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Psychometric Properties of the Iranian Version of a Perinatal Anxiety Screening Scale in Iranian Perinatal Population: A Methodological Study

Shahla Barzgar-Molan[1], Azizeh Farshbaf-Khalili[2], Mohammad Asghari Jafarabadi[3], Jalil Babapour[4], Parisa Yavarikia[5*]

Abstract

Objectives: The purpose of this study was to evaluate the validity of a Persian-language perinatal anxiety screening tool in the Iranian population.

Materials and Methods: This cross-sectional study was performed on 300 low-risk women who participated in the perinatal period. Pregnant women aged 18-42 years were randomly selected from comprehensive health centers in Ardabil, Iran and included in the study from 9.10.2017 to 6.3.2018, and finally, followed up as well. Several questionnaires were used in this study, including demographic, perinatal anxiety, perceived stress, and postpartum depression in Edinburgh. The forward-backward method was used to translate the English version of the tool into Persian. Eventually, the content and face validity were assessed and the reliability of the tool was evaluated using the intra-class correlation coefficient (ICC) and Cronbach's alpha coefficient.

Results: The validation of the anxiety instrument showed that the content validity ratio (CVR) (0.6-0.1) and content validity index (CVI) (0.8-1.0) were acceptable. Using the exploratory factor analysis (EFA) ($\chi 2 = 4.966$, df = 465, and $P<0.01$), reliability assessment demonstrated that the instrument had four subscales. The mean (standard deviation) of the total score of the instrument in pregnancy and delivery was 36.6 (13.1) and 43.3 (7.7) in the range of 0-93, respectively. Finally, the Cronbach's alpha coefficient (0.84-0.94) and ICC of 0.96 (95% CI: 0.93-0.98) revealed that the instrument has a high ICC and excellent test-retest.

Conclusions: In general, the findings of this study support the validity and reliability of the tool thus it can be used in clinical and research cases.

Keywords: Validity, Reliability, Perinatal Anxiety Screening Scale

Introduction

Perinatal mental health problems are among the major public health issues that have a negative impact on the mother and infant and impose significant economic burdens on society if left undiagnosed and then untreated (1-3). Anxiety is one of the most common mental health problems that women experience in the perinatal period, namely, pregnancy and postpartum (4). Although this problem is a frequent comorbidity with depression (5), it has received limited attention from researchers and health professionals. In particular, maternal antenatal anxiety is associated with increased childbirth fear (6), a preference for caesarean section delivery (7), decreased effective coping strategies (8), increased nausea and poor maternal attachment (9), higher rates of eating disorders (10), and an increased risk for suicide (11). It also has important neonatal implications as it has been linked to increased preterm birth rates (12,13), lower Apgar scores (14), and decreased gestational length (15).

Previous research on anxiety in pregnancy shows that a significant portion of women is affected by this problem (16). Based on a systematic review, the prevalence of antenatal anxiety symptom (AAS) and antenatal depression symptom was found to be 58.5% and 73.5% during pregnancy, respectively (17), of these, 64% continued to postnatal anxiety (18). In other studies in Bangladesh (19) and Iran (20), the frequencies of antenatal depression symptom and AAS were reported to be 18.3% and 27.6%, as well as 29.4% and 58.5%, respectively. According to another report, the high prevalence of pregnancy anxiety was related to the third trimester of pregnancy (21).

According to research conducted by the authors of this study, despite the importance of anxiety in the perinatal period, the Perinatal Anxiety Screening Scale (PASS) questionnaire has not yet been validated in Iran for Iranian pregnant women. Therefore, the application of this tool

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[1]Student Research Committee, Department of Midwifery, Faculty of Nursing and Midwifery, Tabriz University of Medical Sciences, Tabriz, Iran [2]Aging Research Institute, Physical Medicine and Rehabilitation Research Centre, Tabriz University of Medical Sciences, Tabriz, Iran. [3]Department of Statistics and Epidemiology, Faculty of Health, Tabriz University of Medical Sciences, Tabriz, Iran. [4]Faculty of Education and Psychology, Tabriz University, Tabriz, Iran. [5]Department of Midwifery, Faculty of Nursing and Midwifery, Tabriz University of Medical Sciences, Tabriz, Iran.

