Original Article

The relationship between mode of delivery and postpartum physical and mental health related quality of life

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Abstract

Background: The postpartum period is a critical life event for women leading physical, emotional, and social changes. Postpartum quality-of-life may be affected by delivery mode. The purpose of this study was to determine the association between postpartum health related quality-of-life (HRQoL) and mode of delivery.

Materials and Methods: In a prospective study, 300 women consisting of 150 vaginal deliveries (VD) and 150 cesarean sections (CS) were recruited between August 2007 and October 2008 from health centers. Stratified random sampling was performed to select 10 Health Centers in Kashan City, Iran. Physical and mental HRQoL was measured using the SF-36 questionnaire and compared between VD and CS groups 2 and 4 months after delivery. Data were analyzed by using the Student's *t*-test, Mann–Whitney U-test, and Chi-square test.

Results: Results showed physical HRQoL at 2 months after VD was better than CS significantly; there were significant differences in the physical functioning and role physical subscales. Furthermore mental HRQoL at 4 months after VD was better than CS significantly; there were significant difference in the social function and emotional health subscales.

Conclusion: The findings demonstrated that VD leads to a better physical health at 2 months after delivery and mental health at 4 months after delivery. Efforts should be made to reduce CS.

Key words: Caesarean section, delivery, Iran, mental health, postpartum, quality of life

Introduction

Cesarean sections (CS) performed following a medical indication is necessary for life-saving. It is a surgical intervention to prevent maternal or perinatal complications and the appropriate rate of use should be one associated with the lowest rate of maternal and perinatal morbidity and mortality.[1] However, women are increasingly undergoing CS without any medical indication, which may contribute to the world-wide higher rates of CS.[2] There has been a debate about the appropriateness of CS performed due to maternal request or what Physicians suggest to their patients.[3]

Result of the World Health Organization (WHO) global survey in a large cross-sectional study demonstrated severe maternal morbidity in planned cesarean delivery are higher than planned vaginal delivery (VD).[4,5] WHO recommended 10-15% rate of cesarean section.[6] This recommendation was based on the cesarean section rates of the countries with the lowest maternal and neonatal mortality rates in the world at that moment. The rate of cesarean delivery has increased dramatically over the past decade. Many studies have shown that the actual rate of CS in numerous countries is far higher than the recommended range.[7-9] The rate of cesarean section out of all deliveries in Iran increased by six-fold over the past three decades.[10] These results are in accordance with previous reports that confirm the growing rate of CS in Iran.[11,12] However, the debate on the best practices (VD vs. CS) to minimize postnatal morbidity still is a matter of controversy both from professionals' perspectives and from women's perceptions of the childbirth experience.[13] The postpartum period are critical life events for women leading to physiological, emotional, and social changes.[14] Postpartum mothers experience certain physical health conditions that may affect their quality-of-life (QoL), future health, and health of their children. Several studies confirm that socio-economic deficiencies and medical problem are risk factors for decreased QoL

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and depressive symptoms in women during the postnatal period.[15,16] Mode of delivery and childbirth experience may have a long-term effect on self-rated health. Several studies have investigated the association between type of delivery and health related quality-of-life (HRQoL), but there is conflicting, with some studies reporting decreased HRQoL in cesarean delivery.[17-19] Whereas, other studies did not confirm any relations between CS and HRQoL.[20-22] In a study it was found that patients after VD had higher mean physical HRQoL scores than after CS while mean mental HRQoL were similar among VD and CS groups.[19] In another study, cesarean delivery is a predictor of poorer mental health in postpartum women.[23] However, careful assessment of the predictor variables of poorer physical and mental health after childbirth may improve the quality of postpartum care. The aim of this study was to explore the impact of delivery mode on women's postpartum physical and mental health related QOL.

