

The Validity and Reliability of Persian Version of Wijma Delivery Expectancy/Experience Questionnaire (Version A) among Iranian Nulliparous Women

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Abstract

Extreme fear of childbirth may interfere with normal process of labor and increase the rate of cesarean section. The aim of this study was to evaluate validity and reliability of a Persian version of Wijma Delivery Expectancy/Experience Questionnaire (W-DEQ) among nulliparous women. In this cross-sectional study, 200 nulliparous women of reproductive age were recruited. The original form of the W-DEQ was received from corresponding author (Garthus-Niegel). This questionnaire was translated into Persian language and back-translated to English by three experts in reproductive health and psychiatry who were fluent in Persian and English. Two questionnaires namely the Beck Anxiety Inventory (BAI) and the Depression Anxiety Stress Scale (DASS) were used to check the convergent and divergent validity. Confirmatory factor analysis was used to assess the construct validity, while the Pearson correlation coefficient was used to assess the convergent and divergent validity of the W-DEQ. Reliability was measured using Cronbach's coefficient alpha. Factor analysis yielded nine factors that explained 70.06% of the total variation. Cronbach's alpha was 0.64 and the convergent validity with the BAI questionnaire was ($r=0.402$) and the divergent validity of W-DEQ with the DASS questionnaire was ($r=0.349$). The Persian W-DEQ has a good validity and reliability for measuring the fear of delivery in Iranian women of reproductive age. Using this questionnaire for nulliparous women is recommended.

Keywords: convergent validity, divergent validity, validity, reliability, fear of childbirth, factor analysis

1. Introduction

Tocophobia is a Greek word means extreme fear of childbearing that may cause a woman to avoid pregnancy (Hofberg & Ward, 2003). Severe fear of childbirth affects around 6-10% of women worldwide (Saisto & Halmesmaki, 2003). A study in Australia on 1410 women showed that the prevalence of fear of childbirth was 24% and 31.5% of nulliparous women had severe fear of childbirth (Toohil et al., 2014).

Tocophobia is classified into primary and secondary, with primary tocophobia mainly affecting nulliparous women. Tocophobia in nulliparous women is sometimes so severe that even a woman with a strong desire to have children avoids pregnancy (Hofberg & Brockington, 2000). Secondary tocophobia is mostly associated with unpleasant experiences of labor in the previous pregnancy (Hofberg & Brockington, 2000). A study by Størksen et al. showed that women who had a previous negative outcome with childbearing were 4.8 times more likely to have an extreme fear of childbirth (OR=4.8, 95% CI: 2.8-8.3) (Størksen et al., 2013). In another study, the results showed that a negative birth outcome in the previous pregnancy, fear of childbirth during pregnancy, cesarean section, and nulliparity were the factors that most related to fear of childbirth (Nilsson et al., 2012). A study of 376 women by Aksoy et al. showed that an extreme fear of childbirth is a factor linked to an increased rate of cesarean section (OR 4.22, 95% CI: 2.91-6.11) (Aksoy et al., 2014). A qualitative study conducted by

Faisal et al. in Iran on 14 nulliparous women who requested elective cesarean section without any medical reason showed that the main reasons for requesting cesarean section were extreme fear of childbirth, complications after normal vaginal delivery, and sexual dysfunction (Faisal et al., 2014). In a study of 1,635 nulliparous and multiparous women, Nieminen et al. showed that there was an association between fear of childbirth and preference for cesarean section among nulliparous women (OR 11.79, CI:6.1-22.59) and multiparous women (OR 8.32, CI:4.36-15.85) (Nieminen et al., 2009).

The relationship of fear of childbirth (FOC) and negative pregnancy outcome remained a concern. While Laursen et al. (2009) in their study on 25297 nulliparous healthy women with term pregnancy found that women with extreme FOC significantly had more emergency cesarean section (OR: 1.43, 1.13-1.80), and increased risk of dystocia (OR: 1.33, CI: 1.15-1.54), Sluij et al. (2012) in their study on 105 low risk healthy women found that the FOC was not related to negative outcomes of pregnancy.

The Wijma Delivery Expectancy/Experience Questionnaire (W-DEQ) was developed to measure FOC among nulliparous and multiparous women. The internal consistency reliability and split half reliability of this questionnaire was tested by Wijma et al., and reported as 0.87 (Wijma et al., 1998). A study conducted by Garthus-Niegel et al., on 1642 women on their third trimester to explore underlying factor structure of W-DEQ. Results indicated six factors that each measured separate area and the final version of questionnaire including 25 questions had sufficient psychometric validity (Garthus-Niegel et al., 2011). The Wijma Delivery Expectancy/Experience Questionnaire has been translated and psychometric tested in some Asian countries (Takegata et al., 2013; Korukcu et al., 2012).

