



Validation of the Slade Fear of Childbirth Scale for Pregnancy in a Sample of Iranian Women: A Cross-sectional Study

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Abstract

Objectives: The existence of a valid scale of fear of childbirth (FOC) has an effective role in identifying women at risk, so this study was conducted to determine the validation of the Slade FOC scale for pregnancy in a sample of Iranian women.

Materials and Methods: In this cross-sectional study, initially, the Slade scale was translated based on a forward-backward approach. For sampling among pregnant women in Anbarabad city, 820 pregnant women were selected by multistage cluster sampling method. The research questionnaire included (a) demographic information, (b) Slade FOC scale (new scale), (c) childbirth attitude questionnaire (validated scale), and (d) Wijma scale (validated scale). Face validity, content validity, construct validity (using factor analysis), convergent validity, and concurrent validity (by calculating the present scale correlation with childbirth attitude questionnaire and Wijma scale) were used to determine the validity of the scale. Internal consistency (Cronbach's alpha), split-half, and stability (test-retest) methods were used for scale reliability. SPSS software version 22 and LISREL version 8.8 were used for data analysis.

Results: Target population comments were applied in face validity, the impact score of face validity was in the range of 1.6-4.5. Content validity ratio (CVR) values (81%-100%) and content validity index (CVI) value (83%) were acceptable. The exploratory factor analysis (EFA) showed that the scale had four factors which include uncertainty and injury with 18.39%, the unprofessional behavior of maternity staff with 14.51%, the unpredictable with 14.44%, and negative emotions with 10.54% of the variance. The scale had acceptable convergent validity and the correlation between items and the total score was between 0.41-0.63. The correlation coefficient between the present scale with the childbirth attitude questionnaire and Wijma scale was 0.81 and 0.79, respectively. The reliability result showed an acceptable internal consistency (Cronbach's alpha = 0.84), acceptable split-half (0.71 for the first half of scale and 0.78 for the second half of scale) and acceptable stability ($r = 0.78$).

Conclusions: The results showed that the Slade scale has acceptable validity and reliability. Therefore, this scale can be used in scientific research and screening for FOC.

Keywords: Fear, Gravidity, Pregnancy, Women

Introduction

The experience of pregnancy and childbirth can range from intense emotions such as happiness and satisfaction to anxiety and fear (1). This fear includes a wide range of fears related to the physical well-being of the mother and child, as well as the mother's mental interpretations of her experiences and behaviors at birth (2). The global prevalence of fear of childbirth (FOC) is 16% (3). Also, the prevalence of FOC in different countries varies in the range of 8%-45%; with 8.4% in the United Kingdom (4), 45% in Canada (5), 30.1% in Kenya, and 25.3% in Ethiopia (6).

The severity of FOC in women varies from mild to severe (7-10). Severe FOC is a pathological disorder that has negative consequences on mental health (depression, anxiety, and post-traumatic stress disorder) (1,9), family relationships (increased marital conflict, and adverse emotional and behavioral consequences on

the relationship between mother and child) (2,8,11,12), and pregnancy (avoiding pregnancy, abortion, less pain tolerance, increased use of anesthetics during labor, prolonged labor, cesarean section) (1,9,13,14).

Given the negative effects of FOC, a valid and accurate scale for screening affected women is needed (15,16) because by identifying these individuals and early intervention, perinatal problems and mental illness caused by fear can be prevented (5).

According to research, because of outdated, lack of understanding of some questions and the use of anxiety and attitude indicators in the existing scales; using these scales in measuring the FOC is questionable (1,17-19). To solve this problem, Slade has introduced a scale that, according to the researcher, has overcome the limitations of previous tools (18).

Despite the high prevalence of FOC in Iranian women, there is no reliable tool for screening and research (20).

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Key Messages

- ▶ Fear of childbirth has undesirable consequences on women, so it is very important to identify women at risk.
- ▶ This study provides a valid scale for measuring the fear of childbirth.

Anbarabad city with a population of 200,000 people, due to job opportunities offered in agriculture and conversion industries is a city migrating from other provinces of Iran (21,22). Therefore, the aim of this study was to validate the Slade FOC scale for pregnancy in a sample of Iranian women.

Materials and Methods

This cross-sectional study was performed on 820 pregnant women, referring to Anbarabad health centers in 2021. Because of the prevalence of coronavirus and health instructions, informed consent was obtained by telephone after stating the objectives of the study, the conditions of confidentiality, withdrawal from research, and voluntary participation in the study (23,24).

To prepare the study scale, the method of Arabi et al was used in 4 steps; the first and second step is to translate the scale with a forward-backward approach. First, the English scale was translated into Persian separately by two midwives and fluent in English. Then, an agreement is reached between two translators on a final version of the items. In the end, the same people (midwives) translated the final version into English. In the third and fourth stages, the validity and reliability of the scale were evaluated (25).

Face Validity

This section was performed in 2 quantitative and qualitative parts on 10 literate pregnant women who were referred to health centers to receive prenatal care. The sampling method was convenient. The qualitative part was conducted by face-to-face interviews with women to assess the simplicity, relevance and comprehensibility of the items (26). In the quantitative part, after determining the importance of each item based on a 5-point Likert scale by the participants, the impact score for each item was calculated (27). The method of calculating the impact factor is: Frequency (percentage) × Importance, items with values < 1.5 are deleted (28).