***Corresponding Author:** Parisa Yavarikia, Email: p_k_hn@yahoo.com

may be useful in future studies for assessing anxiety in the perinatal period among the Iranian pregnant women population.

Materials and Methods

Research Design

This study was conducted following a cross-sectional study design. The cluster sampling technique was performed to select 5 comprehensive health centers in Ardebil (Iran) from a total of 16 centers covering the most pregnant women, including Mirzahoseini, Shahid-Ganad-Emami, Razi, Shahid-Rajaei, and Shahid-Jedi Health Centers. In addition, participants entered the study from 9.10.2017 to 6.3.2018 and their follow-up was completed on 16.7.2018. Overall, 341 pregnant women at 26-30 gestational weeks were available among whom, 300 cases were included in the study based on meeting the eligibility criteria. The inclusion criteria included the gestational age of 26-30 weeks, pregnant women aged 18-42 years, pregnant women without any chronic and mental illness, no history of abortion, and stillbirth. After excluding ineligible participants (i.e., those having a history of drug abuse, smoking, addiction, and a depression score of higher than 20 based on the Edinburgh scale, and a history of preterm labor), 300 pregnant women completed the questionnaires in the antenatal stage, of which 206 women completed the questionnaires in the childbirth stage. The in-person interview was conducted by a trained researcher in a private and quiet room. The participants were allowed to withdraw from the research process any time they want.

Measure Selection

Related articles were reviewed to find a specific tool for evaluating the perinatal period in women. Further, the search focused on finding a tool that could be used in both research and clinical studies to screen for anxiety in the perinatal period, be cost-effective and time-consuming, and includes all aspects of perinatal anxiety. The PASS questionnaire contains all these specifications. Therefore, this study began after obtaining permission from the inventor of the tool (1). The sample size in the exploratory analysis follows the general principle of sampling, that is, the number of samples should exceed the number of questions in the questionnaire (22), implying that 5-20 participants are recommended per question (23). Accordingly, based on Stevens' theory and the number of questions (n=31), the sample size was estimated to be 300 on average (10 individuals per question). Considering a 10% chance of the dropout of 341 low-risk pregnant women, namely, women who had no chronic hypertension and diabetes and no history of stillbirth and intrauterine growth retardation (24), 300 questionnaires were completed by pregnant women.

Determining the sample size in the exploratory analysis follows the general principle of sampling. In other words, the number of subjects should always be greater than the number of questionnaire (22). A range of 5-20 participants was considered for each question (23). Therefore, the sample size was determined as 300 individuals (10 individuals per question) based on Stevens' theory and the number of questions (n=31). By taking a 10% probability of loss, the questionnaires were distributed among 341 low-risk pregnant women, namely, those who had not chronic hypertension, diabetes, a previous fetal death, intrauterine growth, and hypertensive disorders of pregnancy (24), and finally, 300 questionnaires were completed by pregnant women.

Measures

Socio-demographic Data Form

Demographic information was collected in a separate sheet of demographic information recording, including pregnancy or the postnatal period, age, the order of pregnancy or children, educational qualification, occupation, and socioeconomic status, along with suffering from any kind of physical illness and taking counseling service.

Perinatal Anxiety Screening Scale (PASS)

This questionnaire consists of 4 subscales and 31 short questions. It was first developed by Somerville et al (1) and conducted on 393 pregnant women. It is based on a validity and reliability assessment study published in 2014. The four subscales are acute anxiety and adjustment disorder (PASS1-8), general worry and specific fears (PASS9-18), perfectionism control and trauma (PASS19-26), and social anxiety (PASS27-31). The Cronbach's alpha coefficient for each subscale is based on the reliability and validity of the original study, and Cronbach's alpha coefficients for sub-dimensions are 0.90, 0.89, 0.86, and 0.87, respectively, Furthermore, the questionnaire scoring method is based on a 4-point Likert-type scale in the range of 'Almost never' (0), 'Sometimes' (1), 'Most often' (2) and 'Almost always' (3). Each option is assigned a score of 0-3 and there is no reverse item. Moreover, the lowest and highest scores are zero and 93, respectively. Eventually, the cut-off point of PASS is 26 and a higher score on this scale indicates more anxiety.

