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Turkish version of the Pregnancy-related Anxiety Scale: A psychometric study

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Abstract

Purpose: To adapt the Pregnancy-related Anxiety Scale (PrAS) into Turkish and evaluate its psychometric properties.

Design and methods: This cross-sectional study comprised of 400 pregnant women. The PrAS was translated using the methods of translation, back-translation, consensus meetings, and a trial of potential users. Then, its psychometric properties were evaluated by exploratory factor analysis and confirmatory factor analysis.

Findings: The PrAS consists of 33 items. Following the exploratory factor analysis, the two items in the scale were discarded because factor loads were less than 0.50, therefore, the number of items decreased from 33 to 31. In the confirmatory factor analysis, the goodness-of-fit indices of the scale were found to be suitable. The internal consistency coefficient calculated for the reliability of the scale was .89. After correlating it with another scale for measuring pregnancy distress, the Turkish version of the PrAS shows discriminant validity.

Practice implications: The Turkish version of the PrAS is a valid and reliable instrument that can be used to evaluate pregnancy-related-anxiety. The use of the PrAS in prenatal healthcare services will contribute to the early diagnosis, treatment, and management of pregnancy-related anxiety.

KEYWORDS

pregnancy-related anxiety, reliability, scale, validity

1 | INTRODUCTION

Anxiety is the feeling of fear, anxiety, tension, distress, or restlessness in the face of threats from the internal or external world.[1,2] Anxiety may occur in any period of life due to genetic factors; emotional changes in childhood, adolescence, and old age; and hormonal changes during menstruation, menopause, and andropause. One of the times when both emotional and hormonal changes happen is pregnancy.[3-7] Pregnancy is a special period in which some physiological, anatomical, and cognitive changes occur in women to meet their needs of the growing and developing fetus, and psychological and emotional changes occur during adaptation to pregnancy.[8,9]

Contrary to general anxiety, pregnancy-related anxiety (PrA) is characterized by specific fears and concerns about the health and well-being of the fetus, preterm birth, hospital care, birth, the postpartum period, raising children, or the maternal role.[10,11] In high-income countries, PrA is seen in 6% to 29% of pregnant women, while in low- and middle-income countries it varies between 1% and 26%.[12,13] Any unfavorable experience that a woman may have had, such as a risky pregnancy, infertility treatment, stillbirth, malnutrition, being a first-time mother, insufficient financial resources, or little family support, may affect the level of PrA.[13-15] Moreover, nulliparous women experiencing maternity for the first time, fear of giving birth, birth pain, and insufficient knowledge of delivery interventions, as well as negative experiences about the birthing process and healthcare staff of multiparous women, affect the level of PrA.[14] In addition, pregnant women may experience anxiety for different reasons during each trimester of pregnancy. Concerns about birth

and infant health, such as the adjustment to pregnancy in the first trimester, the fear of harming the baby in the second trimester, and the loss of attractiveness and the upcoming birth in the third trimester, increase anxiety levels.[16-18]

Studies have reported that PrA may lead to adverse results for maternal and fetal/child health.[14,19] PrA is associated with preterm labor, prolonged labor, increased analgesic usage, and adverse obstetric outcomes.[14,19] PrA may lead to low birth weight, low Apgar score, as well as high motor activity in the second and third trimesters. PrA has also been linked to increases in fetal and maternal mortality and morbidity rates.[14,19-21] In addition, PrA may cause cognitive development and mental health impairments in children, such as attention deficit 3 months after birth, developmental delay in the eighth month, restless temperament in the 27th month; furthermore, increased distraction problems and hyperactivity disorder may be seen, and gray matter density in the brain may decrease between the ages of 6 and 9.[21,22] A study conducted to test prospective associations between pregnancy anxiety and child negative affect has been found that high PrA level of women in the second trimester of pregnancy affects children negatively.[23] A similar study conducted to investigate the relationship between PrA and a child's brain structure and behavioral problems showed that the higher PrA was associated with more emotional symptoms, peer relationship problems, and overall child difficulties. In addition, it was determined that PrA leads to sexually dimorphic structural changes in the offspring's limbic system and these changes are also linked to behavioral difficulties.[24] Another related study reported that PrA was associated with many adverse labor outcomes, such as prolonged labor, preterm labor, low birth weight, and unplanned cesarean sections.[25] Therefore, if this anxiety is related to pregnancy and is not identified, it may affect both fetal and maternal health, adversely.