Content Validity

In content validity, the content validity index (CVI) and the content validity ratio (CVR) were evaluated by 10 experts who had experience working with women with FOC or experience writing an article or dissertation in this field (3 Ph.D. in Psychology, 5 Ph.D. In Counseling and 2 Ph.D. in Reproductive Health and Obstetricians). To calculate the CVR, 10 experts were asked to score the necessity of each item of the questionnaire in a 3-point Likert scale

(necessary to unnecessary). The CVR calculation formula for each item is as follows: ((Number of responses to the required option - 5)/5). The minimum CVR value for evaluation by 10 experts is 0.62 (29).

To calculate CVI: First, a list of scale items was provided to 10 experts and they were asked to score the “relevance”, “clarity” and “simplicity” of each item on a Likert scale. The Likert scale about the criterion of “relevance” includes: 1) irrelevant, 2) the need for fundamental change, 3) the need for a minor change, and 4) completely relevant), about the criterion of “clarity” includes: 1) unclear 2) the need for fundamental change, 3) the need for minor change and 4) completely clear) and about the criterion of “simplicity” includes 1) not simple 2) the need for fundamental change, 3) the need for minor change and 4) completely simple) (30-32). Then, for each item, the percentage of experts’ answers to options 3 and 4 was calculated based on the 3 criteria of “relevance”, “clarity” and “simplicity”. If the amount obtained is above 0.79, the item is accepted (33).

Construct Validity

Exploratory Factor Analysis (EFA)

EFA by principal component analysis (PCA) with varimax rotation was used to evaluate the construct validity and determine the factor structure of the study scale (34). Kaiser-Meyer-Olkin (KMO) and Bartlett’s test were used to evaluate the adequacy of sample size. The values obtained from KMO (0.78) and Bartlett’s test (0.001) indicate that the sample size is sufficient (35). The sample size in EFA varies from 5-20 people per item (36). At this stage, 400 pregnant women were selected as a sample (20 people per item). Because of the possibility of falling samples, 450 people were considered as a final sample.

Confirmatory Factor Analysis (CFA)

CFA was used to investigate the factor structure obtained from the 4-factor model. The standardized RMR (SRMR) < 0.1, root mean square error of approximation (RMSEA) < 0.1, comparative fit index (CFI) > 0.9, goodness-of-fit index (GFI) > 0.9, adjusted GFI (AGFI) > 0.85, chi-square/degrees of freedom (CMIN/DF) < 5 were used to test the overall fitness of the model (37). The sample size in CFA is 200 people (38). At this stage, 220 pregnant women were selected as a sample. Because of the possibility of falling samples, 220 people were considered as a final sample.

Convergent Validity

To calculate the convergent validity, the correlation between each item and the total scale score was examined (39). A correlation greater than 0.4 indicates convergent validity for the relevant item (40).

Concurrent Validity

At this stage, correlation between the total score of the Slade scale (2021) and the total score of the Childbirth Attitude Questionnaire (CAQ) (1988) and the Wijma

Delivery Expectation Questionnaire (WDE-Q) (1998) were calculated. The statistical sample included 100 pregnant women based on Sanjari criteria (41).

Sampling for Construct, Convergent and Concurrent Validity

Sampling was done by cluster sampling. In this method, first between health centers of Anbarabad city, two urban centers, and two rural centers were randomly selected. Then, by referring to these centers, the contact information of women who had been referred for prenatal care during 2021 was obtained and listed in an excel file (4320 pregnant women). Inclusion criteria included pregnancy, referral to health centers, willingness to participate in research, and literacy.

Data Collection

After obtaining informed consent by phone, the link of the research questionnaire was sent to the participants via SMS, email, WhatsApp, Instagram. A paper questionnaire was sent to participants who did not have access to the Internet.

Study Scales

Slade FOC Scale: This scale was created by Slade, which is a scale with 20 questions based on 4-point Likert. Each question is scored between 0-3, so the final score range of the scale is between 0-60. Its content validity has been reported as acceptable by Slade. This scale has been translated and adapted according to the method suggested by Arabi et al.

CAQ: This scale was developed by Areskog et al and Harman to measure the FOC in 16 items in the Likert scale with 4 options (none = 1, very low = 2, medium = 3, high = 4) (42-44). Gourounti et al confirmed the validity of the scale (45). In Iran, Sanjari et al and Khorsandi et al confirmed the validity and reliability of this scale by content validation method and Cronbach α (41,46).

WDE-Q: This scale was created by Wijma et al with 33 items on a 5-point Likert scale from 0-5. Final score range of the scale is between 0-165, and the cut-off point is 100. Questionnaire reliability by Wijma et al was determined by split-half and α methods, which were 89% and 93%, respectively (47). In other studies, the convergent validity of the scale has been evaluated as appropriate (48). Cronbach's alpha value was also reported as 0.84 (20).

Reliability

Internal consistency (α coefficients), stability (test-retest) methods were used to evaluate the reliability. To assess internal consistency, the Slade scale was given to 20 pregnant women (49) referred to Anbarabad health centers who were selected by convenience sampling method. Then the total α and each factor were calculated. We also calculated the reliability coefficient of the scale using the split-half method.

For test-retest, the scale was given to 20 women from the target population (50). After 2 weeks, the scale was completed again by the same people. The correlation coefficient between the 2 tests was calculated. Sampling was performed by the convenience method among literate pregnant women referring to Anbarabad health centers.

