



## Quality of life after cesarean and vaginal delivery

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**Abstract:** Cesarean rates in recent decades have been increasing. A number of studies have shown that cesarean increases maternal morbidities. The aim of this study is to compare the quality of life after cesarean and vaginal delivery. This prospective study was carried out on 356 pregnant women visiting urban health centers in Shahroud City in north east Iran, in 2011. The subjects filled out the quality of life questionnaire in the third trimester of pregnancy and at 8 weeks postpartum. In primiparas, the mean global QOL scores for the cesarean and vaginal delivery groups were 67.65±12.7 and 72.12±11.8, respectively. Also, the scores for the physical, psychological, and social domains of QOL were higher in the vaginal delivery than the cesarean group (P<0.05). The means values of following variables were significantly different in the two groups: family income, age, and postpartum rehospitalization (P<0.05). Regression analysis revealed that after adjusting for age, income and postpartum rehospitalization, delivery type remained as a predictor of the score for the social domain (R<sup>2</sup>=3.3%, B=-.181 P=.022, CI [-12.4, .985]) and the global score of QOL (R<sup>2</sup>=2.4%, B= -.154, P=.049, CI [-7.732, -.018]). Cesarean affected the QOL of primiparas negatively while it did not affect the QOL of multiparas.. More studies should be done to examine the effects of cesarean on QOL in earlier stages of the postpartum.

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**Key words** Quality of Life; cesarean; pregnant women; postpartum period

### 1. Introduction

With the declining maternal mortality rates and general improvement in pregnancy outcomes in recent decades, the aims of maternity care in developed countries have now expanded to areas beyond the mere detection and management of risk factors which threaten the outcome of the pregnancy. One of the components of this broadened view of maternity care has been the adoption of enhancement quality of life (QOL) as one of the aims of prenatal and postnatal care (Symon, 2003). As a result, many studies have been undertaken to investigate the effects of pregnancy and delivery outcomes on maternal QOL (Couto, 2009).

According to World Health Organization (WHO) recommendations, the reasonable rate for cesarean is 5-15 percent of all deliveries performed. Rates more than 15% are considered inappropriate and

unnecessary and do not produce better health outcomes (1985). In most countries, and in particular in developing countries, it has been continuously rising and has gone well beyond the WHO recommendations, without being accompanied by any decline in maternal mortality and morbidity rates (Mccurt, 2007). The same trend has been affecting Iran in recent decades. Another study in 1999 reported cesarean rates of 14.9-39.2% in 6 teaching hospitals and 87.4% and 78.5% in 2 private hospitals in Tehran (Garmaroudi, 2002). Overall, the rate of cesarean in Iran increased from 35.4% of deliveries in 1999 to 42.3% in 2003 (Ahmad-Nia, 2009).

A number of studies on cesarean have reported increased the risk of maternal morbidities such as: hysterectomy, hemorrhage, infection, thrombosis, and postpartum depression (Villar, 2007). Also, results of

some studies indicate that symptoms such as fatigue, headache, lack of sleep, anemia, urinary infection and other conditions needing treatment in the first 8 weeks after delivery are higher in women with cesarean section than those with vaginal delivery (Borders, 2006; Thompson, 2002). It is evident that the experience of pain and fatigue can negatively affect QOL after birth (Scolt, 2003). Despite the extent of postnatal morbidity, there are only a limited number of studies comparing quality of life in new mothers after different types of delivery and even studies on ante- and postnatal quality of life in general are rare (Symon, 2003). In a study in Iran comparing the quality of life in women after VD and cesarean at two weeks postpartum, the cesarean group had lower scores in the mental and physical subscales of QOL compared with the vaginal delivery group (Abedian, 2010). The above studies didn't consider factors such as parity or age which can affect the QOL. Also, they did not compare the QOL of two groups in the antenatal period to ensure that two groups are equal, which would be of value in case there was no difference in QOL between the two groups in postpartum. Considering the WHO's emphasis on abandoning a merely "mechanistic model of medicine" (World Health Organization, 1984) and its initiative in developing WHOQOL-BREF instrument (World health organization, 1996), it is surprising to find only a small number studies on the quality of life during pregnancy or postpartum using this instruments. Therefore, the present prospective study attempts to investigate and compare quality of life of women with cesarean and VD using WHOQOL-BREF instrument. Also, we divided the women into group according to their parity in order to examine how the mode of delivery affects the QOL in primiparas and multiparas.