Edinburgh Postnatal Depression Scale (EPDS)

It was used to measure depression during pregnancy and postpartum. This questionnaire was compiled by Cox et al in 1978 and then reviewed in 1994 (25). It has 10 four-choice questions and the options are arranged from low to high intensity (1, 2, and 4) in some questions while from high to low intensity (3, 5,6, 7, 8, 9, and 10) in some others. Each question has a score of 0-3 and the overall score varies between zero and thirty. The mother is required to choose the answers she has felt over the past week. The score ≥12 is considered as an acceptable cut-off point for identifying at-risk women regarding major depression (with 86% sensitivity, 78% specificity, and a 73% positive

predictive value) in clinical settings validated in Iran by Montazeri et al (26). The validity coefficient based on the Cronbach's alpha and the internal consistency are reported to be 70% and 80%, respectively. If the total score is below 12, the person is not depressed, otherwise, that person suffers from depression.

Perceived Stress Scale

The Perceived Stress Scale (PSS), which was developed by Cohen et al in 1983, has 3 versions of 4, 10, and 14 items. It is used to evaluate the perceived general stress over the past month (27). Additionally, this tool measures thoughts and feelings about stressful events, overcoming and coping with stress and experienced stress. It also examines risk factors in behavioral disorders and illustrates the process of stressful relationships. In this study, the PSS consisted of 14 questions included in 5 options. Half of the questions were directly scored (1, 0, 2, 3, and 4) and the other half (items 4, 5, 6, 7, 9, 10, and 13), which had a positive meaning, was scored reversely (0, 1, 2, 3, and 4). All items were scored on a Likert-type scale ('Never = 0', 'Low = 1', 'Medium = 2', 'High = 3', and 'Very high = 4'), and the scores ranged from 0 to 56 (11). The reliability of the Persian version of PSS was calculated by Bastani et al (28) using the internal consistency method with a Cronbach's alpha coefficient of 74%.

Validity Procedure

The validity of the PASS was evaluated through four stages including scale translation, content validity, face validity, and construct validity.

Translation

First, the forward-backward method was used to translate the questionnaire (29). The original form of the questionnaire was separately translated by three Persian-speaking individuals who were fluent in English and experts in the field of psychology, psychiatry, and midwifery care. Then, the three translators provided an agreed version. The Persian version was back-translated to English by a translator who did not read the original version and was not involved with the translation process of the questionnaire. Finally, the two versions (translated and retranslated ones) were compared with the original version, and the agreed Persian version was obtained accordingly. Next, the translated questionnaire was provided to 20 eligible women who referred to two health care centers for routine pregnancy care for a qualitative evaluation of the tool. The questionnaire was completed again by the same pregnant women two weeks later, ensuring that the questions were translated correctly and comprehensibly.

Content Validity

Quantitative and qualitative methods were used to determine content validity. Accordingly, the required instruments and description sheets (questionnaire) were given to specialist experts in the field of tool design and the perinatal period. In the qualitative evaluation of the content, the researcher asked the experts to provide the required feedback after qualifying the tool based on several criteria such as observing the grammatical rules, using the right words, including the items in their proper place, and appropriate scoring. Then, the questionnaire was modified based on these feedbacks. The content validity index (CVI) (30) and content validity ratio (CVR) (31) were also used to determine content validity. The instrument included some questions in 2 general steps for each expert. In the first step, some questions were asked about the necessity of each item in order to determine CVR, and the questions were answered based on a 4-point Likert-type scale in the range of 'Never' (0), 'Sometimes' (1), 'Most often' (2), and 'Almost always' (3). Considering the number of expert responses and compliance with Lawshe's s tabulation, CVR ≥ 0.60 was considered acceptable for each item.

To determine the CVI, some questions were asked about the relevance, transparency, and simplicity of each item based on a 4-point Likert-type scale, and CVR ≥ 0.79 was considered acceptable. The experts were also asked questions to comment on each item.

