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Adaptation of Birth Satisfaction Scale-Revised to Turkish Society

Öznur Özdemir Gökmen[1(ID)] , Nülüfer Erbil[2(ID)] , Birsel Canan Demirbağ[3(ID)]

[1]Vocational School of Health Service, Iğdır University, Iğdır, Turkey
[2]Department of Gynecologic and Obstetrics Nursing, Faculty of Health Sciences, Ordu University, Ordu, Turkey
[3]Department of Public Health Nursing, Faculty of Health Sciences, Karadeniz Technical University, Trabzon, Turkey

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Abstract

Objective: The aim of this study was to adapt the Birth Satisfaction Scale-Revised (BSS-R) to Turkish and test its reliability and validity.

Methods: The methodological study was conducted in maternity ward of Iğdır State Hospital between the dates of 15.06.2016-15.09.2016. All of the women in the maternity ward that had given birth formed the population of the study. The study was completed by interviewing 219 volunteer women that are suitable for the criteria before making a sampling choice. Validity and reliability analysis, language and content validity, and explanatory and confirmatory factor analysis were tested by using Cronbach's alpha coefficient.

Results: The language validity of the BSS-R was provided by the translation-retranslation method, later its content validity was provided by making necessary changes in the direction of opinions of specialists. The scale in its final form was applied to women in the sample group after making pre-application. The factor analysis of scale was evaluated by explanatory and confirmatory factor analysis. It was obtained that factor load distribution of scale changes between 0.593-0.899 and keeps the three-dimensional structure it's in original form. Factor load distribution of BSS-R of scale changes between 0.593-0.899 and keeps three-dimensional structure as its original form. Fit index values were found as x2/SD value 2.06, RMSEA 0.070, CFI 0.95, SRMR 0.078, GFI 0.93, AGFI 0.89 and NFI 0.92. The Cronbach's alpha coefficient of the 10-item BSS-R was 0.72, and the Cronbach's alpha coefficients of its sub-dimensions were between 0.70 and 0.78.

Conclusion: It was obtained that BSS-R which was adapted to Turkish is a reliable, valid and suitable measurement instrument means for Turkish culture.

Key words: Birth satisfaction, scale, validity and reliability, nursing.

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Address for correspondence/reprints:
Name and Surname: Öznur Özdemir Gökmen
Telephone number: +90 (476) 223 00 10
E-mail: oznurr.ozdemir@gmail.com

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INTRODUCTION

Measurement of patient satisfaction is a beneficial practice for the evaluation of the quality of health services and is recommended to resolve possibilities for dissatisfaction (1). With the measurement of patient satisfaction, patient perceptions, satisfaction levels and factors affecting satisfaction levels may be defined. Thus, changes and regulations can be made to health services offered as a competitive element to preserve patient satisfaction (2).

The birth process has increased sensitivity requiring aid and empathy, involves changes in psychosocial balances and this process is stated to be a crisis period when the mother and family experience intense stress (4). While women find themselves in an unknown environment during birth and encounter situations like the inability to protect their privacy, they may experience fear, worry, and anxiety due to do not sufficiently knowing, understanding, or controlling what they experience or what happens, while simultaneously attempting to deal with the birth process (5).

Satisfaction related to birth is an important marker to evaluate birth experiences. Determination of birth satisfaction is important in terms of showing the well-being status of the newborn and mother, as much as a marker of maternal care quality (3,6,7). Two studies in Sweden found negative birth experiences at rates of 7% (8) and 9.6% (9). Another study found that three years after birth, 16% of women looked back negatively on their birth experiences, with more than 1 in 5 primiparas looking back negatively compared with 1 in 9 multiparas (10). A study in Turkey stated there were good levels of satisfaction related to birth among participants, with the birth satisfaction of those with vaginal births being higher compared to those with planned or emergency cesarean births (7). It was found that the application of vacuum forceps, medical birth, and experiencing problems related to the baby reduced birth satisfaction. The study stated that those with social security, those who were not employed, and multipara births had higher satisfaction. There is a weak negative correlation between women's satisfaction with birth and pain experienced after birth and a weak positive significant correlation with early mobilization and holding the baby in the expected period (7).

