

The Validity and Reliability of the Wijma Delivery Expectancy/Experience Questionnaire (Version A) in Primiparous Women in Mashhad, Iran

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What's Known

- The Wijma Delivery Expectancy/Experience Questionnaire (W-DEQ) is considered to be the best tool for measuring the fear of childbirth. In a study in Iran (2017), the reliability of the W-DEQ (A) was confirmed with a Cronbach's alpha of 0.64, but its reliability was lower in Iran than in other societies.

What's New

- This study showed that W-DEQ (A) is a valid (Cronbach's alpha of 0.84) and reliable tool for measuring the fear of childbirth in the Iranian culture. The results of this study can help others to use W-DEQ (A) as a valid and reliable tool for measuring the fear of childbirth in the Iranian culture.

Abstract

Background: Although pregnancy and childbirth are physiological processes, fear of childbirth is a common problem that is often associated with requests for cesarean delivery. This study was undertaken to determine the validity and reliability of the Wijma Delivery Expectancy/Experience Questionnaire A (W-DEQ [A]) primiparous women in Mashhad, Iran.

Methods: This study was conducted on 220 primiparous women with a gestational age of 28-30 weeks referred to health centers in Mashhad. Using demographic questionnaire, Beck's Anxiety Inventory, Beck's Depression Inventory, and the W-DEQ (A), for determining the validity and reliability of the W-DEQ (A), first two linguists translated the questionnaire into Persian; then, two other linguists translated the Persian version back into English. The content validity of this version was then assessed by expert faculty members. The final version was sent to the questionnaire's original developers (Klass Wijma and Barbro Wijma) and then used after their approval. Factor analysis was used to analyze the data.

Results: The result of factor analysis revealed six factors, forming 58.8% of the total variance. The reliability of this questionnaire was confirmed with a Cronbach's alpha coefficient of 0.84, and the fear of childbirth was found to be correlated with Beck's anxiety ($r=0.414$) and depression ($r=0.287$) scores.

Conclusion: The W-DEQ (A) is a valid and reliable tool for measuring the fear of childbirth and is recommended to be used for measuring the fear of childbirth among Iranian women.

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Introduction

Fear of childbirth might occur in the form of anxiety disorder or extreme fear during pregnancy, and manifests itself as nightmares, physical discomfort and difficulty in concentrating at work or during family activities, and is often associated with requests for cesarean delivery. Fearing childbirth is a common and serious problem among women. The prevalence of fear of childbirth varies with cultural factors, gestational week, and assessment method.¹

In Iran, an estimated 5% to 20% of pregnant women experience this fear, and one out of every five women suffers

from this fear. Moreover, 6% to 13% of pregnant women experience intense and debilitating fear of childbirth.² A study conducted by andaroon and colleagues showed that 50.9% of pregnant women had an intense fear of childbirth, and the reasons for their fear included concerns about labor pain, infant's health, what they had heard through others' experiences, the lack of trust in the medical personnel, and physical complications, by order of prevalence.³

Many tools have been used to date for measuring the fear of childbirth, including researcher-made tools, Hartman's Childbirth Attitudes Questionnaire,⁴ and the Wijma Delivery Expectancy/Experience Questionnaire (W-DEQ [A]). Wijma developed this tool for measuring the fear of childbirth and doing a cognitive assessment of women with regard to childbirth and sought to include objective items with direct relevance to the circumstance of fear. Wijma developed Version A for measuring the structure of fear of childbirth during pregnancy by asking women about their antenatal expectations and developed Version B based on women's postpartum experiences.⁵ Rouhe and colleagues consider the W-DEQ as the only accurate tool for the screening of fear. Unlike other questionnaires that focus only on labor and childbirth, this questionnaire also takes into account the pregnant women's thoughts, beliefs, and feelings about childbirth.⁶

The validity and reliability of the W-DEQ (A) have been confirmed. Its reliability was confirmed in a study done by Wijma and colleagues with a Cronbach's alpha of 0.93.⁵

Fenalori and colleagues confirmed the reliability of the W-DEQ (A) with a Cronbach's alpha of 0.86.⁷ In Iran, the reliability of the W-DEQ (A) was confirmed with a Cronbach's alpha of 0.64 in a study by Abedi and colleagues.⁸ In Mortazavi's study, the reliability of W-DEQ (A) was confirmed with a Cronbach's alpha coefficient for nulliparous and multiparous women ($\alpha=0.91$).⁹ We conducted this study aiming to determine the validity and reliability of the Wijma Delivery Expectancy/Experience Questionnaire A (W-DEQ[A]) in primiparous women in Mashhad, Iran.