The rate of elective cesarean sections in Iranian nulliparous women is higher than that in other countries. A study in the southwest of Iran in 2010 showed that the rate of cesarean is 50% and that maternal request was the main reason (Maharlouei et al., 2013). To date, there is no validated questionnaire to measure the FOC in Iran. Therefore, the main objective of this study was to assess the validity and reliability of an Iranian version of W-DEQ (version A) among nulliparous women.

2. Methods

This was a cross-sectional study in which 200 nulliparous women were recruited. This study was started in November 2014 and was completed in May 2015. The inclusion criteria were as follows: age 18-35 years, gestational age 24-40 weeks, basic literacy, and a singleton baby. Women with a history of depression, using medication that would cause depression symptoms, chronic diseases that cause depression, occurrence of stressful events in the family, and any contraindication for vaginal delivery were excluded from this study. The design of this study was approved by the Ethics Committee of Ahvaz Jundishapur University of Medical Sciences. Written informed consent was obtained from each participant prior to data collection.

2.1 Measures

The original form of W-DEQ was obtained from the author (Garthus-Niegel) by e-mail. This questionnaire was translated into Persian by a PhD of Reproductive Health and back-translated into English by another academic member who had PhD in Reproductive Health. The concordance of back translated version with the original English version was checked and approved by a psychiatrist.

The W-DEQ contains 33 questions with each question scored from zero (not at all) to 5 (intense fear of childbearing). The total minimum score was zero, and the maximum total score was 165. Scores of more than 85 indicated clinical FOC (Fenaroli et al., 2013). Two questionnaires, namely the Beck Anxiety Inventory (BAI) and the Depression Anxiety Stress Scale (DASS), were used to assess the convergent and divergent validity. The BAI has 21 items with answers ranging from 0 (not at all bothered) to 3 (severely bothered). The minimum score for this questionnaire is 0 and the maximum score is 63. The higher the score, the higher is the level of anxiety (Beck & Steer, 1991). The validity and reliability of BAI have been tested and approved in the Iranian population ($r=0.83$, $p<0.001$ and $\alpha=0.92$) (Kaviani & Mousavi, 2008). The DASS is a 42-item self-administered questionnaire that measures the level of depression, anxiety, and stress. The items range in scale from zero (does not apply to me at all) to 3 (applies to me most of the time). Scores of 18-28 indicate mild depression, 29-35 moderate depression, and 36-63 severe depression (Lovibond & Lovibond, 1995). The validity and reliability of DASS-21 has been evaluated in Iran, and the results showed that this questionnaire has good validity and reliability among the Iranian population (Asghari et al., 2008). The construct validity coefficient was considered as follow: $r\geq 0.81$ -1 excellent, 0.61-0.80 very good, 0.41-0.60 good, 0.21-0.40 fair and 0-0.20 poor (Feise & Menke, 2001).

2.2 Statistics

Data were entered in SPSS version 19. Factor analysis (confirmatory) was used to assess the construct validity of the W-DEQ questionnaire while Pearson correlation coefficient was used to assess the correlation between W-DEQ and BAI and DASS questionnaires. The reliability of W-DEQ was measured using Cronbach's alpha.

3. Results

Mean age of the women in this study was 27.9 ± 4.3 years. Most women had a bachelor degree 75 (37.5%) and they were mostly house-kippers 145 (72.2%). Results of Kaiser-Meyer-Olkin (KMO) and Bartlett Sphericity tests showed that the data were suitable for implementation of factor analysis (KMO=0.849, chi-square=351, $p < 0.001$).

Results of the factor analysis are shown in Table 1. Each question in this test scored between zero and one. However, the closer each variable is to one, the greater the role it has in factor analysis. The highest percentages of variance were related to question number 26 (let happen), number 33 (child will be injured), number 32 (child will die), and number 29 (natural), respectively. The lowest percentages of variance were related to question number 10 (independent). Total item correlation was 0.7. These results showed that none of items needs to be removed from the factor analysis.