## 2. Materials and Methods

This study is part of a longitudinal study which was started in May, 2011 in 10 urban health centers in Shahroud, Iran. The study protocol was approved by Ethics Committee of the Shahroud University of Medical Sciences (Approval No. 90.002). A total of 390 women who attended Shahroud health centers to receive prenatal care and met the inclusion criteria were selected using non-probability sampling method of which 356 accepted to participate in the study and gave informed consent and 340 were followed up until 8 weeks postpartum. The inclusion criteria were gestational age more than 28 weeks and delivering a live and healthy baby and absence of major psychological and medical problems (e.g. depression, disabilities, and drug intake). The exclusion criteria were infant death during 8 weeks postpartum, and acute stressful events during the course of study (e.g. lose of a family member or divorce). After explaining the aims of the study and obtaining written consent

from women, they were given instructions on how to fill out the WHOQOL-BREF questionnaire. To preserve Participant anonymity, all the questionnaires were given to participants with an envelope to cover the questionnaire after filling it out. Midwives of health centers were responsible of distributing and gathering questionnaires.

### 2.1. Instruments

#### 2.1.1. Interview form

An interview form consisting of personal (age, education level, employment status, family income, housing type) and obstetrical information (parity, pregnancy wantedness, infant birth weight, infant feeding method) was completed during the third trimester of pregnancy and at the first visit postpartum.

#### 2.1.2. WHOQOL-BREF

The participants completed the WHOQOL-BREF questionnaire in the third trimester of pregnancy and at 8 weeks postpartum. The WHOQOL-BREF was developed by the World Health Organization as a shortened version of the WHOQOL-100 instrument. It contains 26 questions. Two questions are about an individual's overall perception of quality of life and health and twenty four questions concern four subscales: Physical, Psychological, Social Relationships and Environment (World health organization, 1996). The items are rated on a 5-point Likert scale. The raw subscale scores converted to a 0-100 scale. Higher scores mean a better quality of life. The validity and reliability of Iranian translation of WHOQOL-BREF was investigated in a previous study which indicated that all its domains met the minimum reliability standards (Cronbach's alpha and intra-class correlation  $> 0.7$ ), except for social relationships (alpha = 0.55). It also reported that it discriminated well between subgroups of the study samples differing in their health status and demonstrated statistically significant correlation with the Iranian version of the SF-36 (Nedjat, 2008). The validity of the questionnaire among women in the postpartum period has also been investigated. In one study All domains of the WHOQOL-BREF met reliability standards (alpha coefficient  $> 0.70$ ) and the questionnaire discriminated well between depressed and non-depressed groups ( $P < 0.001$ ) and showed satisfactory correlations with the Australian Unity Wellbeing index ( $r > \text{or} = 0.45$ ) (Webster, 2010).

#### 2.1.3. Statistical analysis

Statistical analysis was performed using Spss 12 (SPSS Inc., Chicago, IL, USA). Chi-square and t- test were done to compare women's characteristics between the two groups, Mann-Whitney-u test was performed to compare the QOL scores of the two groups in the ante-

and postnatal periods. Multiple regression analysis was used to disclose the relationship of QOL and delivery type in primiparas. The internal consistency of the questionnaire was examined using Alpha Cronbach coefficient. The significance level of tests was set at 0.05.

### 3. Results

Shahroud is a small city in northeast of Iran. It has 10 public health centers and 2 public hospitals in Shahroud, one a general hospital and the other a maternity hospital in which all the participants in the study gave birth.

### 3.1. Women's characteristics

The characteristics of the women in the cesarean and VD groups are compared in Table 1. Mean age of women was  $26.17 \pm 4.42$  with ages ranging from 15 to 42 years. Median monthly income of the household was 4 million RLS. Median years of education were 12 with range (4-21). The mode of delivery for 53% of the sample was cesarean.

The values of Alpha Cronbach coefficient for each of the four subscales and the whole WHOQOL-BREF questionnaire in the antenatal and postpartum periods were, respectively: physical subscale 0.83 and 0.82, psychological 0.78 and 0.73, social relationship 0.77 and 0.68, environmental 0.79 and 0.80 and the whole questionnaire 0.92 and 0.93.