Materials and Methods

A prospective study was performed in the period August 2007 to October 2008 of pregnant women who admitted for prenatal care in the health center. A total of 10 health center were selected randomly in Kashan City in Iran. After applying inclusion and exclusion criteria, there were 365 consecutive women that agreed to take part in the study and all women gave their informed consent before entering the study. Of whom 342 women entering the study after delivery consist of 175 (%51.2) mothers after VD and 167 (%48.8) mothers after CS (elective or emergency CS), in follow-up 2 months after delivery (time 1 assessment) 162 women after VD and 159 after CS completed QoL questionnaire. Of whom 150 women in each type of delivery completed QoL questionnaire 4 months after delivery again (time 2 assessment) in health centers. In these analyses, we have included all women with singleton, live born infant, term pregnancy, prenatal care started before 20 weeks gestation, having uncomplicated pregnancies, parity 1-3 and the study population was ethnically Iranian, not having: others pre-existing diseases, history of infertility, and divorce. Excluding criteria were instrumental delivery, birth weight less than 2,500 g, child or fetal dead, child abnormality, not breast feeding and medical problems in child and mother. All patients were interviewed by the trained midwives and a structured questionnaire was used to evaluate women's socio-demographic characteristics and obstetric variables. Also we used a generic HRQoL instrument to measure QoL (categorized into physical and mental health). QoL was assessed using the Iranian version of Short Form-36 health survey social functioning (SF-36). SF-36 is a standard and well-known generic health related QoL instrument and proved to be highly feasible, reliable and is a good choice to measure health related QoL after delivery.[19] The validity of the Iranian version of the SF-36 is well documented.[24] It consists of 36 items, organized into eight scales: Physical functioning (PF), Role limitation due to physical problems or role physical (RP), bodily pain (BP), general health (GH), Vitality (VT), Social Functioning (SF), Role limitation due to emotional problems or role emotional (RE), and emotional well-being (EW). The scores on each subscale range from 0 to 100 with higher scores indicating a better condition, The SF-36 furthermore provides physical health (based on the PF, RP, BP, and GH scales) and a mental health (relating to VT, SF, RE, and EW). We compared women's socio-demographic characteristics and physical and mental health scores between women with VD and CS that completed QoL questionnaire at 2 and 4 months after delivery (150 VD and 150 CS). Furthermore score differences within each mode of delivery between time 2 and time 1assessment were evaluated. Data were analyzed by using the SPSS software (version 16). Differences in means were analyzed using the Student's *t*-test and the Mann–Whitney U-test. The Chi-square was applied to qualitative variables. *P* value of less than 0.05 was regarded as significant. The study protocol was approved by the Local Research Committee in Kashan University of Medical Sciences.

Results

Results on the demographics characteristics in women presented in Table 1. There were no significant differences between VD and cesarean groups with regard to these variables. Maternal age was between 20 and 40 and VD was performed up to %80 with episiotomy or laceration. The physical and mental health parameters related QOL at 2 months follow-up has shown in Table 2; total physical health score in VD women was higher than CS group. Mean scores was 60.52 ± 13.28 and 57.37 ± 12.20 ($P = 0.034$) respectively. On performing a detailed analysis, statistically significant differences in 2 parameters; PF ($P = 0.001$) and RP ($P = 0.026$) were found. Total mental health score in CS women was generally higher than VD, but differences were not significant. Comparing physical and mental health parameters at 4 months postpartum presented in Table 3. Results showed that the VD group in compared CS group had a higher score in total physical health (61.37 ± 13.05 and 58.36 ± 14.09 $P = 0.05$) and total mental health was (64.99 ± 12.44 and 61.83 ± 13.58 $P = 0.036$) respectively. In comparing subscales; differences statistically significant were found for 1 parameter in physical health (physical function $P = 0.01$) and for 2 parameter in mental health

Table 1: General characteristics of patients according to mode of delivery

Characteristics	Vaginal delivery (*n*=150)	Cesarean section (*n*=150)	*P* value
	Number (%)	Number (%)	
Maternal age			
25<	63 (42)	69 (46)	0.44
30	64 (42.7)	51 (34)	
30-35	18 (12)	23 (15.3)	
35>	5 (3.3)	7 (4.7)	
Birth weight			
3000<	40 (26.7)	43 (28.7)	0.21
3000-4000	106 (70.7)	97 (64.7)	
4000>	4 (2.7)	10 (6.7)	
Children			
1	72 (48)	72 (48)	0.39
2	65 (43.3)	58 (38.7)	
3	13 (8.7)	20 (13.3)	
Occupational status			
Employed	15 (10)	15 (10)	1
Unemployed	135 (90)	135 (90)	
Unwanted pregnancy			
Yes	21 (14)	16 (10.7)	0.38
No	129 (86)	134 (89.3)	
Sex of fetus			
Male	72 (48)	74 (49.3)	0.81
Female	78 (52)	76 (50.7)	
Level of education			
Illiterate and primary	62 (41.3)	54 (36)	0.26
Middle or high school	75 (50)	72 (48)	
College education	13 (8.7)	24 (16)	

Student *t*-test and the Mann–Whitney U-test were applied to quantitative variables. The Chi-square was applied to qualitative variables

