



Factors Associated with the Quality of Obstetric Recovery Among Women Undergoing Elective Cesarean Delivery

Elektif Sezaryen Doğum Sonrası Kadınların Obstetrik İyileşme Kalitesi ile İlişkili Faktörler

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Abstract

Introduction: One in two women give birth by cesarean section; therefore, it is necessary to assess the quality of postoperative recovery. This study was designed to investigate the factors associated with the quality of obstetric recovery in women who underwent cesarean section.

Methods: This descriptive study was conducted between December 28, 2023 and March 15, 2024, among women who had elective cesarean section within 24 h of giving birth in the maternity units of two medical facilities in the Konya province. The personal information form (age, education, number of births, etc.), Obstetric Quality of Recovery score 11 (ObsQoR-11T), and Visual Analog Scale (VAS) for General Health Assessment were used as data collection tools. The p-value was set as <0.05.

Results: The total mean scores of the women (n=358) in the ObsQoR-11T and General Health Perception VAS were calculated as 66.30±24.79 and 60.89±24.36, respectively. The ObsQoR-11T total and general health VAS scores of women with primary education were higher than those of women with higher education. Women who had two or more births had higher ObsQoR-11T total scores than those who had given birth for the first time. Correlation analysis showed that women's ObsQoR-11T scores were associated with general health VAS scores.

Discussion and Conclusion: The results of the study showed that women's education level, problems during pregnancy, and number of pregnancies affected the quality of obstetric recovery. In addition, the quality of obstetric recovery was found to be associated with general health VAS scores.

Keywords: Cesarean section; Obstetrics; Postpartum period; Recovery

A cesarean section is a surgical procedure in which the baby is delivered through an incision in the abdomen and uterus.^[1] According to data from the Health Statistics

Yearbook 2022, the rate of cesarean section among live births in Türkiye is 60.1%, and the rate of primary cesarean section rate is 31.1%.^[2] One in two women gave birth

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by cesarean section, making it necessary to assess the quality of postoperative recovery and care. Recovery from cesarean section is a complex process that depends on the patient, surgical technique, and characteristics of the anesthetic, and may also be affected by the occurrence of postoperative complications. Postoperative mortality and morbidity rates have traditionally been used as criteria, but patient experience or quality of postoperative recovery have not been defined.^[3,4] Postoperative patient-reported recovery outcome measures can provide accurate information regarding postoperative recovery. Patient-reported outcome measures are structured questionnaires that allow patients to report on their own health and assess several domains of recovery from the patient's perspective. The Obstetric Quality of Recovery (ObsQoR) form also allows patients to self-report.^[5,6] In general surgery, areas such as postoperative pain, physical comfort, physical independence, psychological support, and emotional status are assessed.^[4,7] Outcome measures of functional recovery after cesarean delivery often focus on pain scores as the most important dimension of postoperative recovery.^[8] Because cesarean section is a surgical procedure, postoperative care should include recovery as well as basic elements such as newborn care and breastfeeding.^[9,10] In particular, the first 24 h after cesarean delivery is a time when the effects of the anesthetic wear off, the uterus begins to involute, and breastfeeding begins.^[11]

Variables such as early feeding, activity (mobilization), rest, and fluid intake after cesarean section can affect recovery.^[12-14] The Enhanced Recovery After Surgery (ERAS) protocol recommends that the patient be assessed, informed, and care planned based on patient feedback to ensure a rapid recovery.^[15,16] Patient-centered measurement of the quality of obstetric recovery can have a positive impact on the quality of care. Patients experience more pain after cesarean delivery than after vaginal delivery.^[17] In addition, the recovery process after a vaginal birth is generally considered to be quicker and the risk of complications is lower than after a cesarean section.^[18] Therefore, it is important to assess the quality of recovery of a woman who has had a cesarean section. Most studies did not use the ObsQoR tool even though it is recommended as the best measure of functional recovery after cesarean section.^[19,20] In this regard, this study makes a significant contribution to the literature.

Midwives and nurses are health professionals who provide comprehensive care for the health and well-being of women and newborns in maternity hospitals. These professionals contribute to the healthy recovery

of mothers and babies by performing critical tasks, such as managing physiological and psychological changes during the maternity period, health monitoring, education, and support services.^[21,22] The study closely monitored women's recovery in the postpartum period. Therefore, clinicians should be aware that women's descriptive, obstetric, or previous childbirth experiences may influence the quality of recovery after cesarean section. A review of the literature did not identify any studies that assessed the quality of obstetric recovery after cesarean section. Due to the increase in cesarean section rates in our country, there is a need to evaluate the recovery criteria of women after childbirth and plan care accordingly. The aim of this study was to determine the quality of recovery in women who underwent elective cesarean section and to examine the factors associated with it.

