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Design and Psychometric Evaluation of the Iranian Version of Public Awareness of Anxiety and Depression Symptoms Scale: A Mixed Methods Study

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Abstract

Background & Objectives: Awareness of the symptoms of anxiety and depression, two prevalent psychiatric disorders, can significantly contribute to the diagnosis, management, and prevention of mental health conditions. The assessment and measurement of awareness levels regarding anxiety and depression symptoms necessitate the utilization of specialized and validated instruments in this domain. This study was conducted with the aim of designing and psychometrically evaluating the Iranian version of Public Awareness of Anxiety and Depression Symptoms Scale.

Materials & Methods: The present study employed an exploratory sequential mixed methods design and was conducted in two distinct phases. In the qualitative phase, questionnaire items were initially extracted. Subsequently, in the quantitative phase, the validation of the designed instrument was undertaken, utilizing face validity, content validity; construct validity, internal consistency, and stability assessments.

Results: The initial questionnaire comprised 42 items, which were reduced to 30 items following multiple sessions and revisions by the research team. According to the results of the exploratory factor analysis, factor loadings for the items ranged from 0.57 to 0.89, all of which were statistically significant. The two dimensions introduced in the original instrument were confirmed with acceptable values. The intra-class correlation coefficient for the entire instrument was calculated at 0.92. Furthermore, the reliability of the instrument, assessed through internal consistency using Cronbach's alpha, was determined to be 0.98 for the entire instrument.

Conclusion: The present questionnaire is a valid and reliable instrument for assessing public awareness of anxiety and depression symptoms. Consequently, healthcare system managers and policymakers can employ this tool to evaluate public awareness of anxiety and depression symptoms.

Keywords: Psychometric Testing, Awareness, Anxiety, Depression, Public Health

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Introduction

Mental health, as one of the most crucial health indicators, can potentially lead to significant adverse consequences (1). According to the World Health Organization (WHO) report in 2008, one in five adults experienced mental

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disorders in the previous year, and 29.2% of individuals have encountered mental illnesses throughout their lifetime (2). Consequently, to enhance mental health, the WHO has developed an evidence-based mental health program for the 2013-2020 period (3). Mental disorders such as depression and anxiety are considered the most prevalent, with 25% of individuals experiencing them during their lifetime (4).

Depression encompasses periods of severely depressed mood, with dysphoria as its fundamental element. Anxiety, on the other hand, is characterized by chronic and intense experiences of fear regarding an imminent event (5). These two conditions are considered causal factors and consequences of each other (6), exhibiting extensive overlap in pathophysiology (7), genetic correlation (8), and comorbidity with other disorders such as alcohol and substance dependence, sleep disorders, and certain personality disorders (9).

Various questionnaires and instruments have been designed to assess knowledge of mental health and mental disorders (10-14). The majority of these tools evaluate and inquire about individuals' attitudes towards mental disorders, perspectives on treatment, etiology of disorders, level of information acquired from websites, assessment of previous educational efficacy, behavior towards patients, and awareness of risk factors for onset.

Given the aforementioned challenges, there is an increasing need for a questionnaire that is comprehensible to diverse groups in terms of culture, occupation, age, and educational level, and that presents symptoms and signs in simple, non-technical language. Therefore, considering the significance of this topic and the existing research gap, the present study was conducted with the objective of designing and validating a questionnaire to assess the level of public awareness of anxiety and depression symptoms among the general population.

Materials and Methods

Study Design

The present study employed an exploratory sequential mixed methods design (15).

Phase One (The Qualitative Stage)

For the initial phase of the research (qualitative phase), data collection was conducted through semi-structured individual interviews. To this end, 21 in-depth, semi-structured interviews were carried out face-to-face with 21 members of the general public comprising six housewives, three teachers, four university administrative staff members, and eight shopkeepers and business owners. Each interview lasted between 45 and 60 minutes. Inclusion criteria comprised not having mental disorders, voluntary willingness to participate in the study and a minimum of primary-level literacy, while the exclusion criterion was unwillingness to participate for any reason. The present study employed purposive sampling. Interviews commenced with a general question, such as inquiring about the participant's age, followed by specific questions including:

"What is your definition of anxiety and depression? Have you ever experienced symptoms of anxiety and depression? In your opinion, what are the symptoms of anxiety and depression? What measures are necessary when experiencing symptoms of anxiety and depression?"