Data Analysis

First, the frequency and frequency percentage of demographic information of each stage was calculated. In face validity, an item impact score above 1.5 is acceptable (51). In content validity, the minimum CVR value was considered to be 0.62 based on the score of 10 experts in the Lawshe table (29), and the minimum CVI value was considered 0.79 (33). In construct validity, KMO >0.6 indicates the adequacy of the sample size (52). In EFA, factors with eigenvalues greater than 1.5 were considered as the major factors (53). The minimum value of α was considered 0.7 (54). SPSS software version 22 and LISREL version 8.8 were used for data analysis. The significance level in the tests is $0.05 <$ (55).

Results

Among 10 experts, 3 (30%) had a doctorate in general psychology, 5 had a doctorate (50%) in counseling, 1 (10%) had a doctorate in reproductive health and 1 (10%) had a specialty in obstetrics and gynecology. In terms of gender, 7 (70%) were female and 3 (30%) were male. Other demographic information related to other stages is summarized in (Table 1).

Face Validity

In the qualitative step, some items of the scale were edited based on women's opinions. In the quantitative step, the impact score of all items obtained was above 1.5, so no items were deleted. Impact item scores are shown in (Table 2).

Content Validity

CVR for the 20 items of the scale ranged from 81-100%. The CVI value was calculated to be 0.83% after 10 expert evaluations. Therefore, based on the results of this step, no items were removed (Table 2).

Construct Validity

EFA: Based on the extraction coefficients of (Table 3), none of the scale items were omitted because the extraction coefficients of the items are higher than 0.3 (56). The scale comprises four saturation factors that explain 57.87% of the total variance, which explains the first factor with 18.39%, the second factor with 14.51%, the third factor with 14.44, and the four-factor with 10.54% of the variance, respectively (Table 4).

The items related to each factor are listed in (Table 5); these factors are named based on questions related to each dimension, review of vocabulary and terminology,

Table 1. Demographic Characteristics

	Age (Y)		Education Status			Occupation			Parity Status			Trimester Of Pregnancy			Total	Missing
	< 25	25	Illiterate& Primary	Under Diploma & Diploma	University	Employed	Housewife	Nulliparous	Multiparous	First	Second	Third				
Face validity	4 (40%)	6 (60%)	1 (10%)	4 (40%)	5 (50%)	3 (30%)	7 (70%)	6 (60%)	4 (40%)	5 (50%)	2 (20%)	3 (30%)	10	0		
EFA*	175 (41%)	252 (59%)	11 (2.57%)	200 (46.8%)	216 (50.58%)	141 (33.02%)	286 (66.98%)	277 (64.87%)	150 (35.1%)	243 (56.91%)	73 (17.1%)	111 (26%)	450	23		
CFA	90 (43.27%)	118 (56.73%)	8 (3.85%)	97 (46.63%)	103 (49.52%)	80 (38.46%)	128 (61.54%)	130 (62.5%)	78 (37.5%)	97 (46.63%)	48 (23.08%)	63 (30.29%)	220	12		
Convergent validity*	175 (41%)	252 (59%)	11 (2.57%)	200 (46.8%)	216 (50.58%)	142 (33.02%)	287 (66.98%)	277 (64.87%)	150 (35.1%)	243 (56.91%)	73 (17.1%)	111 (26%)	450	23		
Concurrent validity	36 (36%)	58 (58%)	3 (3%)	50 (50%)	41 (41%)	38 (38%)	56 (56%)	57 (57%)	37 (37%)	45 (45%)	23 (23%)	26 (26%)	100	6		
Reliability (internal consistency)	7 (36.84%)	12 (63.16%)	2 (10.53%)	8 (42.11%)	9 (47.37%)	6 (31.58%)	13 (68.42%)	11 (57.89%)	8 (42.11%)	10 (52.63%)	3 (15.79%)	6 (31.58%)	20	1		
Reliability (stability)	7 (41.18%)	10 (58.82%)	1 (5.88%)	8 (47.06%)	8 (47.06%)	7 (41.18%)	10 (58.82%)	11 (64.71%)	6 (35.29%)	8 (47.06%)	5 (29.41%)	4 (23.53%)	20	3		

* Exploratory factor analysis.

** The sample of CFA is the same as the sample of convergent validity.

Table 2. Extract Values of Scale Validity

Item	Face Validity (n = 10)	CVI (n = 10)	CVR (n = 10)	Convergent Validity (n = 450)
1. Feeling good about birth	3.36	0.80	0.80	0.42
2. Fear of untimely and unplanned delivery	2.66	0.80	1.00	0.57
3. Uncertainty of staff attention	2.66	0.90	0.80	0.44
4. Concerns about postpartum complications	3.36	0.90	1.00	0.51
5. Uncertainty of pain tolerance	1.65	0.80	0.80	0.60
6. Concerns about baby injuries during childbirth	4.50	1.00	1.00	0.54
7. Fear of not having control of the body during childbirth	2.34	0.90	1.00	0.51
8. Uncertainty about the ability to give birth	2.66	0.80	0.80	0.62
9. Fear of not having the authority to make decisions	1.60	0.83	0.80	0.50
10. Uncertainty about emotional adjustment to childbirth	1.85	0.80	0.80	0.41
11. Unpredictability of labour	2.46	0.80	1.00	0.57
12. Concerns about actions taken during hospitalization	2.16	0.80	1.00	0.58
13. Concerns about maternal injuries during childbirth	4.50	1.00	1.00	0.63
14. Ensuring access to staff	3.01	0.80	0.80	0.49
15. Concerns about baby hypoxia	1.80	0.80	0.80	0.52
16. Fear of unpleasant procedures	1.98	0.80	1.00	0.52
17. Uncertainty of receiving adequate pain relief	1.90	0.83	1.00	0.59
18. Fear of loneliness during labor	3.96	0.90	1.00	0.57
19. Worrying about giving birth for no reason	2.59	0.87	0.80	0.60
20. Uncertainty about the good functioning of the body during labour	1.70	0.80	0.80	0.56

existing theories, and results of previous studies:

- Factor 1: Items, 5-6-7-8-13-17-20 (Uncertainty and injury)
- Factor 2, Items, 3-9-12-14 (Unprofessional behavior of maternity staff)
- Factor 3, items, 2-4-11-15-16 (Unpredictable)
- Factor 4, Items, 1-10-18-19 (Negative Emotions)

CFA: According to the values obtained (SRMR = 0.09, RMSEA = 0.09, CFI = 0.91, GFI = 0.9, AGFI = 0.86, and

CMIN/DF = 4.76), it can be said that Figure 1 has a good fit and confirms the four-factor structure.

Convergent Validity

The results showed that the range of scores obtained from the correlation between questions with the total scale score was 0.41-0.63 (Table 2). Thus the scale has convergent validity.

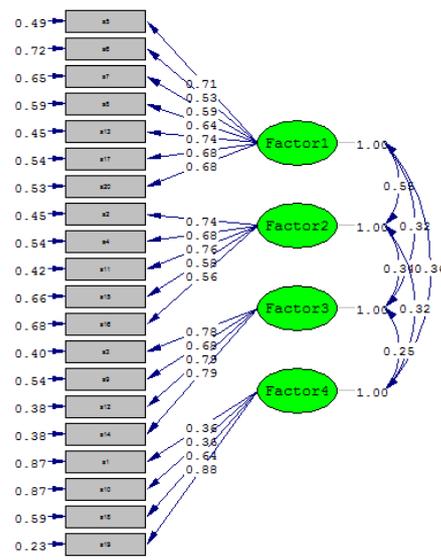
Concurrent Validity

The results showed that the correlation between Slade scale and Wijma was 0.79 which was significant at 0.01 level, also the correlation between Slade scale and CAQ was 0.81 which was significant at 0.01 level.

Table 3. Communalities of Initial and Extraction Value*

Item	Initial	Extraction
i1	1	0.6
i2	1	0.63
i3	1	0.72
i4	1	0.61
i5	1	0.58
i6	1	0.38
i7	1	0.45
i8	1	0.55
i9	1	0.63
i10	1	0.66
i11	1	0.63
i12	1	0.68
i13	1	0.6
i14	1	0.68
i15	1	0.47
i16	1	0.46
i17	1	0.53
i18	1	0.53
i19	1	0.65
i20	1	0.55

*This table is related to exploratory factor analysis calculations in construct validity (extraction values greater than 0.3 are acceptable).



Chi-Square=781.16, df=164, P-value=0.00000, RMSEA=0.094

Figure 1. CFA Results.

Table 4. Total Variance Explained*

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% Of Variance	Cumulative %	Total	% Of Variance	Cumulative %	Total	% Of Variance	Cumulative %
1	5.55	27.77	27.77	5.55	27.77	27.77	3.68	18.39	18.39
2	2.33	11.67	39.45	2.33	11.67	39.45	2.9	14.51	32.89
3	1.99	9.96	49.4	1.99	9.96	49.4	2.89	14.44	47.33
4	1.69	8.47	57.87	1.69	8.47	57.87	2.11	10.54	57.87

*This table is related to EFA calculations (It consists of four dimensions, which in total, these dimensions explain 57.87% of the variance of FOC).

Reliability

Internal Consistency Reliability

The got a coefficient was 84% for the whole scale and 84% for the first subscale, 84% for the second subscale, 80% for the third subscale, and 70% for the fourth subscale (Table 6). Split-half reliability results indicate acceptable validity because α value for each half is greater than 0.7 (57). Therefore, the scale has good internal compatibility (Table 6).

Table 5. Rotated Component Matrix*

Item	Component			
	1	2	3	4
i1	-0.08	-0.21	-0.05	0.74
i2	0.16	0.1	0.77	0.05
i3	0.08	0.84	0.02	-0.08
i4	0.14	0.08	0.76	-0.07
i5	0.74	0.06	0.14	0.12
i6	0.55	0.22	0.15	0.06
i7	0.65	0.01	0.15	0
i8	0.74	0.05	0.05	-0.02
i9	0.07	0.77	0.19	0
i10	-0.12	-0.17	-0.06	0.78
i11	0.25	0.09	0.75	-0.03
i12	0.17	0.79	0.12	0.09
i13	0.72	0.07	0.28	0.04
i14	0.1	0.81	0.12	-0.04
i15	0.16	0.09	0.66	0.07
i16	0.16	0.11	0.63	0.16
i17	0.7	0.15	0.12	0.04
i18	0.21	0.25	0.16	0.63
i19	0.25	0.24	0.2	0.7
i20	0.72	0.06	0.19	-0.04

*This table is related to EFA calculations in construct validity (In this table, the questions related to the four dimensions extracted in Table 4 are specified).

