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Development and Testing of Stress and Stressors Scale of Risky Pregnant Women in the Hospital

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ABSTRACT

The aim of the study is to development and testing a scale to determine hospital-related stress and stressors that can be applied for risky pregnant women in all three trimesters. This is a methodological study. It was conducted from in the perinatology clinics of two training and research hospitals, between September 2019- December 2020 with 200 risky pregnant women. The data were collected with a sociodemographic form and the Stress and Stressors Scale of Risky Pregnant Women in Hospital. The construct validity of the scale was determined via exploratory factor analysis and confirmatory factor analysis. The scale consists of 20 items and five subdimensions. Cronbach's alpha value is 0.87 for total scales. This value study showed that the scale is a valid and reliable. The scale can be used to determine hospital-related stress and stressors for all at-risky pregnant women and to contribute to planning of interventions for women' stress.

Keywords: Hospital, reliability, risky pregnancy, stress, stressor, validity.

Hastanedeki Riskli Gebe Kadınlar İçin Stres ve Stresörler Ölçeğinin Geliştirilmesi ve Test Edilmesi

ÖZET

Çalışmanın amacı, her üç trimesterdeki riskli gebeler için uygulanabilecek hastane ile ilgili stres ve stresörleri belirlemeye yönelik bir ölçek geliştirmektir. Bu metodolojik çalışma, Eylül 2019-Aralık 2020 tarihleri arasında iki eğitim ve araştırma hastanesinin perinatoloji kliniklerinde 200 adet riskli gebe ile yürütülmüştür. Veriler sosyodemografik form ve Hastanedeki Riskli Gebelerin Stres ve Stresörleri Ölçeği ile toplanmıştır. Ölçeğin yapı geçerliliği açıklayıcı faktör analizi ve doğrulayıcı faktör analizi ile belirlenmiştir. Ölçek, 20 madde ve beş alt boyuttan oluşmaktadır. Ölçeğin toplamı için Cronbach's alfa değeri 0.87'dir. Bu çalışma, ölçeğin geçerli ve güvenilir bir ölçek olduğunu göstermiştir. Ölçek, tüm riskli gebe kadınlar için hastane ile ilgili stres ve stresörleri belirlemek ve kadınların stresine yönelik müdahalelerin planlanmasına katkıda bulunmak için kullanılabilir.

Anahtar Kelimeler: Geçerlilik, güvenirlik, hastane, riskli gebelik, stres, stresör.

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INTRODUCTION

Pregnancy is a stressful event in women's lives (World Health Organization, 2019). Stress is a state of intense physical and nervous tension brought on by unfavorable circumstances or unfavorable emotional or physical effects and sensations. Selye referred to the environmental stimulus that causes an individual to experience a chain of reactions as a stressor and the person's response to such stimuli as stress (Avramova, 2020). It is stated that stressors are factors with the potential to directly challenge homeostasis, whereas stress is stated to be a state of homeostasis that is being challenged (Lu et al., 2021). Stress can have a few negative effects on one's physical and mental health (Avramova, 2020). In addition to pregnancy-related stress, some factors have been shown to increase the stress of pregnant women such as lack of social support, poor quality of life, poor environmental conditions, risky pregnancy, and hospitalization (Janighorban et al., 2018).

A high-risk pregnancy is defined as any condition that may adversely affect maternal and/or fetal health (Holness, 2018). The risk may develop in approximately 15% of all pregnancies (World Health Organization, 2017). Women experience anxiety and fear about their own health as well as the health of the fetus and the loss of the fetus when risk develops during pregnancy (Oliveira & Mandu, 2015). On the other hand, the possibility of premature births, intervening births, or unplanned cesarean sections causes stress (Elvander et al., 2013). Many high-risk pregnant women must be hospitalized. Hospitalized pregnant women experience stress (Janighorban et al., 2018). There are many stressors for pregnant women who are hospitalized. Being in a hospital is a big life change for pregnant women. Pregnant women create stress due to being separated from home and family, not being able to take care of the child at home, transferring responsibilities at home to the husband, loss of control, fatigue, and concerns about the health status of the fetus and herself (Janighorban et al., 2018; Oliveira & Mandu, 2015). On the other hand, the possibility of premature births, intervening births, or unplanned cesarean sections causes stress (Elvander et al., 2013). It is also stated that financial problems that increase especially with long hospitalization are a source of stress (World Health Organization, 2012). As the length of hospital stay increases, women experience many feelings of boredom, anger, sadness, and hope (Pohlmann et al., 2016). It also affects not only the woman but also the family of the woman in risky pregnancies (Gourounti et al., 2015).