Additionally, probing questions were utilized to enhance the clarity of information provided by participants, for example: "Could you elaborate on... that you mentioned? What do you mean by...? Can you provide an example or share your experience?"

Qualitative data analysis was conducted using the Graneheim and Lundman (2004) content analysis approach (16).

Items Pools

A qualitative approach and literature review were used to extract the items. For this purpose, studies published in the field of anxiety and depression symptoms in the last ten years

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were reviewed. The search was conducted in electronic databases such as the Cochrane Library, PubMed, Scopus, ScienceDirect, Web of Science, ProQuest, and Google Scholar, and the Google Database was also searched to find reports and guides related to the subject. Following the qualitative phase and literature review, an initial item pool of 42 items was formed. Through multiple research team sessions, 12 items with conceptual similarities were merged, resulting in a final questionnaire comprising 30 items (15 items related to anxiety symptoms and 15 items related to depression symptoms), which then proceeded to the validation and quantitative phase.

Psychometric Analysis Phase

Face Validity

To assess face validity using a qualitative approach, the opinions of 15 individuals from the general population were solicited. This group comprised three housewives, three teachers, two university administrative staff members, and seven shopkeepers and business owners. Their feedback was sought regarding the wording, phrasing, and appearance of the questionnaire items, with particular attention to clarity, the use of simple and comprehensible terminology, and the employment of common language (avoiding technical and specialized terminology).

Quantitative Face Validity

For the quantitative assessment of face validity, the item impact score index was employed. To this end, the questionnaire was distributed to 15 experts (comprising five psychiatrists, six doctoral-level psychiatric nursing specialists, and four professors with expertise in instrument development). These experts were requested to assign a score to each questionnaire item based on a five-point Likert scale (5 = extremely important, 4 = very important, 3 = moderately important, 2 = slightly important, 1 = not at all important). Following the determination of the impact score for each item, those with an impact score exceeding 1.5 were retained in the questionnaire (17).

Content Validity

Qualitative Content Validity

The questionnaire assessing public awareness of anxiety and depression symptoms was separately distributed to 15 experts in nursing, instrument development, and psychology (comprising 10 individuals holding doctoral degrees in nursing and five individuals with master's degrees in psychology), as well as 15 members of the general public. These participants were requested to evaluate the questionnaire items in terms of grammatical correctness, sentence structure, comprehensibility, and cultural appropriateness within the Iranian context. They were also asked to provide their comments for each item.

Quantitative Content Validity

To assess the Content Validity Ratio (CVR), the questionnaire items were evaluated by experts in terms of relevance and necessity using a three-point Likert scale (1 = not necessary, 3 = essential). Based on this evaluation, the content validity of each item was calculated. To examine the Content Validity Index (CVI), the revised version of the questionnaire assessing public awareness of anxiety and depression symptoms was re-administered to 30 participants. These individuals were instructed to rate each item on a four-point Likert scale (1 = irrelevant, 4 = highly relevant) in terms of simplicity, clarity, and relevance (18, 19). Subsequently, the CVI was calculated for each item and for the questionnaire as a whole. In this study, a CVR above 0.33 and a CVI exceeding 0.8 were considered acceptable (20).

Construct Validity

Exploratory Factor Analysis

Exploratory Factor Analysis (EFA) was conducted to evaluate construct validity, ensuring the instrument's alignment with its measurement objectives. At this stage, EFA was performed using the Varimax rotation method. In this study, the researchers considered eigenvalues greater than 1 and factor loadings exceeding 0.4 to

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achieve an optimal structure. The adequacy of the sample was assessed using the Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity. To ensure the accuracy of the analysis, the KMO value was required to exceed 0.7, and Bartlett's test should yield a p-value less than 0.05 ($p<0.05$) (21). Items with factor loadings below 0.4 were eliminated from the questionnaire. In this study, approximately seven participants were considered for each item, resulting in a total of 210 individuals participating in the exploratory construct validity assessment. Given that the factor loadings for all items exceeded 0.4, no items were eliminated.

