Translation, Validity, and Reliability of Depression Literacy Questionnaire in Iranian Young Adults

Abstract

Background: Depression literacy has notable advantages in the early identification and treatment of depression. The current study was conducted with the aim of translating and investigating the validity and reliability of the Depression Literacy Questionnaire (D-Lit) in Iranian young adults. **Methods:** The current study entailed a descriptive-analytical study in which the translation, validation, and preparation of the Persian version of D-Lit were conducted. It had two stages: translation and validation. In order to check the composite reliability, the statistical population consisted of Iranian adults in the city of Mashhad, and 300 people participated in this study in the form of a census. The content validity ratio (CVR) and content validity index (CVI) indices were used for content validity. **Results:** The results of the content validity evaluation of this questionnaire indicated that both the CVR and CVI indices have higher-than-average coefficients (0.78 and 0.83). Furthermore, the Cronbach's alpha value for the components of the D-Lit was found to be higher than 0.70. In the present study, the questionnaire's reliability was assessed using the intra-cluster correlation coefficient (ICC), and the difficulty coefficient for the whole questionnaire and its sub-components was at a favorable level. Out of 22 questions, 17 questions of this questionnaire were retained and questions 1, 17, and 22 were removed due to low CVR and CVI in the validity stage, and questions 5 and 13 were removed due to common factor load in the factor analysis stage. **Conclusion:** According to the content validity and reliability in this study, this tool can be used to identify underlying factors, etiology, and treatment of depression.

Keywords: *Depression literacy questionnaire, reliability, validity*

Fatteme Raiisi, Mohamad Ebrahimi¹, Fahimeh Ghahvehchi_ Hosseini², Kosar Jafari³, Fatemeh Rahmati⁴

Ph.D of Cognitive Science, Institute of Cognitive Science Studies, Tehran, Iran, ¹Ph.D Candidate, Health Research Center, Life Style Institute, Baqiyatallah University of Medical Sciences, Tehran, Iran, ²Ph.D Candidate, Behavioral Sciences Research Center, Life Style Institute, Baqiyatallah University of Medical Sciences, Tehran, Iran, ³Students' Research Committee, Baqiyatallah University of Medical Sciences, Tehran, Iran, ⁴Ph.D of Health Education, Health Research Center, Life Style Institute, Baqiyatallah University of Medical Sciences, Tehran, Iran

Introduction

Depression is an incapacitating mental disorder encompassing mood disturbances that are likewise identified as major depression, clinical depression, or melancholia.[1] Common characteristics of depression include mood disorders, absence of enjoyment, sleep disturbances, weight changes, sentiments of guilt, compromised focus and concentration, impaired daily functioning, and in severe cases suicide.[2] Epidemiological studies have shown that depression constitutes a large part of the affected population in the world. According to the most recent data provided by the World Health Organization in 2021, more than 280 million people worldwide are suffering from depression. Depression is a common disease worldwide, affecting about 3.8% of the world's population, including 5% of adults and 5.7% of middle-aged and over 60-year-olds.[3] The prevalence of depression in Iran after the COVID-19 outbreak among adults is higher than before the outbreak of this virus.[4] On this basis, depression among the military is also increasing. A meta-analysis indicated that the depression prevalence in the active military system was about 23% and in soldiers returning from war was 20%.[5]

Depression stands as one of the leading causes of disability and burden of mental illness in the world and has emerged as a pervasive ailment and concern that poses a significant threat to countless individuals across the globe.[6] As a result, numerous researchers worldwide are actively involved in research on depression and its understanding.[7] The importance of knowing is that this disorder is involved in 90% of suicidal thoughts, attempts, and commitments.[8] Therefore, having health literacy and depression literacy is very important for preventing depression and helping people to be more flexible against depression.[9] On the other hand, it can be important to have depression literacy

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in people, especially young people, so that by knowing the different dimensions of depression, its consequences can be reduced. Because cognitive dimensions and verbal-metaphoric load of depression can challenge people's cognitive system.[10] Therefore, depression literacy is a subset of health literacy, which means understanding the signs and symptoms of depressive disorders, as well as recognizing the need to refer to a specialist for proper treatment.[11]