Research Questions

1. What are the ObsQoR-11 and General Health Perception VAS scores for women?
2. Is there a relationship between the ObsQoR-11 and VAS scores of women?
3. What variables affect ObsQoR-11 scores in women?

Materials and Methods

Design and Sample

This is a descriptive study. The study population consisted of women who were in the maternity ward of two medical faculties in Konya/Türkiye within 24 h after elective cesarean section between December 28, 2023 and March 15, 2024. The study population comprised 390 women. All eligible women who were in the maternity wards of two medical faculties in Konya/Türkiye within 24 h after elective cesarean section between December 28, 2023 and March 15, 2024 were included in the study. Participants (n=23) were excluded from the study because they did not meet the inclusion criteria. Women who did not complete the data collection form (n=4), who wanted to leave the study (n=2), and whose newborns were admitted to intensive care after birth (n=3) were not included in the study. The study was completed in 358 women. The inclusion criteria for the study were women who could read and write in Turkish, were 18 years of age or older, had an elective cesarean section, were within 24 h of giving birth, and volunteered to participate in the study. The exclusion criteria were illiteracy, complications during or after delivery (postpartum hemorrhage, eclampsia, etc.), and admission of the baby to the neonatal intensive care unit.

Data Collection Process

Data were collected using a personal information form and the ObsQoR-11 and VAS to assess general health perceptions. Women in the first 24 h postpartum completed the data collection forms on a self-report basis. The time taken to complete the data collection forms varied between 5 and 10 min depending on the woman's general health. The researcher looked after the baby while the women completed the data collection form. The patient's relatives were removed from the room, and a quiet environment was created.

Data Collection Tools

Personal Information Form

A seven-question form was developed by researchers using the literature to determine the sociodemographic and obstetric characteristics of women (questions such as age, level of education, marital status, employment status, cesarean section, etc.).^[4,11,22]

Obstetric Quality of Recovery Score (ObsQoR-11)

The scale was developed by Ciechanowicz et al.^[11] in 2019. Özkan et al.^[23] conducted a Turkish validity and reliability study of the scale in 2022. The scale comprises 11 items to assess the quality of women's recovery after cesarean section. The first five items are scored from 10 (strongly disagree) to 0 (strongly agree), and the next six items are scored from 0 (strongly disagree) to 10 (strongly agree). The scale has four subdimensions. The Turkish version of the scale is divided into subdimension 1 (items 3, 4, and 5/tremor, dizziness, nausea, or vomiting), subdimension 2 (items 6 and 11/feeling comfortable and in control), subdimension 3 (items 7, 8, 9, and 10/ability to move independently, hold the baby, feed the baby, and personal care), and subdimension 4 (items 1 and 2/moderate and very severe pain). Subdimension 1 represents physical comfort, subdimension 2 represents emotional state. Subdimension 3 represents physical independence, and subdimension 4 describes pain. The maximum score that can be obtained from the scale is 110, and the minimum score is zero (0). If the total score obtained from the scale is 100 and above, good recovery is indicated. A total score of 87 and below indicates poor recovery. In the study by Özkan et al.^[23] (2022), the Cronbach's alpha value was 0.82. In this study, the Cronbach's alpha reliability coefficient was calculated as $\alpha=0.87$.

General Health Perception Visual Analog Scale (VAS)

In this study, the VAS scores were 0 (worst health) and 100 (best health). In the data collection form, women were given a vertical line to rate their general health after cesarean delivery and were asked to mark the health they felt. A 100-mm vertical form was used in this study.

Statistical Analysis

The IBM Statistical Package for Social Science 25 (Version 25.0) was used for the statistical analysis of the data (IBM Corp., Armonk, NY, USA). The descriptive results are presented as numbers and percentages. The total score obtained from the scale was skewness=0.305 and kurtosis=0.482, and the values showed a normal distribution. The independent groups t-test and Analysis of Variance (ANOVA) analysis were used to compare the descriptive and obstetric characteristics of the women and the mean scores of the scale. The post hoc Tukey analysis was performed using the ANOVA test. The relationship between the ObsQoR-11 score and the total scores of the General Health Perception VAS was examined using Pearson's correlation analysis. Linear regression analysis was used to examine the factors associated with women's ObsQoR-11 total scores, and the "Enter" model was used. The p-value was set as <0.05 .

