Clinical and Experimental Health Sciences

Fear of Getting Pregnant Scale Development Study

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ABSTRACT

Objective: This study was carried out to develop a measurement tool that determines the factors that may be effective in women's fear of getting pregnant and to test its validity and reliability.

Methods: The sample of the study, which was carried out with a methodological design, consisted of 240 sexually active women who presented to the obstetrics clinic of a hospital in the Anatolian side of Istanbul between February 1 and June 1, 2021. The draft of the Fear of Getting Pregnant Scale was created by the researchers. The item pool for the draft scale consisted of 22 items. After the validity and reliability analyses, the final form of the scale contained 18 items. The scale consisted of three dimensions: "physical reasons" (5 items), "psychological reasons" (6 items), and "social reasons" (7 items). After evaluating the content validity of the scale, its test-retest reliability, internal consistency, and construct validity were examined. Explanatory factor analysis, confirmatory factor analysis, Bartlett's test of sphericity, Cronbach's alpha test, and Shapiro-Wilk test were used in the development of the scale.

Results: In the validity and reliability study of the Fear of Getting Pregnant Scale, the Content Validity Index (CVI) was found to be .83. The total Cronbach's alpha value of the scale was determined as .95, and the Cronbach's alpha values of the dimensions were .91 for "physical reasons", .89 for "psychological reasons", and .90 for "social reasons".

Conclusion: In line with these data, it was determined that the "Fear of Getting Pregnant Scale" is a valid and reliable scale.

Keywords: Pregnancy, fear, scale, development.

1. INTRODUCTION

Pregnancy is defined as a natural but complex period that causes physiological, psychological, and social changes and requires an adaptation process to these changes. In this process, the woman tries to adapt first to pregnancy and then to motherhood. The perception of pregnancy is individual and differs for each woman and her family (1). The perception of pregnancy by women differ based on their personal experiences, expectations about pregnancy, attitudes of towards pregnancy, desire for pregnancy, readiness for motherhood, dreams, education level, pre-existing diseases, risky situations experienced in current and previous pregnancies, current number of children, and social support systems, as well as the pregnancy-related attitudes, socioeconomic status, and positive reactions of their environments and families (2). The body and pregnancy perceptions of women who feel ready for pregnancy, think that pregnancy is a special period for them, and are happy to bring a baby into the world are positively affected (3).

Pregnancy is an event that has given women a significant cultural meaning in terms of social status throughout history, and at the same time, the feeling of being a mother. However, some reasons such as not having planned a pregnancy or becoming pregnant at an advanced age cause their perception of pregnancy to be negatively affected (4). Women may be undecided about having a child due to reasons such as fear of coping with the complications that arise in pregnancy with advanced age, the necessity of taking care of the baby to be born, the thought of being away from work, the thought of losing academic status, and the thought of not being able to meet the needs of the child to be born due to the existing economic conditions (5).

In the literature review, it was seen that there are many measurement instruments developed to measure pre-pregnancy childbirth stress, childbirth anxiety, and fear of childbirth (5-7). On the other hand, there is no measurement instrument developed to measure women's fears of getting pregnant before they get pregnant.

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1.1. Objective

This study aimed to develop a measurement instrument that will determine women's fear of getting pregnant and contribute this instrument to the literature.

The research questions were as follows:

- Is the "Fear of Getting Pregnant Scale" developed to assess women's fear of becoming pregnant a valid scale?
- Is the "Fear of Getting Pregnant Scale" developed to assess women's fear of becoming pregnant a reliable scale?

2. METHODS

2.1. Design and population

This study was planned with a methodological design. The study was carried out between 1 February and 1 June 2021 with women who presented to the gynecology outpatient clinics of a gynecology and pediatrics hospital serving on the Anatolian side of Istanbul for routine follow-ups.