In most studies, depression literacy has been studied with subscales of health literacy.[12] Mental health literacy pertains to the comprehension and beliefs regarding mental disorders which can aid in recognizing, managing, and preventing them.[13] In 2004, Griffiths *et al.*[14] designed a 22-item true-false self-assessment scale and reported its psychometric properties as favorable. This tool has been localized to different populations in the world and its psychometric properties have been evaluated, the most important of which are:

- The Chinese version of the Depression Literacy Questionnaire (D-Lit): Internal consistency, factor analysis, and content validity index were used to evaluate the reliability and validity of the D-Lit of the Chinese version. The process of cultural adaptation of the questionnaire using the forward translation method, backward translation, pre-test as well as interviews, and preparation of the final version were conducted by a panel of experts. Cronbach's alpha coefficient was 0.88. The content validity index of the whole questionnaire was 0.98.[15]
- Depression literacy scale of Korean-American parents: This scale, which was for evaluating the psychometric properties of Griffith's 22-item questionnaire, was conducted on a sample of Korean mothers who had teenage children. For this purpose, this study was conducted based on experts' reviews, individual interviews, focus groups, and a cross-sectional self-assessment study. This scale showed moderate reliability and validity (α =0.72) and content validity (content validity index at scale level 0.87).[16]
- German translation and psychometric properties of the D-Lit: In this study, the D Lit of Griffiths *et al.*[14] was translated into German, and the psychometrical characteristics of this questionnaire were investigated on a sample of 229 people with depression symptoms. The questionnaire showed a satisfactory overall internal consistency with an alpha of 0.74.[17]

Based on the research of the authors of this article, the localization of this questionnaire and its validity have not been investigated in Iran. Of course, in a study in Iran, demographic factors related to depression literacy have been investigated using this questionnaire without localization and internal validity.[18] On the other hand, in the conducted studies, depression literacy among people has not been investigated so far in Iran. Today, health issues have become more important for people because leads to

health care development and mental health promotion. It can be important to have depression literacy in people, so that it can be reduced by knowing the different dimensions of depression. Depression literacy is awareness about the causes, risk factors, signs or symptoms, and treatment of depression. In studies of the different fields, depression literacy has been investigated in the context of mental health literacy.[19] However sufficient and independent knowledge in this field may facilitate seeking professional support. In other words; having sufficient knowledge and literacy to identify the causes and symptoms of disorders can help in emergency, and immediate diagnostics, treatment, prevention, and the hindrance of the worsening of the course of the disease. It is worth noting that the English version and its translation into various languages such as German, Chinese, Korean, etc., are valid and reliable, and the cultural structure and the Persian language are different from other cultures and languages. Based on this, this study was conducted to translate and investigate the validity and reliability of the D-Lit in Iranian young adults.

Methods

The current study entailed a descriptive-analytical study in which the translation, validation, and preparation of the Persian version of D-Lit were conducted in Iran and had two stages of translation and validation.

Participants

To check the construct and convergent validity (composite reliability), the statistical population included Iranian adults in the city of Mashhad in 2022. Tarka suggests a ratio of 10 observations per independent variable for psychometric studies and its modeling in behavioral sciences. In these models, it is always emphasized that the sample size should not be less than 200 people.[20] Considering that 17 final validity and reliability questions were found in the present study, the sample of the study was selected by taking into account the sample drop of 300 young adults in the form of a census. The inclusion criteria were: being between 18 and 40 years old, having literacy in Persian, ability to speak Persian, and not suffering from psychological and cognitive disorders. Before completing this questionnaire, the purpose of implementing the project and the method of doing it were explained to the participants, who were also ensured that any data pertaining to their personal details would remain confidential. The demographic information questionnaire encompassed factors such as age, gender, marital status, residential situation, level of education, quality of economic and employment status, mental health (via a selection of questions from the Goldberg Mental Health Questionnaire), and medical history.