Face Validity

Quantitative and qualitative methods were used to determine the face validity of the tool. For this purpose, the translated PASS questionnaire was provided to 20 eligible women, who referred to two health care centers for routine pregnancy care, for the qualitative evaluation of the tool. In addition, the questionnaire was completed again two weeks later by the same pregnant women in order to ensure that the questions were translated correctly and comprehensibly (32). The problematic, unrelated, and ambiguous expressions of each item were checked and correct expressions were used accordingly. Finally, the item impact method was used to evaluate the tool quantitatively and the highest score was considered to be 3.

Construct Validity

Exploratory factor analysis (EFA) was used to determine the construct validity of the PASS questionnaire (33). Four components were extracted using Varimax rotation (34) and eigenvalue, and factor-item loading values ≥0.25 were considered appropriate. Using theoretical backgrounds, these components were named as public concern and specific fears, perfectionism, and social anxiety. The value of KMO = 0.91 means that the number of samples is highly desirable for factor analysis and KMO >0.7 is considered acceptable (35). The Bartlett test was $P < 0.001$ and $\chi^2 = 4.966$ and significant. To evaluate the extent to which the obtained EFA fits the model and the data, the weighted least squares method was used to estimate the

subscales, and the confirmatory factor analysis (CFA) was used to separate the subscales (34). Chi-squared/df <5 was considered as an acceptable value for CFA.

Reliability

Internal consistency and test-retest were used to determine the reliability of the instrument. In addition, internal consistency was assessed by Cronbach's alpha coefficient, which was considered appropriate if ≥0.70 (36). Further, the test-retest was performed by completing the PASS questionnaire in two steps during two separate weeks by 20 eligible pregnant women who were selected randomly. Furthermore, the interclass correlation coefficient (ICC) was performed to assess the reliability (37). Thus, ICC ≤0.4, 0.41-0.60, 0.61-0.80, > 0.80 was considered as weak, moderate, good, and excellent, respectively.

Statistical Analysis

The frequency and mean (standard deviation), as well as skewness and kurtosis (38) were used for qualitative and quantitative data, respectively. Skewness values >3 and kurtosis values >10 were removed from the calculation.

To calculate the score of each PASS subscale, the responses were recorded and normalized and then ranged from 0 to 93. Moreover, the scores for each subscale were obtained based on the mean score of the questions related to subscales. Additionally, data validity and reliability were adjusted as soon as the data were prepared and divided into 4 subscales on 200-300 participants.

EFA and CFA were applied to these data. Finally, statistical analysis was performed using SPSS 21, and a $P < 0.050$ was considered statistically significant.

Results

Participants

All available subjects at 26-30 gestational weeks were 341 pregnant women. Of this population, 41 individuals were excluded from the study due to the lack of eligibility criteria. Thus, 300 eligible 26-30 week pregnant women at the antenatal stage entered the study from 9.10.2017 to 6.3.2018 and their follow-up was completed on 16.7.2018 (Figure 1). Eventually, completed the above-mentioned questionnaires. In general, 206 out of 300 women completed the above-mentioned questionnaires in the childbirth stage (94 individuals were unavailable during childbirth). The response time for each questionnaire was 5-10, and it took about 20 minutes for each participant to complete the questionnaire. The mean age (standard deviation) of the subjects used for PASS validation was 29.1 (5.95) years. More than half of perinatal women (64.7%) had a diploma and 53.7% of them were multiparous while about half of the perinatal women (46.3%) were primiparous. More than three-fourth of them (76.7%) had partly enough income. According to their view, 61% of pregnancies were wanted, and 91.0% of perinatal women were housewives. The sample composition is presented in Table 1.