The health of both the patients and their babies in hospitalized risky pregnant women are adversely affected. Because hospitalization due to any risk during pregnancy in women is a known stressor and affects maternal and infant health (Janighorban et al., 2018; Oliveira & Mandu, 2015; Pohlmann et al., 2016). The American Association of Obstetrician and Gynecologists recommends that women be evaluated at least once for depression and anxiety during pregnancy (American College of Obstetricians and Gynaecologists, 2015). Nurses are responsible for the care of hospitalized risky pregnant women. Nurses should determine the stress levels and stressors of hospitalized risky pregnant women when planning their care.

It is thought that there are problems in assessing the stresses of risky pregnancies (Rodrigues et al., 2016). Nurses and health professionals need valid and reliable scales to assess the stresses and stressors of risky pregnant women. There are some scales used to assess the stresses of hospitalized pregnant women (Çapık & Pasinlioğlu, 2015; Razurel et al., 2014). Some scales assess hospital stressors, while others assess stressors during pregnancy. Some scales include specific symptoms and tests in all three trimesters (Çapık & Pasinlioğlu, 2015; Oskay & Coşkun, 2012; Somerville et al., 2014). A scale that can be used in all trimesters and in all risky pregnancies could not be reached. For example, a scale containing a substance related to amniocentesis cannot be applied to a pregnant woman in the third trimester.

The aim of the study was to develop and test a scale to determine hospital-related stressors that can be applied for risky pregnant women in all trimesters.

MATERIAL AND METHOD

Study Type

The research design for this study is a methodological study.

Population and Sampling

The study was conducted in the perinatology clinics of two training and research hospitals, between September 2019- December 2020. In the literature, methodologists propose different rules for sample size. One of them is the "rule of 100". There should be either five participants per variable or at least 100 individuals should be included (Şencan, 2005). This study was conducted with 200 risky pregnant women. The sample consists of pregnant women who were hospitalized after being diagnosed with a risky pregnancy by a doctor. Sampling inclusion criteria include being voluntary, Turkish speaking, aged 18 years and over, and risk pregnancy diagnosis. Sampling exclusion criteria include the desire to leave the research at any stage.

Steps of Developing the Scale

Item pool: An item pool (49 items) was composed of opinions of researchers and obstetrician experts and reviewing literature. To determine the appropriateness of item contents, 10 obstetrician doctors and nurses reviewed the items. Experts were asked to evaluate the items as follows: 1= not suitable, 2 = somewhat suitable, 3 = suitable, and 4 = very suitable. Experts were asked to give suggestions for responses other than 'very suitable'. After the expert opinions, the decision was made to remove 15 items from the scale and the Item Content Validity Index (I-CVI) and the Scale Content Validity Index (S-CVI) were calculated respectively. It is suggested that I-CVI should be over 0.78 (Polit & Beck, 2006), the ICV-I in our results varied between 0.80 and 1.00. The SCV-I was found to be 0.98. As a result of analysis, the 34 items- Stress and Stressors Scale of Risky Pregnant Women in Hospital (SSRP) was developed with a 4-point Likert type.

34 items-SSRP: For establishing the intelligibility of items for women with risky pregnancy a pilot study was made with 23 voluntary women, Turkish speaking and understanding, aged 18 years and over, and with risky pregnancy diagnosis. The items were read to twenty-three risky pregnant women. Each item was asked whether it is understood after it was read. Additionally, women's suggestions were evaluated, and minor changes were done. After the changes, the final 34-item SSRP was composed.