- Depression Literacy Questionnaire: This questionnaire was developed to measure the level of depression literacy by Griffiths, *et al.*[14] This questionnaire includes 22 items and measures four domains of depression literacy. These four domains include a) signs

and symptoms of depression and knowledge about cognitive-behavioral symptoms (questions 1 to 11), b) information about depression (questions 12 to 15), and Knowledge about taking medication and their side effects (questions 16-18), and d) treatment and prevention of depression (questions 19-22). In this questionnaire, correct answers get a score of one, and wrong answers and "I don't know" get a score of zero. The total number of correct items and the person's overall score show the person's literacy about depression. This questionnaire can be used to identify the strengths and weaknesses of people's awareness in the field of depression. The confirmation of the validity and reliability of this tool was established in Griffith's study, and also Cronbach's alpha and 3-month retest reliability were reported as 0.70 and 0.71, respectively.[14]

Procedures

Backward-forward translation

In the first step, the backward-forward translation was used in this study.[21] At first, two translators, a psychologist translator (the first author of the article) and an English language translator translated this questionnaire into Farsi and a preliminary Persian version of the translation was prepared. In the next step, two experts (a psychologist and an English expert) separately translated the questionnaire into English. Then, the translated English version was compared with the Persian version. Finally, a linguistic expert checked the quality of the final Persian translation and the discrepancies in the translations, and the final editing was done from the literary point of view.

Content validity

In this step, 15 experts in this field (8 psychologists, 5 health experts, and 2 physicians) were asked to express their opinion about the content, clarity and readability, simplicity of the instrument's items, and the ease of completing the questionnaire qualitatively and after the qualitative review of the questionnaire, supply the necessary feedback based on the criteria of grammar compliance, utilization of appropriate vocabulary, the necessity, importance, and placement of phrases in their appropriate place and appropriate scoring. The CVR and CVI indexes were used to measure the content validity based on the Lausche index and the content validity of Waltz and Bausell.[22] The acceptance standards of CVR and CVI values are based on Lausche's table, and the cut-off point is 0.49 for CVR and 0.79 for CVI.[23] Furthermore, in a pilot study, to evaluate the clarity of the questionnaire items, this tool was given to a group of 50 people (27 psychologists, 10 psychiatrists, and 13 health experts) voluntarily, and while completing it, they were asked to use a two-dimensional scale to evaluate the questionnaire as "comprehensible" and "incomprehensible". Then the percentage of "incomprehensible" was calculated for each item, and the

items that were more than 20% incomprehensible were revised. Acceptance of the items was based on Lynn's table, in which when the number of experts becomes 10, the minimum content validity index value becomes 0.79 at the 5% level of significance. A higher score than 0.79 is considered acceptable. The score between 0.70 and 0.79 is questionable and needs correction and revision. A score less than 0.70 was unacceptable and the items with this score were removed.[24]

Face validity

For the acceptability and reasonableness of the questionnaire, face validity was conducted with quantitative and qualitative methods. In this way, a cognitive interview was conducted with 15 young individuals studying bachelor's and master's degrees according to the items of the questionnaire. Also, to quantitatively study the face validity, 22 questions were asked about the importance (very important, important, medium, slightly important, and not important at all), simplicity, and clarity of each one of the samples. Therefore, the impact score of the item was calculated with the formula: item impact = frequency percentage × average importance. Frequency in terms of percentage was the number of people who rate this item as 4 or 5 (very important or important). The average importance was the mean score of importance based on a Likert scale of 1 to 5. The minimum acceptable standard for item impact was 1.5.[25]

Stability and reliability

To study stability and reliability, Kuder-Richardson tests, Cronbach's alpha coefficient, and intra-cluster correlation coefficient (ICC) were used. The evaluation phase of the retest was carried out on 30 youths within ten days. Then, the scores obtained in these two steps were compared by using the ICC. In well-designed questionnaires, Cronbach's alpha was more than 0.7.[26] Statistical analysis was done by using the SPSS-22 statistical software ($P < 0.05$).