Table 6. Extract Values of Scale Reliability

Domains/Scales	Number of Items	Mean (SD)	Cronbach's Alpha
Whole scale	20	31.1 (11.56)	0.84
Uncertainty and injury	7	10.32 (5.70)	0.84
Unprofessional behavior of maternity staff	4	6.28 (4.03)	0.84
Unpredictable	5	6.66 (4.17)	0.80
Negative emotions	4	7.85 (3.46)	0.70
Part 1	10	16.18 (5.34)	0.71
Part 2	10	14.93 (6.74)	0.78
Correlation between part 1 & part 2		0.83*	
Coefficient of stability		0.78*	

*Significant at the 0.01 level.

Stability Reliability (Test-Retest)

Based on the results, the estimated value of the correlation between the responses of the 2 times was 0.6, which is significant at the level of 0.01. Therefore, the scale has acceptable stability reliability (Table 6).

Discussion

This study examined the validity of the Slade FOC scale for the first time. Although in the original study (Slade study) this scale was extracted after interviews with women, the face validity assessment was performed both qualitatively and quantitatively in our research. The results showed that the scale has acceptable face validity.

The results also showed that the scale has acceptable content validity. Slade also confirmed the content validity of this scale, but the present study has calculated the amount of CVR and CVI.

The construct validity by factor analysis method has not been investigated for this scale. Our study is the first study to examine the construct validity of this scale. The results of EFA showed that the Slade scale with 20 questions comprised four factors: 1) Uncertainty and injury 2) Unprofessional behavior of maternity staff 3) Unpredictable 4) Negative emotions.

The multifactorial nature of the FOC in this study, like other studies, has been confirmed. In these scales, the factor structure of FOC has been confirmed from the maximum nine-factor structure in the Fairbrother scale to the minimum structure of three factors in the CAQ scale (42,43,47,48,58,59).

Since factor 1 (Uncertainty and injury) of the research scale measures fears related to "injury", "pain", "control" and "ability", so this factor is in line with the factors of "pain",

“harm” and “damage” of the Fairbrother scale, factors of “self-efficacy” and “negative evaluation” Persian version of Wijma scale, factor of “fear of events” Persian version of CAQ scale, factors of “own capacity” and “participation” in the CEQ scale, and factors of “childbirth” and “child and mother well-being” in the Melander scale because these factors have questions similar to the questions of factor 1 of this research (20,41,48,58,59).

Factor 2 (Unprofessional behavior of maternity staff) measures fears related to “attention and care” and “skill”, so this factor is in line with the factor of “fear of the performance of staff” Persian version of CAQ scale, factors of “professional support” and “participation” in the CEQ scale and factor of “health care staff” in the Melander scale because these factors also have questions similar to factor 2 (41,58,59).

Factor 3 (Unpredictable) measures fears related to “unpredictable events and complications”, so this factor is aligned with the factor of “damage” of the Fairbrother scale and factors of “childbirth”, “child and mother well-being”, “family life” and “cesarean section” in the Melander scale because these factors also have questions similar to factor 3 (48,59).

Factor 4 (Negative emotions) measures fears related to “loneliness” and “worry”, so this factor is aligned with factors of “body image concerns”, and “attitudes toward childbirth” in the Brunton (60) scale, the factor of lack of self-efficacy Persian version of Wijma scale, some questions of the factor “fear of pain and stress” Persian version of the CAQ scale and factor of “own capacity” in the CEQ scale because these factors also have questions similar to factor 4 (20,41,58).

The results of the convergent validity evaluation showed that all items had an acceptable correlation with the total score, which indicates that the scale has acceptable convergent validity. Although the convergent validity of the Slade scale has not been evaluated in any study so far, some childbirth fear scales that had similar questions to the Slade scale, such as the pregnancy-related Anxiety Scale (60), CAQ (41), WED-Q (44) and Delivery Fear Scale (61), reported acceptable convergent validity.

The results also showed that there is a significant correlation between the Slade scale and the CAQ (41) and WED-Q (44) which indicates the concurrent validity of this scale. The reason for this correlation is the overlap of some Slade scale items with the items of the two mentioned scales, which have high concurrent validity with other tools of FOC.

The reliability of the scale was confirmed and accepted by using α coefficient, Split-half, and stability methods, which can be inferred that the instrument has relatively acceptable reliability.

This scale differs from other existing FOC scales. The first difference is related to the understanding of the questions by the target community. As Slade showed in a study, the questions on this scale are clearer and more

understandable than other scales of FOC (19).

Another difference between this scale and other scales is the coverage of a wide range of physical and emotional fears. Also, many FOC scales, such as the WED-Q and CAQ, measure women’s perceptions or attitudes toward childbirth, while the Slade scale is a dedicated scale for FOC.

The last difference is related to updating the concept of FOC in the Slade scale. Because fear is a concept that changes over time, for example, the fear of mother and child death has been one of the common fears during childbirth, now with the expansion of facilities across the country, even in rural areas, this fear is less seen.

The advantages of this questionnaire are its multifactorial nature, the low number of items (20 items), and its date of construction compared to other scales because most of the scales available are before 2010. However, the Fairbrother scale in 2021 with 40 items provided.

Limitations of the Study

One limitation of this research is the statistical population of the research which is limited to Anbarabad city and since this city is one of the deprived cities in Iran in terms of facilities, generalization of results to other cities and other women should be done with caution. Also, considering the elimination of women with a history of mental illness, using this scale among these women can lead to incorrect results.

Therefore, the Slade FOC scale can be used in future research to screen high-risk women, and this study could be performed in women with a history of depression and non-pregnant women in other cities.

