Evaluation of Mackey Childbirth Satisfaction Rating Scale in Iran: What Are the Psychometric Properties?

Zahra Moudi,[1,*] and Mahmoud Tavousi[2]

[1]Pregnancy Health Research Center, School of Nursing and Midwifery, Zahedan University of Medical Sciences, Zahedan, IR Iran
[2]Health Metrics Research Center, Iranian Institute for Health Sciences Research, Academic Center for Education, Culture and Research, Tehran, IR Iran

[*]*Corresponding author*: Zahra Moudi, Pregnancy Health Research Center, Zahedan University of Medical Sciences, Zahedan, IR Iran. Tel: +98-5433442482, Fax: +98-5433442481, E-mail: moudi@zaums.ac.ir

Abstract

Background: With the integration of the evaluation of patient satisfaction in the overall assessment of healthcare services, authorities can be assured about the alignment of these services with patient needs and the suitability of care provided at the local level.

Objectives: This study was conducted in 2013 in Zahedan, Iran, in order to assess the psychometric properties of the Iranian version of the mackey childbirth satisfaction rating scale (MCSRS).

Patients and Methods: For this study, a methodological design was used. After translating the MCSRS and confirming its initial validity, the questionnaires were distributed among women with uncomplicated pregnancies and no prior history of cesarean section. The participants had given birth to healthy, full-term, singletons (with cephalic presentation) via normal vaginal delivery at hospitals within the past six months. Cronbach's alpha and test-retest (via the intraclass correlation coefficient) were applied to analyze the internal consistency and reliability of the scale. Moreover, the validity of the scale was tested via exploratory factor analysis, confirmatory factor analysis, and convergent validity.

Results: The MCSRS consists of six subscales. Through the process of validation, two partner-related items ("partner" subscale) of the scale were excluded due to cultural barriers and hospital policies. Cronbach's alpha for the total scale was 0.78. It ranged between 0.70 and 0.86 for five subscales, and was 0.31 for the "baby" subscale. Factor analysis confirmed the subscales of "nurse," "physician," and "baby," which were identified in the original scale. However, in the translated version, the "self" subscale was divided into two separate dimensions. The six subscales explained 70.37% of the variance. Confirmatory factor analysis indicated a good fitness for the new model. Convergent validity showed a significant correlation between the MCSRS and the SERVQUAL scale (r = 0.72, P < 0.001). Moreover, the Farsi version of the MCSRS showed excellent repeatability (r = 0.81 - 0.96 for individual subscales and r = 0.96 for the entire scale).

Conclusions: The study findings indicated the Farsi version of the MCSRS is a reliable and valid instrument. However, according to the reliability assessment and factor analysis, the "baby" and "self" subscales need further revisions.

Keywords: Patient Satisfaction, Childbirth, Psychometric Tests

1. Background

Today, service providers have widely acknowledged the importance of the patient perspective as a proper measure that can be used to review and improve the process of healthcare provision (1). In fact, understanding of the perspectives of patients can provide us a new opportunity for assessing the quality of the services provided and customer satisfaction (2, 3).

Studies have shown that customer dissatisfaction may lead to complaints, refusal of services, change of healthcare providers, and even negative words from dissatisfied clients (4). Additionally, the disappointment of mothers in childbirth services could cause negative psychological outcomes such as post-traumatic stress disorder, reluctance to consider future pregnancies, inclination towards elective cesarean section and abortion, negative mother-infant interactions, and inability to establish an effective relationship with a partner (5-8).

As demonstrated in a study by Williams, service providers can assure the provision of proper care by designing and delivering healthcare services based on the experiences and perceptions of healthcare recipients (including evaluation of satisfaction) (9). In fact, with the integration of patient satisfaction evaluation in the overall service assessment, patients, including underprivileged citizens with no choice but to use public services, can be involved in the analysis of care provision. Consequently, healthcare authorities can ascertain service quality and acceptability, and improve healthcare outcomes for mothers

and newborns (10).

Customer satisfaction is a complex and multi-dimensional concept. Assessment of customer satisfaction with the provided care, especially childbirth services, can be both objective (by evaluating real events) and subjective (by evaluating healthcare services based on the customers' preferences, values, and expectations) (7, 11).