Reliability

The reliability of the questionnaire assessing general awareness of anxiety and depression symptoms was evaluated using internal consistency (Cronbach's alpha coefficient) and test-retest reliability. The Cronbach's alpha coefficient was calculated for a sample of 100 participants, with values exceeding 0.7 considered acceptable (22). To assess test-retest reliability, the Intra-Class Correlation (ICC) coefficient was computed using data collected from 50 individuals, including 26 males and 24 females. The mean age of participants was 41.27 ± 5.25 years. These 50 individuals were selected through convenience sampling in Fasa City, in Fars Province, southern Iran, over a two-week interval. An ICC value surpassing 0.80 was considered indicative of satisfactory stability (23).

Results

The study sample comprised 210 individuals from the general population. Analysis of the data revealed that the mean age of participants was 47.36 ± 7.36 years. Additional socio-demographic characteristics of the study cohort are delineated in Table 1.

Face Validity

From the participants' perspective, all 30 items were deemed simple, clear, and relevant to the study topic. Moreover, the impact score for all items exceeded 1.5, resulting in no items being eliminated.

Content Validity

Based on expert opinions regarding item necessity, the Content Validity Ratio (CVR) was calculated. According to Lawshe's table, an acceptable CVR value is 0.33. The CVR for all items in the awareness questionnaire on anxiety and depression ranged from 0.85 to 1. Consequently, no items were eliminated due to inadequate CVR. The Content Validity Index (CVI) for each item was also computed, ranging from 0.95 to 1. Ultimately, the Scale-Level Content Validity Index/Average Congruency Rate (S-CVI/Ave) was determined to be 0.98.

Construct Validity

The initial step in exploratory factor analysis involved calculating the Kaiser-Meyer-Olkin (KMO) measure. The KMO value for the present scale was 0.89, indicating sufficient sample

Table 1. The demographic characteristics of participants (N=200)

Variable		Frequency	Percent
Gender	Male	85	%40.46
	Female	125	59.52%
Occupation	Teacher	66	31.43%
	Homemaker	28	13.13%
	Medical University Staff	41	19.52%
	Self-employed	43	20.48%
	Engineering Student	32	15.24%
Educational Level	Lower Secondary	29	13.81%
	Diploma	74	35.24%
	Bachelor's Degree	82	39.04%
	Master's Degree	21	10%
	Doctoral Degree	4	1.9%