Conclusions

According to the results the Slade FOC scale has acceptable psychometric properties. Therefore, it is suggested that for further clinical use, similar studies be performed in different populations and larger samples.

Authors’ Contribution

SHSA and KA designed the study and conducted the research. SHSA, KA and MRMS monitored, evaluated, and analyzed the results. SHSA And AAF Reviewed the article. All authors approve the final version and are responsible for data integrity.

Conflict of Interests

Authors have no conflict of interest.

Ethical Issues

This research project has been approved by the ethics committee of Kerman University of Medical Sciences, Kerman, Iran (Code: IR.KMU.REC.1400.564).

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References

1. Wigert H, Nilsson Ch, Dencker A, et al. Women's experiences of fear of childbirth: A metasynthesis of qualitative studies. *Int J Qual Stud Health Well-being*. 2020;15(1):1704484. doi:10.1080/17482631.2019.1704484
2. Challacombe FL, Nath S, Trevillion K, et al. Fear of childbirth during pregnancy: Associations with observed mother-infant interactions and perceived bonding. *Arch Womens Ment Health*. 2021;24(3):483-492. doi:10.1007/s00737-020-01098-w
3. Sanjari Sh, Chaman R, Salehin Sh, et al. Update on the global prevalence of severe fear of childbirth in low-risk pregnant women: A systematic review and meta-analysis. *Int J Womens Health Reprod Sci*. 2022;10(1):3-10. doi:10.15296/ijwhr.2022.02
4. Striebich S, Ayerle GM. Severe fear of childbirth of pregnant women in Germany: Experiences and collective frames of orientation regarding antenatal care and birth preparation – a reconstructive study. *GMS Z Hebammenwiss*. 2020;7:1-24. doi:10.3205/zhwi000015
5. Johnson AR, Kumar MG, Jacob R, et al. Fear of childbirth among pregnant women availing antenatal services in a Maternity Hospital in Rural Karnataka. *Indian J Psychol Med*. 2019;41(4):318-322. doi:10.4103/IJPSYM.IJPSYM_292_18
6. Onchonga D, Moghaddam Hosseini V, Keraka M, et al. Prevalence of fear of childbirth in a sample of gravida women in Kenya. *Sex Reprod Healthc*. 2020;24:100510. doi:10.1016/j.srhc.2020.100510
7. Gelaw T, Ketema TG, Beyene K, et al. Fear of childbirth among pregnant women attending antenatal care in Arba Minch town, southern Ethiopia: A cross-sectional study. *BMC Pregnancy Childbirth*. 2020;20(1):672. doi:10.1186/s12884-020-03367-z
8. Golmakani N, Gholami M, Shaghghi F, et al. Relationship between fear of childbirth and the sense of cohesion with the attachment of pregnant mothers to the fetus. *J Educ Health Promot*. 2020;9(1):261. doi:10.4103/jehp.jehp_46_20
9. Nguyen LD, Nguyen LH, Ninh LT, et al. Fear of childbirth and preferences for prevention services among urban pregnant women in a developing country: A multicenter, cross-sectional study. *Int J Environ Res Public Health*. 2021;18(10):5382.
10. Onchonga D. Prenatal fear of childbirth among pregnant women and their spouses in Kenya. *Sex Reprod Healthc*. 2021;27(5):100593. doi:10.1016/j.srhc.2020.100593
11. O'Connell MA, Khashan AS, Leahy-Warren P. Women's experiences of interventions for fear of childbirth in the perinatal period: A meta-synthesis of qualitative research evidence. *Women Birth*. 2021;34(3):e309-e321. doi:10.1016/j.wombi.2020.05.008
12. Ilska M, Brandt-Salmeri A, Kolodziej-Zaleska A, et al. Factors associated with fear of childbirth among Polish pregnant women. *Sci Rep*. 2021;11(1):4397. doi:10.1038/s41598-021-83915-5
13. Ryding EL, Lukasse M, Kristjansdottir H, et al. Pregnant women's preference for cesarean section and subsequent mode of birth—a six-country cohort study. *J Psychosom Obstet Gynaecol*. 2016;37(3):75-83. doi:10.1080/0167482x.2016.1181055
14. Goutaudier N, Bertoli Ch, Séjourné N, et al. Childbirth as a forthcoming traumatic event: Pretraumatic stress disorder during pregnancy and its psychological correlates. *J Reprod Infant Psychol*. 2019;37(1):44-55. doi:10.1080/02646838.2018.1504284
15. Kabukcu C, Sert C, Gunes C, et al. Predictors of prenatal distress and fear of childbirth among nulliparous and parous women. *Niger J Clin Pract*. 2019;22(12):1635-1643. doi:10.4103/njcp.njcp_613_18