These women presented to the gynecology outpatient clinic to get smear tests, and they did not have active health problems. The sample of the study consisted of women who had an active sex life, were not pregnant and not in menopause, did not have a history of tubal ligation, were not infertile, and did not have a communication barrier that would affect their response to the questions to be asked. The number of participants to be included was calculated based on the recommendation that the sample size of a scale development study should be 10 times the number of scale items. It was aimed to reach at least 220 women for the scale that initially consisted of 22 items, and the study was completed with 240 women who met the inclusion criteria. The sample size was 13.3 times the final number of scale items reached after the analyses.

2.2. Measurements

Personal Information Form: The form created by the researchers included 8 questions about the introductory characteristics of the participants (1-4).

Fear of Getting Pregnant Scale: A five-point Likert-type draft scale consisting of 22 items was created by the researchers based on their review of the relevant literature and previous scale development studies (1-4). An item pool was created based on guidelines and drafts that had not been validated.

2.3. Data collection

To determine the fears of women arising from problems that may arise in case of getting pregnant, an item pool of 22 statements was created based on studies and observations in the relevant literature (1-5). The Lawshe method was preferred for the content validity analysis of the scale (8). For the item pool, expert opinions were obtained from 14 midwife and nurse academicians, 12 of them in the field of gynecology nursing and 2 in the field of psychiatric nursing. While assessing the suitability of each item, the experts were asked to mark one of the options "essential", "useful but not essential", and "not necessary" and write down their opinions and recommendations for the scale items according to the criteria of relevance for the purpose, intelligibility for the respondent, and usage of clear expressions. The number of draft scale items was revised as 21 after the evaluations of the experts and the calculations of the content validity ratio (CVR) values, using which the content validity index (CVI) was found as the average of all CVR values. The resulting 21-item scale was administered to 42 people as a pilot implementation, based on the consideration to include at least two times participants as the number of items. These 42 participants were determined based on inclusion and exclusion criteria from the main sample. While applying the scale, the face-to-face interview technique was used, and the opinions of the participants about the clarity, intelligibility, and difficulty of the items were obtained. At this stage, no items that were difficult to understand and required detailed explanation were identified. After the data were collected, item analyses were applied to all items to determine whether there was a problem in terms of item-total correlation or internal consistency.

In the literature, it is stated that in scale development studies, the sample size should be at least 5 times the number of scale items, ideally 10 times (9,10). Apart from this method, which is determined based on the number of items, Preacher and MacCallum stated that the minimum sample size in scale development studies should be between 100 and 250 (11). A sample of 240 women was reached for the number of 21 items so that the minimum criteria reported in the aforementioned studies were met.

2.4. Data analysis

While the exploratory factor analysis and reliability analyses of the study were performed with the SPSS 26.0 package program, the confirmatory factor analysis was performed with the AMOS 22.0 software. In all statistical analyses conducted within the scope of the study, the level of statistical significance was accepted as 0.05. In the evaluation of expert opinions, the content validity index (CVI) was determined by calculating the content validity ratio (CVR) for each item and taking the average of the calculated CVR values. To determine the construct validity of the scale, exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were performed. The Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity were conducted to understand whether the scale items and the sample were suitable for factor analysis. In the EFA, the limit value was taken as 0.50 for the load values in the factor in which the items were included, and the items with a factor load value below 0.50 were excluded. CFA was performed after the EFA. To determine the reliability of the scale, the Cronbach's alpha reliability coefficient was

calculated. To determine the time-invariance of the scale, the Pearson product-moment correlation coefficient was calculated for the total scale and its dimensions using the test-retest method. For a test-retest analysis, a period of 2 to 6 weeks is recommended to eliminate the effect of responses staying in memory and avoid problems in reaching individuals (12). Additionally, since it is recommended in the literature that the number of individuals to be tested-retested should not be smaller than 30 (13), the scale was re-administered to 129 women who agreed to respond to the items for the second time 4 weeks after the first application. The split-half reliability testing method was used to identify potential problems in the items. This method divides the form into two equal parts, and after the simultaneous application of the two halves to the subjects, the correlation between the scores of the subjects from the halves (correlation coefficient of the half test), reliability estimation (if the conditions are met, again Pearson Product of Moments) with Correlation Coefficient) (14). If the scale has sub-dimensions, each dimension can be applied as a whole in itself. Spearman-Brown formula is applied for the reliability coefficient of the whole scale (15).