Taking into consideration the adverse effects of anxiety on pregnant women and baby/child health, it is important to diagnose anxiety levels early in the pregnancy. Thus, the PrA in both the antenatal and postnatal periods can be screened and all adverse effects on pregnancy and obstetric outcomes can be treated or reduced.

The National Institute for Health and Care Excellence recommends that pregnant women visiting the hospital for the first time should be screened by using the Generalized Anxiety Disorder Scale (GAD-2) for anxiety.[26] On the contrary, the Scottish Intercollegiate Guidelines Network reported that research should be conducted to identify anxiety levels in the antenatal and postnatal periods and also manage it.[27] Screening and identification of PrA have also been recommended by professional guidelines.[28,29] The State-Trait Anxiety Inventory and its short versions and the GAD-2 have been widely used in research to evaluate anxiety in pregnancy.[11,30] However, generic anxiety instruments often include somatic symptoms that can be confused with the common physiologic symptoms of pregnancy.[9] Hence, instruments which are specific for the pregnancy should be used to screen PrA.

There is one instrument to screen PrA and another one to screen distress related to pregnancy in Turkey.[14,31] However, the instruments are not able to screen PrA as comprehensively as the PrAS. The PrAS has nine subscales that delve into PrA: *childbirth concerns*, *body image concerns*, *attitudes towards childbirth*, *worry about motherhood*, *acceptance of pregnancy*, *anxiety indicator*, *attitudes towards medical staff*, *avoidance*, and *baby concerns*.[19] The subscales aim to determine important information related to anxieties that are specific to pregnancy, and the total scale score indicates the overall anxiety level. For example, the avoidance subscale, which is unique to the PrAS, assesses avoidance-related behaviors used to cope with pregnancy distress and anxiety. High scores on this subscale represent an attempt to reduce anxiety about childbirth/labor. Brunton et al[19] have reported that some women scoring highly on this subscale may have valid reasons for undergoing a caesarian; therefore, evaluating these reasons in conjunction with this subscale is necessary. Thus, these pregnant women can be provided with psychological support that can better prepare them for childbirth/labor. The PrAS provides clinicians with a comprehensive assessment of a woman's PrA. Moreover, the individual subscales offer deeper insights into a woman's pregnancy concerns and anxiety.[19]

In this context, this study aimed to translate the original version of the PrAS from English into Turkish and to evaluate the psychometric properties of the Turkish version.

2 | METHODS

2.1 | Design and participants

This present study was conducted in a tertiary care hospital in a province in western Turkey from January to July 2019. When adapting a scale to another culture, it is suggested that the sample size for a reliable factor analysis should be at least 10 to 20 times greater than the number of scale items.[32] On the basis of this suggestion, at least 400 pregnant women who were in the first, second, and third trimester of pregnancy were targeted for recruitment to the study, as this was considered an adequate sample size.

Inclusion criteria for participation included pregnant women aged 18 years or older; able to speak, read, and understand the Turkish language, and able to provide informed consent. Pregnant women with a high-risk pregnancy or any chronic diseases were excluded from the study.

2.2 | Materials

2.2.1 | Participant Description Questionnaire

After reviewing the literature,[7,19,33] the investigators developed a questionnaire to determine the sociodemographic and obstetric characteristics of the participants. Sociodemographic information included age, primary language, educational level, employment status, marital status, and health insurance. Obstetrics information included the number of previous pregnancies and gestational age. The demographic portion of the survey was completed by the participant.