16. Webb R, Bond R, Romero-Gonzalez B, et al. Interventions to treat fear of childbirth in pregnancy: A systematic review and meta-analysis. *Psychological Medicine*. 2021;51:1964-1977. doi:10.1017/S0033291721002324
17. Nath S, Busuulwa P, Ryan EG, et al. The characteristics and prevalence of phobias in pregnancy. *Midwifery*. 2020; 82:102590. doi:10.1016/j.midw.2019.102590
18. Slade P, Balling K, Houghton G, et al. A new scale for fear of childbirth: the fear of childbirth questionnaire (FCQ). *J Reprod Infant Psychol*. 2021;24:1-11. doi:10.1080/02646838.2021.1928615
19. Slade P, Balling K, Sheen K, et al. Identifying fear of childbirth in a UK population: Qualitative examination of the clarity and acceptability of existing measurement tools in a small UK sample. *BMC Pregnancy Childbirth*. 2020;20(1):553. doi:10.1186/s12884-020-03249-4
20. Andaroon N, Kordi M, Ghasemi M, et al. The validity and reliability of the Wijma delivery expectancy/experience questionnaire (Version A) in primiparous women in Mashhad, Iran. *Iran J Med Sci*. 2020;45(2):110-117. doi:10.30476/ijms.2019.45326
21. Dadvar R, Bashar F. Pathology of superstitions in religion, family and marriage in Anbarabad city. In: Islamic Azad University KB, editor. *Regional Conference on Development Challenges and Strategies in Deprived Areas*; 2016-09-27; Kahnooj: Knowledge Reference; 2013.
22. Hajinejad A, Yaghfori H, Sanjari A. Study the ecological effects of segregation on social sustainability (case study: Anbarabad city). *J Discip Geogr*. 2016;3:35-60.
23. Rothwell E, Brassil D, Barton-Baxter M, et al. Informed consent: Old and new challenges in the context of the COVID-19 pandemic. *J Clin Transl Sci*. 2021;5(1):e105. doi:10.1017/cts.2021.401
24. Khalil K, Das P, Kammowanee R, et al. Ethical considerations of phone-based interviews from three studies of COVID-19 impact in Bihar, India. *BMJ Glob Health*. 2021;6(Suppl):e005981. doi:10.1136/bmjgh-2021-005981
25. Arabi S, Rezaee M, Robab Sahaf, Rassafiani M, Hosseini H, Mirzakhany N, et al. Validity and reliability of the Persian version of measurement of the quality of life of people with disabilities. *Pajoohe*. 2014;19:91-8.
26. Simbar M, Rahmanian F, Nazarpour S, Ramezankhani A, Eskandari N, Zayeri F. Design and psychometric properties of a questionnaire to assess gender sensitivity of perinatal care services: a sequential exploratory study. *BMC Public Health*. 2020;20:1063. doi:10.1186/s12889-020-08913-0
27. Bahariniya S, Ezatiasar M, Madadzadeh F. A brief review of the types of validity and reliability of scales in medical research. *J Community Health Res*. 2021;10(2):100-102. doi:10.18502/jchr.v10i2.6582
28. Nikrouz L, Alhani F, Ebadi A, et al. The spirituality in caregivers and families with chronic patients: Psychometric of caregiver's spiritual empowering scale. *Crescent J Med Biol Sci*. 2020;7(4):474-487.
29. Abbaspoor Z, Javadifar N, Miryan M, et al. Psychometric properties of the Iranian version of mindful eating questionnaire in women who seeking weight reduction. *J Eat Disord*. 2018;6:33. doi:10.1186/s40337-018-0220-4.
30. Najafi M, Kohan N, Najafi M, et al. Assessment of validity and reliability of attitudes to health professionals questionnaire (AHPQ) in Iran (Persian). *Res Med Educ*. 2015;7(2):21-28. doi:10.18869/acadpub.rme.7.2.21
31. Bokaie M, Simbar M, Yassini Ardekani SM. Validity and reliability of sexual behavior of infertile women questionnaire: Investigating the development and psychometric properties. *Int J Womens Health Reprod Sci*. 2019;7(2):190-195. doi:10.15296/ijwhr.2019.32
32. Monazam M, Laal F, Sarsangi V, et al. Designing and determination of validity and reliability of the questionnaire increasing the duration of using the hearing protection device by workers based on BASNEF model (Persian). *J Ilam Univ Medical Sci*. 2018;25(6):21-28. doi:10.29252/sjimu.25.6.21.
33. Kaveh R, Kamali K, Pool M, Sadeghi G. Development and validation of a checklist for urban health service centers in terms of health, Safety and environmental management. *J Hum Environ Health Promot*. 2021;7:101-7. doi:10.52547/jhehp.7.2.101
34. Sanjari Sh, Kamali A, Amirfakhraei A, et al. Construction and validation of a self-report violence scale in Iranian women. *J Fundam Mental Health*. 2021;23(3):181-189. doi:10.22038/JFMH.2021.18583.
35. Chan L, Idris N. Validity and Reliability of The Instrument Using