Fulfillment and discrepancy theories have been employed to explain patient satisfaction. In fulfillment theory, satisfaction is explained by the patients' contentment with the outcomes, while prior expectations are not taken into account. On the other hand, discrepancy theory focuses on the deviation of healthcare services from expectations and desires that have been internalized in an individual (11, 12).

Some scholars have applied a qualitative approach to assess women's perspectives on satisfaction with childbirth experiences (13-15). However, since standardization, comparability, and generalizability of qualitative results are not feasible, there is a strong need for a psychometrically valid instrument.

Several questionnaires have been designed to measure childbirth satisfaction (6, 7, 11, 16-18). However, based on a literature review of Iranian studies, these instruments have not been adapted for an Iranian population. For this reason, a valid and reliable instrument is required to capture mothers' perspectives and evaluate different dimensions and components of childbirth experiences and satisfaction. Therefore, the mackey childbirth satisfaction rating scale (MCSRS) was chosen for analysis in this study (6).

MCSRS was designed by Mackey and Goodman by examining multiple factors affecting childbirth satisfaction (6). This instrument is a 34-item scale, which measures childbirth satisfaction and consists of six subscales: "self" (9 items; no.3-11), "nurse" (9 items; no. 17,19,21,23,25,27,29,31,33), "partner" (2 items; no. 12,13), "baby" (3 items; no. 14-16), "physician" (8 items; no. 18,20,22,24,26,28,30,32), and "overall childbirth satisfaction" (3 items; no. 1-2,34).

Respondents express their satisfaction or dissatisfaction with each item on a five-point Likert scale: 1 = very dissatisfied, 2 = dissatisfied, 3 = neither satisfied nor dissatisfied, 4 = satisfied, and 5 = very satisfied. This scale has demonstrated robust psychometric properties in the United States (6) and other countries, with internal reliability coefficients of 0.90, 0.97, 0.70, 0.83, 0.93, and 0.94 for the subscales of "self," "partner," "baby," "physician," "overall childbirth satisfaction," and "total score," respectively (18-20). Additionally, MCSRS facilitates a qualitative assessment of the mothers' perspectives. The features of this tool allow researchers to identify and compare mothers' concerns across different regions. Though this tool has been validated in a number of countries (6, 18-20), its applicability in the Iranian population has not been yet determined.

2. Objectives

The purpose of the current study was to analyze the reliability and validity of the MCSRS in Iran.

3. Patients and Methods

3.1. The Iranian Version of MCSRS

Permission was obtained from Marlene C. Mackey via e-mail to develop the Iranian version of the MCSRS. The English version of this scale was translated into Farsi by a health professional with a M.Sc. in midwifery and who was fluent in English. Afterwards, the Farsi version was back-translated into English by two translators fluent in English and Farsi. One of the translators was a general practitioner and the other held a PhD degree in the English language and linguistics; neither of the translators had prior knowledge of the questionnaire.

The original scale and the translated Farsi version were reviewed by the original author (PhD in reproductive health) and an external expert in social sciences (who was bilingual and fluent in English) to compare the scales and resolve any discrepancies. Subsequently, psychometric tests, including face validity, exploratory factor analysis (EFA), confirmatory factor analysis (21), convergent validity, internal consistency, and reliability were performed on the Farsi scale, consisting of five factors and 32 items.

3.2. Participants and Setting

A study with a methodological design was conducted in Zahedan, Iran in 2013. The city was stratified into three areas, based on socioeconomic and cultural factors. Then, three healthcare centers in the northern area, two healthcare centers in the central area, and two centers in the southern area of the city were selected for the study. Overall in Iran, healthcare centers provide basic services for children, including immunization. Since immunization is not accessible outside healthcare facilities, a representative sample of women, who had given birth at different hospitals within the past six months, was recruited by reviewing the immunization records of the centers.

The inclusion criteria were as follows: 1) uncomplicated pregnancy; 2) singleton birth with cephalic presentation; 3) no prior history of cesarean section; and 4) normal vaginal delivery of a healthy infant at the hospital.