2.2.2 | Pregnancy-related Anxiety Scale (PrAS)

The PrAS was developed in 2018 by Brunton et al[19] and validity-reliability was conducted. It is composed of 33 items and nine subscales evaluating anxiety: *childbirth concerns*, *body image concerns*, *attitudes towards childbirth*, *worry about motherhood*, *acceptance of pregnancy*, *anxiety indicators*, *attitudes towards medical staff*, *avoidance*, and *baby concerns*. The scale consists of a 4-point Likert-type scale (1: *not at all*; 2: *occasionally*; 3: *quite often*; 4: *very often*). Each subscale is separately scored and the total score of all items in the scale ranges from 33 to 132. Eleven items of the scale are inversely scored. The cut-off score calculated for the scale is 75.5. A total score of 75.5 and above indicates an increased anxiety level due to pregnancy. The intercoder reliability (ICR) of the original scale was found to be in the range of 0.77 to 0.95, which was considered excellent.[34] In this study, the ICR of the PrAS was determined to be 0.89.

2.2.3 | Tilburg Pregnancy Distress Scale

The Tilburg Pregnancy Distress Scale was used to determine the concurrent validity of the PrAS. It was developed by Pop et al.[35] The Turkish validity and reliability of Tilburg Pregnancy Distress Scale were performed by Çapık and Pasinlioğlu[31] in 2015. The Tilburg Pregnancy Distress Scale consists of 16 items and two subscales: negative affect and partner involvement. The scale includes a 4-point Likert-type scale (0: *very often*; 1: *often*; 2: *occasionally*; 3: *rarely or never*). The total score of the scale can range between 0 and 48. A total score calculated at 28 and above can identify pregnant women at risk for distress (depression, anxiety, and stress). The ICR of the original scale was found to be 0.83, which was considered good.[31] In this study, the ICR of the scale was calculated as 0.82.

2.3 | Procedures

The information provided to all participants included the purpose of the study as well as the possibility to withdraw at any point without any effects on current or future treatment. Data collection forms were given to the women agreeing to participate in the study. During data collection, all questions of the participants were answered by the researchers. It took approximately 10 to 15 minutes for each participant to complete the data collection form.

A total of 440 pregnant women were asked to participate in the study, of these 19 declined. A total of 421 pregnant women enrolled in the study, but 21 were withdrawn because of incomplete data. The final number of participants with complete data was 400.

Then, to evaluate the test-retest reliability of the PrAS, the scale was re-administered to 100 pregnant women randomly selected among the pregnant women in the sample 2 weeks after the first data collection.

2.4 | Data analyses

The SPSS for Windows Version 23.0 (SPSS Inc, Chicago, IL) statistical package program and the AMOS 23 package program were used for data analysis. Descriptive data are stated as average, standard deviation (SD), number, and percentage. Pearson correlation test was used for concurrent validity. To evaluate the validity of the PrAS, exploratory factor analysis (varimax rotation and principal component analysis) and confirmatory factor analysis were performed. Within the scope of exploratory factor analysis, Kaiser-Meyer-Olkin (KMO) sample adequacy measure and Bartlett's sphericity test were conducted to determine whether the data were suitable for factor analysis. According to Gönültaş et al,[36] the KMO value should be at least 0.80 to 0.90 and the result of Bartlett's test should be less than 0.05. Besides, each factor should have at least one eigenvalue, factor load should be over 0.50, contribution to the explanation of total variance should be at least 5%, and the explained variance ratio should be above 32%.[36,37] Additionally, to verify the original structure of the PrAS, confirmatory factor analysis was performed using AMOS 23 package program. Cronbach's α was used to determine ICR and the Pearson correlation used for test-retest reliability to test reliability over time.[37] Cronbach's α was described using the following conventions: $\alpha < .50$ = unacceptable; $.50 < \alpha \leq .60$ = poor; $.60 < \alpha \leq .70$ = weak; $.70 \leq \alpha < .80$ = acceptable; $.80 \leq \alpha < .90$ = good; and $.90 \leq \alpha$ = excellent.[22] In the test-retest technique, the correlation value between the two measurements of greater than .70 is considered acceptable.[38]

2.4.1 | Analysis of the validity and reliability of the PrAS

The study proceeded in two stages: the translation and cross-cultural adaptation stage and the validation stage (psychometric testing).