Data Collection

The Personal Information Form and 34-item SSRP were completed by women who were hospitalized at perinatology clinics. The data collection process took a maximum of 7-8 minutes per woman. Personal information form: This form consists of eight items and includes items about the women's descriptive and obstetric characteristics. 34-item SSRP: This used a 4-point Likert scale.

Data Analysis

The Statistical Package for Social Sciences (SPSS) 21 and Analysis of Moment Structures (AMOS) 21 statistical software packages were used in the analysis of the data. The descriptive figures were calculated using percentages and mean ratings. The Shapiro-Wilk normality test was used to evaluate whether the data have a normal distribution. The CVI was used to determine the compatibility of expert opinions. To determine the relationship between the scores from the scale items and the total scale score, Pearson correlation coefficients were calculated. The Cronbach's alpha coefficient and half-split methods were used to determine the internal consistency of the total scale and sub-scales. Explanatory factor analysis (EFA) was used for determining the relationship between items and the factor. Before conducting the EFA, the adequacy of the data for factor analysis was evaluated by using the Kaiser-Meyer-Olkin (KMO) test and Barlett's test of sphericity. Confirmatory factor analysis (CFA) was used to verify the structure explained by the explanatory factor analysis. Hotelling's T-square test was used to evaluate the presence of a response bias. Additionally, Tukey's test was used for the principle of additivity, and floor and ceiling effect analysis was performed (Şencan, 2005; Şimşek, 2010). A significance level of $p<0.05$ was used.

Ethical Committee Approval

The ethics approval was obtained from the Non-invasive Research Ethics Board in the relevant university (Issue number: 2017/16-33, Approval date: 15/06/2017). Permission was obtained from the

institutions where the data were collected, oral and written consents of the women who agreed to participate in the research were obtained.

RESULTS

Sample Characteristics

The mean age of the women in the sample group was 28.58 ± 5.76 (min: 18, max: 42). Of the women, 82.5% were unemployed, 68.5% had a middle level of income and 75.5% had a nuclear family type. Regarding their education level, the sample was diverse; 59.0% completed primary school, 26.5% completed high school, and 14.5% were postgraduates. Of the women, 29.0% were diagnosed with Gestational Diabetes Mellitus. The average number of births was 1.78 ± 0.95, and the average pregnancy week was 30.29 ± 4.33 (Table 1).

Table 1. Descriptive and Obstetrics Characteristics (n=200)

Characteristics		
Age of the women (mean±SD years) (min-max)	28.58 ±5.76 (18.0-42.0)	
Gestational Age (mean±SD years) (min-max)	30.29±4.33 (21.0-36.0)	
Parity (mean±SD years) (min-max)	1.78±0.95 (1.0-6.0)	
	n	**%**
Education of the women		
Primary school	118	59.0
High school	53	26.5
University	29	14.5
Employment status		
Employed	35	17.5
Unemployed	165	82.5
Family Type		
Nuclear	151	75.5
Extended	49	24.5
Income		
High	51	25.5
Moderate	137	68.5
Low	12	6.0
Diagnosis of Risky Pregnancy		
Threatened Premature Birth	56	28.0
Gestational Diabetes Mellitus	58	29.0
Hyperemesis Gravidarum	13	6.5
Cervical Failure	24	12.0
Preeclampsia	29	14.5
Placenta Previa	20	10.0

Item-Total Score Analysis

Item-Total Score correlations were calculated for the 34-item SSRP. Considering the scale items, the correlation coefficients of the items other than four items were found to be higher (Table 2). After the four items were removed from the scale, the correlation coefficients of the items were found to be between 0.30 and 0.65, according to the analysis of 30-item SSRP ($p<0.05$) (Table 2). According to the confirmatory factor analysis, 10 items were removed from the scale and the item total score analysis was performed again with 20 items. The correlation coefficients of the items were found to be between 0.29 and 0.74, according to the analysis of 20-item SSRP ($p<0.05$) (Table 2).