Convergent validity

The correlation coefficient was calculated between the total score of the D-Lit and the Beck Depression Inventory for convergent validity. The convergent validity of the D-Lit with the Beck Depression Inventory was 0.63, which is good validity.

Factor analysis

Exploratory factor analysis (EFA) and confirmatory factor analysis are used. The Kaiser-Meyer-Olkin test (KMO) was used in the EFA for the adequacy of the sample. The value of KMO is variable between zero and one, and the higher its value, the better the factor analysis will be. If KMO values are above 0.5, the sample size will be sufficient, but values between 0.7 and 0.8 are considered great,[27] and values higher than 0.8 are excellent. The purpose of confirmatory factor analysis is whether the

studied questionnaire has confirmatory structural validity or not.

Statistical analysis

In this study, in addition to descriptive statistics, the SPSS-26 software was used to examine the frequency and average demographic characteristics of the subjects and to analyze relationships, and AMOS-24 software was used to evaluate and achieve factor analysis.

Results

The convergent validity of this questionnaire with Beck's Depression Inventory was 0.63. The Cronbach's alpha of the components of the D-Lit is higher than 0.70. As a result, these components have good reliability. Furthermore, the ICC and the difficulty coefficient of all components are at a favorable level, which shows that there is consensus among evaluators and experts about the components of the mentioned questionnaire [Table 1].

Quantitative evaluation of the content validity of the tool was done by 15 experts (8 psychologists, 5 health experts, and 2 physicians). The content validity indices of CVR, CVI, and factor loading of the questions of the D-Lit (that 300 Iranian adults completed) are presented separately in Table 2. The results of the content validity evaluation of the tool are presented, both CVR and CVI indexes have high average coefficients (0.78 and 0.83). Based on Table 1, questions 1, 17, and 22 were removed from the questionnaire due to the low CVI and CVR below the cut-off point.[22,23]

The sampling adequacy index (KMO) in the present study was 0.91, which is sufficient. Based on EFA results for the D-Lit, four factors with an eigenvalue greater than one were obtained, which explains 53.18% of the total variance. Based on the Guttman-Kaiser law, only factors with an eigenvalue greater than one are maintained. Questions 13 and 5 of the D-Lit were removed from the model due to having cross-factor loadings in several factors and lack of significance [Table 2].

The obtained factors of the scales of this study were analyzed in exploratory factor analysis. The factor loadings of the questions (except questions 5 and 13, which were excluded in the exploratory factor analysis) were all found

to be significant. Many researchers, including Sagino and Klein, suggested that factor loadings of 0.3 and larger are to be considered appropriate values.[28] Four factors with special value (that are greater than one) in the Iranian D-Lit, are presented in the scree plot [Figure 1].

According to the results of the confirmed factor analysis in Figure 1, and the fit indices, the measurement models had an acceptable fit and are valid based on the hypothesized model of the substructure. According to the evaluation indices of the measurement model fit in the above table, especially the Chi-square division by the degree of freedom (X^2/df 2.19), the comparative fit index (CFI) (0.98) and the RMSEA index (0.063), the measurement model of the latent variables has great fitness and construct validity [Table 3]. According to the results of confirmatory factor analysis and evaluation indices, the measurement models had an acceptable fit and are valid based on the hypothesized model of the substructure [Figure 2].

Discussion

The present study's purpose was to translate and investigate the validity and reliability of the D-Lit in Iranian young adults. The results indicated that 17 of the 22 questions of this questionnaire were retained, questions 1, 17, and 22 were removed due to low CVR and CVI, and questions 5 and 13 were removed due to common factor load, and the rest of the questions were retained and considered culturally appropriate. Also, the total ICC score and subscales were at a favorable level. The results of Spearman's internal correlation coefficient showed that all components of depression literacy (knowledge about psychological symptoms, the effectiveness of available treatment methods, the cognitive-behavioral symptoms, and taking medications and their side effects) are directly related to the total score of this questionnaire and that they were meaningful. The convergent validity of the D-Lit with Beck depression was reported to be 0.63, which is a good validity. The result of this research is in line with the results of Mamun *et al.*,[9] Wang *et al.*,[7] Jeong *et al.*,[16] and Arafat *et al.*[8]