Risk factors affecting the negativity of birth experiences include unexpected medical problems like emergency operative birth, induction, lengthened labor, and transfer of the newborn to intensive care; factors related to the woman's social life like unwanted pregnancy and lack of support from partners; related to women's feelings during birth, pain and lack of control; services provided by care providers like insufficient time for women's questions during antenatal check-ups, deficiency of support during birth and administration of obstetric analgesia (8); and anal sphincter injury

and administration of oxytocin beginning in the first stage of labor (9).

Considering negative birth experiences are thought to be related to the occurrence of postnatal depression in women and even posttraumatic stress disorder, the importance of ensuring patient satisfaction with birth is clear (11,13). Emotional stress, especially depression, worry, and anxiety, increase pregnancy and birth complications, negatively affect the health of the newborn, and are reported to cause premature birth, low birth weight and intrauterine growth retardation.

The duty of nurses and midwives during labor and birth is not just to ensure a safe birth but also to create a positive and satisfactory birth experience (14). Professional support provided during labor may develop women's ability to control feelings and cope with birth pain and prevent negative experiences (5). A study stated that interviews with assisting midwives before birth and sustaining treatment by noting the needs of the mother and partner, encouragement, and competency reduced the risk of negative birth experiences (8). The same study stated that satisfaction related to information about the birth and labor process, allowing women to participate in decisions made during birth and supportive midwives and doctors reduced the risk of having a negative experience (8). Another study found women cared for by midwives had a significantly higher degree of control and birth satisfaction compared to women cared for by obstetric specialists while the incidence of cesarean birth did not affect both measures (15).

Maternal/perinatal death, birth trauma and cesarean rates, accepted as traditional quality markers for birth services, have begun to be reviewed in recent years. The rapid reduction in mortality and morbidity rates and developing technology have reduced the importance of these traditional markers and revealed the need for multidimensional constructs suitable for quality evaluation in varying conditions. As a result, evaluation of satisfaction of women in relation to experiences of birth and postnatal period and satisfaction with care received are important markers for the presentation of quality services (16,17).

It has become easier to use concepts/models and scales to obtain objective data for the measurement of patient satisfaction. The BSS-R form is a scale that can be applied in a time period where the woman can clearly remember her experiences in the postpartum 10-day period and to determine the whole process and influencing factors with evaluation questions that include components for satisfaction. In Turkey, there are limited numbers of valid and reliable scale tools measuring birth satisfaction. The aim of this methodological research is to adapt the "Birth Satisfaction Scale-Revised (BSS-R)" form developed by Hollins Martin and Martin (18) to Turkish culture and perform validity and reliability studies.

Research Question:

Is the BSS-R an appropriate, valid, and reliable scale tool for Turkish culture?

METHOD

Design and Setting

This methodological type of study was completed in the postnatal unit of Iğdır State Hospital, in Turkey. The rooms in the birth and postnatal units where data for the research were collected are two-person rooms. The hospital employs five Gynecology and Obstetrics specialist doctors, and one specialist doctor is on duty every night. A total of 13 midwives and nurses provide services in the birth unit. Each night two midwives and one neonatal nurse are on duty. Women stabilized after birth are transferred to the postnatal care unit and observed for at least 24 hours. The first communication between the newborn, with an initial evaluation by the neonatal nurse after birth, and the mother occurs after the mother is transferred to the postnatal care unit. In this process, the mother is given breastfeeding training by the neonatal nurse and the baby feeds for the first time. As there are insufficient numbers of personnel for a total of two midwives and one neonatal nurse at night and four midwives to serve the birth unit during the day, they work from a work center.

Participants

Adaptation of a scale to a different culture requires accessing a sample with a size at least 5-10 times the number of scale items (19). The number of scale items for adaptation in this study was 10. As a result, we aimed to reach 20 times this number with 200 individuals. Sampling in this research included a total of 219 women in the postnatal period due to the possibility of excessive and missing values.

Inclusion criteria: Inclusion criteria for the study were age older than 18 years, literacy, volunteering to participate in the research, risk-free pregnancy, spontaneous vaginal birth, term birth, and being less than 10 days postpartum.

Exclusion criteria: Exclusion criteria for the study were known mental disease, pregnancy duration of 36 weeks or less, mental disability, communication disability, and mothers with cesarean births.