Analysis of translation and cross-cultural adaptation

Language adaptation of a scale involves a method of conceptualization and translation to minimize differences in expression. Translation guidelines were followed in a similar fashion in this study.[39] Accordingly, the translation–back-translation method was used for achieving linguistic validity of the PrAS. In the adaptation phase of the PrAS to Turkish, the original scale was translated into Turkish by two faculty members in the department of foreign languages, both proficient in English and Turkish. Then, a single translation was created by combining these translations by a faculty member with a good English proficiency level specializing in women's health. In addition, the suitability of a single translation of the PrAS into Turkish was evaluated by a Turkish-language expert, and a few word corrections were made according to the recommendations. Back-translation was subsequently performed by two bilingual translators with no prior knowledge of the PrAS scale: one was a native English-speaking nurse and the other was an expert in women's health.

The back-translated version was compared with the original PrAS scale to assess conceptual equivalence. The translations were almost identical and accurately conveyed the meaning of the original English version. No changes in wording were needed as a result of the last translation. Then, the final version was reviewed by three nursing instructors who were experts in women's health to resolve any discrepancies.

Analysis of psychometric properties

The content validity index (CVI) was used to evaluate the content validity of the scale. For this purpose, the suitability, clarity, and importance level of PrAS items were evaluated by three faculty members specializing in obstetrics, women's health, and psychiatry. The experts were asked to grade each item on the scale from 1 to 4 (4: *extremely appropriate, no revision required*; 3: *suitable, minor revision required*; 2: *unsuitable, and major revision required*; 1: *unsuitable, deletion required*). CVI was calculated in the evaluation of expert opinions. In this context, the number of experts who selected suitable or moderate revision options was divided by the total number of experts, producing the CVI. If this value was 0.80 or higher, the item was deemed to be adequate in terms of content validity. If this value was 0.90 or higher, the item was considered as excellent.[40,41]

A pilot study was conducted with 10 pregnant women to test the comprehensibility and legibility of the final version of the PrAS. These women were asked to complete the PrAS and gave feedback about whether the scale items were comprehensible in terms of the Turkish language. At the end of the pilot study, no changes were made regarding the items in the scale. The pregnant women in the pilot study were not included in this study.

For concurrent validity, the Tilburg Pregnancy Distress Scale was used as an auxiliary questionnaire to assess the correlation of the PrAS with the Tilburg Pregnancy Distress Scale. For reliability, internal consistency and test-retest reliability were evaluated. For test-retest reliability, a 2-week period was designated as the retest interval. The retest sample was determined from among the recruited participants by utilizing a simple random numbers table. The women were contacted to learn their next appointment date. On the day of this visit, the investigator met the participants and asked them to complete the PrAS. The retest sample comprised of 100 pregnant women.

To determine the construct validity of the scale, exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were performed. EFA was performed again due to insufficient goodness-of-fit indices, low factor loads, and reliability coefficients of two items. The second iteration of CFA was conducted to confirm the results that these two items should be discarded. According to the CFA, the adequacy of fit was determined by three indices recommended by Hu and Bentler[42]: the Tucker-Lewis index (TLI), the standardized root-mean-square residual (SRMR), and the root-mean-square error of approximation (RMSEA). According to Hu and Bentler, a good fit to the data is indicated by TLI values "close to" 0.95, SRMR values "close to" 0.08, and RMSEA values "close to" 0.06.[43]

2.5 | Ethical considerations

The original version of the PrAS was requested from Robyn J. Brunton by e-mail to adapt the scale to Turkish. The study was approved by the institutional ethical review board of the tertiary care hospital (Ethics committee approval number: 71522473/050.01.04/329). Before conducting the study, which was carried out in accordance with the principles of the Helsinki Declaration, written permission was obtained from the tertiary care hospital where the research was conducted. All of the participants provided informed consent.

3 | RESULTS

3.1 | Sociodemographic characteristics

The distribution of sociodemographic and obstetric characteristics of the pregnant women is shown in Table 1. The ages of the pregnant women ranged between 18 and 42, and the mean age was 28.6 ± 5.1. Of the pregnant women, 98.8% were lawfully married and 31.8% were high school graduates. About 83.3% of the women were unemployed, and 12.5% did not have health insurance. Of the sample, 68% were multigravida and 63.7% were in the third trimester (Table 1). The mean total score of the PrAS was 57.84 ± 13.73. There was no statistically significant difference between PrAS total score and gestation/trimester ($F = .3233$; $P = .72$).

3.2 | Validity

3.2.1 | Content validity

The content validity of the PrAS was determined to be 0.96 in this study.