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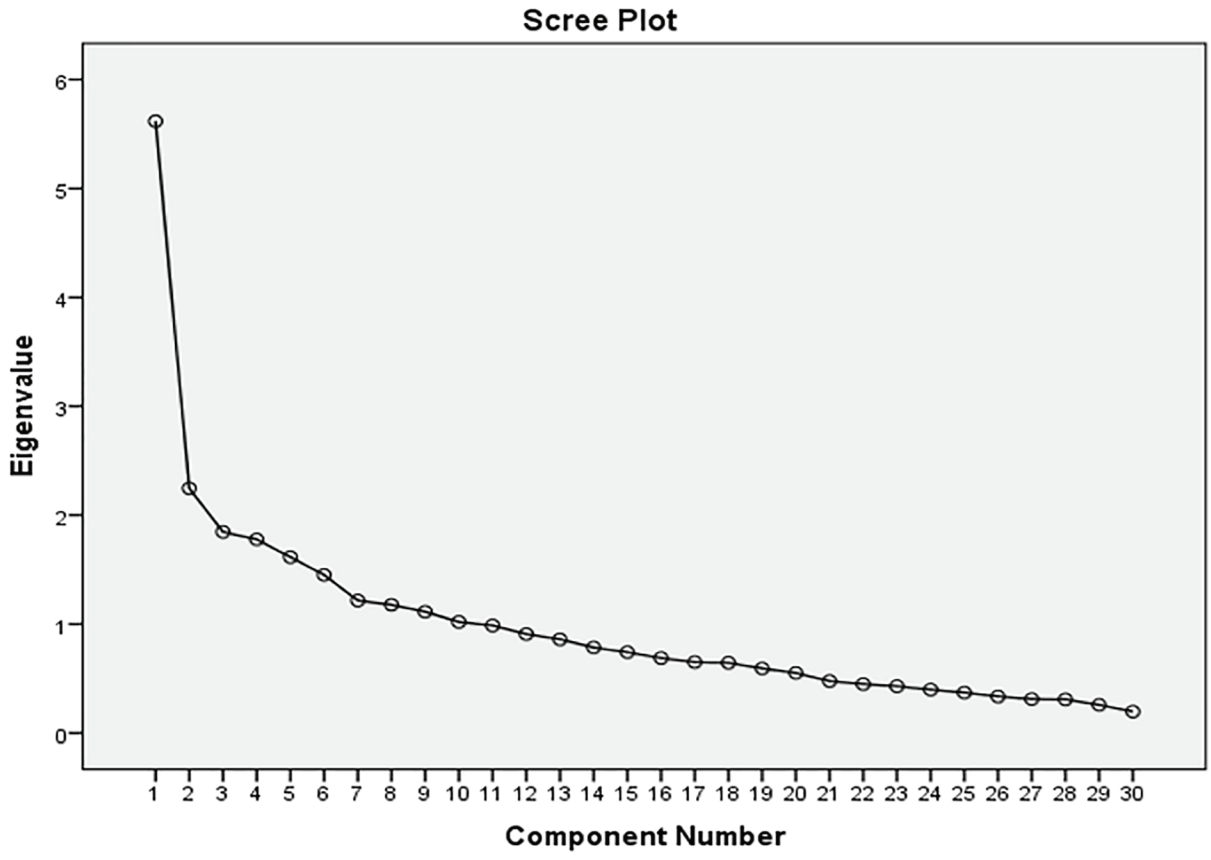


Figure 1. Scree plot of exploratory factor analysis questionnaire for assessment Public Awareness of Anxiety and Depression Symptoms

adequacy for analysis. Additionally, all items demonstrated factor loadings exceeding 0.4, with no items requiring removal. The factor analysis results revealed that two factors accounted for 64.57% of the total variance ($p < 0.001$). Based on the Scree plot, two factors were confirmed for the questionnaire (Figure 1). The findings also indicated that item factor loadings ranged from 0.65 to 0.89. Factor loadings are presented in Table 2.

Internal Consistency

The scale demonstrated excellent internal consistency, as evidenced by a Cronbach's alpha coefficient of 0.98 (Table 3).

Stability

The test-retest reliability of the 30-item instrument was assessed using the Intra-Class Correlation Coefficient (ICC), which yielded a value of 0.92. This result indicates strong temporal stability of the questionnaire (Table 4).

The finalized questionnaire consists of 30 items, with questions 1-15 addressing awareness of anxiety and questions 16-30 focusing on awareness of depressive symptoms. Each item is scored on a five-point Likert scale, ranging from "Strongly Agree" (5 points) to "Strongly Disagree" (1 point). The interpretation of the cumulative scores is as follows: scores ranging from 1-75 indicate poor awareness, 76-120 signify moderate awareness, and 121-150 denote good awareness (Table 5).

Discussion

The present study was conducted to design and psychometrically evaluate a questionnaire assessing public awareness of anxiety and depression symptoms as common psychiatric disorders.

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Table 2. Two-Factor Structure and Factor Loadings Using Varimax Rotation for the Anxiety and Depression Symptoms Awareness Questionnaire