Ethical Statement

Permission to use ObsQoR-11 was obtained from the responsible author, Gökhan Özkan,^[23] who conducted the Turkish validity and reliability study. Approval was obtained from the Non-Interventional Clinical Research Ethics Committee of Selçuk University, Faculty of Health Sciences, at its meeting on 27.12.2023 (approval number: 2023/10). During the data collection phase, the purpose of the study was explained to the women, and verbal consent was obtained. The women were informed that they had the right to withdraw from the study at any time. The study was conducted in accordance with the principles of the Declaration of Helsinki.

Results

The mean age of the women participating in the study was 28.01 ± 6.36 (min=18, max=46) and 72.1% were between 18 and 32 years old. The postpartum discharge time of the women was determined to be 25.28 ± 2.61 h (min=24, max=36). It was found that 14.8% of the women had chronic diseases, and these diseases were hypertension or diabetes (34%), thyroid (11.3%), heart disease (9.4%),

and other diseases (asthma, blood diseases, anemia, etc.) (45.3%). It was determined that 33.8% of the women had problems during their pregnancy, and when these problems were examined, they were: risk of miscarriage or risk of premature birth (19.8%), gestational diabetes (8.3%), preeclampsia (6.6%), and other conditions (anemia, allergies, heart disease, urinary tract infection, etc.) (65.3%). It was noted that 34.4% of the women had their first child. It was found that 24.9% of the women had previously undergone cesarean section, 22.9% due to fetal conditions (abnormal fetal position, twin pregnancy, breech presentation, fetal pathology, etc.), and 52.2% due to other conditions (maternal request, maternal cardiovascular problems, previous traumatic vaginal delivery, advanced maternal age, etc.). General anesthesia was administered to 57.8% of the women (Table 1).

It was found that there was a statistically significant difference between women's educational status and ObsQoR-11 total scores ($p=0.010$) and subdimensions 1 ($p=0.013$) and 2 ($p=0.017$). In other words, women with primary education had higher ObsQoR-11 total and General Health Perception VAS scores than those with tertiary education. It was observed that there was no statistically significant difference in the ObsQoR-11 and General Health Perception VAS scores of variables such as age group, employment status, and presence of chronic diseases ($p>0.05$). It was found that there was no statistically significant difference between the problems experienced by the women during their pregnancy (gestational diabetes, preeclampsia, heart disease, urinary tract infection, etc.) and the total ObsQoR-11 score. However, women with problems during pregnancy were found to have lower scores on subdimension 2 of the ObsQoR-11 than women without problems during pregnancy ($p=0.035$). Women who had two or more births had higher ObsQoR-11 total scores than those who had a first birth ($p=0.039$). Women who underwent surgery with spinal anesthesia had lower ObsQoR-11 subdimension 4 scores than those who underwent general anesthesia ($p=0.029$) (Table 1).

The mean ObsQoR-11 total score of women was calculated as 66.30 ± 24.79 and the mean of the General Health Perception VAS total score was calculated as 60.89 ± 24.36 . A strong and significant positive correlation was found between women's ObsQoR-11 total and General Health Perception VAS scores ($r=0.805$, $p<0.001$) (Table 2).

A model was constructed in relation to the total ObsQoR-11 score of women, and the model explained 65% of the dependent variable ($R^2=0.651$, $p<0.001$). In

the model, educational status, number of births, and General Health Perception VAS scores were independent variables. Women's ObsQoR-11 scores were analyzed using the Enter model with all variables considered to contribute to the model. According to this model, it was found that women's General Health Perception VAS scores predicted the ObsQoR-11 scores. In other words, as a result of the regression analysis, women's ObsQoR-11 scores were related to women's General Health Perception VAS scores (Table 3).

Discussion

This study assessed the quality of recovery levels of women after cesarean section and identified factors related to it. Women's ObsQoR scores are patient-centered and an important measure of their level of recovery.^[6,19] The ObsQoR-11 total score was 66.30 ± 24.79 in this study. Ciechanowicz et al.^[11] (2019) reported a mean ObsQoR-11 total score of 80.6 ± 17.6 , while Kielty et al.^[5] (2024) found that women who were discharged from the hospital within 48 h had a mean ObsQoR-11 total score of 87 ± 14 . An ObsQoR-11 total score of 87 indicates poor recovery.^[11,23] In this study, women were found to have low ObsQoR-11 levels.

The aim after surgery is usually to achieve rapid physiological recovery and to be ready for discharge. However, after cesarean section, not only physiological recovery is expected, but also the mother's ability to function in a way that allows her to care for her baby.^[11,24] However, some characteristics of the mother or her perception of her general health status may affect obstetric recovery. The study found that women with high levels of education who experienced problems during pregnancy had a lower quality of obstetric recovery. In a study by Sultan et al.^[6] (2020a), it was reported that women gave birth by cesarean section because of prenatal problems (such as heart disease, respiratory diseases, hematological diseases). Women with a higher level of education and who have problems during pregnancy may be considered at risk after surgery. Assessing a woman's demographic characteristics during antenatal care can help determine the risks that she may face after surgery.