Table 1. Item total correlation in nulliparous women

Questions	Mean \pm SD	% of Variance
1. Fantastic	3.380 \pm 0.10	0.71
2. Frightful	2.45 \pm 1.50	0.52
3. Lonely	1.80 \pm 0.53	0.67
4. Strong	3.27 \pm 1.2	0.72
5. Confident	3.49 \pm 1.17	0.76
6. Afraid	2.80 \pm 1.52	0.64
7. Deserted	1.22 \pm 1.51	0.73
8. Weak	1.02 \pm 1.53	0.58
9. Safe	3.6 \pm 1.2	0.72
10. Independent	3.44 \pm 1.05	0.46
11. Desolate	1.76 \pm 1.53	0.75
12. Tense	2.10 \pm 1.48	0.66
13. Glad	3.50 \pm 1.24	0.71
14. Proud	3.74 \pm 1.07	0.76
15. Abandoned	0.98 \pm 1.36	0.68
16. Composed	2.56 \pm 1.26	0.53
17. Relaxed	3.18 \pm 1.19	0.68
18. Happy	3.99 \pm 1.07	0.71
19. Panic	2.36 \pm 1.47	0.72
20. Hopelessness	1.43 \pm 1.35	0.73
21. Longing for Child	4.32 \pm 1.09	0.62
22. Self-confidence	3.64 \pm 1.07	0.68
23. Trust	4.54 \pm 0.78	0.74
24. Pain	2.22 \pm 1.51	0.65
25. Behave badly	1.22 \pm 1.36	0.75
26. Let happen	3.46 \pm 1.23	0.84
27. Lose control	1.80 \pm 1.43	0.77
28. Funny	4.69 \pm 0.59	0.69
29. Natural	3.52 \pm 1.19	0.81
30. Obvious	3.26 \pm 1.20	0.75

31. Dangerous	1.12±1.37	0.61
32. Child will be die	1.34±1.61	0.81
33. Child will be injured	1.44±1.49	0.83

Role of each factor in the factor analysis is listed in Table 2. In total, nine factors contributed to 70.064% of the total variation of factors. Nine factors were as follow: Factor 1, “Despair,” included items of lonely, deserted, weak, independent, fantastic, tense, and hopelessness. Factor 2, “Confidence” included items of strong, confident, safe, glad, composed, and self-confidence. Factor 3, “Fear,” included items of lonely, afraid, panic, and pain. Factor 4 “Happiness,” included items of proud, happy, longing, trust, and funny. Factor 5, “Loss of control,” included items of behave badly, lose control, and dangerous. Factor 6 “Independence,” included items of fantastic, independent, and relaxed. Factor 7, “Concern about newborn,” included items of child will die and child will be injured. Factor 8, “Obvious,” included items of natural and obvious. Factor 9, “Control,” included just one question “let happen.”

Table 2. The eigenvalues association with each linear factor after extraction and after rotation

Factors	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1(Despair)	9.745	29.531	29.531	4.284	12.983	12.983
2(Confidence)	2.888	8.752	38.283	3.688	11.175	24.158
3(Fear)	2.276	6.896	45.179	3.105	9.410	33.569
4(Happiness)	1.790	5.424	50.603	2.417	7.325	40.893
5(loss of control)	1.505	4.560	55.163	2.361	7.156	48.049
6(Independence)	1.426	4.321	59.484	2.178	6.599	54.648
7(Concerns about child)	1.295	3.925	63.409	1.991	6.033	60.680
8(Obvious)	1.192	3.611	67.020	1.765	5.349	66.029
9(Control)	1.004	3.044	70.064	1.331	4.035	70.064

Table 3 shows the matrix of factors after rotation. The highlighted numbers in each row are the largest in that row and show the position of the question in the related factor.