Table1. Sociodemographic characteristics of the women in the two groups

Characteristics	Vaginal delivery	Cesarean	Total	p-value
	N (%)	N (%)	N (%)	
Age (y) M±SD	25.46±4.4	26.86±4.7	26.12±4.6	.005**
<20	12(3.5)	4(1.2)	16(4.5)	
20-29	132(38.4)	143(41.6)	275(80.7)	
30=<	18(5.2)	35(10.2)	53(14.8)	
Education level (y)	11.15±3.63	11.57±3.84	11.4±3.7	.301
Primary(<7)	17(7.6)	26(7.6)	43(12.5)	
High school(7-12)	105(30.5)	102(29.7)	207(60.2)	
University(12<)	39(11.3)	55(16)	94(27.3)	
Family income (million RLS) Mean±SD	404.73±142.5	445.53 ±156.8	424±150	.007**
<425	94(34.4)	81(29.7)	175(64.1)	
425=or<	38(13.9)	60(22)	98(35.9)	
Not reported	41(11.95)	29(8.45)	70(20.4)	
Infant birth weight (g)	3234±372	3204±396	3217±383	.490
Parity				
Primiparous	95(27)	103(30)	198(57)	.577
Multiparous	67(20)	80(23)	147(43)	
Nature of pregnancy				
Wanted	141(6)	162(6)	303(88)	.787
Unwanted	20(41)	21(47)	41(12)	
Employment				
No	148(43)	166(48)	314(91)	.834
Yes	14(4)	17(5)	31(9)	
House				
Pay rent	84(25)	91(26)	175(51)	.811
Owner	78(23)	89(26)	167(49)	
Mother rehospitalization in early postpartum				
No	157(45.5)	168(48.7)		.043*
Yes	5(1.4)	15(4.3)		
Infant feeding method				
Exclusive breastfeeding	43(13)	57(17)	100(29)	.315
Nonexclusive Breastfeeding	118(34)	123(36)	241(71)	

### 3.2. Comparison of cesarean and vaginal delivery groups

Comparison of two groups showed that there was no significant difference between the two groups in all variables except in women's age ( $P=0.005$ ), family income ( $P=0.007$ ), and mothers' rehospitalization in early postpartum ( $P=0.043$ ). With cesarean group were older, had higher family income, and more rehospitalization in early postpartum. Also, we found that cesarean affected QOL of primiparas and multiparas differently.

Table 2 shows the scores obtained by the two groups in all the subscales of the WHOQOL-BREF in the ante- and postnatal period. Analyzing all the items of the questionnaire individually showed that the scores obtained by the two groups for all questions were not significantly different, except for the scores obtained by the vaginal delivery group for Q11 which belongs to the psychological domain (Are you able to accept your bodily appearance?) and Q21 from the social relationship domain, (How satisfied are you with your sex life?), which were significantly higher ( $P = 0.037$ ).

Table2. Means and standard deviations of QOL in the third trimester of pregnancy and postpartum based on delivery type

Domains	QOL scores in Pregnancy			QOL scores in postpartum		
	Cesarean	Vaginal delivery	P-value	Cesarean	Vaginal delivery	P-value
M(SD)	M(SD)	M(SD)		M(SD)		
Physical	64.01(17)	61.47(17.26)	.121	69.63(14.98)	72.32(15.83)	.084
Psychological	64.14(15.61)	62.79(17.72)	.668	62.73(16.39)	65.88(17.9)	.047*
Social	66.53(20.84)	65.99(20.3)	.925	66.8(18.34)	71.67(19.42)	.030*
Environmental	69.26(13.88)	68.08(15.68)	.742	66.55(15.08)	69.53(15.04)	.066
Overall QOL	4.01(.69)	4.03(.73)	.844	4.02(0.68)	4.04(0.83)	.322
Overall health	4.05(.80)	4.01(.82)	.782	3.91(0.77)	3.96(0.88)	.313
Global	66.89(13)	65.45 (14.4)	.425	67 (13)	69.93 (14.2)	.033*

In Table 3, the cesarean and vaginal delivery groups have been classified according to parity and their scores in the four QOL domains in postnatal period have been compared.

In multiparas, there was no relationship between QOL and delivery type. In primiparas, regression analysis revealed that after controlling for age, income

and postpartum rehospitalization, the relationship between delivery type and the scores of physical and psychological domain of QOL disappeared, but the delivery type remained as a predictor of the score for the social domain ( $R^2=3.3\%$ ,  $B=-.181$   $P=.022$ ,  $CI [-12.4, .985]$ ) and the global QOL score ( $R^2=2.4\%$ ,  $B= -.154$ ,  $P=.049$ ,  $CI[-7.732, -.018]$ ).