Procedures

The cross-cultural adaptation process of the BSS-R

For validity and reliability of the BSS-R in Turkey, firstly linguistic validity studies were performed. For linguistic validity of the BSS-R, translation, and reverse translation from English to Turkish were performed by two academics from the Department of Foreign Languages. The translated Turkish items were investigated, and a common form was created. The scale items included on this form were reverse translated by another language expert. For scope validity of the BSS-R Form, after translation processes were completed, interviews were held with 10 professors employed in Gynecology and Obstetrics

Nursing and Midwifery Department in universities in Turkey. These experts investigated the scale in terms of understandability and cultural suitability and reported their opinions by e-mail. To evaluate scope validity results, the Davis technique was used (20,23). Experts evaluated scale items according to four grades used in the Davis Technique. The means of points given to scale items were as follows; 1 point for "item not appropriate", 2 points for "item should be made appropriate", 3 points for "appropriate but requires small changes", and 4 points for "very appropriate". The scope validity index (SVI) was used to evaluate the points given by experts for BSS-R items. According to this assessment, the SVI for all items being larger than 0.80 means the items are sufficient in terms of scope validity (20). After scope validity analysis in this study, the scale was preliminarily applied to 20 women. After this application, it was observed there was no need to make any changes to the items.

Data Collection

Data in the research were collected with the personal information form and the Turkish version of the BSS-R from 15 June 2016 to 15 September 2016. The BSS-R should be applied to women in the first 10 days after vaginal birth, comprises 10 items, and has 3 subdimensions. The subdimensions of the BSS-R are *"Quality of care provision" (*3rd, 5th, 6th, and 10th items), "S*tress experienced during labor" (*1st, 2nd, 7th, 9th items), and "*women's personal attributes*" *(*4th and 8th items). The scale has a 5-point Likert type with points of 0 for disagree, 1 for disagree, 2 for undecided, 3 for agree, and 4 for definitely agree. The lowest points that can be obtained on the scale are 0, with the highest point of 40. The scale contains 6 positive statements, and 4 negative statements, with 4 items given inverse points. The 2nd, 4th, 7th, and 8th items are given inverse points. As points obtained from the scale increase, the woman's satisfaction with birth is interpreted to increase (18). In this study, the scale had Cronbach alpha reliability coefficients of 0.72 for the total BSS-R, 0.78 for the "*Quality of care provision"* dimension, 0.71 for the "S*tress experienced during labor"* dimension, and 0.70 for the "*woman's personal attributes*" dimension.

Ethical Considerations

Before beginning the research with the aim of adapting the BSS-R to Turkish culture and measuring its suitability for use in Turkey, written permission was obtained by e-mail from the author who developed the scale and performed validity and reliability studies for the original form of the scale. In order to perform the research, written permission was obtained from the organization linked to the hospital where the research was to be performed and ethics committee permission was obtained for implementation of the research from Ordu University Clinical Research Ethics Committee (26.01.2017/87). Women accepting

participation in the research were informed about the research and provided informed written consent. The consent form provided information that participation in the research was based on volunteerism, that they were free to leave at any time, and that responses given would be confidential.

Analysis of Data

Before evaluating the factorial structure of the BSS-R, the Shapiro-Wilk test was used to assess the univariate normality of each item (24). The Shapiro-Wilk test showed the BSS-R had normal distribution ($p>0.05$). The fitness of the sample size and data set for factor analysis was evaluated with the Kaiser-Mayer-Olkin (KMO) Index and the Bartlett test. Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were used to evaluate the construct validity of the BSS-R. In the research, principal component analysis, varimax vertical transformation and Scree plot test were used for EFA. For CFA, Root Mean Square Error of Approximation (RMSEA), Standardized Root-mean-Square Residual (SRMR), Comparative Fit Index (CFI), Non-Normed Fit Index (NNFI), Goodness of Fit Index (GFI), and Adjusted Goodness of Fit Index (AGFI) fit indices were used (25). In CFA, structural equation modeling (SEM) was assessed with the x^2/SD, RMSEA, CFI, SRMR, GFI, AGFI, and NFI. Evaluation of internal consistency used the Cronbach alpha coefficient, item-total point correlation, Spearman-Brown coefficient, and Student t-test to compare upper (27%) and lower (27%) ranges. Data were analyzed with SPSS for Windows 17 and LISREL 8.8 programs.