Table 2. Item-Total Score Analysis

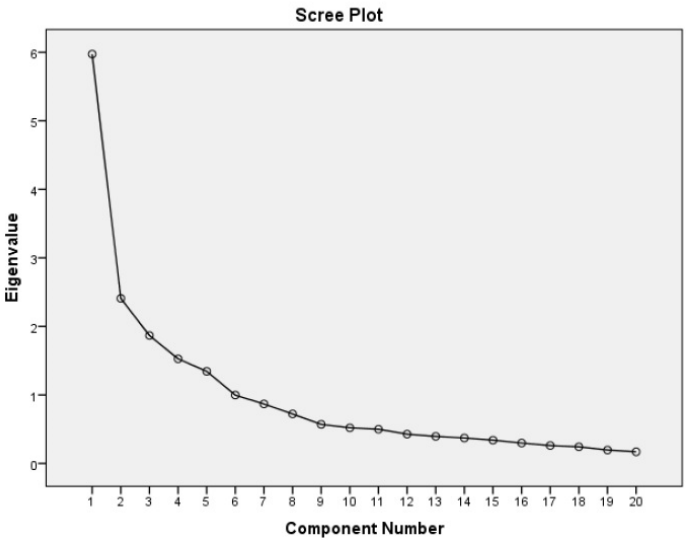
No	34-Items Item-Total Score Correlation (r)	No	30 Items Item-Total Score Correlation (r)	No	20 Items Item-Total Score Correlation (r)
Q1	0.59*	**Q1**	0.59*	**Q3**	0.57*
Q2	0.02	**Q3**	0.52*	**Q4**	0.56*
Q3	0.50*	**Q4**	0.50*	**Q5**	0.57*
Q4	0.48*	**Q5**	0.52*	**Q6**	0.74*
Q5	0.52*	**Q6**	0.69*	**Q7**	0.66*
Q6	0.69*	**Q7**	0.63*	**Q8**	0.63*
Q7	0.63*	**Q8**	0.60*	**Q9**	0.63*
Q8	0.59*	**Q9**	0.60*	**Q11**	0.44*
Q9	0.59*	**Q10**	0.51*	**Q13**	0.29*
Q10	0.51*	**Q11**	0.41*	**Q16**	0.53*
Q11	0.42*	**Q12**	0.39*	**Q18**	0.44*
Q12	0.36*	**Q13**	0.33*	**Q19**	0.57*
Q13	0.33*	**Q15**	0.35*	**Q21**	0.68*
Q14	0.13	**Q16**	0.55*	**Q22**	0.46*
Q15	0.34*	**Q17**	0.39*	**Q23**	0.38*
Q16	0.55*	**Q18**	0.46*	**Q26**	0.42*
Q17	0.40*	**Q19**	0.58*	**Q28**	0.59*
Q18	0.45*	**Q20**	0.42*	**Q29**	0.57*
Q19	0.58*	**Q21**	0.65*	**Q30**	0.49*
Q20	0.43*	**Q22**	0.48*	**Q33**	0.40*
Q21	0.66*	**Q23**	0.41*		
Q22	0.49*	**Q25**	0.37*		
Q23	0.42*	**Q26**	0.44*		
Q24	0.13	**Q27**	0.48*		
Q25	0.35*	**Q28**	0.57*		
Q26	0.45*	**Q29**	0.56*		
Q27	0.46*	**Q30**	0.49*		
Q28	0.55*	**Q32**	0.33*		
Q29	0.53*	**Q33**	0.40*		
Q30	0.46*	**Q34**	0.30*		
Q31	-0.04				
Q32	0.33*				
Q33	0.41*				
Q34	0.29*				
Scale Cronbach's Alpha (α)		**Scale Cronbach's Alpha (α)**		**Scale Cronbach's Alpha (α)**	
0.87		0.88		0.87	

***<0.05**

Validity

In the EFA of the 20-item SSRP, the Kaiser-Meyer-Olkin (KMO) coefficient was determined to be 0.81, and Bartlett's test result (x2: 1836.176, p: 0.000) was seen to be significant. The EFA found that three factors explained 65.60% of the total variance and had eigenvalues higher than 1.00 (Figure 1).

