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Psychometric Properties of the Pregnancy-Related Anxiety Questionnaire-Revised2 Among Iranian Women

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Abstract

Objectives: The pregnancy-related anxiety questionnaire is one of the specialized scales designed for pregnancy-related anxiety measurement including fear of delivery, fear of birth of a handicapped child, and concern about pregnancy- and delivery-related body changes. The present study aimed to assess psychometric properties of Pregnancy Related Anxiety Questionnaire- Revised2 (PRAQ-R_2) among Iranian women.

Materials and Methods: In this methodological, cross-sectional study, 109 pregnant women in the second trimester of pregnancy were studied through proportional randomized sampling. Content validity was evaluated in two qualitative (by experts) and quantitative (content validity ratio [CVR] and content validity index [CVI]) stages. In the next step, a confirmatory factor analysis was used to determine the validity of the structure. For reliability, the internal consistency (Cronbach α) was calculated and the stability of the questionnaire was analyzed using intragroup correlation coefficient with 20 samples.

Results: Based on the results, the evaluation of content validity in quantitative step showed that CVI and CVR were 0.97 and 0.98 for PRAQ-R_2, respectively. The reliability of the questionnaire calculated by intraclass correlation coefficient (ICC = 0.73) and internal correlation (α = 0.74) verified the high reliability of the instrument. Moreover, the construct validity was confirmed by confirmatory factor analysis.

Conclusions: In general, the findings support the validity and reliability of the questionnaire. Therefore, it is recommended that a short form of anxiety questionnaire be used to assess the anxiety and concerns of Iranian women during pregnancy in clinical trials.

Keywords: Anxiety, Pregnancy, Psychometric, Validity, Reliability

Introduction

Pregnancy is one of the most important events that happen to women, and they experience extensive physical, mental, and even social changes during this period. Sometimes these changes may be accompanied with several mental reactions such as stress and anxiety (1,2).

Research on the incidence of maternal anxiety shows that approximately 10%-15% of women suffer anxiety during pregnancy (3). Various factors are involved in the incidence of pregnancy-related anxiety, whose causing stressors are different among women (4). Fear of labor pain, personal characteristics, anxiety about taking care of baby, and unpleasant experience from previous pregnancy (s) are the anxiety-inducing factors in pregnant women. Concern about fetal health and pregnancy-related physical changes are also listed as the influential factors in pregnancy-related anxiety (2,5).

Although anxiety could be part of a natural process during pregnancy and labor (6), it might end with negative maternal and fetal outcomes (7,8). Research suggests that high levels of pregnancy-related anxiety reduce uterine blood flow via raising the maternal cortisol levels and consequently may end with preterm delivery (9, 10) and preeclampsia (11).

High anxiety level during pregnancy may increase the possibility of postpartum depression (12). Therefore, this issue suggests the significance and the desperate need for addressing it (13). It is of great importance to have access to valid and reliable tools in order to use in clinical research and to measure the pregnancy-related anxiety (14). Numerous studies have underscored the importance of addressing the anxiety during pregnancy, because timely diagnosis, prevention, and treatment of anxiety are possible in pregnancy (15).

In general, few tools are available for measuring pregnancy-related anxiety that could also measure the severity of anxiety along with (16,17). Majority of the instruments used to measure anxiety in pregnant women assess the anxiety in its general sense such as State-Trait Anxiety Inventory (8). However, pregnancy-related anxiety is probably more severe than and distinct from usual anxiety (18). Therefore, the available tools are not responsive in measuring the anxiety during pregnancy (14) and may not completely reveal the correlation

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between pregnancy-related anxiety and childbirth outcomes (19,20).

Van den Bergh et al developed the Pregnancy-Related Anxiety Questionnaire (PRAQ) in 1990 to assess the anxiety during pregnancy (21). It was later revised and shortened (34 items) by Huizink et al. Huizink et al reviewed and confirmed the Pregnancy-Related Anxiety Questionnaire-Revised (PRAQ-R) in terms of psychometric properties (22). Because of the rather fewer number of items, PRAQ-R is an easy-to-use tool for studying both the pregnancy-related anxiety and clinical research. That is why it has been employed in many studies (8,23-25).