The questionnaires were completed through face-to-face interviews. In addition, demographic information of the mothers and neonates, e.g., parity, age, education level,

gestational age, and infant's weight, and type of hospital were gathered.

3.3. Evaluation of the Validity of MCSRS

3.3.1. Content Validity

The translated Farsi version of the questionnaire with a 34-item scale was examined for its content validity. A small group of four midwives who had worked in the hospital and a scholar confirmed the content validity of the instrument.

3.3.2. Face Validity

To confirm the face validity of the MCSRS, a draft of the questionnaire was presented to 10 mothers for clarity and wording adjustments, to ensure the questionnaire would suit the target population.

3.3.3. Exploratory Factor Analysis (EFA)

Since we aimed to apply the questionnaire in a different culture (with diverse medical beliefs and practices), use of EFA, which assumes no prior hypothesis about the dimensionality of a given set of items, was advisable (22). Therefore, according to Polit and Beck, the original and new factor analyses were compared with respect to factor structure and loading.

For EFA, a total of 513 questionnaires were completed by the mothers. In accordance with Polit and Beck, EFA via conventional methods (principal component analysis) was applied to identify the factors. Bartlett's test of sphericity and the kaiser-meyer-olkin (KMO) test were also performed to analyze the magnitude of inter-correlations and sampling adequacy (22).

In this study, only factors with eigenvalues of more than one were retained (22). Orthogonal (varimax) rotation was used to obtain the factor structure of the scale. Factors with a value of 0.4 or greater were considered desirable. As Polit and Lake noted, factor loadings exceeding 0.7 indicate an overlapping variance of at least 50% between the item and the factor and are, therefore, desirable for interpretation (23).

3.3.4. Confirmatory Factor Analysis (CFA)

EFA was applied to extract the factors, while CFA was used to indicate the fitness of the extracted model in this study (21). In fact, via CFA, the theoretical relationships between the constructs within any given model can be assessed.

We assessed the model via maximum likelihood estimation, using Lisrel 8.8 for Windows to determine which model best fit the data. In the literature, various suggestions have been made regarding the number, type, and cut-off values for goodness of fit required for CFA. In the present study, we applied several goodness-of-fit indicators, including relative/normed Chi-square (χ^2/df), normed fit index (NFI), non-normed fit index (NNFI), root mean square error of approximation (RMSEA), comparative fit index (CFI), and standardized root mean square residual (SRMR) (24).

Overall, if NFI, NNFI, and CFI values range between 0.90 and 0.95, the model has an adequate fit. Values above 0.95 indicate a good fit, while values below 0.90 represent a poor fit of the model. For RMSEA, values above 1.0 should be rejected, while values below 0.06 indicate a good fit of the model. For χ^2/df, values below 5.0 indicate an adequate fit, while values below 3.0 represent a good fit of the model. Also, for SRMR, values below 0.08 indicate an adequate fit, whereas values below 0.05 represent a good fit of the model (25, 26).

3.3.5. Convergent Validity

Convergent validity analyzes the correlation between two different methods that measure the same trait (22). According to previous studies, different features of healthcare quality (e.g., safety, mother's relationship with caregivers, and the structural aspect) influence maternal satisfaction with childbirth services (15, 27).

In the present analysis, we hypothesized that scores on childbirth satisfaction would be positively correlated with scores on childbirth care quality. Therefore, the SERVQUAL scale for the assessment of service quality was adapted to confirm the probable positive correlation between childbirth satisfaction and quality of midwifery care (convergent validity). Based on the findings, correlation values of 0.29, 0.3 - 0.49, and $\geq$ 0.5 were considered small, moderate, and strong, respectively (28). The SERVQUAL scale was developed in 1988 by Parasuraman, Zeithaml, and Berry to measure the functional quality of healthcare services. Subsequently, the applicability of this scale was assessed in hospital environments (29). The dimensions of the SERVQUAL scale are as follows: 1) tangibles: facilities, equipment, and appearance of personnel; 2) reliability: ability to perform the promised service dependably; 3) responsiveness: willingness to help customers and provide prompt services; 4) assurance: knowledge and courtesy of employees and their ability to inspire trust and confidence; and 5) empathy: caring, individualized attention of the firm to the clients.