Materials and Methods

Participants

This is a cross-sectional study conducted on 220 pregnant women with a gestational age of 28-30 weeks referred to health centers in Mashhad in 2016. After obtaining the approval of the ethics committee of Mashhad University of Medical Sciences (IR.MUMS.REC.1394.720),

sampling was performed in health centers in Mashhad. To comply with the codes of research ethics, the candidates were briefed on the study objectives and submitted their written consent if they were willing to participate. The researcher then asked the eligible and willing women to complete a demographic questionnaire, Beck's Anxiety Inventory, Beck's Depression Inventory, and the W-DEQ (A).

Eligibility Criteria

The inclusion criteria were being an Iranian, Persian-speaker, living in Mashhad, aged 18 to 35, gestational age 28-30 weeks, and possessing at least fifth-year of primary school literacy. The exclusion criteria were addiction to opioids, psychotropic medications or stimulants, drinking alcohol, occurrence of any stressful and unpleasant incidents over the past 6 months, and speech or hearing disorders.

Research Design

There are eight main and essential steps in preparing a translation version of each questionnaire from the main language into another language.¹⁰⁻¹⁴ In our study, the steps of translation and localization of the questionnaire were followed and they are presented in table 1.

The sample size was six times higher than the number of the items¹⁵ in the W-DEQ ($n=198$), but for greater assurance, 220 eligible women ultimately entered the study. The Kaiser-Meyer-Olkin (KMO) test was used for ensuring the sample size adequacy. The KMO score was 0.85 (table 2), indicating sample size adequacy for factor analysis.

Questionnaires

The W-DEQ (A) was first developed by Klaas and Barbro Wijma in 1998 in Sweden. The tool has 33 items that are scored based on a six-point Likert scale, with 0 indicating "extremely" and five indicating "not at all". The total score ranges from 0 to 165. A high total score indicates a high level of fear. The cut-off point is 85 and scores of 85 or higher confirm clinical fear; scores of 37 or lower show mild fear, 38-65 show moderate fear, and 66-84 show intense fear. Wijma and colleagues assessed the validity and reliability of the W-DEQ (A) for the first time in 1998 on 196 nulliparous and multiparous women in Sweden and found an overall reliability of 0.93 and Cronbach's alpha values of 0.89 in nulliparous and 0.99 in multiparous women.⁵

Beck's Anxiety Inventory (BAI) contains 21 items that are scored from 0 to 3, and the total score ranges from 0 to 63. Scores of 0-7 indicate minimal anxiety, 8-15 indicate mild anxiety,

Table 1: Steps of translation and localization of the questionnaire

The step of translation and localization of the questionnaire	
Step1: Translating the questionnaire from the original language to the target language	First, the English version was translated into Persian. Two translators independently translated the original questionnaire into Persian, and at a meeting, researchers and translators agreed on the translation.
Step2: Integration of the original translations into a single translation:	During a meeting with the presence of translators and researchers of the study, the first translated version was discussed. The translation was reviewed and some terms were replaced with the more appropriate terms. In order to assess the quality of translation in terms of clarity (using simple and understandable words), use in common language (avoiding technical, specialized, and artificial terms), conceptual equivalent-making (including the conceptual content of the original questionnaire), and the overall quality of translation, a third translator was asked to examine the translation for any undesirable words or sentences, and suggest appropriate alternatives. At the end of this stage, a Persian version that seemed to have the qualities demanded by the translator was reached.
Step 3: Retranslating the translated version of the target language back into the original language	Two other linguists then separately retranslated the Persian version back into English.
Step 4: Reviewing the translated version of target language into the original language	At this stage the back translations opposite the source instrument was reviewed to identify any differences.
Step 5: Acquiring cognitive information	The obtained version was given to 30 pregnant women as pilot. These individuals were not among those who participated in the main study. The aim of this stage was to evaluate what the pregnant women thought about the questions in terms of being simple, clear, and understandable and their ability to answer the examined questions.
Step 6: Modifying and summarizing	To determine the content validity, including face validity, the final version was assessed by ten expert faculty members of the School of Nursing and Midwifery of Mashhad University of Medical Sciences and the School of Psychology of Ferdowsi University of Mashhad. The qualitative content validity was assessed through some criteria including grammar, wording, item replacement, and scoring. Face validity was assessed through some criteria such as typing style, font, and consistency of text in pages; all the items were assessed and the experts' suggestions were included. The above steps eventually led to the availability of a Persian version of translation with appropriate quality.
Step 7: Determining the validity and reliability of the final translated questionnaire	After completing the translation process, the validity and reliability of the questionnaire were evaluated
Step 8: Final reporting and sending a questionnaire to the original author	Finally, the final version was emailed to the original instrument developers, i.e. Klass Wijma and Barbro Wijma. They reviewed the English version submitted with the original English version equally and conceptually and approved the translation.