Nevertheless, one of the shortcomings of PRAQ-R was its specificity to primiparous women. Huizink et al, therefore, conducted an extensive study to modify the questionnaire in order that it could be used for measuring pregnancy-related anxiety both in primiparous and multiparous women. They developed the 11-item PRAQ-R_2, in which the items 1 and 8 are related to primiparas and multiparas, respectively, as replacement items. Items are scored on a 5-point Likert scale. Moreover, confirmatory factor analysis (CFA) conducted by Huizink et al revealed three factors in the questionnaire, namely fear of delivery, fear of giving birth to a handicapped child, and worries about physical changes (3).

Considering that the latest version of PRAQ-R_2 has been introduced by its developer as a specialized, comprehensive, brief, and simple tool for measuring pregnancy-related anxiety and because of the cultural differences of Iranian women and high incidence of pregnancy-related anxiety, the present study aimed to translate and verify the validity and reliability of the Persian version of PRAQ-R_2 questionnaire in a sample of Iranian women population.

Materials and Methods

This methodological and cross-sectional study was designed to translate and verify the validity and reliability of PRAQ-R_2. This questionnaire is designed by Huizink et al for measuring the anxiety during pregnancy and includes 11 items and 3 structural factors: fear of delivery with 3 items (1,2,6); anxiety about giving birth to a physically or mentally handicapped child with 4 items (4,9-11); and anxiety about physical changes with 3 items (3,5,7). Each item is scored based on a 5-point Likert scale. The total score of the questionnaire is the sum of each item's score with no defined cut-off point (3). This questionnaire was used in the present study with written permission from the developer. A total of 109 women participated in this study, and the inclusion criteria were: Iranian nationality, second trimester pregnancy (14-18 weeks of gestational age), 15-49 years of age, married, verbal and auditory ability (capable of communication), and willingness to participate.

Sampling

Having obtained the ethical approval (code of ethics: IR.TBZMED.REC.1396.793) from Research Ethics Committee at Tabriz University of Medical Sciences, sampling began using two-stage cluster sampling. First, out of 20 public and private healthcare centers, one-fourth (5 centers) were selected randomly. Then, the pregnant women who aged 15 to 49 years old and were in the early second trimester of pregnancy were selected by proportional randomized sampling. The inclusion criteria were applied and the research goals as well as confidentiality of the study were explained to the women. Furthermore, the subjects were orally asked whether they were interested to participate and if so, written informed consent was obtained from them. As a rule of thumb, sample size was determined to be 10 times larger than each item for factor analysis. Since PRAQ-R_2 is an approximately 10-item questionnaire, sample size was calculated to be 100. At last, a total of 109 women in their second trimester of pregnancy were selected for this study.

English to Persian Translation (Literal Translation) and Back Translation

After correspondence and obtaining permission from the developer and author of the questionnaire by the corresponding author, the questionnaire was translated-retranslated by two proficient English translators. The preliminary translations were combined into an integrated translation and then was back translated to English by two other translators. The back translated text was compared to the original text and the validity of the translation was confirmed.

Reliability and Validity of the PRAQ-R2

In the next step, the questionnaire was reviewed by 10 faculty members including 2 gynecologists, 1 epidemiologist, 3 PhD students of Reproductive Health, 2 master students of Midwifery Counseling, and 2 psychologists, and their comments on orthography were received. The content validity index (CVI) for clarity, simplicity, and relevance, and content validity ratio (CVR) for essentiality of the items were calculated. Based on Lawshe, CVR >0.62 was appropriate and an item would be considered acceptable if CVI ≥0.79 (26). The preliminary Persian version of the questionnaire was administered to 30 pregnant women who confirmed its face validity and concepts. The final version was administered to 20 pregnant women and ICC and internal consistency (Cronbach alpha coefficient) were measured for the PRAQ-R_2 questionnaire.

Statistical Analysis

Statistical analyses were carried out in SATA 14.0. CFA was used because of the dual nature of hidden variables. Using Bernoulli distribution and logit function (link function), each item was introduced in the model with a binary mode in order to describe the hidden variable.

Mean-variance adaptive Gauss-Hermite quadrature was employed to assess the model. This model allows examining the relationship between each item and the construct under study as hidden variables. The paths from binary exogenous variables to hidden endogenous variables were defined. Significance level was set at $P<0.05$.