3.2.2 | Internal validity

In the analysis, the KMO coefficient was found to be 0.82 and $P < .001$ according to the Bartlett test (χ^2: 6075.876, SD: 465). Thus, the conditions for factor analysis of the PrAS were favorable given the size of the sample (n = 400).

The results of the EFA of the scale are shown in Table 2. The principal component analysis was used as a factor analysis. As a result of the principal component analysis, two items in the scale ("I feel good with the way I look" and "I feel content") were excluded from the analysis because factor loads were less than 0.50 and the number of items decreased from 33 to 31. However, 31 items were categorized into nine factors, whose factor loads ranged between 0.62 and 0.90, 70.383% of the total variance of the scale: *childbirth concerns* (11.049%), *attitudes towards medical staff* (8.603%), *acceptance of pregnancy* (8.030%), *avoidance* (7.978%), *baby concerns* (7.911%),

TABLE 1 Distribution of sociodemographic and obstetric characteristics of the pregnant women (n = 400)

Age, y (min = 18, max = 42) (mean ± standard deviation)	28.6 ± 5.1 n	 %
Marital status		
Married	395	98.8
Lives with spouse/life partner	5	1.3
Education		
Primary school	58	14.4
Secondary school	109	27.3
High school	127	31.8
College and above	106	26.5
Employment		
Unemployed	333	83.3
Working, full-time	67	16.8
Health insurance		
Yes	350	87.5
No	50	12.5
Gravida		
Primigravida	128	32
Multigravida	272	68
Gestation		
First trimester (≤13)	37	9.3
Second trimester (13 to ≤26)	108	27
Third trimester (>26)	255	63.7

body image concerns (7.274%), *anxiety indicators* (6.808%), *attitudes towards childbirth* (6.627%) and *worry about motherhood* (6.102%). The subscales eigenvalues were found to be 3.425 for *childbirth concerns*, 2.667 for *attitudes towards medical staff*, 2.489 for *acceptance of pregnancy*, 2.473 for *avoidance*, 2.452 for *baby concerns*, 2.255 for *body image concerns*, 2.110 for *anxiety indicators*, 2.054 for *attitudes towards childbirth* and 1.892 for *worry about motherhood* (Table 2).

Fit indices were found as TLI 0.93, RMSEA 0.04, and SRMR 0.05 (Figure 1).

3.2.3 | Concurrent validity

Correlation coefficients between the scores of the PrAS and the Tilburg Pregnancy Distress Scale were examined to determine concurrent validity. As a result of the Pearson correlation analysis, the correlation coefficient between the PrAS and Tilburg Pregnancy Distress Scale was 0.64 and $P < .001$.

3.3 | Reliability

Cronbach's α value of the scale was considered good, and subscale values ranged between acceptable and excellent (Table 3). For the test-retest reliability of the scale, the scale was given to 100 pregnant women at 2-week intervals. In this context, the mean total PrAS score was 55.59 ± 15.28 and the mean score of retest was 54.23 ± 14.78. The Pearson correlation coefficient calculated between PrAS scores and retest scores was found to be .89. As a result of the dependent sample *t* test, there was no statistically significant difference between the PrAS score and subscale averages over time (Table 4; $P > .05$). Accordingly, the scale was consistent with time.

4 | DISCUSSION

The American College of Obstetricians and Gynecologists recommends the screening of anxiety levels of the pregnant women at least once in the perinatal period by using a standardized and validated measurement tool.[29] Within this scope, the PrAS was found to be a reliable and valid measurement tool in determining the anxiety levels of pregnant women related to the pregnancy.[19] We developed a Turkish version of the PrAS and examined its psychometric properties. EFA and CFA were used to test the construct validity of the PrAS adapted for Turkish-speaking pregnant women. At the end of the EFA, two items in the scale were excluded because their factor loads were lower than the required value, their reliability coefficients were low, and their goodness-of-fit index results were inadequate. These excluded items examined the women's perceptions regarding their appearances and their satisfaction with pregnancy.[19] These items were considered to be related to each other as pregnant