Table 2: The KMO and Bartlett's sphericity test results for the W-DEQ items

Item	KMO	Bartlett's Test of Sphericity		
		Degree of Freedom	Sphericity	Significance
1-33	0.854	0.465	3064.703	P< 0.001

16-25 moderate and 26-63 severe anxiety.¹⁶ The validity and reliability of BAI were confirmed in a study by Kaviani and colleagues. The tool's validity was confirmed through comparing its quantitative assessment by clinical experts and the scores obtained by the participants (r=0.72; its reliability was confirmed with a Cronbach's alpha coefficient of 0.77).

Beck's Depression Inventory (BDI) contains 21 items scored from 0 to 3, with the total score ranging from 0 to 63, where 0-13 indicate minimal depression, 14-19 mild, 20-28 moderate, and 29-63 severe depression.¹⁷ The validity of the scale was confirmed by Dobson through a factor analysis; construct validity and its reliability were confirmed with a Cronbach's alpha of 0.91.¹⁸

The reliability of this scale was confirmed with a Cronbach's alpha of 0.76.

Data Analysis

Data were analyzed in SPSS-21 using the mean and standard deviation and table of frequency distribution to describe the participants' details. The KMO test was used to assess sample size adequacy for the content analysis assessment, Bartlett's test for assessing the samples' fit, and factor analysis for data analysis. A correlation matrix was formed for the factor analysis and factor extraction based on the variables correlation coefficients, and the factor analysis was performed on the items with a minimum factor loading of 0.4. The

orthogonal varimax rotation was used for better interpretability and the items were ultimately assigned to factors with the highest correlation in that factor.

Results

Basic Data

Participants' mean age was 28.4±4 years and their mean score of fear was 63.63±21.35, and women who planned for vaginal birth were 97 (44.1%) and who planned for cesarean section were 123 (55.9%) and educational level, occupation, socioeconomic status, and history of miscarriage are presented in table 3.

Validity and Reliability of the Instruments

The KMO score was 0.85, indicating sample size adequacy for factor analysis. Bartlett's test of sphericity was performed to justify the factor analysis and showed that the variables were suitable for factor analysis for all the 33 items at the significance level of $P < 0.001$ (table 2).

The factor analysis was performed on items with a minimum factor loading of 0.4; thus, items 24 and 31 were excluded.

The exploratory factor analysis using the main component analysis and varimax rotation led to the extraction of six factors, which accounted for 58.8% of the total variance (table 4 and figure 1). The six factors extracted were Factor 1 (Lack of self-efficacy), including the items lack of power, lack of confidence, independence, happiness, lack of pride, lack of calmness, lack of peace, lack of helplessness, lack of self-confidence, and lack of trust; Factor 2 (fear), including loneliness, fear, having no one, incapacity, misery, tension, and being left alone; Factor 3 (Negative appraisal), including happiness, eagerness, ability to control and weirdness; Factor 4 (Lack of positive anticipation), including panic, fright, bad conduct and lack of control; Factor 5 (Concerns for the child), including not feeling novel, infant mortality and infant injuries; Factor 6 (Loneliness), including not feeling excellent, feeling weak and feeling weird. The factor loadings of each item are presented in table 5. The items related to infant mortality and injuries had the highest factor loading. Two items including 24 and 31 were omitted because of very low factor loading values and not being allocated to any factors.

Table 3: The frequency distribution of education, occupation, socioeconomic status, and history of miscarriage in primiparous women

Variable		N (%) n=220
Educational level	Below high school diploma	10 (4.54)
	High school diploma	21 (9.54)
	Associate degree	71 (32.27)
	Bachelor's degree	76 (34.55)
	Master's degree	42 (19.1)
Occupation	Housewife	190 (86.4)
	Corporate worker	24 (10.9)
	Student	6 (2.7)
Socioeconomic Status	Low	17 (7.7)
	Moderate	108 (49.1)
	Moderate to high	83 (37.7)
	High	12 (5.5)
History of Miscarriage	Yes	23 (10.5)
	No	197 (89.6)
Plan for childbirth	Vaginal birth	97 (44.1)
	Caesarian	123 (55.9)