The SERVQUAL scale consists of 22 items, scored on a five-point Likert scale: 1 = very dissatisfied, 2 = dissatisfied, 3 = neither satisfied nor dissatisfied, 4 = satisfied, and 5 = very satisfied. This scale was previously translated into Farsi (α = 93%) (30, 31) and has been frequently used in Iran (32, 33). In this study, 100 mothers were asked to complete the MC-

SRS and the SERVQUAL scales simultaneously to provide evidence of convergent validity.

3.4. Evaluation of the Reliability of MCSRS

To analyze the internal consistency of MCSRS, at first, a total of 100 questionnaires were completed by the mothers. Internal consistency was assessed based on Cronbach's alpha or coefficient alpha. A coefficient alpha of ≥ 0.70 was considered satisfactory (34). Moreover, the repeatability or stability of the scale was determined through test-retest and the intraclass correlation coefficient (ICC). As Polit and Beck noted, an r-value of 0.7 is considered high for psychological variables; also, correlations between such variables are typically in the 0.20 - 0.40 range (22).

The final questionnaire was completed by 14 mothers. Ten to fourteen days later, these mothers were asked to complete the questionnaire again. The correlation coefficient and Pearson's r were calculated to test the repeatability of the scale. According to Polit and Lake, a reliability coefficient above 0.70 was considered satisfactory (23).

For statistical analysis, SPSS version 13.0 and Lisrel 8.8 for Windows were utilized. The normality of the data was first checked, and square transformation was applied for the data related to two MCSRS subscales (i.e., "self" and "nurse").

3.5. Ethical Considerations

Permission was obtained from Zahedan University of Medical Sciences, Zahedan, Iran (April 22, 2013; approval No. 5760). The participants were informed about the objectives of the study and were assured about the confidentiality of the data. The subjects could withdraw from the study at any time if they desired. Finally, women who were willing to participate in the study completed the questionnaires.

4. Results

4.1. Descriptive Statistics

A total of 513 questionnaires were completed by the mothers. The majority of women (69.4%) had given birth at teaching hospitals, while 30.6% had delivered at non-teaching hospitals. The mean age of the mothers was 27.28 $\pm$ 5.83 years (range: 15 - 45 years). Also, the majority of the participants were multiparous (73.7%), while almost 26.3% were primiparous.

Approximately 8.4% of the participants were illiterate, 16.4% had basic education, and 21.4% had university degrees. The mean gestational age of infants was 38.58 $\pm$ 1.26 weeks (range: 34 - 42 weeks). Also, the mean birth weight of infants was 3137.79 $\pm$ 395.23 g (range: 1500 - 4500 g).

4.2. Content and Face Validity

Due to cultural barriers and hospital policies, fathers are not allowed to be present in labor wards in Iran. Therefore, two partner-related items ("partner" subscale) were excluded from the translated version. After the final form of the questionnaire was approved by consensus, it was used for psychometric evaluations.

4.3. Factor Analysis

First, the suitability of the data for EFA was assessed. Bartlett's test of sphericity was statistically significant (< 0.001), i.e., the null hypothesis, which indicates zero correlation among variables, could be rejected; therefore, factor analysis was considered appropriate. Overall, the KMO test is a more appropriate tool, because it compares the magnitude of correlation coefficients with the size of partial correlation coefficients (range: 0 - 1). The closer the value is to one, the better the prospects for factor analysis will be (23). Based on our analysis, the KMO measurement of sampling adequacy was estimated at 0.91. Therefore, the data were amenable to factor analysis, and factor analysis was conducted accordingly.

Six factors with eigenvalues greater than 1.0 were extracted, accounting for 70.37% of the variance. As presented in Table 1, three and eight items were attributed to the "baby" and "physician" subscales, respectively, which did not differ from the original scale. In the Farsi version of the scale, one item of the "overall childbirth satisfaction" subscale (Overall, how satisfied or dissatisfied are you with your childbirth experience?) was attributed to the "nurse" subscale (Table 1).