Results

Descriptive Characteristics of the Participants

In total, the data collected from 109 pregnant women were analyzed. In the first step, the analyses were concentrated on the demographic information. In this regard, the mean age (and standard deviation) of the women was 29.2 (5.7) and almost half of the participants (46.8%) were pregnant for the first time. More than 90% of the women (90.8%) were housewives and less than one-tenth (9.2%) were employed. Approximately, half of the women (50.45%) were uneducated or had elementary education. The mean (SD) gestational age was 16.3 (2.5) weeks and about half of the women (49.5%) stated that their income did not meet their expenses (Table 1).

Content Validity

For the qualitative assessment of the questionnaire, the experts provided their feedback on the clarity and relevance of the PRAQ-R_2 content to the Iranian culture. The content was generally accepted at this stage. It is noteworthy that some of the items were modified and corrected at the experts' discretion: item 7 was removed because it was quite similar to the item 5. CVI and CVR scores were 0.97 and 0.98, respectively (Table 2).

Construct Validity

CFA results were as follows:

Kaiser-Meyer-Olkin test and Bartlett test of sphericity were used prior to CFA to assess sampling adequacy and significance. Appropriate values for conducting CFA are above 0.6 (23) which was 0.72 in the present study, thus adequate for CFA of the questionnaire. Results showed that the items 2, 1, and 6 were placed significantly under the first subscale. In other words, the subscale "fear of delivery" was comprised of the above items. The items 4, 9, and 11 were placed significantly under the second subscale, that is, worries about giving birth to a handicapped child. The items 3 and 5 were placed under the third subscale, i.e. worries about physical changes. As a result, convergence and discrimination of the first, second, and third subscales and consequently the construct validity of all three subscales were relatively confirmed (Table 3).

Table1. Descriptive Characteristics of the Participants (N=109)

Sociodemographic Characteristics	No. (%)	Mean (SD)
Age (y)	109 (100)	29.2 (5.7)
Gestational age (wk)	109 (100)	16.3 (2.5)
Occupation		
Unemployed	99 (90.82)	30.87 (6.93)
Employed	10 (9.17)	32.10 (8.41)
Family income		
Low	49 (45.0)	31.20 (7.20)
Moderate	54 (49.5)	31.14 (6.99)
High	5 (4.5)	32.76 (5.43)
Educational level		
Illiterate/primary school	55 (50.45)	32.18 (6.7)
High school or university level	54 (49.54)	29.77 (7.1)

Note: *Mean of pregnancy related anxiety.

Reliability

Cronbach alpha coefficient was 0.74, which evaluated and confirmed internal consistency of the instrument. ICC (with a 95% confidence interval) was 0.73 (0.27-0.86), showing consistent results if the test was repeated (Table 4).

Discussion

The purpose of this study was to assess the validity and reliability of the PRAQ-R_2 questionnaire among Iranian pregnant women. It consisted of three subscales, namely fear of delivery, worries about giving birth to a handicapped child, and worries about physical changes. Our results showed that the Persian version of PRAQ-R_2 has acceptable psychometric properties to be used for Iranian pregnant women, as well as being used in clinical and research studies. The present study is the first one that could assess the psychometric properties of PRAQ-R_2 among Iranian pregnant women. Moreover, in comparison with other related instruments, the PRAQ-R_2 is designed specifically for measuring pregnancy-related anxiety both in primiparous and multiparous pregnant women in a brief format which can be simply applied in clinical practice.

Content Validity

Validity of an instrument is defined as its effectiveness in measuring a property for which it is designed to (27). The content validity of the PRAQ-R_2 questionnaire was verified both qualitatively (experts' opinions) and

Table 2. CVI and CVR for Items of the PRAQ-R_2

Questions	CVI	CVR
1	1	1
2	1	1
3	1	1
4	1	1
5	0.63	1
6	1	1
7	0.98	1
8	1	0.98
9	1	1
10	1	1
11	1	1

Table 3. Rotated Component Matrix for PRAQ-R_2

Scale Items	Component		
	Fear of Giving Birth	Worries About Bearing a Handicapped Child	Concern about One's Own Appearance
Preanxiety1	0.800		
Preanxiety2	0.826		
Preanxiety3			0.788
Preanxiety4		0.800	
Preanxiety5			0.766
Preanxiety6	0.731		
Preanxiety8			
Preanxiety9		0.857	
Preanxiety10		0.863	
Preanxiety11		0.845	

Note: Extraction method: Principal component analysis.