- Exploratory Factor Analysis and Cronbach' alpha. *Int J Acad Res Bus Soc Sci.* 2017;7:400-410. doi: 10.6007/IJARBS/v7-i10/3387
36. Shakya R, Shrestha R, Shrestha S, Sapkota P, Gautam R, Rai L, et al. Translation, cultural adaptation and validation of the hill bone compliance to high blood Pressure therapy scale to nepalese language. *Patient Prefer Adherence.* 2022;16:957-70. doi:10.2147/ppa.s349760
 37. Chiao HM, Chen YL, Huang WH. Data on the acceptance of a tourism navigation system applying structuring equation modeling analysis. *Data Brief.* 2018;20(1):1392-1396. doi:10.1016/j.dib.2018.09.002
 38. Chang CC, Su JA, Lin CY. Using the affiliate stigma scale with caregivers of people with dementia: psychometric evaluation. *Alzheimers Res Ther.* 2016;8:45. doi:10.1186/s13195-016-0213-y
 39. Anthoine E, Moret L, Regnault A, et al. Sample size used to validate a scale: A review of publications on newly-developed patient reported outcomes measures. *Health Qual Life Outcomes.* 2014;12:176. doi:10.1186/s12955-014-0176-2
 40. Mohammadbeigi A, Mohammadalehi N, Aligol M. Validity and reliability of the instruments and types of measurments in health applied researches (Persian). *J Rafsanjan Univ Med Sci.* 2015;13(12):1153-1170.
 41. Sanjari S, Rafati F, Amirfakhraei A, et al. Evaluation of factor structure and validation of electronic form of CAQ fear of delivery questionnaire in pregnant women (Persian). *Quarterly J Health Psychol.* 2021;10(2):57-70.
 42. Areskog B, Kjessler B, Uddenberg N. Identification of women with significant fear of childbirth during late pregnancy. *Gynecol Obstet Invest.* 1982;13(2):98-107. doi:10.1159/000299490
 43. Harman P. Fear of Childbirth and Related Incidence of Complications in Labor and Delivery. *The 33rd Annual Meeting of the American College Nurse-Midwives;* 1988; Detroit, MI.
 44. Mortazavi F. Validity and reliability of the Farsi version of Wijma delivery expectancy questionnaire: an exploratory and confirmatory factor analysis. *Electron Physician.* 2017;9:4606-15. doi:10.19082/4606
 45. Gourounti K, Kouklaki E, Lykeridou K. Validation of the childbirth attitudes questionnaire in greek and psychosocial characteristics of pregnant women with fear of childbirth. *Women Birth.* 2015;28(3):44-51. doi:10.1016/j.wombi.2015.02.004
 46. Khorsandi M, Ghofranipour F, Heydarnia A, et al. The effect of childbirth preparation classes on childbirth fear and normal delivery among primiparous women (Persian). *J Arak Univ Med Sci.* 2008;11(3):29-36.
 47. Wijma K, Wijma B, Zar M. Psychometric aspects of the W-DEQ; a new questionnaire for the measurement of fear of childbirth. *J Psychosom Obstet Gynaecol.* 1998;19(2):84-97. doi:10.3109/01674829809048501
 48. Fairbrother N, Collardeau F, Albert A, Stoll K. Screening for perinatal anxiety using the childbirth fear questionnaire: A new measure of fear of childbirth. *Int J Environ Res Public Health.* 2022;19(4):2223. doi:10.3390/ijerph19042223
 49. Attarha M, Keshavarz Z, Bakhtiari M, et al. Psychometric properties of midwife- motherrelationship scale in delivery room (M.M.R.S) (Persian). *Nurs Midwifery J.* 2016;14(2):170-182.
 50. Khalili F, Nejat S, Bayegi V, Yadegarfar G, Yazdani K, Mohammad K. Psychometrics of the Persian version of the World Health Organization Health Status Questionnaire. *J Med Council Iran.* 2017;34(3):201-8. doi:10.32598/sija.2020.3.110
 51. Abdollahipour F, Alizadeh Zarei M, Akbar Fahimi M, et al. Study of face and content validity of the Persian version of behavior rating inventory of executive function, preschool version. *Arch Rehabil.* 2016;17(1):12-19. doi:10.20286/jrehab-170110
 52. Barzgar-Molan Sh, Farshbaf-Khalili A, Asghari Jafarabadi M, et al. Psychometric properties of the Iranian version of a perinatal anxiety screening scale in Iranian perinatal population: A methodological study. *Crescent J Med Biol Sci.* 2020;7(4):551-559.
 53. Rostami F, Owaysee Osquee H, Mahdavi F, et al. Development of a new psychometric assessment tool for predicting Hepatitis B Virus infection in pregnant women. *Int J Women's Health Reprod Sci.* 2020;8(3):297-302. doi:10.15296/ijwhr.2020.48.
 54. Fathnezhad kazemi A, Hajian S, Sharifi N. The psychometric properties of the Persian Version of the pregnancy physical activity questionnaire. *Int J Womens Health Reprod Sci.* 2019;7(1):54-60. doi:10.15296/ijwhr.2019.09
 55. Vakilizad N, Faramarzi S. [Investigating psychometric properties of the multidimensional scale of attitudes towards people with disabilities in students of Isfahan university in 2015 (Persian). *J Rafsanjan Univ Med Sci.* 2017;15(12):1119-1132.
 56. Philip H, Pollock I, Philip H, et al. *The Essentials of Political Analysis.* 5th ed. Florida: CQ Press; 2019.
 57. Taber KS. The use of cronbach's alpha when developing and reporting research instruments in science education. *Res Sci Educ.* 2018;48(6):1273-1296. doi:10.1007/s11165-016-9602-2
 58. Dencker A, Taft Ch, Bergqvist L, et al. Childbirth experience questionnaire (CEQ): Development and evaluation of a multidimensional instrument. *BMC Pregnancy Childbirth.* 2010;10(1):81. doi:10.1186/1471-2393-10-81
 59. Melender HL. Experiences of fears associated with pregnancy and childbirth: A study of 329 pregnant women. *Birth.* 2002;29(1):101-111. doi:10.1046/j.1523-536X.2002.00170.x
 60. Brunton RJ, Dryer R, Saliba A, et al. The initial development of the pregnancy-related anxiety scale. *Women and Birth.* 2019; 32(1): e118-e130. doi:10.1016/j.wombi.2018.05.004.
 61. Shakarami A, Iravani M, Mirghafourvand M, et al. Psychometric properties of the Persian version of delivery fear scale (DFS) in Iran. *BMC Pregnancy Childbirth.* 2021; 21(1): 147. doi:10.1186/s12884-021-03634-7

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