Moreover, data on the "self" subscale were categorized into two separate dimensions. The first dimension included items that were solely related to mothers and their inner power, while the second dimension contained items involving mothers and their interactions with nurses or midwives (Table 1).

The mean values and standard deviations for the "total satisfaction," "overall childbirth satisfaction," "self," "nurse," "physician," and "baby" subscales were 117.83 $\pm$ 17.53, 10.10 $\pm$ 2.54, 34.42 $\pm$ 5.32, 33.69 $\pm$ 6.45, 27.16 $\pm$ 6.86, and 12.43 $\pm$ 1.96, respectively. The correlation matrix for MCSRS is presented in Table 2. There was a desirable correlation between each item and its matching scale, with coefficients ranging from 0.64 to 0.85, except for one item (overall, how satisfied or dissatisfied are you with your childbirth experience?) and its corresponding scale (r = 0.6).

The findings indicated the adequate fitness of the model in structural equation modeling. As presented in Table 3, the produced model with six subscales had acceptable indices (χ^2/df = 4.73, RMSEA = 0.085, CFI = 0.96, NFI =

Table 1. Exploratory Factor Analysis of the Iranian Version of the Mackey Childbirth Satisfaction Rating Scale (Part 1)[a,b,c]

Items	Factors					
	Nurse	Physician	Self		Baby	Overall Satisfaction
			Five Items	Four Items		
1. Your overall labor experience	0.169	0.124	0.134	0.345	-0.028	**0.765**
2. Your overall delivery experience	0.230	0.090	0.092	0.257	0.011	**0.819**
3. Your level of participation in decision-making during labor	0.413	0.172	0.091	**0.681**	0.112	0.095
4. Your level of participation in decision-making during delivery	0.344	0.126	0.144	**0.700**	0.118	0.051
5. Your ability to manage your labor contractions	0.158	0.086	**0.514**	0.503	0.011	0.218
6. Your level of comfort during labor	0.117	0.150	0.163	**0.783**	0.046	0.180
7. Your level of comfort during delivery	0.147	0.171	0.192	**0.775**	0.031	0.205
8. The control you had over your emotions during labor	0.090	0.005	**0.882**	0.109	0.065	0.084
9. The control you had over your emotions during delivery	0.054	-0.005	**0.853**	0.146	0.109	0.039
10. The control you had over your actions during labor	0.210	-0.013	**0.822**	0.075	0.109	0.023
11. The control you had over your actions during delivery	0.100	0.004	**0.797**	0.142	0.137	0.027
14[*]. Your baby's physical condition at birth	0.145	0.162	0.404	0.128	**0.416**	-0.356
15. The amount of time that passed before you first held your baby	0.097	0.075	0.131	0.062	**0.887**	0.016
16. The amount of time that passed before you first fed your baby	0.021	0.128	0.216	0.099	**0.865**	0.006
17. The physical care you received from the nursing staff during labor and delivery	**0.624**	0.307	0.107	0.208	0.088	0.113
18. The physical care you received from the medical staff during labor and delivery	0.257	**0.779**	0.084	0.178	0.146	0.036
19. The technical knowledge, ability, and competence of the nursing staff in labor and delivery	**0.702**	0.179	0.134	0.038	0.041	0.080
20. The technical knowledge, ability, and competence of the medical staff in labor and delivery	0.245	**0.777**	0.026	0.065	0.154	0.046
21. The amount of explanation or information received from the nursing staff in labor and delivery	**0.741**	0.236	0.184	0.177	0.041	-0.105
22. The amount of explanation or information received from the medical staff in labor and delivery	0.296	**0.790**	0.039	0.014	0.090	0.007
23. The personal interest and attention given to you by the nursing staff in labor and delivery	**0.766**	0.302	0.098	0.181	0.048	0.118
24. The personal interest and attention given to you by the medical staff in labor and delivery	0.258	**0.838**	-0.010	0.091	-0.009	0.120
25. The help and support with breathing and relaxation you received from the nursing staff in labor and delivery	**0.708**	0.313	0.081	0.166	0.024	-0.004
26. The help and support with breathing and relaxation you received from the medical staff in labor and delivery	0.272	**0.834**	-0.039	0.109	0.048	0.062
27. The amount of time the nurses spent with you during labor	**0.683**	0.338	-0.023	0.065	-0.059	0.238
28. The amount of time the doctors spent with you during labor	0.240	**0.777**	-0.052	0.059	-0.086	0.179
29. The attitude of nurses in labor and delivery	**0.759**	0.160	0.117	0.208	0.073	-0.072
30. The attitude of physicians in labor and delivery	0.278	**0.740**	0.054	0.237	0.085	-0.115
31. The nursing staff's sensitivity to your needs during labor and delivery	**0.749**	0.345	0.056	0.157	0.007	0.065
32. The medical staff's sensitivity to your needs during labor and delivery	0.294	**0.813**	0.041	0.137	0.044	-0.003
33. The overall care you received during labor and delivery	**0.745**	0.273	0.052	0.103	0.019	0.205
34. Overall, how satisfied or dissatisfied are you with your childbirth experience?	**0.579**	0.239	0.176	0.193	0.188	0.315
Eigenvalue	6.11	5.98	3.57	3.08	1.91	1.84
Explained variance, %	19.11	18.69	11.17	9.65	5.99	5.76