Row	Item	Factor 1	Factor 2
1	Inability to feel calm is a symptom of anxiety	0.68	
2	Anger and irritability are symptoms of anxiety	0.78	
3	Fear and worry about bad events are symptoms of anxiety	0.84	
4	Shortness of breath is a symptom of anxiety	0.61	
5	Recurrent nightmares and sleep disturbances are symptoms of anxiety	0.73	
6	Lack of concentration in performing tasks is a symptom of anxiety	0.79	
7	Feeling under pressure is a symptom of anxiety	0.59	
8	Excessive sweating is a symptom of anxiety	0.59	
9	Restlessness is a symptom of anxiety	0.73	
10	Hand tremors are a symptom of anxiety	0.69	
11	Fear of losing control is a symptom of anxiety	0.61	
12	Difficulty breathing is a symptom of anxiety	0.58	
13	Feeling hot and flushed is a symptom of anxiety	0.67	
14	Heart palpitations are a symptom of anxiety	0.83	
15	Indigestion and stomach discomfort are symptoms of anxiety	0.57	
16	Feeling sad is a symptom of depression		0.89
17	Lack of enjoyment in life is a symptom of depression		0.81
18	Feeling punished is a symptom of depression		0.65
19	Self-blame is a symptom of depression		0.69
20	Thoughts or desire for suicide are symptoms of depression		0.81
21	Feeling like a burden is a symptom of depression		0.79
22	Difficulty in decision-making is a symptom of depression		0.64
23	Feelings of hopelessness and worthlessness are symptoms of depression		0.77
24	Changes in sleep patterns, such as insomnia or excessive sleep, are symptoms of depression		0.59
25	Changes in appetite are symptoms of depression		0.55
26	Difficulty concentrating is a symptom of depression		0.62
27	Fatigue and feelings of inability are symptoms of depression		0.67
28	Social withdrawal and isolation are symptoms of depression		0.79
29	Wishing for death is a symptom of depression		0.77
30	Low self-esteem is a symptom of depression		0.79

Table 3. Cronbach's alpha of subscales and the entire questionnaire for assessment Public Awareness of Anxiety and Depression Symptoms

Factors	Subscale	Items	Cronbach's alpha
1	Anxiety	15	0.98
2	Depression	15	0.97
Entire Questionnaire		30	0.98

Table 4. Intra-class correlation coefficient (ICC) values for the domains of the questionnaire for assessment Public Awareness of Anxiety and Depression Symptoms

Factor	Dimensions	Mean ± SD	ICC	Confidence interval	P -value
1	Anxiety	39.96±6.66	0.92	0.90– 0.97	p<0.05
2	Depression	27.56±5.33	0.95	0.92- 0.99	p<0.05
Entire Questionnaire (Total)		77.17±11.30	0.92	0.90 - 0.96	p<0.05

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Table 5. Final version questionnaire for assessment Public Awareness of Anxiety and Depression Symptoms

Row	Item	Strongly agree	agree	neutral	disagree	Strongly disagree
1	Inability to feel calm is a symptom of anxiety					
2	Anger and irritability are symptoms of anxiety					
3	Fear and worry about bad events are symptoms of anxiety					
4	Shortness of breath is a symptom of anxiety					
5	Recurrent nightmares and sleep disturbances are symptoms of anxiety					
6	Lack of concentration in performing tasks is a symptom of anxiety					
7	Feeling under pressure is a symptom of anxiety					
8	Excessive sweating is a symptom of anxiety					
9	Restlessness is a symptom of anxiety					
10	Hand tremors are a symptom of anxiety					
11	Fear of losing control is a symptom of anxiety					
12	Difficulty breathing is a symptom of anxiety					
13	Feeling hot and flushed is a symptom of anxiety					
14	Heart palpitations are a symptom of anxiety					
15	Indigestion and stomach discomfort are symptoms of anxiety					
16	Feeling sad is a symptom of depression					
17	Lack of enjoyment in life is a symptom of depression					
18	Feeling punished is a symptom of depression					
19	Self-blame is a symptom of depression					
20	Thoughts or desire for suicide are symptoms of depression					
21	Feeling like a burden is a symptom of depression					
22	Difficulty in decision-making is a symptom of depression					
23	Feelings of hopelessness and worthlessness are symptoms of depression					
24	Changes in sleep patterns, such as insomnia or excessive sleep, are symptoms of depression					
25	Changes in appetite are symptoms of depression					
26	Difficulty concentrating is a symptom of depression					
27	Fatigue and feelings of inability are symptoms of depression					
28	Social withdrawal and isolation are symptoms of depression					
29	Wishing for death is a symptom of depression					
30	Low self-esteem is a symptom of depression					