Table 3. Matrix of factors after rotation

Questions	Factors								
	Factor 1	Factor 2	Factor3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9
1. Fantastic	-0.083	0.088	-0.035	0.105	0.104	0.707	0.072	0.199	-0.058
2. Frightful	0.012	-0.242	0.565	0.015	0.220	-0.221	0.130	0.139	-0.543
3. Lonely	0.755	-0.173	0.112	-0.052	0.121	-0.148	0.018	-0.136	-0.069
4. Strong	-0.220	0.793	-0.062	0.128	0.062	0.001	-0.135	0.074	0.050
5. Confident	-0.079	0.826	-0.205	0.113	0.056	0.050	0.052	0.081	-0.103
6. Afraid	0.154	-0.148	0.745	0.038	-0.004	-0.092	0.143	-0.028	-0.127
7. Deserted	0.790	-0.222	-0.033	-0.046	0.158	-0.042	0.138	-0.046	-0.092
8. Weak	0.610	-0.090	0.404	-0.093	-0.051	0.024	0.029	-0.135	0.123
9. Safe	-0.286	0.680	-0.068	0.073	-0.239	0.290	-0.013	0.136	0.089
10. Independent	-0.320	0.313	-0.142	0.090	-0.033	0.381	-0.088	0.264	0.129
11. Desolate	0.758	-0.158	0.121	-0.096	-0.204	-0.172	0.217	0.027	0.089
12. Tense	0.700	0.040	0.367	-0.055	0.021	-0.123	0.066	-0.096	-0.100
13. Glad	-0.256	0.525	-0.042	0.253	-0.148	0.504	-0.156	-0.030	0.090
14. Proud	0.066	0.341	0.027	0.540	-0.150	0.425	-0.370	-0.108	-0.028

15. Abandoned	0.584	-0.327	-0.039	-0.061	0.445	-0.105	0.043	0.124	0.033
16. Composed	-0.069	0.489	-0.234	-0.128	0.009	0.402	-0.200	0.053	0.100
17. Relaxed	-0.260	0.349	-0.336	-0.025	-0.046	0.527	-0.143	0.133	0.249
18. Happy	-0.254	0.222	0.024	0.598	0.068	0.466	-0.137	-0.049	-0.039
19. Panic	0.178	0.097	0.780	-0.002	-0.222	-0.110	0.064	-0.039	0.082
20. Hopelessness	0.521	-0.152	0.500	-0.132	0.349	-0.116	0.058	-0.163	-0.069
21. Longing for child	-0.163	0.370	0.110	0.580	-0.192	0.098	-0.099	-0.155	0.179
22. Self-confidence	-0.111	0.600	-0.363	0.261	-0.019	0.193	-0.087	0.239	0.083
23. Trust	-0.120	0.265	-0.158	0.689	0.018	-0.192	-0.105	0.074	0.322
24. Pain	0.435	-0.068	0.551	-0.166	0.263	-0.103	0.207	0.021	-0.043
25. Behave badly	0.270	0.107	0.212	-0.024	0.778	0.002	0.034	-0.071	-0.111
26. Let happen	-0.038	0.037	-0.044	0.067	-0.045	0.062	-0.019	-0.364	0.904
27. Lose control	0.115	-0.092	0.242	0.082	0.711	-0.129	0.065	-0.237	-0.322
28. Funny	-0.033	-0.090	-0.039	0.797	-0.038	0.045	0.204	0.345	-0.019
29. Natural	0.065	0.178	-0.123	-0.069	-0.040	0.227	-0.096	0.831	-0.046
30. Obvious	-0.345	0.099	0.116	0.027	-0.047	-0.029	-0.063	0.779	-0.019
31. Dangerous	0.121	-0.037	0.079	-0.144	0.701	0.122	0.056	0.098	0.222
32. Child will be die	0.220	-0.044	0.195	0.044	0.001	-0.034	0.846	-0.053	0.018
33. Child will be injured	0.125	-0.131	0.155	-0.054	0.125	-0.079	0.846	-0.118	-0.060

For the detection of reliability among the nine factors, Cronbach's alpha was used. The value of alpha was 0.64, (Table 4). The lowest subscale to subscale correlation was 0.61 and the highest was 0.65.

In this study, we decided to re-examine individual questions to test the changes in value of alpha. The lowest Cronbach's alpha was 61% with the individual elimination of each of the following questions: 7, 8, 11, 12, 19, 20, 24, or 25. The highest Cronbach's alpha was 65% with the individual elimination of questions 10, 17, 26, or 30. These results show that there is no need to eliminate any of the questions (data are not shown). The minimum α coefficient that is recommended by most methodologists is 0.65- 0.8 and α less than 0.5 is unacceptable (Goforth, 2015). The convergent validity with the BAI questionnaire was $r=0.402$ and the divergent validity of W-DEQ with the DASS questionnaire was $r=0.349$.