Figure 1. Screen Plot of Exploratory Factor Analysis



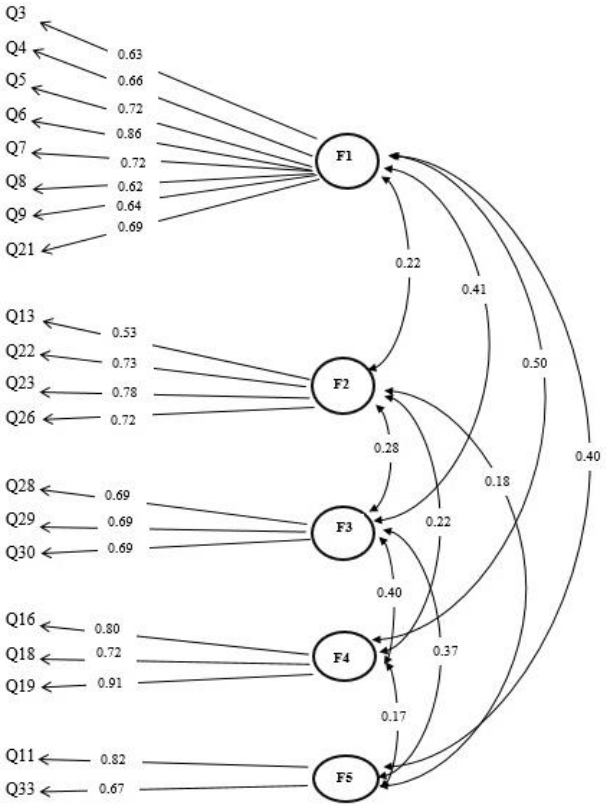
The eigenvalue of the first factor was 5.97, the eigenvalue of the second factor was 2.41, the eigenvalue of the third factor was 1.53, the eigenvalue of the fourth factor was 1.87, and the eigenvalue of the fifth factor was 1.34, and all factor eigenvalues were above 1. The total variances explained were 29.87 for Factor 1, 12.04 for Factor 2, 7.64 for Factor 3, 9.34 for Factor 4, and 6.72 for Factor 5 (Table 3).

Table 3. Explanatory Factor Analysis and Item-Total Score Analysis for the Sub-Scales

Sub-Scales	Explanatory Factor Analysis	Item Total Score Analysis	
Items	Factor value of items	Item-Total Score Correlation (r)	p
Factor 1			
Q3	0.87	0.76	<0.05
Q4	0.73	0.68	<0.05
Q5	0.73	0.72	<0.05
Q6	0.82	0.84	<0.05
Q7	0.64	0.75	<0.05
Q8	0.64	0.72	<0.05
Q9	0.78	0.75	<0.05
Q21	0.56	0.70	<0.05
Eigenvalues	5.97		
Described Variance %	29.87		
Factor 2			
Q13	0.75	0.73	<0.05
Q22	0.82	0.82	<0.05
Q23	0.72	0.73	<0.05
Q26	0.73	0.73	<0.05
Eigenvalues	2.41		
Described Variance %	12.04		
Factor 3			
Q28	0.74	0.87	<0.05
Q29	0.83	0.91	<0.05
Q30	0.84	0.84	<0.05
Eigenvalues	1.53		
Described Variance %	7.64		
Factor 4			
Q16	0.75	0.80	<0.05
Q18	0.87	0.82	<0.05
Q19	0.85	0.86	<0.05
Eigenvalues	1.87		
Described Variance %	9.34		
Factor 5			
Q11	0.87	0.91	<0.05
Q33	0.84	0.85	<0.05
Eigenvalues	1.34		
Described Variance %	6.72		

In the CFA, chi-square degrees of freedom statistics ($\chi 2/df$) = 2.15, root mean square error approximation (RMSEA) = 0.076, goodness fit index (GFI) = 0.90, comparative fit index (CFI) = 0.90, normed fit index (NFI) = 0.85, and non-normed fit index (NNFI) = 0.87 (Figure 2).