Table 4: The linear factor values after extraction and after matrix rotation

Factor	Initial Value			Rotated Value		
	Total	Percentage of Variances	Sum	Total	Percentage of Variances	Sum
1. Lack of self-efficacy	7.27	23.47	23.47	4.94	15.95	15.95
2. Fear	5.36	17.30	40.78	4.24	13.68	29.64
3. Negative appraisal	1.61	5.21	45.99	2.68	8.64	38.29
4. Lack of positive anticipation	1.46	4.71	50.71	2.33	7.52	45.82
5. Concerns for the child	1.42	4.58	55.29	2.03	6.56	52.38
6. Loneliness	1.10	3.55	58.84	2.00	6.46	58.84

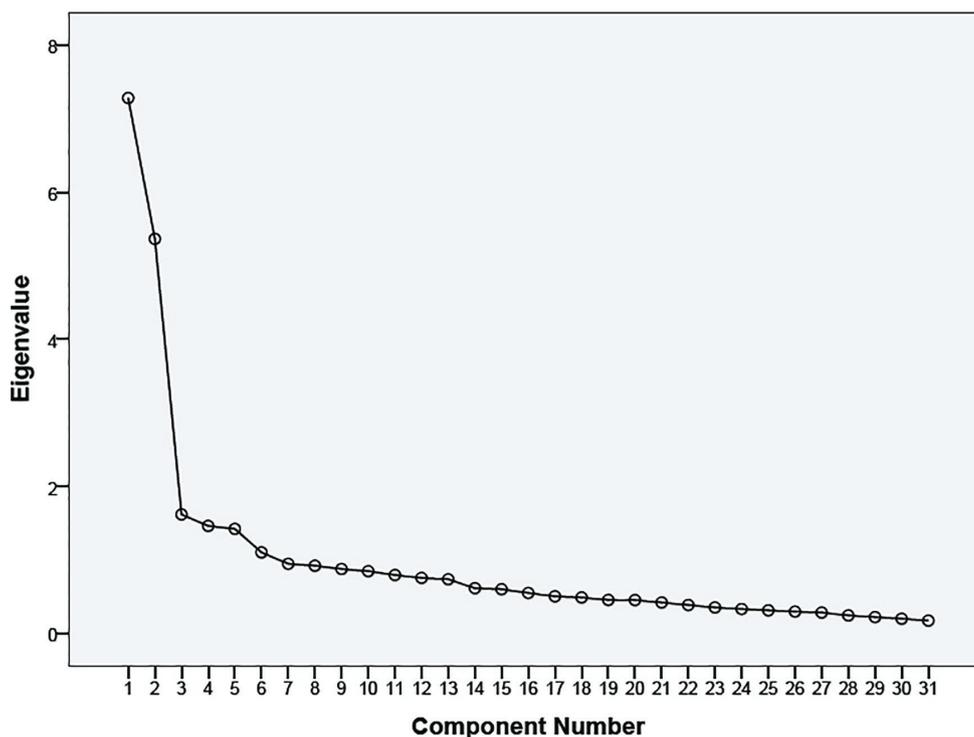


Figure 1: The figure shows the scree plot for the determination of factor numbers of the W-DEQ (A).

The results of Pearson’s test showed a significant direct correlation between the fear of childbirth and the BAI ($r=0.414$, $P<0.001$) and BDI ($r=0.287$, $P=0.006$) scores. The reliability of this questionnaire was confirmed using internal consistency with a Cronbach’s alpha of 0.84 and using the split-half method with a coefficient of 0.84.

Cronbach’s alpha was used to determine the reliability of the extracted factors and the results showed that Factor 2 (fear) and Factor 6 (negative feelings) had the highest and lowest Cronbach’s alpha, respectively (table 6).

Discussion

This study assessed the validity and reliability of the W-DEQ (A) in Iranian women, and the factor analysis led to six factors, including lack of self-efficacy, fear, negative appraisal, lack of positive anticipation, concerns for the child, and loneliness, which totally accounted for 58.84% of the total variance. The reliability of the tool was confirmed with a Cronbach’s alpha of 0.846 and a split-half coefficient of 0.840. The results showed that the tool had acceptable validity and reliability for use in the Iranian culture. Wijma and colleagues tested the validity and reliability of the W-DEQ (A) in 196 women (90 nulliparous and 100 multiparous women) in Sweden for the first time and found its overall internal consistency reliability to be 0.93 and

its Cronbach’s alpha to be 0.89 in nulliparous and 0.99 in multiparous women.⁵ The present findings are consistent with the results obtained by Wijma and colleagues.⁵ In another study, Fenalori and colleagues assessed the validity and reliability of the Italian version of the W-DEQ in 347 primiparous women in Italy. Items were placed in four factors (fear, negative feelings, lack of confidence, and negative thoughts), which accounted for 44.8% of the total variance. The reliability of this questionnaire was confirmed with a Cronbach’s alpha of 0.86 for version A.⁷ The coefficient of reliability reported by Fenalori and colleagues was almost similar to that obtained in the present study.