The Fear of Getting Pregnant Scale finally consisted of 18 items and three dimensions. There was no inversely scored item in the scale, and the scale had a 5-point Likert-type scoring system where each item was scored as 5 for the option of Strongly agree, 4 for Agree, 3 for Undecided, 2 for Disagree, and 1 for Strongly disagree. The minimum and maximum total scores of the scale were 18 and 90. Higher scores indicated higher levels of fear of getting pregnant.

2.5. Ethical considerations

To carry out the study, approval of the ethics committee of a foundation university was obtained (decision dated: 23.12.2020 and numbered: 130/9), followed by obtaining the permission of the institution where the study would be carried out. Written informed consent was obtained from the women who agreed to participate in the study.

2.6. Limitations

The scale was developed for women who do not have a condition that prevents getting pregnant (menopause and infertility) and have an active sex life/partner. The data were limited by the accuracy of the answers given by the participants to the scale items.

This scale may not be suitable for women who are not sexually active or those who do not have a partner. Since these women do not have a risk of becoming pregnant, the possibility of experiencing the fear of becoming pregnant is almost non-existent. For this reason, the scale was applied to individuals who were sexually active.

3. RESULTS

Results of the Validity Tests of the Scale

The mean age of the participants in the study was 31.52±7.42. It was determined that 74.6% of the participants were married, 78.3% had a university or higher education level, 70.0 % worked in an income-generating job, and 74.6% had income equal to their expenses. While 54.2% of the participants had children, 79.2% spent most of their lives in the city center, and 55.8% used an effective contraceptive method.

For a total of 22 items, the CVR values were calculated according to the evaluations made by 14 experts, and item 7 was excluded from the scale since it had a low CVR value (.42 < Critical CVR = .51). After removing this item, CVI (Content Validity Index) was calculated as the average of the CVR values as .83. As a result, a 21-item construct was obtained because the inequality CVI ≥ Critical CVR was statistically significant (Table 1).

Table 1. *Expert opinions and CVR values for each item*

	Necessary	Useful/ Insufficient	Unnecessary	CVR
Item 1	11	2	1	.57
Item 2	13	1	0	.85
Item 3	11	3	0	.57
Item 4	14	0	0	1.0
Item 5	14	0	0	1.0
Item 6	14	0	0	1.0
Item 7	**10**	**2**	**2**	**.42**
Item 8	12	2	0	.71
Item 9	13	0	1	.85
Item 10	14	0	0	1.0
Item 11	11	2	1	.57
Item 12	13	0	1	.85
Item 13	14	0	0	1.0
Item 14	13	1	0	.85
Item 15	14	0	0	1.0
Item 16	14	0	0	1.0
Item 17	13	0	1	.85
Item 18	14	0	0	1.0
Item 19	12	1	1	.71
Item 20	11	2	1	.57
Item 21	12	2	0	.71
Item 22	13	1	0	.85

CVR: Content Validity Ratio

Table 2. *KMO value of Fear of Getting Pregnant Scale and Bartlett's test of sphericity results*

Kaiser-Meyer-Olkin (KMO)		.92
Bartlett's Test of Sphericity	χ^2	3354.55
	df	153
	p-value	.000*

*χ^2: Chi-squared, df: degrees of freedom, * p< .001*

The KMO statistic of the scale was found to be .92. Thus, it was seen that the sample size was sufficient for applying factor analysis. As a result of the Bartlett's test of sphericity, it was concluded that there were significantly high correlations between the variables, and the data were suitable for applying factor analysis (p<.05) (Table 2).