Figure 2. Confirmatory Factor Analysis



Reliability

The correlation coefficients between sub-scale item scores and the sub-scale total scores were in the range of 0.68-0.84 for "Factor 1", 0.73-0.82 for "Factor 2", 0.84-0.91 for "Factor 3", 0.80-0.86 for "Factor 4", and 0.85-0.91 for "Factor 5", respectively, and the correlations were found to be statistically significant ($p< 0.05$) (Table 3).

In order to examine the alignment of each sub-scale with the scale, correlations of the sub-scale scores and the total score of the scale were calculated. The correlation coefficients of the sub-scales were between 0.51 and 0.85 and were statistically significant ($p< 0.05$) (Table 4).

Table 4. Sub-Scales-Total Score Correlation and Reliability Analysis

Sub-Scales	**Sub-scales Total Score Correlation**		**Scale Cronbach's Alpha (α)**	First half of Cronbach α	Second half of Cronbach α	Spearman-Brown	Guttman split half	Correlation between two halves	Floor effect %	Ceiling effect %
	r	**p**								
Factor 1. Stressors Related to the Baby	0.85	<0.05	0.88						1.0	7.0
Factor 2. Stressors Related to the Pregnant Itself	0.51	<0.05	0.75						10.0	3.5
Factor 3. Emotions of the Pregnant	0.63	<0.05	0.84						23.0	7.0
Factor 4. Stressors Related to Health Personnel	0.62	<0.05	0.77						12.0	6.5
Factor 5. Stressors Related to Social Support Needs	0.58	<0.05	0.70						3.0	21.5
Total Scale			**0.87**	**0.82**	**0.78**	**0.72**	**0.72**	**0.56**	**0.5**	**0.5**

Internal Consistency Reliability Coefficients: The SSRP's total Cronbach's alpha internal consistency reliability coefficient was determined to be 0.87. Cronbach's alpha internal consistency reliability coefficients of the sub-scales of the scale ranged from 0.70 to 0.88. The correlation value between the two halves of the SSRP was 0.56, and highly significant (p = 0.000). According to the split-half reliability analysis, Cronbach's alpha coefficient of the first part of the scale was 0.82, and Cronbach's alpha coefficient of the second part was 0.78. The Spearmen-Brown coefficient was 0.72, and the Guttman split-half coefficient was 0.72 (Table 4).

Hotelling's T2 Test and Tukey's Test of Additivity: Hotelling T2 analysis was performed to examine if the item score averages of all the items in the scale are equal to each other and the bias of the responses. It was found that the item averages were different and there was no response bias (Hotelling T^2 = 369.224, p = 0.000). In addition, Tukey's Test of Additivity was applied to examine whether the scale has additivity. The scale was found to be additive (p< 0.05).

Ceiling and Floor Effect of the Scale: The floor and ceiling effect of the scale was determined for the entire scale. The floor effect of the scale was 0.5, and the ceiling effect was 0.5. The floor and ceiling effects were as follows: 1.0 and 7.0 for Factor 1, 10.0 and 3.5 for Factor 2, 23.0 and 7.0 for Factor 3, 12.0 and 6.5 for Factor 4, and 3.0 and 21.5 for Factor 5, respectively. (Table 4).

DISCUSSION

Validity

In this study, EFA and CFA were performed for construct validity. According to the item-total score correlation analysis, EFA and CFA were performed with 30 items first. The structure that was determined as a result of the explanatory factor analysis with 30 items was evaluated with the confirmatory factor analysis. As a result of the CFA, it was seen that the construct validity was not appropriate. Since ten items with low factor loading did not support the model, it was suggested to be removed from the model. Therefore, ten items were excluded from the model. The construct validity of 20 items in the scale was examined.