RESULTS

Participant Characteristics

The mean age of the women included in the study was 25.84 ± 5.77 years (range, 18-43), 30.6% were literate, 94.5% were housewives, 57.5% had nuclear families, 80.8% had social security, and 72.1% had moderate income. The spouses of 29.7% of women were educated at primary level and 64.8% of the spouses were self-employed. When the distribution of birth experiences, applications, and postnatal thoughts of women included in the scope of the research are investigated, 94.1% of women wanted their partner with them while in pain, while 61.6% stated their partner was with them while in pain. Of women, 81.3% stated they experienced fear of birth. Before and during labor, 61.2% of women had episiotomy, 36.1% had enemas, 74.4% had oxytocin and 60.7% had fundal pressure applications. The applications performed with the lowest frequency were anesthesia (4.6%) and vacuum (5.5%). Of women, 74.5% wanted their partner with them, 55.5% wanted someone they knew with them, while 88.6% wanted their next birth to be normal birth, and 92.7% recommended normal birth. The mean duration between admission to the hospital and birth was 12.27±14.85 hours.

Construct Validity of the BSS-R

Before analysis of the principal components of the BSS-R, sample sufficiency of data for factor analysis was investigated with the KMO and Bartlett tests. In this study, the KMO value was determined as 0.72. This value shows it is appropriate for principal component analysis. The Bartlett test was performed to determine the suitability of the data for factor analysis. Later the factor structure of the scale was evaluated with both exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). The KMO value was 0.72, while the Bartlett test value was identified as x^2=661.532, p=0.000. These findings show the data are associated with each other and the data set is suitable for factor analysis.

Results of Exploratory Factor Analysis

The three-factor structure of the Birth Satisfaction Scale explains 63.980% of the total variance (see Table 1).

The eigenvalue for the differentiation points in the three-dimensional structure of the Birth Satisfaction Scale was found to be above 1 (see Figure 1).

Exploratory factor analysis for the BSS-R, subdimensions, and factor loads are presented in Table 2. Just as in the original language, when the items on the see BSS-R are investigated in three subdimensions, factor loads appear to vary from 0.593-0.899. With the three-dimensional structure in the original language, the BSS-R appears to preserve this original structure in the Turkish form. At this stage, no items were removed as the factor loads for all items were above 0.30. The results of exploratory factor analysis determined the BSS-R comprised three subdimensions called "Quality of care provision" (3rd, 5th, 6th, and 10th items), "Stress experienced during labor" (1st, 2nd, 7th, and 9th items), and "Women's personal attributes" (4th and 8th items), in accordance with the original.

Results of Confirmatory Factor Analysis

The confirmatory factor analysis results for the BSS-R are presented in Table 3. Many fit indices were used to investigate the model fit of the BSS-R. These were found as x2/SD value 2.06, RMSEA 0.070, CFI 0.95, SRMR 0.078, GFI 0.93, AGFI 0.89, and NFI 0.92. Based on the relevant fit index values, the model was concluded to be suitable in this form. As a result, there were no changes required for the 10-item, three-subdimension Birth Satisfaction Scale Turkish form compared to the original.

The factor structure obtained as a result of confirmatory factor analysis related to the BSS-R items is presented as a PATH diagram (see Figure 2). Factor loads for all items on the BSS-R were determined to vary from 0.43 to 0.88 as a result of confirmatory factor analysis. For all these reasons, there appeared to be no need to remove items from the scale (26).

Results Related to Internal Consistency for Reliability of the BSS-R

The Cronbach alpha, Spearman-Brown coefficient, and item-total point correlation coefficients were evaluated to determine the internal consistency and homogeneity of the BSS-R Turkish version (see Table 4). For the total scale, the Cronbach alpha coefficient was 0.724, the Spearman-Brown coefficient was 0.597 and the item-total point correlations varied from 0.25 to 0.48. For the BSS-R, the Cronbach alpha coefficient for the total scale was 0.724, for the "Stress experienced during labor" subdimension it was 0.713, for the "Quality of care provision" subdimension it was 0.788 and for "Women's personal attributes" subdimension it was 0.703.

Mean points for participants for the full BSS-R Turkish version were 19.37±5.90 with a point range from 4 to 34. According to the range comparison analysis of the upper and lower 27% on the scale, the difference in the range comparison of the upper and lower 27% on the BSS-R Turkish version was statistically significant ($p<0.05$) (see Table 5). This value is further evidence that the scale has the ability to differentiate.