Abedi and colleagues also assessed the validity and reliability of the W-DEQ (A) in 200 nulliparous women in Iran. The reliability of this questionnaire via the Cronbach’s alpha was 0.64.⁸ In the present study, the reliability coefficient obtained was higher than Abedi’s study. Based on a study by Mohammadbeigi and colleagues, the categorization of Cronbach’s alpha would be excellent if it is more than 0.9, good if 0.8-0.9, acceptable if 0.7-0.8, debatable if 0.6-0.7, mild if 0.5-0.6, and unacceptable if less than 0.5.¹⁹ The results of our study show that the reliability of the W-DEQ (A) was good.

In Mortazavi’s study, the reliability of W-DEQ (A) on Iranian women was reported as one Cronbach’s alpha coefficient for nulliparous and multiparous women ($\alpha=0.91$), so the reliability of

Table 5: The items' factor loadings

Item	Factor 1 Lack of self-efficacy	Factor 2 Fear	Factor 3 Negative appraisal	Factor 4 Negative appraisal	Factor 5 Concerns for the child	Factor 6 Loneliness
4	Not strong	0.746				
5	Not Confidence	0.755				
10	Not Independence	0.672				
13	Not happy	0.514				
14	Not Proud	0.603				
16	Not Composed	0.618				
17	Not Relaxed	0.628				
20	Helplessness	0.617				
22	Not Self- Confidence	0.562				
23	Not Trust	0.635				
3	Lonely		0.683			
6	Afraid		0.495			
7	Deserted		0.824			
8	Weak		0.601			
11	Desolate		0.764			
12	Tens		0.732			
15	Abandoned		0.694			
18	Not happy			0.612		
21	Longing for the child			0.728		
26	Not let happen			0.552		
28	Not joyful			0.668		
2	Frightful				0.658	
19	Panic				0.672	
25	Behave badly				0.512	
27	Lose control				0.664	
30	Not obvious					0.463
32	Fantasies that child will die					0.852
33	Fantasies that child will be injuries					0.803
1	Not fantastic					0.492
9	Not safe					0.520
29	Not Natural					0.714

Table 6: Cronbach's alpha values for the various factors of the W-DEQ (A)

Factor	Cronbach's Alpha	95% CI	P
1. Lack of self-efficacy	0.83	0.80-0.86	<0.001
2. Fear	0.85	0.82-0.88	<0.001
3. Negative appraisal	0.69	0.61-0.75	<0.001
4. Lack of positive anticipation	0.64	0.56-0.71	<0.001
5. Concerns for the child	0.74	0.67-0.79	<0.001
6. Loneliness	0.58	0.47-0.61	<0.001
Total	0.84	0.81-0.87	<0.001

the questionnaire was not reported separately for nulliparous and multiparous women.⁹ In the study by Taheri and colleagues, the fear of childbirth in nulliparous women was more than multiparous women.²⁰ Since Wijma has stated that the purpose behind the preparation of the questionnaire was the measurement of fear of childbirth and women's cognitive evaluation; therefore, the diversity in the research participants may affect the reliability of the questionnaire.

In a study done by Mortazavi, only the women who planned for vaginal birth were assessed and not those who planned for cesarean section while in our study, 55.9% of the participants were planning for cesarean section and 44.1% were going to have a natural delivery. That is a major consideration, since studies have shown that fear is one of the most important factors that can lead women to cesarean delivery.²¹

There are eight main and essential steps

in preparing a translated version of each questionnaire from the main language into another language.¹⁰⁻¹⁴ The eighth step includes the final report and sending the questionnaire to the original author. A translated version of each questionnaire was performed carefully unlike other studies done in this regard.

In the present study, the fear of childbirth had a significant and direct correlation with the BAI and BDI scores. In the study of Wijma and colleagues, the W-DEQ (A) questionnaire had the highest correlation with anxiety and depression,⁵ and also in a study done by Erkaya and colleagues, the relationship between fear and BAI had a significant and direct correlation.²²

The strengths of the present study include the selection of primiparous women, who lack the experience of childbirth because having experience could have affected the results obtained through the questionnaire. The study limitations include personal differences and the mental health status of the participants when completing the questionnaire.

Conclusion

The results showed that the W-DEQ (A) is a valid and reliable tool for measuring the fear of childbirth, thus the tool is recommended to be used for measuring fear of childbirth for Iranian women.

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