In the original version of this questionnaire, Griffiths *et al.*[14] confirmed the validity and reliability and reliability was reported by Cronbach's alpha and 3-month retest as 0.70 and 0.71, respectively. In a study by Arafat *et al.*,[8]

Table 1: Mean, standard deviation, Cronbach's alpha coefficient, difficulty, and ICC to measure the reliability of the Persian version of the Depression Literacy Questionnaire ($N = 50$)

Dimensions of the Depression Literacy Questionnaire	Number of items	Mean	SD	Convergent validity	Cronbach's alpha coefficients	ICC	Difficulty coefficient
Knowledge about psychological symptoms	9	16	3.88	0.44	0.826	0.405	0.62
Knowledge about the effectiveness of available treatment methods	3	12.06	4.25	0.37	0.876	0.639	0.66
Knowledge about the cognitive-behavioral symptoms	2	6.88	2.88	0.29	0.797	0.567	0.69
Knowledge about taking medications and their side effects	3	6.28	2.47	0.63	0.885	0.563	0.42
Total	17	41.22	11.25	0.42	0.846	0.543	0.59

Table 2: Items, CVI, CVR, factor load (*N* = 15), and communality index of the questions related to each factor (*N* = 300)

Items	Scales	Item	CVR	CVI	Face validity	Statutes	Factor loading
People with depression may feel guilty even though they have done nothing wrong.	knowledge about psychological symptoms	2	1	1	3.36	Accept	0.69
One of the signs of depression is reckless and stupid behavior.		3	0.818	0.909	2.23	Accept	0.53
Loss of confidence and poor self-esteem may be a symptom of depression.		4	1	0.909	2.25	Accept	0.74
People with depression often hear voices that are not there.		6	1	1	3.13	Accept	0.52
Sleeping too much or too little may be a sign of depression.		7	1	0.909	2.89	Accept	0.73
Eating too much or losing interest in food may be a sign of depression.		8	1	0.909	2.89	Accept	0.72
Depression does not affect your memory and concentration.		9	1	0.909	1.97	Accept	0.44
Having several distinct personalities may be a sign of depression.		10	0.636	0.909	3.11	Accept	0.58
Depressed people may move more slowly or be late to excite as a result of their depression.		11	0.818	0.909	2.52	Accept	0.62
Clinical psychologists can prescribe antidepressants.	Knowledge about the effectiveness of available treatment methods	12	0.636	0.909	3.31	Accept	0.55
Most people with depression need to be hospitalized.		14	0.818	1	3.54	Accept	0.48
Many famous people have suffered from depression.		15	0.636	0.818	2.29	Accept	0.48
Many treatments for depression are more effective than antidepressants.	Knowledge about the cognitive-behavioral symptoms	16	0.818	0.818	2.04	Accept	0.55
Cognitive behavioral therapy is as effective as antidepressants for mild to moderate depression.		18	0.818	0.818	2.74	Accept	0.59
Taking vitamins is the most beneficial of all alternative therapies and lifestyle changes for depression.	Knowledge about taking medications and their side effects	19	0.818	0.818	2.89	Accept	0.54
Depressed people may avoid taking antidepressants until they feel better		20	1	1	3.38	Accept	0.54
Antidepressants are addictive.		21	0.636	0.818	2.97	Accept	0.70

Table 3: Fitness indicators of the Depression Literacy Questionnaire

RMSEA	NNFI	NFI	CFI	P	DF	X2
0.063	0.97	0.96	0.98	0.0000	161	352.44

20 questions were retained and two questions were deleted. Cronbach's alpha was also estimated as 0.77. Similarly, Mamun *et al.*[9] validated this questionnaire in Bangladesh. The total Cronbach's alpha was equal to 0.77. As a result, these researchers confirmed the validity of this questionnaire. Durán *et al.*[29] confirmed the validity and reliability of this questionnaire in Portugal. The Cronbach's alpha value of the entire questionnaire in this research was 0.846, which is a higher value than the original sample.