Table 1. Explained total variance of BSS-R with three factors

Item number	**Eigenvalues**			**Square Loads Sum**		
	Total	Variance %	Cumulative %	Total	Varyans %	Cumulative %
1	2.941	29.412	29.412	2.575	25.747	25.747
2	2.239	22.391	51.803	2.191	21.909	47.656
3	1.218	12.177	63.980	1.632	16.324	63.980
4	.807	8.071	72.050			
5	.669	6.695	78.745			
6	.604	6.037	84.782			
7	.514	5.137	89.919			
8	.415	4.154	94.073			
9	.378	3.776	97.849			
10	.215	2.151	100.000			

Method: *Principal Components Analysis*

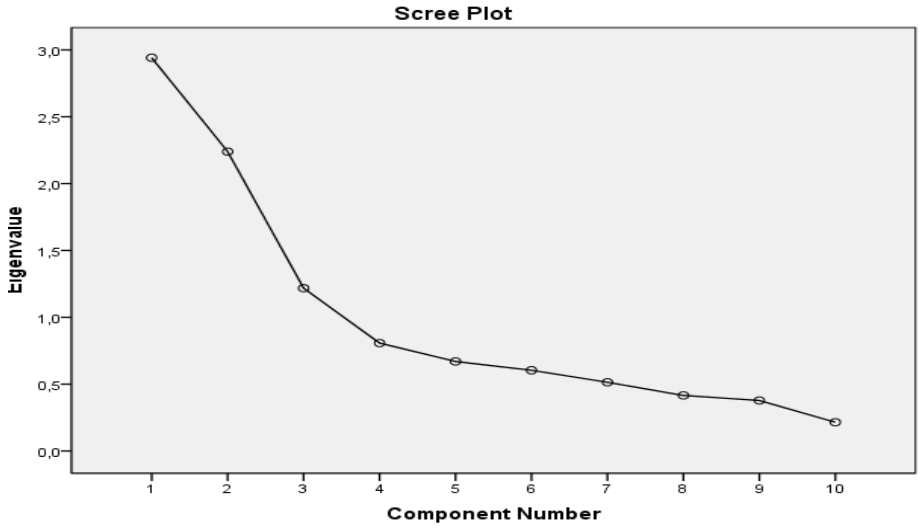

Figure 1. Eigenvalues of factor structure scree plot graph

Table 2. Scale Items and Factor Loads in Three Factor Structure *

Items	BSS-R Items	BSR- Subscales**		
		1	2	3
1.	I came through childbirth virtually unscathed.		0.593	
2.	I thought my labour was excessively long.		0.691	
7.	I found giving birth a distressing experience.		0.808	
9.	I was not distressed at all during labour.		0.787	
3.	The delivery room staff encouraged me to make decisions.	0.712		
5.	I felt well supported by staff during my labour and birth.	0.872		
6.	The staff communicated well with me during labour.	0.899		
10.	The delivery room was clean and hygienic.	0.623		
4.	I felt very anxious during my labour and birth.			0.859
8.	I felt out of control during my birth experience.			0.856

** Varimax rotation method has been applied*
***[1]Quality of care provision subscale; [2]Stress experienced during labour subscale; [3]Women's personel attributes subscale*

Table 3. Confirmatory factor analysis fit indices of the BSS-R Turkish version

Fit indices	Found	Appropriate	Acceptable
x^2/SD	2.06	<2	<5
RMSEA	0.070	<0.05	<0.08
CFI	0.95	>0.95	>0.90
SRMR	0.078	<0.05	<0.08
GFI	0.93	>0.95	>0.90
AGFI	0.89	>0.95	>0.90
NFI	0.92	>0.95	>0.90