Table3. Comparison of the scores of the cesarean and vaginal delivery groups in QOL domains in postnatal period based on parity

Parity	WHOQOL-BREF Domains				
	Physical	Psychological	Social	Environmental	Total
Primipara					
Vaginal delivery (N=94)	74.16±14.29	68.92±15.07	73.13±16.67	71.64±13.03	72.12±11.8
Cesarean (N=100)	69.35±14.61	63.08±16.40	66.66±19.13	67.96±14.46	67.65±12.7
P- value	.019*	.009**	.020*	.114	.013*
Multipara					
Vaginal delivery (N=66)	69.69±17.57	61.55±20.64	67.17±22.45	66.52±17.16	66.78±16.6
Cesarean (N=79)	69.98±15.53	62.28±16.47	66.98±17.42	64.75±15.73	66.16±13.4
P- value	.957	.932	.633	.402	.743

#### 4. Discussion

The WHOQOL-BREF was used in the present study to compare QOL in the ante- and postnatal periods in women with caesarean and VD. Results of the present study indicate that in primiparous women, the global QOL and social domain scores are negatively influenced by cesarean section. An explanation may be suggested by considering the fact that in our study the VD group was more satisfied with their sexual lives and bodily appearance in the postnatal period. Results of a systematic review on postpartum sexual function outcomes reported that short-term postpartum sexual problems are highly prevalent, ranging from 22% to 86%. Some of the studies had found no differences in sexual functioning between women with cesarean and those with vaginal delivery (Hicks, 2004). According to other studies at two and eight weeks postpartum, women with VD had higher scores in the psychological domain of QOL than women with cesarean, but there were no significant difference in the social domain of QOL between two groups either two or eight weeks postpartum (Abadian, 2010; Nikpour, 2011]. In a study in Iran, the VD group had significantly better scores in the vitality and mental health subscales of the Short Form Health Survey (SF-36) at two month postpartum (Torkan, 2009). But, results of a review showed that there was no evidence indicating delivery by caesarean increased the risk of postpartum depression (Carter, 2006). We found that women in VD group had less rehospitalization in early postpartum than cesarean group. A study that compared sleep and fatigue in mothers in early postpartum reported less hospitalization and more total sleep time in the vaginal birth than caesarean group (Lee, 2007).

The finding of the present study contributes to our understanding of the relationship between the mode of delivery and QOL and the role of parity and other variables in this relationship.

Unfortunately, many women in our society believe that cesarean is a better method of delivery. Results of a study in selected public and private hospitals in Tehran showed that a significant proportion of cases of cesarean section (15.6%) were due to maternal request of which 89.7% were inappropriate (Ostovar, 2012). Mothers are not adequately informed about the advantages or disadvantages of different methods of delivery and there are no education and counseling programs for this purpose. Besides, there has been a growing tendency toward cesarean as a means of avoiding labor pain (Nerum, 2006). Also, considering the high rate of cesarean (53%) in two public hospitals in a small city like Shahroud, it is clear that the problem calls for a more comprehensive approach and it cannot be attributed only to the attitudes of individual women.

Hopefully the findings of the present study may be of help to healthcare policy makers in devising policies to control the cesarean rate in Shahroud. We examined the QOL of women at 8 weeks postpartum. We recommend that further studies be designed to examine the QOL of women at closer time after delivery such as 2 or 4 weeks postpartum.

In short, cesarean affected the social domain and the global score of QOL of primiparas negatively. More studies should be done to examine the effect of cesarean on QOL at closer time after delivery.

This study used the WHOQOL-BREF to evaluate the quality of life, an instrument which is not specifically designed for pregnant women. However, a previous study comparing The Mother-Generated Index (MGI) with the WHOQOL-BREF has reported a strong correlation between the two questionnaires (Zubaran, 2009). As our study enjoy of good sample size of all pregnant women attending the all Shahroud health centers, and with regard to the fact that antenatal care coverage at least once and four times was reported 98% and 94% respectively in Iran in 2006-2010 (UNICEF, 2011), the study sample is representative and our result can be generalized to all Shahroudi pregnant women.

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