| Goodness of fit indices         | Confirmatory factor analysis | Acceptable value |
|---------------------------------|-----------------------------|-----------------|
| X²                              | 1669.299                    | -               |
| df                              | 357                         | -               |
| X²/df                           | 4.676                       | <0.5            |
| p-value                         | 0.001                       | p > 0.05        |
| CFI                             | 0.902                       | > 0.9           |
| IFI                             | 0.901                       | > 0.9           |
| GFI                             | 0.912                       | > 0.9           |
| AGFI                            | 0.902                       | > 0.8           |
| RMSEA                           | 0.054                       | <0.08           |
| RMR                             | 0.047                       | <0.08           |
| PNFI                            | 0.748                       | > 0.5           |
| PCFI                            | 0.772                       | > 0.5           |
| PGFI                            | 0.749                       | > 0.5           |

Table 3. Factor loadings of the MHLS in the CFA stage
| Attributes                                         | Items                                                                                                                                 |
|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Ability to recognize disorders (AR1-AR 8)         | 1. If someone became extremely nervous or anxious in one or more situations with other people (e.g., presenting at a meeting) in which they were afraid of being evaluated by others that was humilitating or feel embarrassed, then to what extent do you think it is likely they have some sort of mental illness?  
2. If someone experienced excessive worry about a number of events or activities where this feeling was out of proportion to the situation, and had physical symptoms such as having tense muscles or a rapid heart rate, then to what extent do you think it is likely they have Generalized Anxiety Disorder?  
3. If someone experienced a low mood for two or more weeks, had a loss of pleasure or interest in daily activities, and had periods of depression (i.e., low mood), then to what extent do you think it is likely they have Major Depression Disorder?  
4. To what extent do you think it is likely that Personality Disorders are a category of mental illness?  
5. To what extent do you think it is likely that Dysthymia is a disorder?  
6. To what extent do you think it is likely that the diagnosis of Agoraphobia includes anxiety about certain situations that they were having difficulties managing their emotions?  
7. To what extent do you think it is likely that the diagnosis of Bipolar Disorder includes experiencing periods of depressed (i.e., low) mood?  
8. To what extent do you think it is likely that the diagnosis of Drug Dependence includes physical and psychological tolerance of the drug (i.e., require more of the drug to get the same effect)?  
9. To what extent do you think it is likely that in general in Iran, women are more likely to experience mental illness compared to men?  
10. How willing would you be to employ someone if you knew they had a mental illness? |
| Knowledge of risk factors and causes (RF1,RF2)     | 1. To what extent do you think it is likely that in general in Iran, women are more likely to experience mental illness compared to men?  
2. To what extent do you think it is likely that in general, in Iran, women are more likely to experience mental illness compared to men? |
| Knowledge of self-treatment (ST1,ST2)             | 1. To what extent do you think it would be helpful for someone to improve their quality of self-care and managing their emotions (e.g., becoming very anxious or depressed)?  
2. To what extent do you think it would be helpful for someone to avoid all activities or situations (e.g., presenting at a meeting) in which they were afraid of being evaluated by others that was humilitating or feel embarrassed? |
| Knowledge of the professional help available(PH1-PH3) | 1. To what extent do you think it is likely that Cognitive Behavior Therapy (CBT) is a therapy that would allow a mental health professional to break confidentiality?  
2. If you are at immediate risk of harming yourself or others to better support you |
| Knowledge of where to seek information(SI1-SI4)    | 1. I am confident that I know where to seek information about mental illness  
2. I am confident using the computer or telephone to seek information about mental illness  
3. I am confident attending face to face appointments to seek information about mental illness (e.g., seeing the GP)  
4. I am confident that I have access to resources (e.g., GP, internet, friends) that I can use to seek information about mental illness |
| Attitudes that promote the recognition or appropriate help-seeking behavior(A1-A10) | People with a mental illness could snap out if it if they wanted  
A mental illness is a sign of personal weakness  
A mental illness is not a real medical illness  
If I had a mental illness, I would not seek help from a mental health professional  
I believe treatment for a mental illness, provided by a mental health professional, would not be effective |

Table 4. Descriptive statistics of the MHLS and its attributes
| Attributes                                                | Item | Mean  | SD   | Range |
|-----------------------------------------------------------|------|-------|------|-------|
| Ability to recognise disorders (AR)                       | 8    | 23.81 | 3.52 | 8-32  |
| Knowledge of where to seek information (SI)               | 4    | 13.65 | 2.71 | 4-20  |
| Knowledge of risk factors (RF)                            | 2    | 5.39  | 1.07 | 2-8   |
| Knowledge of self-treatment (ST)                          | 2    | 5.15  | 0.84 | 2-8   |
| Knowledge of professional help available (PH)             | 3    | 8.43  | 1.15 | 3-12  |
| Attitudes that promote recognition or appropriate help seeking behaviour (A) | 10   | 36.58 | 5.30 | 10-50 |
| The final modified version of MHLS (All attributes)       | 29   | 93.03 | 8.16 | 29-130|

Figures

![Diagram](image)

Figure 1

A summary of the modifying of MHLS
Figure 2

Standardized parameter estimates for the factor structure of the MHLS