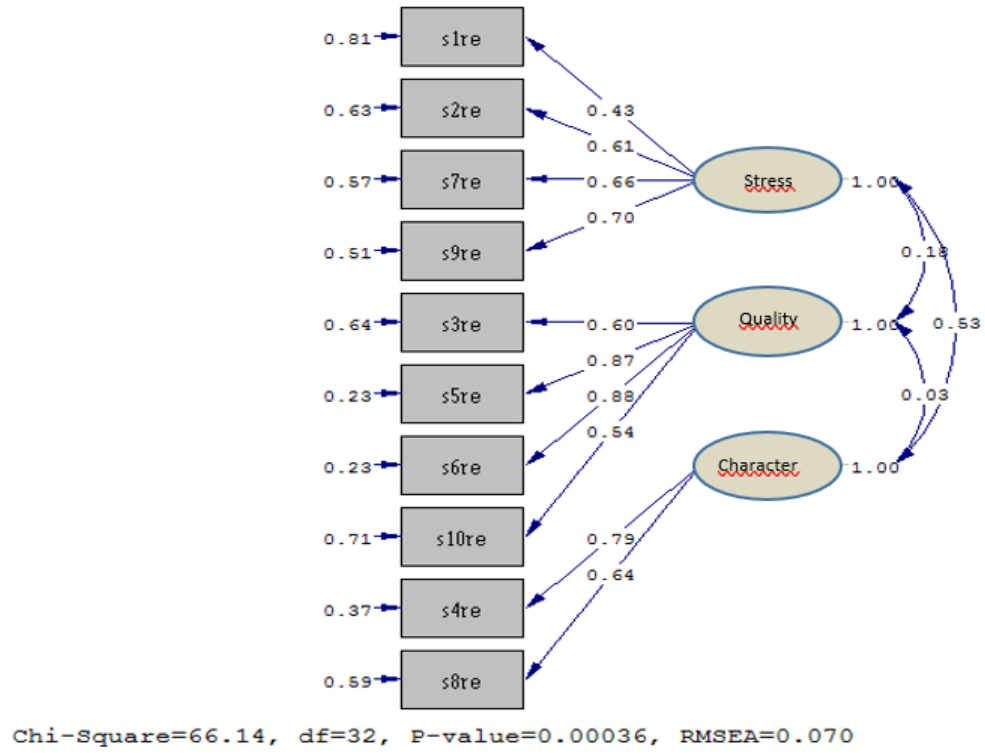

Figure2. Confirmatory factor analysis of the BSS-R Turkish version standardized coefficients and error variances

DISCUSSION

This research was performed with the aim of adapting the BSS-R, with validity and reliability studies by Hollins Martin and Martin (18), to Turkish, performing validity and reliability studies and making it available for Turkish society. This study was needed due to the limited standard scale tools to investigate birth satisfaction in Turkey. In this section, results related to linguistic validity, scope validity, construct validity, internal consistency, and comparison of some variables with mean points on the Birth Satisfaction Scale are discussed for the 10-item, 3-factor Birth Satisfaction Scale.

When performing scale adaptation studies, defined as all systematic studies for the adaptation and use of a certain scale in a different culture and language, it is very important to abide by certain rules for validity and reliability (21, 27). Scale adaptation studies are performed with three main methods including a range of processes. These are, in order, performing linguistic adaptation, performing validity and reliability studies and comparing intercultural traits (21).

Translation from the original language a scale written into another language and used in many cultures is among the methods used in nursing science. To test whether a scale to be adapted to another language and culture is reliable, valid, and appropriate, linguistic adaptation leads to the list of methods applied (20).

Linguistic adaptation studies for the BSS-R were completed using the translation-reverse translation method. In the first stage of the translation-reverse translation method for the linguistic adaptation study, the Birth Satisfaction Scale was translated from English to Turkish by two English language scientists. Translations were investigated and revised by a thesis advisor and the researcher and then a scale form was created. The created scale form was translated into English by two English language scientists who know both languages well (Turkish-English). After the translation-reverse translation processes were performed by independent translators, the preliminary application was performed with 20 women, and opinions were requested to test the understandability of the scale items. Necessary corrections were made in line with recommendations from the preliminary application and the scale was given its final form. According to the results of this study, it is possible to say the Birth Satisfaction Scale Turkish Form is a suitable tool for measurement in terms of linguistic validity.