Validity

Evaluating CVR and CVI (within the range of 0.60-1.00 and 0.80-1.00, respectively) including question relevance, question transparency, and question simplicity and question necessity, confirmed the PASS questionnaire in terms of observing the grammatical rules, using the right words, placing the items in their proper place, and scoring

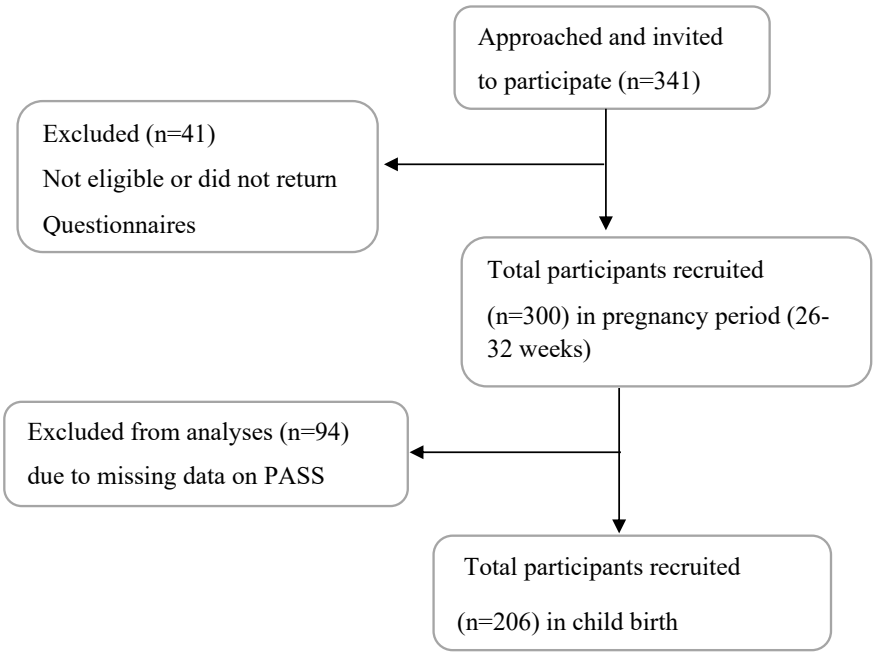

Figure 1. Participants Recruitment.

Table 1. Socio-demographic Profile of the Population (n=300)

Characteristics	Mean ± SD or NO. (%)
Age (y)	
<20	13 (4.3)
20-24	65 (21.7)
25-29	88 (29.3)
30-34	81 (27.0)
>35	53 (17.7)
Mean ± SD	29.1 (5.95)
Education	
Primary	21 (7.0)
Secondary	26 (8.7)
High	194 (64.7)
University	59 (19.7)
Occupation	
House wife	273 (91.0)
Employee	27 (9.0)
Wife's education	
Primary	17 (5.7)
Secondary	34 (11.3)
High	136 (45.3)
University	113 (37.7)
Wife's occupation	
Employee	112 (37.3)
Worker	59 (19.7)
Shopkeeper	55 (18.3)
Others	74 (24.7)
Support	
Yes	284 (94.7)
No	16 (5.3)
Income	
Enough	51 (17.0)
Partly enough	230 (76.7)
Not enough	19 (6.3)
Placement	
Private	107 (35.7)
Leased	143 (47.7)
Parents home	1 (3)
Husbands home	48 (16.0)
Other	1 (3)
Gravity	
Nully	139 (46.3)
Multi	161 (53.7)
Pregnancy	
Wanted	183 (61.0)
Unwanted	68 (22.7)
Non programed	49 (16.3)

Note. SD: Standard deviation.

appropriately. The impact score was more than 1.5, which is desirable (Table 2).

Reliability

Principal component analysis with oblimin rotation was used for determining the reliability of the PASS-IR questionnaire. Table 3 and Figure 2 show the screen plot of the factors. In addition, Table 4 presents the value of KMO = 0.91, meaning that the number of samples is highly desirable for factor analysis (34). Further, the Bartlett test was $P<0.001$ and $\chi^2 = 4.966$ and $df = 465$. Furthermore, factor analysis was used to determine the reliability of the PASS questionnaire. Four components were extracted using varimax rotation and eigenvalue. Using theoretical backgrounds, these components were named under the titles of the dimensions of 'general worry and specific fears', 'perfectionism control and trauma', 'social anxiety' and 'acute anxiety'.