Table 4. Cronbach α and ICC for the PRAQ-R2

Scale Variables	Cronbach α	ICC (95% CI)
Fear of giving birth	0.74	0.74 (0.36 to 0.88)
Worries about bearing a handicapped child	0.76	0.71 (0.18 to 0.89)
Concern about one's own appearance	0.73	0.76 (0.29 to 0.87)
Total score of PRAQ-R_2	0.74	0.73 (0.27 to 0.86)

ICC: intraclass correlation coefficient; PRAQ-R_2: Pregnancy related anxiety questionnaire-pevised2.

quantitatively (CVI, CVR). The experts' opinions and judgments (expert panel) were applied to assess the content validity. Furthermore, the experts were inquired through a checklist about the simplicity, clarity, and relevance, as well as essentiality of each item.

The CVI and CVR were also applied in the original questionnaire to assess clarity, simplicity, relevance, and essentiality. A similar study also confirmed the validity of PRAQ-R_2, however no values were reported that could be compared with that of the present study (17). Assessment of the concurrent validity showed that the tool was highly correlated with a parallel tool viz Beck Anxiety Inventory and psychometric properties of the Persian version of it; it seems that both measured similar constructs.

Reliability

The analyses focused on assessing the reliability of the PRAQ-R_2 questionnaire. The analyses included examining two aspects of reliability using internal consistency through calculation of Cronbach alpha and ICC. The α-values >0.7 show symmetric and acceptable reliability (28); they were above 0.7 in this study for all three dimensions, which, in line with Huizink et al (3) and Aksoy et al (17), favorable reliability of the questionnaire was observed. The total ICC (with a 95% confidence interval) was 0.79 (0.59-0.87), suggesting the consistency and repeatability of the results over reapplications of the questionnaire. This result corroborated that of Huizink et al who assessed and confirmed the original questionnaire in 24-34-week pregnant women (3).

Construct Validity

Construct validity of a test is considered its degree of accuracy in measuring the target theoretical construct of characteristics. CFA was employed in this study. In CFA, the goal is to confirm the special factor analysis that states the hypothesis of the number of factors, and fitness of the favorable factors in the hypothesis with the covariance of measured variables is tested (29).The two-way mode of each item was examined in CFA where each item was used in a binary mode in the logic link Fanetiar and Bernoulli distribution models to estimate the model using the adaptive Gauss-Hermite quadrature integration method. This allowed assessing the significance of the relationship between each item and the construct under study. Factorial validity of the three subscales was then confirmed. The factorial validity for each of the 11 items and the three dimensions of the questionnaire was already confirmed by Huizink et al in the assessment of the psychometric properties of PRAQ-R_2 which is consistent with our results (3). In line with the present study, Aksoy et al also confirmed the three subscales of this tool in assessing its construct validity (17).The reason for this consistency might be that despite the cultural differences between communities, concerns about pregnancy-related issues are similar and independent of cultural differences.

Limitations of the Study

Assessment of the suitability of the questionnaire for measuring pregnancy-related anxiety and its clinical importance are the strong points of the present study. However, it is possible that a number of limitations have influenced the results obtained. As an example, only women with normal pregnancy were included and high-risk pregnancies were excluded from the study. It is therefore suggested that further research should be carried out to investigate the suitability of this tool for using among women with high-risk pregnancies.

Conclusions

Considering the high validity and reliability of the

questionnaire and the favorable fitness of the CFA model for PRAQ-R_2 in an Iranian community similar to the original questionnaire, it can be argued that the Persian version of the PRAQ-R_2 questionnaire is suitable for early diagnosis and determination of the anxiety level in pregnancy and can be used in clinical and research studies. In addition, application of PRAQ-R_2 in provision of prenatal care can help in early diagnosis, treatment, and reduction of pregnancy-related anxiety and complications.

Conflict of Interests

Authors have no conflict of interests.

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