TABLE 2 Exploratory factor analysis of the Pregnancy-related Anxiety Scale

Subscales and items	Factor loading
Childbirth concerns	
VER: 11.049% Eigenvalue: 3.425	
5. I fear I may be harmed during birth.	**.75**
2. I worry that I will tear or need to be cut during the birth.	**.75**
3. I feel afraid of the invasiveness of childbirth.	**.74**
4. During childbirth, I am worried about being restrained in some way and not able to move.	**.72**
1. I worry about unnecessary interventions (eg, forceps during delivery).	**.72**
6. I fear losing control of my body during labor.	**.66**
Attitudes towards medical staff	
VER: 8.603% Eigenvalue: 2.667	
26. I know that midwives/doctors will be kind and helpful. R	**.90**
25. I know the midwives/doctors will be friendly. R	**.89**
27. I know that I can ask the midwives/doctors anything. R	**.85**
Acceptance of pregnancy	
VER: 8.030% Eigenvalue: 2.489	
20. My husband/partner and I are very much looking forward to this baby. R	**.82**
19. This pregnancy is very much wanted. R	**.80**
18. I look forward to meeting my baby. R	**.78**
Avoidance	
VER: 7.978% Eigenvalue: 2.473	
29. I often think a caesarian is better than vaginal birth.	**.89**
30. I think that caesarian birth is safer than vaginal birth.	**.89**
28. I may consider a caesarian to avoid a vaginal birth.	**.77**
Baby concerns	
VER: 7.911% Eigenvalue: 2.452	
33. I constantly worry that something will be physically wrong with my baby.	**.87**
31. I worry about what I will do if my baby is not normal.	**.86**
32. I worry about having a sick or disabled baby.	**.83**
Body image concerns	
VER: 7.274% Eigenvalue: 2.255	
8. I feel unattractive.	**.78**
9. When I look in the mirror, I feel unhappy.	**.76**
11. I worry that my husband/partner doesn't find me attractive.	**.68**
10. I feel scared that I will never regain my figure.	**.62**
Anxiety indicators	
VER: 6.808% Eigenvalue: 2.110	
21. Sometimes I feel panicked for no reason.	**.84**
22. At times, my worries seem to snowball.	**.83**
23. My worries interfere with my daily activities.	**.69**
Attitudes towards childbirth	
VER: 6.627% Eigenvalue: 2.054	
13. When I think of childbirth, I know that I will cope with the pain. R	**.83**
14. I feel confident that I will be fine during childbirth. R	**.77**
12. I feel prepared for childbirth. R	**.73**
Worry about motherhood	
VER: 6.102% Eigenvalue: 1.892	
17. I worry about caring for my baby once I am home.	**.78**
16. I worry that I won't do a good job as a mother.	**.75**
15. I worry about not knowing what the baby wants when it cries.	**.67**

Note: Factor loadings greater than .45 are shown in boldface.
Abbreviations: R, reverse-scored items; VER, variance explanation ratio.

women who are satisfied with pregnancy evaluated their appearances positively. Whether the pregnant women perceive their appearances positively or negatively may change depending on cultural differences.[44] Within this scope, when the PrAS is applied to a different culture compared to the original scale, item-analysis differences may result from cultural differences and beliefs and matters concerning the pregnancy.

The nine factors in the original PrAS were also classified as nine factors in this study. The total variance of the scale and item net values correspond to the standard required for the structural validity of the scale.[36,37] The CFA supported the nine-factor scale structure yielded by the EFA. In this study, it was determined that RMSEA, SRMR, and TLI values were good fit. According to these results, the nine subscales obtained from the CFA were deemed to have sufficient fit indices values (Figure 1).

There was adequate concurrent validity between the total scores of the PrAS and Tilburg Pregnancy Distress Scale. In the original study, it was detected that the PrAS shows adequate concurrent validity with the scales measuring PrA as well.[19] Within this scope, our study's results show similarities with the original scale because the Tilburg Pregnancy Distress Scale used in our study is a measurement tool specifically in pregnancies. In light of these findings, it can be said that the PrAS is effective for evaluating the anxiety levels of women about their pregnancy.