[a] Kaiser-Meyer-Olkin measure of sampling = 0.91; Bartlett's test = 12067.46; df = 496 Sig < 0.001.
[b] Extraction Method: Principal component analysis.
[c] Rotation Method: Varimax with Kaiser normalization.
[*] Items 12 and 13 were deleted.

0.94, NNFI = 0.95, and SRMR = 0.067). In addition, the correlation matrix between the latent variables in CFA is presented in Table 4.

4.4. Convergent Validity

Overall, the estimated convergent validity between the MCSRS and SERVQUAL scales was strong (r = 0.72, P < 0.001). As expected, the results showed a strong and significant correlation among SERVQUAL sub-domains ("reliability," "responsibility," "assurance," and "empathy") and MCSRS

subscales ("nurse," "self," and "overall satisfaction"), which were related to interpersonal relationships (Table 5).

4.5. Reliability of the Scale

As demonstrated in Table 6, the MCSRS showed excellent repeatability. Five factors of the translated version showed satisfactory internal consistency with Cronbach's α of > 0.7, except for the "baby" subscale (α = 0.31). Moreover, the items related to each subscale (e.g., "self") were

Table 2. The Correlation Matrix for Mackey Childbirth Satisfaction Rating Scale

	Self	Nurse	Physician	Baby	Overall Childbirth Satisfaction	Total Satisfaction
Self	1.00					
Nurse	0.48					
Physician	0.30	0.63				
Baby	0.39	0.23	0.23			
Overall childbirth satisfaction	0.53	0.52	0.37	0.12		
Total satisfaction	0.71	0.86	0.80	0.42	0.66	1.00

Table 3. Goodness-of-fit Indices for the Confirmatory Factor Analysis of the Mackey Childbirth Satisfaction Rating Scale After Exploratory Factor Analysis (n = 513)

Parameters		Results
Indices		
Degree of freedom		449
χ^2/df		4.73
Root mean square error of approximation (RMSEA)		0.085
Normed fit index (NFI)		0.94
Non-normed fit index (NNFI)		0.95
Comparative fit index (CFI)		0.95
Incremental fit index (IFI)		0.95
Root mean square residual (RMR)		0.056
Standardized RMR (SRMR)		0.067
Goodness of fit index (GFI)		0.79
Latent variables and factors[a]	**Number of items**	**Factor loading**
Self	5	0.60, 0.88, 0.84, 0.80, 0.76
	4	0.83, 0.81, 0.70, 0.72
Nurse	10	0.83, 0.79, 0.69[b], 0.72, 0.67, 0.76, 0.85, 0.76, 0.74, 0.75
Physician	8	0.82, 0.80, 0.82, 0.86, 0.87, 0.78, 0.79, 0.86
Baby	3	0.49, 0.78, 0.89
Overall childbirth satisfaction	2	0.87, 0.81

[a] All factor loadings are significant at P = 0.01.
[b] The item "Overall, how satisfied or dissatisfied are you with your childbirth experience?" is related to the "overall childbirth satisfaction" subscale.

subjected to reliability assessment, and the corrected item-to-total correlations were examined.