One of the techniques used to test validity is scope validity and this is a mandatory process to understand the degree to which the planned variable is measured or not by a scale tool (26). Stated differently, scope validity shows whether scale items are qualitatively and

quantitatively sufficient to measure the variable desired for measurement. The most common methods used to test scope validity are the Lawshe technique and the Davis technique. The research entitled adaptation of the BSS-R for Turkish society used the Davis technique. With the Davis technique, expert opinions are given

Table 4. Scale items, mean values, item total correlation and Cronbach alfa values if item deleted of Turkish BSS-R

BSS-R Item Number	n	Mean	Sd	Total item correlations	If the Item Is Deleted Cronbach α
1. I came through childbirth virtually unscathed.	219	2.75	1.23	0.39	0.70
2. I thought my labour was excessively long.	219	1.62	1.40	0.48	0.69
7. I found giving birth a distressing experience.	219	0.78	1.10	0.40	0.70
9. I was not distressed at all during labour.	219	1.08	1.30	0.39	0.70
3. The delivery room staff encouraged me to make decisions.	219	2.65	1.22	0.25	0.72
5. I felt well supported by staff during my labour and birth.	219	2.86	1.08	0.39	0.70
6. The staff communicated well with me during labour.	219	2.87	1.11	0.44	0.70
10. The delivery room was clean and hygienic.	219	2.58	1.23	0.46	0.69
4. I felt very anxious during my labour and birth.	219	0.98	1.23	0.30	0.72
8. I felt out of control during my birth experience.	219	1.67	1.47	0.36	0.71
Spearman Brown Katsayısı	0.597				

BSS-R subscales	**Item Number**	**Cronbach α**
Quality of care provision	3,5,6,10	0.78
Stress experienced during labor	1,2,7,9	0.71
Women's personal attributes	4,8	0.70
BSS-R Total	1,2,3,4,5,6,7,8,9,10	0.72

Table 5. Comparison of analysis of BSS-R scores

BSS-R	**n**	**Mean**	**SD**	**Test and p**
Lower %27	65	11.70	3.00	t=-28.377 p=**0.000**
Upper %27	54	27.27	2.46	

in 4-way grading as, 1: inappropriate, 2: item should be made appropriate, 3: appropriate but requires small changes, and 4: very appropriate.In this technique, the number of experts marking choices 3 and 4 is divided by the total number of experts to obtain the "scope validity index" for the item and the criterion value is accepted as 0.80 (28). The introduction/explanation text on the form presented to experts clearly states what is expected of the expert. It is expected that experts will have 90-100% levels of agreement

about the validity and understandability of each item. Contrary to this, if there are items with 70-80% levels of agreement, they may be retained in the scale after revision according to criticism (29). After completing the translation processes, to test scope validity, the scale was presented to 10 expert academics and they were requested to grade each item on the scale with points from 1 to 4 (1: inappropriate, 2: item should be made appropriate, 3: appropriate but requires small changes and 4: very appropriate). They were also requested to provide opinions about items considered inappropriate in their grading. After scope validity analysis, items numbered 1, 2, 3, 4, 5, 6, 7, 8, and 9 were revised in line with expert opinions. The SVI for the scale items with scope validity analysis performed varied from 0.80 to 1.00.

In the literature, it is stated that the number of experts who should be consulted during scale adaptation studies should be between 3 and 20 (23). In the research, the opinions of 10 expert academics were sought, and the scale adaptation stage was completed. It can be said that the number of expert academics consulted is in parallel with the literature information. Additionally, studies stated that the SVI score should be 0.80 and above. In line with this information, it was concluded that the scope validity of the BSS-R was sufficient. Construct validity is an abstract concept that cannot be directly observed or measured and evaluates the degree to which the scale tool achieves the aim of measuring the behavior or dimension, the abstract concept that is desired to be measured, and how accurately the behavior or dimension is measured. Factor analysis to test construct validity uses methods like comparison of contrasting and/or known groups, testing hypotheses, and multivariate-multimethod matrix approach (19, 20, 30).

Analyses for the construct validity of the BSS-R used factor analysis, or if defined differently, the principal component analysis method. Before performing principal component analysis, the Kaiser-Meyer-Olkin (KMO) and Bartlett tests were applied with the aim of determining whether the sample is sufficient or not, and hence whether the data is suitable for factor analysis or not. If the KMO is above 0.60 and the Bartlett test is significant, it shows the data are suitable for factor analysis (31). The sample population should show the normal distribution for factor analysis. The Bartlett sphericity test is performed to determine whether data have a multivariate normal distribution. Just as with other tests, the significance level of this test is checked. If the significance level is <0.05, it indicates the correlation matrix for items in the scale is suitable for factor analysis (32). In this research, Bartlett was $\chi 2$ =661.53, p=0.000 which is significant. These findings show data have a normal distribution, so the measurement results are not affected by sample size and the

sample has dimensions suitable to perform factor analysis.