In this study, the internal consistency coefficient determined for the PrAS and the subscales *childbirth concerns*, *acceptance of pregnancy*, *avoidance*, and *baby concerns* were at a good level. The subscales *body image concerns*, *attitudes towards childbirth*, *worry about motherhood*, and *anxiety indicator* showed acceptable reliability (Table 3). The *Attitudes towards medical staff* subscale was excellent. Brunton et al found the internal consistency coefficients found for the PrAS and its subscales as acceptable to excellent.[19,34]

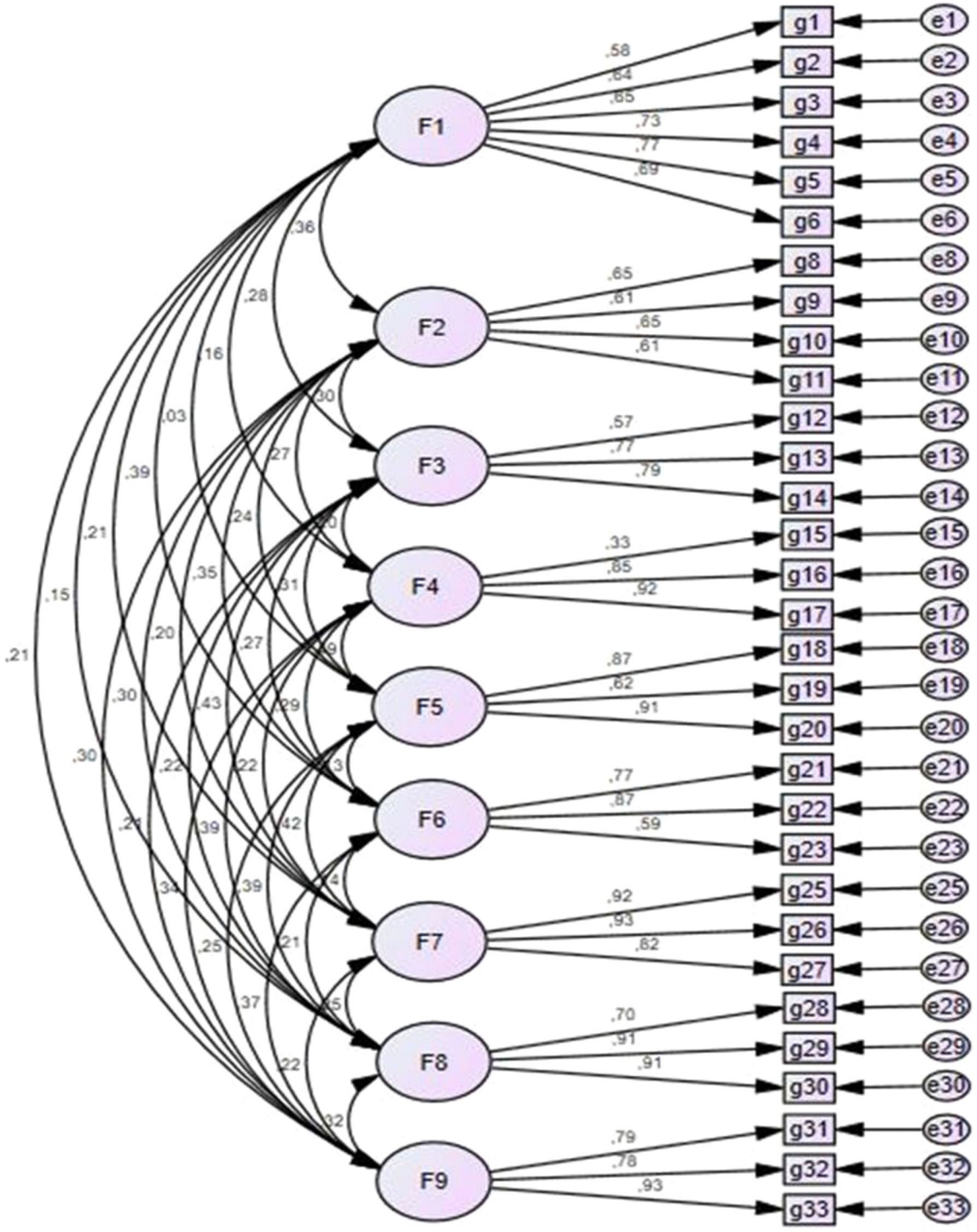

FIGURE 1 Confirmatory factor analysis results of Pregnancy-related Anxiety Scale [Color figure can be viewed at wileyonlinelibrary.com]

The findings obtained in this study are consistent with the findings obtained from the PrAS original scale.