Among items attributed to the "baby" subscale, one item, i.e., "baby's physical condition at birth" showed a correlation of 0.61 with the total score. Other item-to-total correlations for the "baby" subscale ranged from 0.84 to 0.87. Also, among items related to "overall childbirth satisfaction," only one ("Overall, how satisfied or dissatisfied are you with your childbirth experience?") showed a correlation of 0.58. The rest of the item-to-total correlations for "overall childbirth satisfaction" ranged from 0.86 to 0.87.

5. Discussion

The present study is the first comprehensive report on the Iranian version of the MCSRS. The results showed that the translated version possessed relatively sufficient psychometric properties.

Factor analysis confirmed three out of five subscales (i.e., "nurse," "physician," and "baby"), which were identified in the original scale. However, the "self" subscale was divided into two separate dimensions. The first dimension involved the following four items: "your level of participation in decision-making during labor," "your level of par-

Table 4. The Correlation Matrix Between Latent Variables in Confirmatory Factor Analysis

	Overall Childbirth Satisfaction	Baby	Physician	Nurse	Self	
					Five Items	Four Items
Overall childbirth satisfaction	1.00					
Baby	0.05	1				
Physician	0.30	0.24	1			
Nurse	0.45	0.22	0.68	1		
Self						
Five items	0.29	0.42	0.11	0.30	1	
Four items	0.61	0.30	0.46	0.63	0.43	1

Table 5. The Correlation Between the SERVQUAL Scale and the Mackey Childbirth Satisfaction Rating Scale (n = 100)

Satisfaction Quality	Physician	Nurse/Midwife	Baby	Self		Overall Satis-faction	Total	Mean ± SD
				Five Items	Four Items[a]			
Tangibles	0.39[a]	0.55[a]	0.16[b]	0.22[c]	0.47[a]	0.29	0.56[a]	14.55 ± 2.7
Reliability	0.33[c]	0.65[a]	0.13[b]	0.13[c]	0.56[a]	0.51[a]	0.60[a]	17.23 ± 3.9
Responsibility	0.32[c]	0.73[a]	0.16[b]	0.22[c]	0.55[a]	0.46[a]	0.65[a]	13.54 ± 3.8
Assurance	0.21[c]	0.79[a]	0.28[c]	0.29[c]	0.67[a]	0.54[a]	0.68[a]	13.68 ± 3.8
Empathy	0.26[c]	0.81[a]	0.28[c]	0.35[a]	0.67[a]	0.55[a]	0.73[a]	16.71 ± 4.5
Total	0.31[c]	0.80[a]	0.23[c]	0.27[c]	0.66[a]	0.53[a]	0.73	75.7 ± 16.9
Mean ± SD	23.98 ± 16.9[a]	35.03 ± 8.7	11.07 ± 2.5	13.31 ± 3.0[a]	19.29 ± 3.4	6.69 ± 1.8[a]	109.37 ± 19.3[a]	

[a] $P < 0.0001$.
[b] The Correlation Was Insignificant.
[c] $P < 0.05$.

Table 6. The Results of Test-Retest and Reliability Analysis of the Mackey Childbirth Satisfaction Rating Scale

Subscales	Number of Items	Mean (SD), N = 14		ICC (95% CI) Sig			Internal Reliability (Cronbach's α), N = 339
		Test	Retest				
Self	9	37.92 (4.32)	38.50 (4.60)	0.91	0.74 - 0.97	< 0.001	0.70
Baby	3	12.57 (0.93)	12.50 (1.28)	0.91	0.74 - 0.97	< 0.001	0.31
Nurse	9	38.00 (5.50)	37.71 (4.39)	0.95	0.86 - 0.98	< 0.001	0.86
Physician	8	35.07 (4.08)	35.00 (3.92)	0.97	0.93 - 0.99	< 0.001	0.79
Overall Childbirth Satisfaction	3	11.64 (1.82)	11.92 (1.94)	0.89	0.68 - 0.96	< 0.001	0.70
Total Satisfaction	32	135.21 (13.46)	135.64 (13.51)	0.98	0.94 - 0.99	< 0.001	0.78

ticipation in decision-making during delivery," "your level of comfort during labor," and "your level of comfort during delivery." These items showed how nurses interacted with mothers and involved them in the decision-making process.