The mean (standard deviation) of the total score of the instrument in pregnancy and delivery was 36.6 (13.1) and 43.3 (7.7) in the range of 0-93. Moreover, Pearson's intra-class correlation coefficient (ICC) with a 95% confidence interval (CI) was obtained for the test-retest reliability as 0.96 (95% CI: 0.93-0.98) and showed high test-retest reliability. Additionally, the Cronbach's alpha of the subgroups of the questionnaire was obtained as 0.84 (general worry and specific fears), 0.79 (Perfectionism control and trauma), 0.79 (social anxiety), and 0.89 (acute anxiety), and values above 0.8 indicated good convergence (Table 5). Mean (SD) scores of PASS, EPDS, and PSS in pregnancy and childbirth among participants have been reported in Table 6.

Discussion and Conclusions

Anxiety in the perinatal period is a common mental health problem and its screening and diagnosis have received little attention by researchers despite its negative consequences on mothers and infants. Therefore, this study aimed to validate the PASS-IR questionnaire (validity and reliability assessment). Data were compiled on the population of Iranian pregnant women in the perinatal period. The PASS-IR is a self-report questionnaire that extracts the following four subscales using factor loading:

1. General worry and specific fears (PASS 1-10)
2. Perfectionism control and trauma (PASS 11-18)
3. Social anxiety (PASS 19-23)
4. Acute anxiety (PASS 24-31.

Content validity is one of the most important components of validity. To determine the content validity in the present study, several feedbacks were received from a number of experts in the perinatal and instrument design.

Similarly, PASS-IR is a specialized and cost-effective questionnaire for assessing the anxiety in the perinatal period. It is performed on the population of Iranian women and is not time-consuming. Further analysis

Table 2. The Impact Score, CVI, and CVR for Items of the PASS

PASS	Impact Score	CVI	CVR
1. Being worried about the baby/pregnancy	8.9	1.0	1.0
2. Having a fear that harm will come to the baby	9.4	1.0	1.0
3. Having a sense of dread that something bad is going to happen	7.1	0.9	1.0
4. Having worries about many things	7.3	0.9	0.6
5. Being worried about the future	9.0	0.9	0.8
6. Feeling overwhelmed	7.6	0.9	0.8
7. Having really strong fears about things (e.g., needles, blood, birth, pain, and the like)	8.8	0.9	0.8
8. Experiencing sudden rushes of extreme fear or discomfort	9.0	0.9	0.8
9. Experiencing repetitive thoughts that are difficult to stop or control	8.4	0.9	0.8
10. Having difficulty sleeping even when I have the chance to sleep	8.5	0.9	0.8
11. Having to do things in a certain way or order	8.0	0.9	0.6
12. Wanting to do things to do perfect	7.4	0.8	0.8
13. Needing to be in control of things	8.9	1.0	1.0
14. Difficulty in stopping checking or doing things over and over	6.7	0.9	0.6
15. Feeling jumpy or easily startled	9.7	1.0	1.0
16. Having concerns about repeated thoughts	9	0.9	0.8
17. Being 'on guard' or needing to watch out for things	6.7	0.9	0.6
18. Being upset about repeated memories, dreams, or nightmares	9.4	1.0	1.0
19. Being worried about embarrassment in front of others	7.9	0.8	0.6
20. Having fear that others will judge me negatively	8.3	1.0	0.8
21. Feeling really uneasy in crowds	10	1.0	1.0
22. Avoiding social activities because I might be nervous	8.8	1.0	1.0
23. Avoiding things which concern me	8.8	1.0	0.8
24. Feeling detached like you are watching yourself in a movie	8.3	0.9	0.6
25. Losing the track of time and cannot remember what happened	7.3	0.9	0.67
26. Having difficulty adjusting to recent changes	9.5	1.0	0.8
27. Feeling anxiety getting in the way of being able to do things	7.7	0.9	1.0
28. Having racing thoughts that harden concentrate	8.3	1.0	0.8
29. Having fear of losing control	9.5	1.0	1.0
30. Feeling panicky	7.7	1.0	0.6
31. Feeling agitated	10	1.0	1.0

Note. CVI: Content validity index; CVR: Content validity ratio; PASS: Perinatal anxiety screening scale.

focused on the validity and reliability of the questionnaire, which assessed the test-retest and internal consistency aspects of the tool and led to good results. The results revealed that the questionnaire was valid and could be the basis for further research. The high degree of consistency in internal consistency indicates that the tool has a stable structure, which is consistent with the results of studies by Somerville et al (1), Yasmin et al (19), and Yazıcı et al (39). The original study was performed on participants who had other psychological disorders besides anxiety while the present study was conducted on low-risk pregnant women in the perinatal period (those who had no chronic hypertension and diabetes and no history of stillbirth and intrauterine growth retardation).