In questionnaires and instruments designed to assess mental health literacy, the presence of specialized terminology often complicates their application across diverse population segments, as the comprehension of questionnaire items is paramount for accurate responses. For instance, the Mental Disorder Recognition Questionnaire (MDRQ), developed by Swami et al. in 2011, was administered to 477 individuals from various demographic groups in Britain. This 20-item questionnaire describes various mental disorders through brief vignettes. However, the

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disorders presented in this questionnaire are predominantly highly specialized and of low prevalence. For example, conditions such as acalculia or paruresis, defined as mental disorders in this questionnaire, may be unfamiliar even to individuals with advanced education in fields unrelated to psychology. This issue is also evident in the definitions provided for each question, such as the use of terms like "neurobehavioral," which may not be readily comprehensible to the general public. Furthermore, the construct validity of this questionnaire was not evaluated (24).

In 2016, a comprehensive review study was conducted by Wei and colleagues to examine various aspects of instruments designed to assess mental health literacy. The findings of this study indicated that the majority of instruments developed for mental health literacy were primarily designed for adults. Furthermore, these instruments were predominantly developed in Western and other developed countries, which exhibit significant socioeconomic and cultural disparities compared to developing nations. Additionally, the validation processes for these instruments **were** not comprehensively executed, with construct validity, in particular, remaining unexamined in most cases. Moreover, the items in these questionnaires were formulated solely based on literature reviews, without employing qualitative methodologies for item extraction. Consequently, the development of more diverse instruments covering various domains of mental disorders, as well as across different languages and cultures, along with rigorous and comprehensive validation, is of paramount importance for assessing mental health literacy (25).

In 2016, Arafat and colleagues in Bangladesh developed and validated a 20-item Depression Literacy Questionnaire. This questionnaire exclusively assesses the general population's knowledge of depression and is not designed to evaluate depressive symptoms. However, the validation process for this questionnaire was not fully completed. Specifically, the face validity, content validity, and construct validity of the instrument were not examined (26).

In the same year Breedvelt and colleagues conducted a systematic review to explore various features of tools designed to assess mental health literacy. This study reviewed a total of 18 instruments aimed at measuring mental health knowledge. Most of these tools were utilized to evaluate awareness of mental illnesses, diagnostic methods, and treatment options. However, they were neither specifically designed nor comprehensively developed to assess symptoms of anxiety and depression in the general population. Furthermore, the validation procedures for these instruments were not thoroughly carried out. The findings of this study highlight that most tools developed for mental health literacy originated in Western, developed countries, which exhibit significant social, economic, and cultural differences compared to developing countries such as Iran (27).

The Beck Anxiety Inventory (BAI), developed by Beck and colleagues in 1988, consists of 21 items. Each item is rated on a four-point Likert scale ranging from "not at all" to "severely." This questionnaire is a well-recognized and reliable tool for measuring the severity of anxiety in adolescents and adults, with its reliability reported as 0.89 by Beck and colleagues. However, no information is provided regarding its face and content validity, and its construct validity has not been evaluated. Moreover, this instrument was not specifically and comprehensively designed for assessing anxiety symptoms (28).

Conclusion

The present questionnaire is a valid and reliable instrument for assessing public awareness of anxiety and depression symptoms. Consequently, healthcare system managers and policymakers can employ this tool to evaluate public awareness of anxiety and depression symptoms.

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Limitation of the Study

The design of this questionnaire was conducted in southern Iran. Therefore, given the diversity of sociocultural conditions, it is imperative that this questionnaire undergoes further examination and validation in other areas or countries.

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Conflict of Interests

The authors declare that they have no competing interests.

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Ethical Considerations

We provided participants with sufficient information regarding the anonymity and confidentiality of their information. Moreover, the Research Ethics Committee of Fasa University of Medical Sciences, Fars, Iran, approved the study under the code IR.FUMS.REC.1401.090.

Code of Ethices

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Abbreviations

Content Validity Ratio: CVR
Content Validity Index: CVI
Intra-class correlation coefficient: ICC

Author's Contributions

MB, ASK and EP have participated in the conception and design of the study. AT, NJ and MB contributed the data collection and prepared the first draft of the manuscript. MB, and ASK, critically revised and checked closely the proposal, the analysis and interpretation of the data and design the article. All authors read and approved the final manuscript.

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