Although the quality of obstetric recovery was lower in women who experienced problems during pregnancy than in those who did not, no difference was observed between them. Most studies in the literature have focused on the characteristics of women after childbirth.^[5,6,11,24] More studies are needed on the characteristics

Table 1. Comparison of the descriptive and obstetric characteristics of women with ObsQoR-11 total and subsdimension scores

Variables	n	%	ObsQoR-11 total Mean±SD	Subdimension 1 Mean±SD	Subdimension 2 Mean±SD	Subdimension 3 Mean±SD	Subdimension 4 Mean±SD	General health Perception VAS Mean±SD
Age groups								
18–32 years old	271	75.7	65.79±23.82	21.24±8.08	13.26±5.46	21.57±11.15	9.70±6.83	60.25±24.12
33–46 years old	87	24.3	67.90±27.69	20.29±9.61	14.09±5.84	24.05±12.07	9.45±6.84	62.87±25.14
t			-0.691	0.828	-1.201	-1.772	0.295	-0.871
p*			0.490	0.409	0.231	0.077	0.768	0.384
Educational status								
Primary ^a	104	29.1	71.99±24.54	22.55±7.97	14.76±4.84	23.81±11.06	10.84±7.03	66.63±22.27
Secondary ^b	176	49.2	65.21±24.16	21.06±8.21	13.00±5.87	21.86±11.66	9.27±6.54	59.09±25.12
Tertiary ^c	78	21.8	61.19±25.42	18.83±9.28	12.79±5.50	20.67±11.19	8.88±7.05	57.30±24.26
F			4.654	4.395	4.109	1.816	2.362	4.292
p**/Post-hoc			0.010/a>c	0.013/a>c	0.017/a>b,c	0.164	0.096	0.014/a>b,c
Working status								
Yes	60	16.8	64.66±23.47	19.75±9.47	14.25±5.09	21.70±10.86	8.96±6.72	62.16±22.48
No	298	83.2	66.63±25.08	21.26±8.25	13.31±5.64	22.27±11.53	9.78±6.85	60.63±24.75
t			-0.561	-1.268	1.192	-0.354	-0.847	0.443
p*			0.575	0.206	0.234	0.724	0.398	0.658
Chronic disease presence								
Yes	53	14.8	65.11±26.84	21.01±9.44	13.03±6.74	21.62±12.74	9.43±7.26	56.22±28.43
No	305	85.2	66.51±24.46	21.01±8.31	13.54±5.34	22.27±11.19	9.68±6.76	61.70±23.54
t			-0.379	0.005	-0.519	-0.382	-0.247	-1.326
p*			0.705	0.996	0.606	0.703	0.805	0.190
Problems during pregnancy								
Yes	121	33.8	63.73±25.66	20.35±9.08	12.60±5.91	21.35±11.26	9.42±7.06	58.34±24.67
No	237	66.2	67.62±24.29	21.35±8.14	13.91±5.33	22.59±11.49	9.76±6.72	62.19±24.15
t			-1.404	-1.051	-2.115	-0.972	-0.448	-1.415
p*			0.161	0.294	0.035	0.332	0.655	0.158
Number of births								
One (first birth)	123	34.4	62.57±25.27	20.03±8.76	12.95±5.23	20.84±11.36	8.74±6.78	57.64±24.46
Two and above	235	65.6	68.25±24.37	21.52±8.28	13.74±5.72	22.87±11.40	10.11±6.82	62.59±24.18
t			-2.068	-1.589	-1.276	-1.599	-1.809	-1.833
p*			0.039	0.113	0.203	0.111	0.071	0.068
The type of anesthesia used for cesarean section								
Spinal ^a	87	24.3	64.32±24.01	20.00±8.15	13.51±5.34	22.71±11.30	8.09±6.27	60.00±24.01
Epidural ^b	64	17.9	62.60±23.50	20.43±8.95	12.25±5.90	20.56±10.92	9.35±6.59	55.62±22.45
General ^c	207	57.8	68.28±25.41	21.61±8.43	13.82±5.51	22.44±11.61	10.39±7.03	62.89±24.91
F			1.655	1.300	1.977	0.794	3.591	2.272
p**/Post-hoc			0.193	0.274	0.140	0.453	0.029/c>a	0.105

*t: Independent group t-test; **F: Analysis of Variance (ANOVA) Post-Hoc Tukey test was used; ObsQoR-11: Obstetric Quality of Recovery score; VAS: Visual Analog Scale; SD: Standard deviation, p values less than 0.05 are indicated in bold. The letters a, b, c were used to indicate the difference between groups.