The present study determined that the distribution of questions for each subscale was slightly different from the original version, which is in line with the study by Yazıcı et al in Turkey. The original version, which was compiled by Somervill et al in Western Australia, includes 4 subscales. The 'acute anxiety and adjustment disorder' subscale (PASS1-8) which examines the symptoms of panic and separation disorders and adjustment problems. In addition, 'general worry and specific fears' subscale (PASS9-18) covers the symptoms of public disorder and fear, and 'perfectionism control and trauma' subscale (PASS19-26) includes obsessive-compulsive and post-traumatic stress disorders. The final subscale is 'acute anxiety' (PASS27-31) with a cut-off point of 26. In the present study, the names of the subscales of PASS-IR were changed as 'general worry and specific fears' (PASS 1-10),

Table 3. Factor Structures and Factor Loadings

PASS Item	Component (Factor)			
	1	2	3	4
Factor 1: General worry and specific fears				
PASS2	0.662			
PASS9	0.655			
PASS8	0.655			
PASS1	0.654			
PASS5	0.597			
PASS4	0.575			
PASS3	0.558			
PASS10	0.543			
PASS7	0.511			
PASS6	0.509			
Factor 2: Perfectionism control and trauma				
PASS12		0.657		
PASS18		0.640		
PASS17		0.639		
PASS13		0.630		
PASS11		0.581		
PASS14		0.536		
PASS16		0.535		
PASS15		0.287		
Factor 3: Social anxiety				
PASS21			0.720	
PASS20			0.700	
PASS19			0.670	
PASS22			0.659	
PASS23			0.560	
Factor 4: Acute anxiety				
PASS30				0.834
PASS31				0.819
PASS29				0.804
PASS28				0.780
PASS27				0.708
PASS26				0.683
PASS25				0.568
PASS24				0.566

Note. ASS: Perinatal anxiety screening scale.

Table 4. Value of KMO and Bartlett's Test

Test Name	Value	
KMO measure of sampling adequacy	0.910	
Bartlett's test of sphericity	Chi-square	df
	4966.657	465

Note. KMO: Kaiser-Meyer-Olkin.

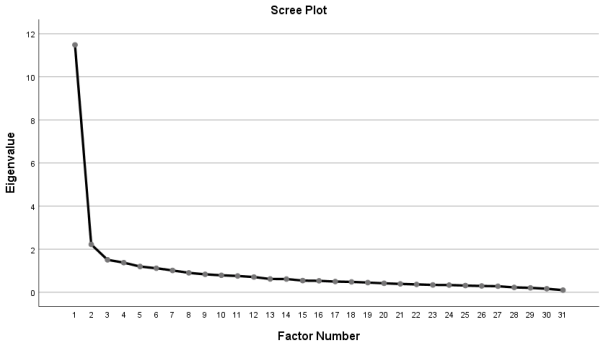

Figure 2. Scree Plots of Factors

'perfectionism control and trauma' (PASS 11-18), 'social anxiety' (PASS 19-23), and 'acute anxiety' (PASS 24-31) with a cut-off point of 26.

The validity and reliability of the PASS questionnaire in Bangladesh were assessed by Yasmin et al on 151 pregnant women attending the perinatal period. Bangla PASS as that of the present study included 31 items and 4 factors. However, Bangla PASS was highly similar to the original version and its subscales included 'acute anxiety', 'general worry and specific fears', 'perfectionism control and trauma', 'social anxiety' with a cut-off point of 26.

In addition, another study by Yazıcı et al in Turkey (PASS-TR) on 312 pregnant women was very similar to the present study in which PASS-TR had 31 items, 4 subscales, and a cut-off point of 16 while the cut-off point for PASS-IR was 26 (39).