The "Social reasons" dimension explained 25.85% of the total variance, the "Psychological reasons" dimension explained 22.28% of the total variance, and the "Physical reasons" dimension explained 20.64% of the total variance in scale scores. Together, the three factors of the scale explained 67.78% of the total variance in the measured variable (Table 3).

Table 3. *Variance explanation rates of factors*

Factor	Initial Eigenvalues			Total Factor Loads (Rotated)		
	Total	Explained Variance %	Cumulative %	Total	Explained Variance %	Cumulative %
Social reasons	9.81	54.53	54.53	4.65	25.85	25.85
Psychological reasons	1.55	8.61	63.14	4.01	22.28	48.13
Physical reasons	1.01	5.63	68.78	3.71	20.64	68.78

Table 4 shows which items were included in the dimensions of the Fear of Getting Pregnant Scale dimensions and the factor loading values of each item. As seen in Table 4, no item had a factor load below .40. Items 5, 8, and 9 in the Fear of Getting Pregnant scale were excluded from the analysis because they were overlapped in on different factors. For this reason, the number of items was reduced from 21 to 18 (Table 4).

Results of Reliability Tests of the Scale

As a result of the Cronbach's alpha internal consistency analysis that was carried out, the Cronbach's alpha coefficients of the dimensions of the Fear of Getting Pregnant Scale were found as .91 for "Physical reasons", .89 for "Psychological reasons", and .90 for "Social reasons", whereas the Cronbach's alpha coefficient of the total scale was .95. Hence, it was concluded that the scale was highly reliable (Table 4).

For the split-half reliability testing of the scale, the 18 items in the scale were divided into two halves, odd numbered items in one half and even numbered items in the other. The relationship between the results on the two sets of items was statistically highly significant (r=.93) (Table 5). Accordingly, the split-half reliability test of the scale revealed that it was highly reliable.

To measure the consistency of the scale over time, the scale was reapplied to 129 of all participants 4 weeks later. According to the results, there was a strong and statistically significant agreement between the test and retest results in both the scale total scores and the dimension scores. According to the intraclass correlation coefficients that were calculated, the items in the dimensions of the scale and the total scale were coherent with each other (p<.05). The rate of agreement between the test and retest was 99.5% for the physical reasons dimension, 99.8% for the psychological reasons dimension, 99.6% for the social reasons dimension, and 99.8% for the total Fear of Getting Pregnant Scale, which revealed very high agreement (Table 6).

Table 4. *Factor loads of scale items, scale dimensions, and Cronbach's Alpha*

	Factor 1	Factor 2	Factor 3
Item 18	.83		
Item 20	.81		
Item 17	.76		
Item 19	.73		
Item 21	.67		
Item 22	.57		
Item 10	.52		
Item 14		.74	
Item 15		.73	
Item 13		.73	
Item 12		.64	
Item 11		.60	
Item 16		.59	
Item 1			.87
Item 2			.87
Item 6			.72
Item 3			.65
Item 4			.62
	Item number	**Cronbach's Alpha**	
Fear of Getting Pregnant	18	.95	
Physical reasons	5	.91	
Psychological reasons	6	.89	
Social reasons	7	.90	

Table 5. *Results of Split-Half and Test-Retest Reliability Tests*

		Half 2		
Half 1	r*	.93**		
	p	.000		
	Intraclass Correlation Coefficient (ICC)	**95% Reliability Interval**		**p**
		Lower Limit	**Upper Limit**	
Fear of Getting Pregnant	.99	.99	.99	**.000****
Physical reasons	.99	.99	.99	**.000****
Psychological reasons	.99	.99	.99	**.000****
Social reasons	.99	.99	.99	**.000****

**r: Pearson's Correlation, **p< .001*

4. DISCUSSION

In this study, it was aimed to develop a measurement instrument to determine women's fears of getting pregnant and contribute this instrument to the relevant literature.