Their results showed that because their study samples were young people and university students, these people were highly educated, hence they were more familiar with the signs and symptoms of depression.

Knowledge and information about depression (underlying factors, etiology, set of symptoms of the spectrum of depression, how to deal with a person who has depression, prevention of depression, etc.) can be very helpful. This issue has been raised with the term "depression literacy" in the research literature. Various types of research also confirm the statement that having depression literacy is very effective in improving attitudes, and reducing stigmatization and the judgments of others. This result is in line with the result of Imamura *et al.*[30]
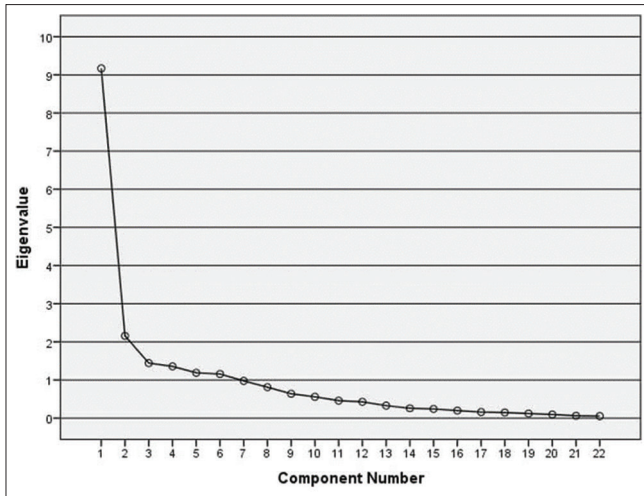
Figure 1: Scree plot of eigenvalues related to Depression Literacy Questionnaire components

It seems that people with mental states such as depression, especially mild depression, are less likely to seek formal treatment. Research has shown that people in such a state tend to talk more with their family, neighbors, and friends.[31] Therefore, having literacy in the field of mental health will help to detect the acute or serious decline of mental health of people earlier and introduce them to a better source of treatment, before the person's condition worsens. Research has shown that the reason for the deterioration of the patient's condition is most likely the late diagnosis of the patient and their family (which is caused by the late visit to the physician).[32] Other reasons such as cultural-regional, religious, and personal factors are important in having depression literacy or any type of literacy in the field of mental health. In many cultures, the fear of the disease label, religious superstitions, or mental stereotypes does not allow people to have knowledge in
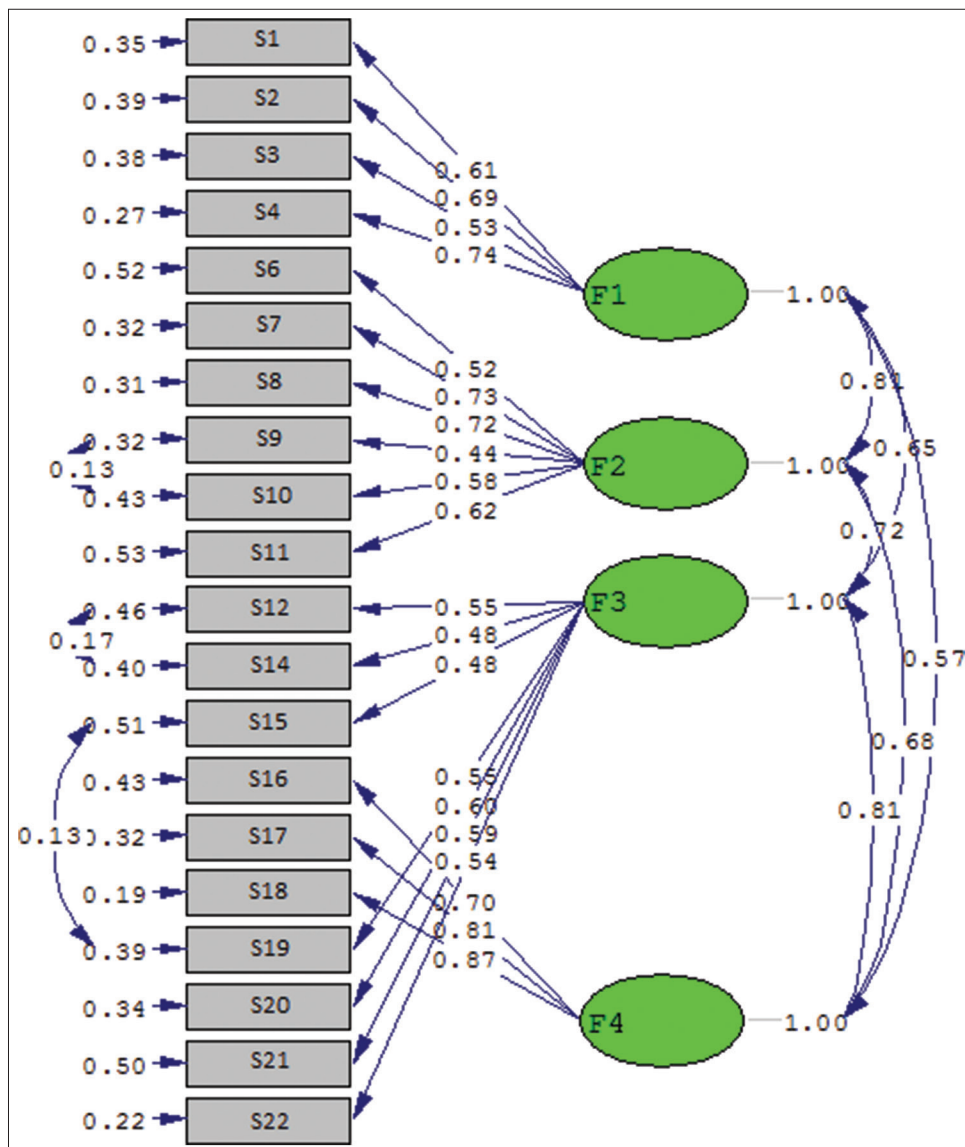