Table 2. Relationship between women’s ObsQoR-11 total and subdimensions and general health perception VAS scores

Scales	ObsQoR-11 total	Subdimension 1	Subdimension 2	Subdimension 3	Subdimension 4
General health perception VAS	r=0.805*	r=0.496*	r=0.743*	r=0.690*	r=0.551*

ObsQoR-11: Obstetric Quality of Recovery score; VAS: Visual Analog Scale; *: p<0.001; r: Correlation value.

Table 3. Examining factors associated with women’s ObsQoR-11 total scores

Independent variables	β	t	p	% 95 CI	
				Lower bound	Upper bound
Educational status	-1.328	-1.144	0.253	-3.610	0.955
Number of births	-1.052	-0.610	0.542	-2.338	4.442
General health perception VAS	0.812	25.098	<0.001	0.748	0.876

R=0.807; R²= .651; [F(df regression, df residual); F(3, 354)=219.719]; (Durbin–Watson=1.288 (p<**0.001**)). Dependent variable: Total ObsQoR-11 score of women; p values less than 0.05 are indicated in bold; β: Unstandardized beta, t: Linear regression t value; CI: Confidence interval; VAS: Visual Analog Scale.

of the pregnancy period. In addition, women who gave birth two or more times had a better quality of obstetric recovery than women who gave birth for the first time. This may be because women who have undergone a previous operation attempt to recover more quickly. Ciechanowicz et al.^[25] (2019b) determined that there was a positive relationship between the number of births of women and the level of obstetric recovery. It should be recognized that women who give birth for the first time are at risk of poor quality obstetric recovery. However, Liu et al.^[26] found that the gastrointestinal functions of primiparous pregnant women returned to normal more quickly after cesarean section. Differences may be due to variables related to the quality of recovery after cesarean section. Following some protocols after cesarean section can have a positive effect on obstetric recovery. Kielty et al.^[5] (2024) examined the quality of obstetric recovery in women who underwent an improved recovery program after elective cesarean section. The study found that the program developed improved the obstetric recovery score. The quality of postoperative recovery can be improved by planning postpartum care according to the ERAS protocols.^[27]

This study found that the type of anesthesia did not affect women’s overall quality of obstetric recovery, but in subdimension 4, which relates to pain, spinal anesthesia was found to have a lower quality of obstetric recovery than general anesthesia. When the results of the studies in the literature were examined, it was found that there was no difference between the levels of general quality of obstetric recovery.^[23,25,28] It is possible that different types of anesthesia have similar effects on the recovery process after childbirth.

The study found that the quality of women’s obstetric recovery was related to the VAS scores. This indicates that a woman’s feedback about her own health has an effect on the quality of her recovery. Most of the studies that have been conducted have assessed recovery after cesarean section in relation to anesthesia.^[4,5,11] This study examined the factors that influence the quality of recovery after cesarean section and is expected to contribute to the field.

Limitations

The study was conducted in two medical faculties in Konya, Türkiye. Therefore, the results of this study cannot be generalized to the maternity population of the country. In addition, the study was performed within 24 h after cesarean delivery. It does not provide information about the state of recovery in the late postpartum period. This study examined some variables (sociodemographic, obstetric, etc.) that may be related to the quality of obstetric recovery. It does not provide information on other related variables that may affect obstetric recovery (elective or emergency cesarean section, high-risk pregnancy status, etc.). Another limitation of this study is that similar studies are limited, and there are few related studies in the literature.

Conclusion

The results showed that women had low scores for the quality of obstetric recovery. In this study, we determined that women’s education level, the problems they experienced during pregnancy, and the number of pregnancies affected the quality of obstetric recovery. In addition, women’s quality of obstetric recovery was found to be related to VAS scores for general health

perception. The increasing incidence of cesarean section worldwide has increased the importance of postoperative care. The recovery status of women who have given birth by cesarean section should be closely monitored, not only for vital signs but also for all variables that affect the quality of recovery. Health professionals should plan women's health care by determining the quality of their obstetric recovery. In this way, women's quality of recovery will improve, and quality health care services will be provided. It is recommended that future studies examine the variables that affect women's quality of obstetric recovery with larger sample sizes and at longer time intervals. In addition, randomized controlled experimental studies on the quality of obstetric recovery should be planned.

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