In studies on scale development, it is stated that an item pool should be created at least two to four times the number of items to be obtained or aimed to be obtained for a Likert type scale (16). In line with the determined purpose, a 22-item question pool was created and the pool of questions was sent to a group of 14 experts consisting of midwives and nurse academicians, and their opinions were received. Inter-expert agreement was evaluated with the Lawshe technique. According to the Lawshe technique, the number of experts should be at least 5 and at most 40. Experts were asked to rate the items as "necessary", "useful but insufficient" and "unnecessary". The CVR value is accepted as a minimum of .51 at the α=.05 significance level for 14 experts. The items below this value were removed, and the items that received a regulation proposal were rearranged and the item pool consisting of 22 questions was transformed into a candidate scale with 21 questions. The content validity index (CVI) value for the 21-item candidate scale was found to be .83. The minimum accepted value for the content validity index is .80 (17). According to this result, it can be said that the remaining 21 items express the area to be measured well.

Reliability is related to the consistency between the answers given by individuals to each test item, and how accurately a test or scale measures the feature it intends to measure. Validity is explained as the degree to which a scale measures what is intended to be measured, or the measurement instrument's suitability for the feature to be measured, and whether the measurement data really reflect the feature to be measured. First, KMO and Bartlett's tests were conducted to understand whether the scale was suitable for factor analysis. In this context, the KMO test measurement result should be .50 or above, and the result of the Bartlett's test of sphericity should be statistically significant (a result of .90 ≤ KMO ≥ .80 is interpreted as good) (18). In this study, the result of the KMO test was found to be .92, and the result of the Bartlett's test of sphericity was significant ($p<.05$) (Table 2). Hence, the sample and data of this study were adequate and suitable for factor analysis. Considering similar scales in the literature, the KMO statistic of the Fear of Childbirth and the Postpartum Period Scale was found to be .86 (7), the KMO statistic of the Women Childbirth Fear-Prior to Pregnancy Scale was determined as .90 (19), and the KMO statistic of the Childbirth Fear Scale for women of fertile age was found to be .88 (20). It is seen that the KMO value of the Fear of Getting Pregnant Scale was higher than those of similar scales.

Factor analysis is one of the widely used multivariate statistical techniques that transform many interrelated variables into a smaller number of independent factors. As a result of the EFA performed on the Fear of Getting Pregnant Scale, it was concluded that the scale had 18 items and three factors. The "Social reasons" dimension explained 25.85% of the total variance, the "Psychological reasons" dimension explained 22.28% of the total variance, and the "Physical reasons" dimension explained 20.64% of the total variance in scale scores. Together, the three dimensions of the scale explained 67.78% of the total variance in scale scores (Table 3). A criterion for factor analysis is that the rate of the total variance explained by the factors of a construct is desired to exceed 50%, because factors that do not collectively explain at least half of the total variance in the results of a construct may not be representative of the entire construct to be examined (21). These results showed that the scale had a high level of validity, while a three-factor construct was obtained as a result of the factor analysis. Like the Fear of Getting Pregnant Scale, the Childbirth Fear Scale for women of fertile age has three dimensions, namely fear of pregnancy, childbirth, and motherhood roles, not meeting physical social needs, and fear of pregnancy and childbirth problems, and its factors were determined to explain 51.93% of the total variance in scale scores (20). It is seen that the Fear of Childbirth and the Postpartum Period Scale has a structure with 10 factors, and physical, social, and psychological dimensions are also included among these factors (7). These results showed that the dimensions of the scale that was developed in this study are similar to those in existing scales.