Based on previous studies, involvement in decision making and control during childbirth are influential fac-tors in maternal satisfaction (7, 12). In this way, mothers are empowered and actively participate in the childbirth process. Moreover, mothers feel in control of their environment, act based on their desires and preferences, meet their emotional, psychological, and physical needs, and feel comfortable during labor and delivery (35, 36).

The second dimension of the "self" subscale consisted

of five items: "your ability to manage your labor contractions," "the control you had over your emotions during labor," "the control you had over your emotions during delivery," "the control you had over your actions during labor," and "the control you had over your actions during delivery." These items primarily showed the mothers' abilities and inner power, and consequently, can be referred to as "self-control." As a result, these five items were categorized as one single dimension.

In the Farsi version of the scale, the final item of "overall childbirth satisfaction" was added to the "nurse" subscale. This was due to two factors. First, this rearrangement is related to the adjacent place of this item to the "nurse" and "physician" items. Second, since the majority of care services are offered by nurses or midwives, and clients mostly interact with these care providers, it is understandable that overall satisfaction depends on the functionality of these individuals; consequently, this item was included in the "nurse" subscale.

In accordance with a study by Rahmqvist and Bara (2010), a good correlation was found between the SERVQUAL scale and the MCSRS (1). Therefore, the Iranian version of the MCSRS can be a proper representative of functional service quality and the level of maternal satisfaction with childbirth experience at hospitals (1, 9, 12, 19, 20). In accordance with previous studies, mothers expected nurses and midwifes (as key maternity care providers) to be skilled, watchful, and compassionate towards them and their infants and to keep them away from hazards.

The present findings revealed that the translated Iranian version of MCSRS had satisfactory repeatability for all the scales and subscales. Also, this scale showed significant and satisfactory internal consistency, except for the "baby" subscale ($\alpha = 0.31$), which was lower than the acceptable alpha value ($\alpha = 0.70$) (34). It should be mentioned that Polit and Beck (2012) considered an r-value between 0.20 and 0.40 to be normal for psychological variables (22).

In terms of the "baby" subscale, the internal consistency was 0.49, 0.72, and 0.78 for "your baby's physical condition at birth," "the amount of time which passed before you first held your baby," and "the amount of time which passed before you first fed your baby," respectively. We did not face any problems in translating the items, and mothers had no trouble understanding the questions. However, it seems that the items related to the "baby" subscale need to be reviewed.

As Larsen and Attkisson noted (10), mothers distinguish between satisfaction and the benefits of curative treatments (item: "baby's physical condition at birth"), which can be gained through childbirth care services at hospitals. Hodnett (2002), in a systemic review, suggested that mothers with healthy newborns might be dissatisfied with their childbirth experiences and vice versa (12).

Although life-threatening events for the mother and newborn can be minimized through maternity care at hospitals (37), mothers pass judgments on the provided services, based on certain personal expectations and desires (Beebe and Humphrey, 2006, Dahlen et al. 2010). Therefore, these expectations should be recognized and considered in the provision of childbirth services to promote maternal satisfaction.

5.2. Limitations

Since satisfaction is dependent on socio-cultural factors, the findings of the present study, conducted in only one city of Iran, cannot be generalized. Therefore, further research is required to re-evaluate the psychometric properties of the MCSRS. Also, since no other valid Farsi childbirth satisfaction questionnaire was accessible to the researchers, the MCSRS was not compared with similar scales (especially a context-based scale).

5.3. Conclusion

The translated version of the MCSRS could provide hospital authorities with a means to evaluate maternal satisfaction with childbirth experiences. Therefore, this scale, with its open-ended questions, can show the level of satisfaction or dissatisfaction of mothers with childbirth services. Moreover, this scale, by showing the differences between "what is" and "what should be," can gather feedback from mothers to tailor healthcare services to their expectations and promote their satisfaction.

Acknowledgments

Footnotes

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