Figure 2: Confirmatory factor analysis and goodness of fit parameters of Depression Literacy Questionnaire

the field of depression and prevent any kind of knowledge about the identification of symptoms and etiology of various mental illnesses.[33,34]

The results of this study support the fact that the Persian version of D-Lit has high levels of reliability and validity. In most cases, the psychometric characteristics of this questionnaire are similar and consistent with the findings reported in other countries. In other words, all the subscales (knowledge about psychological symptoms, knowledge about the effectiveness of available treatment methods, knowledge about the cognitive-behavioral symptoms, and knowledge about taking medications and their side effects) can be identified and recognized in the young Iranian population.

Strengths and limitations

Among the limitations of the current study, including cross-sectional study, sample size limited to one city in Iran, and the census sampling method can be mentioned. The localization of tools in the young Iranian society is truly commendable and adds great value to the study.

Conclusion

Based on this study's findings, it appears that the shortened Iranian questionnaire of 17 questions can be used for rapid assessment of depression literacy in young adults. According to the face and content validity and reliability of D-Lit in this study, this tool can be used to identify underlying factors, etiology, and treatment of depression. It is recommended that in future studies, the Persian version of the D-Lit should be examined in terms of validity and reliability on other populations in different cities.

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Ethical considerations

In this research, all ethical principles (privacy, the confidentiality of participants' information, etc.) were observed. The publication of the results of the project was done with the permission of the Vice President of Research and the Health Research Centre. Written informed consent was obtained from the participants, and they were not obliged to participate in this study.

Code of ethics

The code of ethics for this research is IR.BMSU. REC.1401.083.

Authors' contributions

Fatteme Raiisi (A), Mohamad Ebrahimi (B), Fahimeh Ghahvehchi (C), Kosar Jafari (D), Fatemeh Rahmati (E). A and E contributed to the design and prepared the manuscript. B collected the data. Other authors participated in the research implementation and revision of the article. All authors accept the correctness of the contents of the article by final approval of this article.

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