Table 4. The results of Cronbach's alpha for different factors of W-DEQ

Factors	Questions	α	95% CI	P value
Factor 1	[Lonely (3), Deserted (7), Weak (8), Independent (10), Fantastic (1), Tense (12), Hopelessness (20)]	0.88	0.85-0.91	<0.001
Factor 2	[Strong (4), Confident(5), Safe(9), Glad(13), Composed(16), Self-confidence(22)]	0.86	0.82-0.88	<0.001
Factor 3	[Lonely (2), Afraid (6), Panic(9), Pain (24)]	0.78	0.73-0.83	<0.001
Factor 4	[Proud(14), Happy(18), Longing(21), Trust(23), Funny(28)]	0.76	0.71-0.81	<0.001
Factor 5	[Behave badly (25), Lose control (27), Dangerous (31)]	0.83	0.65-0.78	<0.001
Factor 6	[Fantastic (1), Independent(10), Relaxed(17)]	0.69	0.61-0.75	<0.001
Factor 7	[Child will die(32), Child will be injured (33)]	0.83	0.76-0.87	<0.001
Factor 8	[Natural (29), Obvious (30)]	0.7	0.6-0.77	<0.001
Factor 9	Let happen (26)	--	--	--
Total	--	0.64	--	<0.001

4. Discussion

This study was designed to evaluate validity and reliability of an Iranian version of W-DEQ questionnaire. The results of factor analysis suggest a nine-factor solution. These nine factors contributed to 70 % of total variation. Fear of childbirth affects many women. Wijma et al. designed a questionnaire to evaluate fear of childbirth. In the first validation study of W-DEQ, authors found high inter item correlation and reliability ($r=0.87$) (Wijma et al., 1998). Later Garthus-Niegel et al. (2011) conducted a study to check the structure of the W-DEQ by exploratory and confirmatory factor analysis on total number of 1642 women. Results yielded a six factors that each measured different domains (Garthus-Niegel et al., 2011). The W-DEQ has been validated in other Asian countries (Korukcu et al., 2012; Takegata et al., 2013).

In our study items of “Let happen”, “Natural”, “Child will be die” and “Child will be injured”, had the highest impact of variance among other questions. Also factor “Despair” including (items such as lonely, deserted, weak, independent, fantastic, tense, and hopelessness), “Confidence” including (strong, confident, safe, glad, composed, and self-confidence) and “Fear” including (lonely, afraid, panic, and pain) had the highest impact on total variance (12.9%, 11.1% and 9.4% respectively).

In Garthus-Niegel et al.’s study, in the factor analysis, six factors were identified, and eight items removed from the scale to get the acceptable fit of model. The factor “Fear” (0.81% of variance) included questions about being afraid, tense, panic, and hopeless, in pain and losing control. Another factor with a high impact (88% of variance) was a concern for the child including fantasies that the child will die or be injured. These results for “Fear” and “Concerns for the child” are similar to our results.

The results of Korukcu et al.’s study on 660 women with gestational ages of 28-40 weeks yielded four factors in nulliparous and parous women namely hope, fear, lack of positive anticipation, and riskiness (Korukcu et al., 2012). These results in terms of fear are similar to our results.

A study by Fenaroli & Saita on 522 nulliparous women in Italy showed that the W-DEQ has a good psychometric validity, however, the analysis revealed a reduction of number of questions (Fenaroli & Saita, 2013). These results are not consistent with the present study, since in our study there was no need to remove any of questions.

The results of the present study showed that internal consistency of the Iranian version of W-DEQ was 0.64. In Korukcu et al.’s study (2012); the reliability using the Cronbach’s alpha was 0.89. Although the reliability of W-DEQ in the present study was lower than that in Korukcu et al., it is still within the acceptable range (Goforth, 2015).

The results of the present study showed that the correlation of the W-DEQ with the BAI questionnaire was $r=0.402$ and that with the DASS questionnaire was $r=0.349$.

4.1 Strength and Limitations of the Study

To the best of our knowledge this is the first study that evaluated the validity and reliability of an Iranian version of the W-DEQ among reproductive-aged women. The rate of cesarean section in Iran is higher than other countries, reaching 50%. Most of primigravida women are requesting a cesarean section due to the fear of a normal vaginal delivery (Azami-Aghdash et al., 2014).

This study was conducted on nulliparous women, though, results can be used by policy makers to recognize these women and conduct appropriate intervention(s) to reduce the women’s fear of childbirth.

The results of this study showed that W-DEQ has good validity and reliability for measuring the fear of childbirth in Iranian women of reproductive age. Using this questionnaire to measure fear of childbirth among nulliparous women is recommended.

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Competing Interests Statement

The authors declare that there is no conflict of interests regarding the publication of this paper.

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