The KMO measure of sampling sufficiency was used to examine the suitability of EFA. The Bartlett Sphericity test was used to evaluate whether the correlation coefficients of the variables were significant (Tavşancıl, 2014). Barlett Sphericity test was accepted as statistically significant since the KMO value was higher than 0.60 (Hayran & Hayran, 2011; Terwee et al., 2007). In our results, the Barlett Sphericity test value was found to be statistically significant ($p<0.05$), and the KMO value was found to be > 0.60. Consequently, it was found that the database and sample size of this study are proper for factor analysis (Hayran & Hayran, 2011; Terwee et al., 2007).

The total variance explained was 65.60%. A high percentage of the variance explained indicates that the factor structure is strong. In the literature, explained variance ratios of 50%-60% are considered reasonably high (Elma, 2019). Consequently, the total explained variance in the present study was considered very good.

The eigenvalue must be greater than one in order for a group of items in a scale to be considered a subscale. In this study, since the eigenvalue of all subscales was greater than one, all subscales were accepted as subscales. The relationships between items are explained through factor loads. (Şencan, 2005). Factor loads ranging from 0.30 to 0.40 are stated as sufficient to establish the factor structure (Tavşancıl, 2014). In our results, the factor loads of the items were determined to range from 0.56 to 0.87. In this study, factor loads found in each sub-dimension were > 0.30, therefore it is considered that the scale had a strong factor structure. The names of the subscales are given in accordance with the meaning of the substances contained in the content (Kalaycı, 2010). As a result of examining the properties of the items in the scale sub-dimensions; Factor 1 was called “Stressors Related to the Baby”, Factor 2 was called “Stressors Related to the Pregnant Itself”, Factor 3 was called “Emotions of the Pregnant”, Factor 4 was called “Stressors Related to Health Personnel”, Factor 5 was called “Stressors Related to Social Support Needs”.

It is suggested that the structure composed by EFA should be examined using CFA (Knekta et al., 2019; Koyuncu & Kılıc, 2019). In CFA, it is suggested that factor loads over 0.30, and RMSEA lower 0.08. All the factor loads were found to be over 0.30 (Figure 1). In this study, it was found that RMSEA was < 0.08. The division of Chi-square values by degrees of freedom was determined to be < 5. Also general fit indices were found; GFI = 0.90, NFI = 0.85, CFI = 0.90, NNFI = 0.87. In our results, the CFA results were in agreement with the literature.

Our results show that the scale's content validity and structure validity have been achieved. The researchers have conducted an extensive literature review for the creation of the item pool. For this reason, it is believed that content validity and construct validity was high. Also, researchers’ experiences, extensive knowledge of the healthcare system and culture of society, and scientific background have affected these results. Furthermore, the experts whose opinions regarding the content of the items are requested have affected the results, because these experts are nursing lecturers.

Reliability

The relationship between the scores obtained from the scale items and the total score was explained with item-total score analysis. Item-total score correlations are expected to be positive and above 0.25 (Kalaycı, 2010). Low-correlated items should be discarded from the scale. But changes in the alpha coefficient, when an item is removed, should be taken into consideration (Şencan, 2005). As a result of the analysis, it was found that four items had low correlation coefficients. These items contain positive

expressions. Therefore, it is thought that women have difficulty understanding and responding to these items. When these four items were deleted, there is no significant change in the alpha coefficient. After four items were excluded from the SSRP, Pearson's correlation coefficients for the items were found to be between 0.30 and 0.69. However, as a result of confirmatory factor analysis, it was found that 10 items in the scale did not fit the model. For this reason, 10 items were removed from the scale. When these 10 items were deleted, there is no significant change in the alpha coefficient. Item total score analysis was performed with 20 items and the item total score of all items was found to be over 0.25. The remaining items have high correlation coefficients because these items were easy to understand and clear. Consequently, it was decided that all items in the scale measure what they should measure.