Using Cronbach's alpha, the reliability of the instrument (PASS-IR) in the present study was obtained as a value greater than 0.9 for all the subscales, which is consistent with the above-mentioned studies. Finally, the ICC for the total subscales was 0.94, indicating that the PASS-IR was highly stable.

One of the limitations of this study was the lack of sensitivity and specificity for the calculation of the cut-off point. However, the cut-off point of 26, in accordance with the original version, was considered to screen for the anxiety disorders in the perinatal period. In addition, this tool was not used in the postpartum period. Thus, it is recommended that this questionnaire be implemented as a tool in these areas in the postpartum period in future studies as well.

Table 5. Mean, SD, Cronbach's Alpha, and ICC for the Iranian Version of PASS (n=300)

	Mean	SD	Skewness	Kurtosis	Cronbach's α	ICC (95% CI)
General worry and specific fears (PASS1-10)	13.42	4.53	-0.828	1.009	0.843	0.78 (0.73: 0.82)
Perfectionism control and trauma (PASS11-18)	10.81	3.54	-0.862	1.028	0.790	0.73 (0.68: 0.78)
Social anxiety (PASS19-23)	5.46	2.57	-0.526	-0.028	0.792	0.67 (0.60: 0.74)
Acute anxiety (PASS24-31)	9.89	4.40	-0.698	-0.079	0.896	0.82 (0.79: 0.86)
Total PASS (PASS1-31)	39.56	13.16	-1.049	0.784	0.941	096 (0.93: 0.98)

Note. ICC: Intraclass correlation coefficient; CI: Confidence interval; PASS: Perinatal anxiety screening scale; SD: Standard deviation. The score was within the range of 0-93.

Table 6. Status of PASS, EPDS, PSS in Pregnancy and Childbirth and the Mean (SD)

Measure	Characteristics	N	No. (%)	Mean (SD)	95% CI
PASS	Pregnancy	300	249 (83)	39.59 (13.15)	35.54-39.68
	Childbirth	206	190 (92)	44.28(7.72)	43.20-45.35
EPDS	Pregnancy	300	243 (81)	15.08(2.22)	14.77-15.39
	Childbirth	206	164 (80)	15.17(2.13)	14.87-15.46
PSS	Pregnancy	300	-	22.23(2.78)	21.84-22.62
	Childbirth	206	-	28.88(4.89)	28.19-29.56

Note. PASS (cut-off: 26): Perinatal anxiety screening scale; EPDS (cut-off: 12): Edinburgh Postnatal Depression; PSS: Perceived stress scale; SD: Standard deviation; ICC: Intraclass correlation coefficient; CI: Confidence interval.

The present study was performed to validate the PASS-IR questionnaire in the Iranian women population. The findings are in line with those of the original instrument. It is hoped that the application of this tool can be helpful in removing the barriers when assessing mental health problems (e.g., anxiety, stress, and depression) in the perinatal period.

The findings of this study suggest that the latter tool can be effective in detecting anxiety in the perinatal period since routine screening tools such as EPDS and PSS may not detect anxiety.

Authors' Contribution

ShB, PY, AFKh, MAJ, JB: Study design, proposal writing, revision of the article manuscript, and final editing of the article. ShB, AfKh: Collaboration in study design, proposal writing, study implementation, data collection, and final editing. PY and JB: Writing the final version of the article. MAJ: Collaboration in study design and statistical analysis.

Conflict of Interests

The authors reported that there was no conflict in the study and that the study was performed on human specimens after obtaining an informed consent form.

Ethical Issues

Permission was obtained from the honorable Vice-chancellor for the Research and the Regional Committee for the Research Ethics of Tabriz University of Medical Sciences to conduct the research (IR.TBZMED.REC.1396;330, July 17, 2017). Further, the study was registered at the Clinical Trials Registration Center in Iran (identifier: IRCT20110826007418N3). Then, an introduction letter was obtained from Tabriz School of Nursing and Midwifery and presented to Ardabil University of Medical Sciences for sampling in Ardebil health centers, introducing ourselves and explaining the objectives of the study to the research units, and considering their willingness to participate in the research. Furthermore, research units were assured of the confidentiality of the obtained information, completed a written consent form, and fully adhered to ethical principles in using other research and resources.

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