In principal component analysis, aiming to obtain reduced variables and meaningful conceptual constructs and the most frequently and commonly used method, factor load values are correlated between items and factors, and it means items measure a concept-construct-factor. If factor load values are 0.45 or higher, it is a good criterion for selection; however, for low numbers of items in practice, this limit value may be reduced to 0.30 (31).

Exploratory factor analysis is based on reducing the variable numbers and the correlation between variables with the aim of revealing new constructs (33). When exploratory factor analysis for the BSS-R is investigated, it appears to have a structure with three subdimensions, just like the original structure. The factor loads for the three subdimensions of the BSS-R vary from 0.593 to 0.899 so no item was removed from the scale (see Table 1).

Additionally, the results of total variance evaluation with the three-factor structure of the BSS-R were 63.980%, showing the item factor loads were sufficient for explained variance analysis (see Table 2).

After exploratory factor analysis, confirmatory factor analysis is performed for scale items to test the significance level between the observed variables and the construct. Factor analysis is among the mandatory applications required for scale adaptation studies (26). Data for the model resulting from confirmatory factor analysis had x2/SD value 2.06, RMSEA 0.070, CFI 0.95, SRMR 0.078, GFI 0.93, AGFI 0.89, and NFI 0.92 (see Table 3). In the literature, it is reported that the RMSEA and SRMR values should be below 0.08, while GFI, AGFI, and CFI values should be greater than 0.90 (34, 36). In this study, confirmatory factor analysis results for the BSS-R show the factor loads vary from 0.43 to 0.88. According to Çapık (26) and Harrington (25), the factor loads should be above 0.30 for confirmatory factor analysis. In light of this information, there was no need to remove items from the BSS-R Turkish version.

In conclusion, the three-factor structure of the 10-item BSS-R was a suitable model and ensured construct validity. For determination of whether all aspects of the measurement ability of a scale are suitable or not in scale adaptation studies, the criterion most researchers use is reliability. The way to understand whether a scale has reliability related to internal consistency or not is possible by proving whether all subdimensions of a scale measure the same features or not. There are four methods commonly used to measure internal consistency. These are the half-test division method, Cronbach alpha reliability coefficient, Kuder-Richardson 20-21 reliability coefficient, and item-total point scale reliability-kappa adaptation coefficient (37).

To be able to determine the internal consistency and homogeneity to test the reliability of the Birth Satisfaction Scale in scale adaptation studies, the Cronbach alpha, Spearman-Brown coefficient, and item-total point correlation coefficients were used. One of the methods recommended for internal consistency analyses for Likert-type scales and used in line with recommendations is the Cronbach alpha reliability coefficient with values between 0 and 1. If the Cronbach alpha reliability coefficient is close to 1, the items forming the scale are compliant and exist within a consistent correlation (21,38). The Cronbach alpha reliability coefficient for the BSS-R scale was 0.724 for the total scale, 0.713 for the "Stress experienced during labor" subdimension, 0.788 for the "Quality of care provision" subdimension, and 0.703 for the "Women's personal attributes" subdimension. When compared with literature information, the Cronbach alpha reliability coefficient having values from 0.60 to 0.80 indicates that it can be used in research and shows the Cronbach alpha reliability coefficient points in the study are sufficient (26,33).

To measure internal consistency, item-total point reliability was used along with the Cronbach alpha reliability coefficient. Item total point reliability or item total point correlations are examined to obtain information about the reliability of each item forming a scale. The variance of each item forming the scale is compared with the total variance and the level of correlation between them is examined. High item total point correlations indicate the items forming the scale is reliable (37). The variation of item total point correlations for the study between 0.25 and 0.48 shows the scale items have a sufficient level of reliability.

Limitations

A convenience sampling method was used for participant recruitment from one hospital in Turkey. The sample of the study included women who had vaginal delivery in the early postpartum period.

CONCLUSIONS

The BSS-R shows a good psychometric quality for Turkish postpartum women. The findings in this study provide evidence that the BSS-R is a valid and reliable scale tool that can be rapidly and easily applied for use as a tool to determine the birth satisfaction of postpartum women in the early period after birth. Given the ease of application, it may be useful to determine BSS-R birth satisfaction and plan interventions. Applying the scale to a different sample group is recommended to check whether the factor structure is preserved or not.

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