Cronbach's alpha coefficient determines whether the items are relevant to the subject to be measured. In addition, Cronbach's alpha coefficient demonstrates whether the items measure the same feature. Cronbach's alpha value is expected to be close to 1 on the scale (Ekolu & Quainoo, 2019; Rattray & Jones, 2007). Cronbach's alpha coefficient of the SSRP was determined to be 0.87, which means that the scale is highly reliable. The Cronbach's alpha coefficient for the subscales factor 1, 2, 3, 4, and 5 were 0.88, 0.75, 0.84, 0.77, and 0.70 respectively. According to the analysis results, it was found that Factor 1 and Factor 2 were quite high, and Factor 3, Factor 4, and Factor 5 had high reliability. It is seen that Factor 5 consists of two items. According to the literature, if the number of items collected under a factor is only two, the correlation coefficients of these items are 0.70 and above, which means that the factor is reliable (Tabachnick & Fidell, 2015). As a result of the analysis, it is seen that both the correlation coefficients of Factor 5 are above 0.70 and Cronbach's alpha coefficient is 0.70. The Cronbach's alpha coefficient of all factors showed that the SSRP had very good reliability. It means, items could be used to measure the desired subject at an adequate level, the items were related to the subject. In the two halves method we used, Cronbach's alpha coefficient for both halves is over 0.70. The scale was divided into two equal parts, and the scores of the two halves were calculated (Polit & Beck, 2004). The analyses show that there was a meaningful relationship between the two halves; both the Spearman-Brown and Guttman Split-Half coefficients were higher than 0.70. These results show that the SSRP has a high level of reliability (Ekolu & Quainoo, 2019). Consequently, the internal consistency of the SSRP and the subscales was reached. In SSRP, the subscales were highly correlated with each other and measured the same subject continuously. The items of the SSRP were homogenous and measured the same features.

Response bias is important for the reliability of scales. No response bias should be expected in a scale study. Response bias means that when responding to these questions, people respond by choosing the answers that meet the expectations of the community or scale, not the answers based on their own opinions (Rattray & Jones, 2007). The Hotelling T2 test was used to assess whether the SSRP was biased. Hotelling's T2 test determined that the mean scores of the items were different. This indicated that the SSRP did not have response bias. This result showed that the participants answered the items in line with their own views and the answers given by the participants were different from each other. Since the significance value was $p< 0.05$ according to the Tukey, Tukey's test of additivity result, it was determined that the scale was summable. In other words, a single total scale score could be obtained by adding the scale items (Tekindal, 2018).

Another important factor affecting the reliability of the scales is the ceiling and floor effect. It is suggested that the floor and ceiling effect should not exceed 20% in scale research. In this research, it was found that the floor and ceiling effects were lower than 20% for both the total scale and the subscales. In our study, it is seen that only the floor effect of factor 3 and the ceiling effect of factor 5 are above 20%, although not very high. As a result of the analysis, it is determined that the SSRP is very reliable (Rattray & Jones, 2007).

CONCLUSIONS

This study showed that SSRP is valid and reliable. The high alpha coefficients of the subscales of the scale indicate that the items in the subscales are consistent with each other. EFA and CFA results also confirmed the validity of the scale. The items of SSRP are easy to understand and clear by women with different education. In addition, while creating items, sentences appropriate for the culture of the society were selected and routine practices in the health system were taken into consideration. SSRP differs

from all the instruments in the literature, as it identifies stressors and stress in all trimesters and has been developed for health professionals. As a result, The SSRP can use to determine hospital-related stress factors in all risky pregnancies and contribute to the planning of health professional interventions for women's stress. The minimum score to be taken from the scale is 20 and the maximum score is 80. The higher the score, the higher the stress level. The subscales may be used separately.

ETHICAL COMMITTEE APPROVAL

The ethics approval was obtained from the Non-invasive Research Ethics Board in the relevant university (Issue number: 2017/16-33, Approval date: 15/06/2017). Permission was obtained from the institutions where the data were collected, oral and written consents of the women who agreed to participate in the research were obtained.

AUTHOR'S CONTRIBUTION

Idea/concept: SM, HÖ, EU; Design: SM; Consultancy: HÖ, EU; Data collection: HÖ, EU; Data Processing: HÖ, EU; Analysis and/or Interpretation: SM, HÖ, EU; Literature review: HÖ, EU; Writing of the article: SM, HÖ, EU; Critical review: SM.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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