In scale development studies, there is a common view that the factor load value of each item should be at least .30. Items with factor loads below this value are recommended to be eliminated. Other load value thresholds have been reported as .32, .40, and.45. Regardless of its sign, a load value of .60 or above is defined as high, and a load value between .30 and .59 is defined as medium (18). Among the items included in the dimensions of the Fear of Getting Pregnant Scale, there was no item with a factor load value below .40 (Table 4). If an item has a sufficiently high load value in multiple factors, the difference between these values is checked. This difference should be at least .10. If the difference is smaller than .10, the item is considered to be an overlapping item, and it is removed (21). Items 5, 8, and 9 in the Fear of Getting Pregnant Scale were excluded from the analysis because they were overlapping items. Therefore, the number of items in the scale was reduced from 21 to 18 (Table 4).

The Cronbach's alpha coefficient is frequently used to calculate the reliability of a Likert-type scale based on total scores. If this coefficient is high, this means that the items in the examined scale are consistent with each other and with the scale as a whole to measure the intended variable (13). As a result of the Cronbach's alpha internal consistency analysis that was performed to test the reliability of the Fear of Getting Pregnant Scale in this study, the Cronbach's alpha coefficients of the dimensions of the scale were found as .91 for "Physical reasons", .89 for "psychological reasons", and .90 for "social reasons", whereas the Cronbach's alpha coefficient of the total scale was .95 (Table 4). These values were higher than the acceptable value of .60, and they showed that the scale had a high level of reliability (8). Regarding similar scales in the literature, it was found that the Cronbach's alpha values of the dimensions of the Fear of

Childbirth and the Postpartum Period Scale ranged between .92 and .66, and the Cronbach's alpha coefficient of the total scale was .95 (7). The Cronbach's alpha value of the Women Childbirth Fear-Prior to Pregnancy Scale was found to be .89 (19). It was determined that the Cronbach's alpha values of the dimensions of the Childbirth Fear Scale for women of fertile age were between .75 and .88, and the Cronbach's alpha coefficient of the total scale was .86 (20). According to these results, the dimensions of the Fear of Getting Pregnant Scale and the entire scale were more reliable than similar scales in the literature.

Moreover, the split-half reliability test of the Fear of Getting Pregnant Scale revealed a positive correlation between the results of the oddly numbered items and the results of the evenly numbered items in the scale (r=.93). Accordingly, the scale was found to be highly reliable (Table 5).

The test-retest reliability analysis method is the application of a measurement instrument to the same group of participants twice under the same conditions and within a certain time interval. The correlation coefficient of the measurement values obtained from the two applications is the reliability coefficient of the scale. The most critical aspect of this type of approach is that the time interval between two measurements should be adjusted well. A time interval that is too short causes an artificially increased reliability criterion to emerge as it makes it easier to recall responses, and an interval that is too long makes it difficult to interpret the reliability criterion as it may make it impossible to provide the same conditions for two measurements in cases where some changes may occur in the measured property For a scale to be considered time-invariant, the correlation between the results of the two implementations (test and retest) must be at least .70 (8,14,16). In this study, 129 of the participants in the sample completed the Fear of Getting Pregnant Scale again 4 weeks later, and the correlation coefficient between the implementations was calculated as .99. This showed that the scale had high test-retest reliability (Table 5).

5. CONCLUSION

Among scales in the relevant literature, it is seen that existing scales measure the fear of childbirth and the attitude of women in the pre-pregnancy period or the early postpartum period. The Fear of Getting Pregnant scale was developed with the thought that there is a need for a measurement instrument that assesses women's physical, social, and psychological fears of becoming pregnant in the period before pregnancy. The reliability coefficients of the Fear of Getting Pregnant Scale showed that it is a scale that measures the fear of getting pregnant in women who are sexually active, have not had tubal ligation, are not infertile, are not pregnant, and are not in menopause. The Fear of Getting Pregnant Scale is the first scale developed on this subject. The widespread usage of the scale by adapting it to different languages and cultures will make a significant contribution to the literature. This scale, which was developed, validated and found reliable in this study, can be easily applied by health professionals, especially nurses and midwives.

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