If a measurement tool is applied to persons at different times and consistent results are obtained from persons, this shows the time invariance of the measurement tool.[45] To evaluate the test-retest reliability of the Turkish version of the PrAS, it was reapplied to a group of pregnant women who were randomly selected among the pregnant women from the sample after 2 weeks from the first data collection. It was determined that there was a statistically significant positive and strong relationship between the test-retest total scores of the scale. These results show that the scale is consistent with time. The internal

TABLE 3 Subscales and scales reliability

	Cronbach's α
Pregnancy-related Anxiety Scale	.89
Subscales	
Childbirth concerns	.84
Body image concerns	.72
Attitudes towards childbirth	.75
Worry about motherhood	.71
Acceptance of pregnancy	.83
Anxiety indicators	.78
Attitudes towards medical staff	.92
Avoidance	.87
Baby concerns	.87
Tilburg Pregnancy Distress Scale	.82

consistency coefficient and test-retest analysis have shown that the Turkish version of the PrAS is a reliable measurement tool.

In the study, it was seen that the anxiety levels of pregnant women were moderate. There was no significant difference between the anxiety level and the gestation/trimesters of pregnancy. In the studies of Tuncel and Kahyaoğlu Süt, it was determined that the anxiety level of pregnant women was low, and PrA was found to be similar in all pregnancy trimesters.[46] Nath et al[12] found that women at less than 24 weeks of pregnancy showed high PrA levels. The pregnant women may experience anxiety in each trimester because of the changes specific to that trimester. Reasons such as the adaptation to the pregnancy in the first trimester, physiologic and psychological changes in the second trimester, full-term of the labor, and preparation for being a parent in the third trimester may cause anxiety in pregnant women. This study supports the findings that anxiety levels of pregnant women are not different from each other between trimesters, that pregnant women have anxieties specific to each trimester, and that anxieties may be experienced in each trimester in the pregnancy.

TABLE 4 The Pregnancy-related Anxiety Scale (PrAS) score and subscale averages over time

	Pretest Mean ± SD	Follow-up Mean ± SD	t^a/*P* value
PrAS	55.59 ± 15.28	54.23 ± 14.78	1.445/.152
Subscales			
Childbirth concerns	13.48 ± 5.15	13.45 ± 5.18	.094/.925
Body image concerns	5.57 ± 2.43	5.51 ± 2.25	.348/.728
Attitudes towards childbirth	5.89 ± 2.72	5.76 ± 2.72	.649/.518
Worry about motherhood	4.54 ± 2.33	4.33 ± 2.13	1.427/.157
Acceptance of pregnancy	4.53 ± 2.56	4.35 ± 2.48	1.374/.173
Anxiety indicators	5.90 ± 2.73	5.65 ± 2.53	1.054/.294
Attitudes towards medical staff	5.92 ± 3.28	5.55 ± 2.96	1.361/.176
Avoidance	4.60 ± 2.75	4.25 ± 2.55	1.512/.134
Baby concerns	5.15 ± 2.55	5.38 ± 2.68	−1.000/.320

[a]Dependent sample *t* test.

4.1 | Implications for nursing practice

The PrAS was found to be a valid and reliable instrument to measure anxiety levels of pregnant women in Turkish society. While the PrA can be determined comprehensively with this scale, in-depth information can be obtained about each woman's anxieties about pregnancy. Thus, anxiety levels of pregnant women receiving antenatal care can be determined and necessary interventions can be planned accordingly. It is recommended that the scale be used in both clinical studies and others to determine the PrA of pregnant women and to plan interventions for it.

4.2 | Limitations

The present study was carried out in only one province in Turkey. Therefore, the results are applicable only to the pregnant women surveyed in this study and cannot be generalized to pregnant women in all the provinces of Turkey, which is one of the limitations of the study. In addition, illiterate pregnant women are not included in the study.

CONFLICT OF INTERESTS

The authors declare that there are no conflict of interests.

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