Table 2: Distribution of postpartum physical and mental health according to mode of delivery at 2 months after delivery

Parameters	Vaginal delivery (*n*=150)	Caesarean section (*n*=150)	*P* value
	Mean (SD)	Mean (SD)	
Physical health			
Physical functioning	61.06 (19.80)	53.13 (20.18)	0.001
Role physical	55.95 (18.11)	51.12 (19.33)	0.026
Bodily pain	59.01 (23.35)	58.45 (22.74)	0.83
General health	66.04 (17.23)	66.80 (16.67)	0.69
Total physical health	60.52 (13.28)	57.37 (12.20)	0.034
Mental health			
Social functioning	60.70 (22.90)	62.16 (21.76)	0.57
Emotional well-being	64.32 (21.62)	66.52 (18.57)	0.34
Role emotional	57.22 (24.09)	57.73 (21.01)	0.84
Vitality	58.90 (18.55)	59.66 (18.88)	0.72
Total mental health	60.28 (16.60)	61.52(14.97)	0.49

Student *t*-test and the Mann–Whitney U-test were applied

Table 3: Distribution of postpartum physical and mental health according to mode of delivery at 4 months after delivery

Parameters	Vaginal delivery (*n*=150)	Caesarean section (*n*=150)	*P* value
	Mean (SD)	Mean (SD)	
Physical health			
Physical functioning	60.06 (20.94)	53.76 (20.87)	0.01
Role physical	56.28 (18.59)	52.56 (19.60)	0.09
Bodily pain	62.13 (21.82)	61.63 (23.65)	0.84
General health	67.02 (16.84)	65.50 (18.40)	0.45
Total physical health	61.37 (13.05)	58.36 (14.09)	0.05
Mental health			
Social functioning	68.42 (19.24)	63.48 (21.78)	0.036
emotional well-being	71.37 (17.70)	67.15 (18.12)	0.042
Role emotional	60.11 (21.53)	57.87 (21.60)	0.36
Vitality	60.05 (17.01)	58.81 (15.94)	0.51
Total mental health	64.99 (12.44)	61.83 (13.58)	0.036

Student *t*-test and the Mann–Whitney U-test were applied

(SF $P = 0.036$ and EW $P = 0.042$). To compare the findings within each group results demonstrated that the VD group showed more improvements on total mental HRQoL from time 1 to time 2 assessment [Table 4]. The mean score differences (4 months scores minus 2 months scores) in VD and CS groups were 4.70 ± 16.29 and 0.3 ± 13.81 ($P = 0.01$) respectively. In comparing subscales differences statistically significant were found for 2 parameter (SF $P = 0.03$ and EW $P = 0.01$).

Discussion

Our study showed that physical HRQoL at 2 and 4 months after delivery is better in women with VD. There were significant differences in the PF and RP parameters in time 1 and PF in time 2 assessments. Also mental HRQoL at 4 months after delivery and improvement on mental HRQoL from time 1 to time 2 assessments was better in VD group; differences were significant in SF and EW. Mental HRQoL at 2 months after delivery was better in CS group but differences were not significant in each of parameters; a reason for this occurred is mothers after CS supported better due to surgical intervention.[25] Also, in our study, nearly %80 of VD was performed with episiotomy or laceration. In a study, the median time to restart intercourse in the normal VD with episiotomy was 40 days and in the CS group was 10 days postpartum and there was significant decreases in the sexual functioning scores after VD when compared to CS group.[26] Concerning its effects on postpartum sexual

Table 4: The mean score differences within each mode of delivery (4 months scores — 2 months scores)*

Physical and mental health	Vaginal delivery (*n*=150)	Caesarean section (*n*=150)	*P* value
	Mean (SD)	Mean (SD)	
Physical health			
Physical functioning	−1.00 (20.06)	0.63 (20.97)	0.49
Role physical	0.32 (22.12)	1.43 (22.48)	0.66
Bodily pain	3.12 (26.15)	3.18 (25.26)	0.98
General health	0.98 (17.19)	−1.30 (15.95)	0.23
Total physical health	0.85 (13.27)	0.98 (13.04)	0.93
Mental health			
Social functioning	7.72 (25.23)	1.32 (26.90)	0.03
Emotional well-being	7.05 (25.85)	0.62 (17.42)	0.01
Role emotional	2.88 (282.49)	0.13 (25.10)	0.37
Vitality	1.15 (17.78)	−0.85 (19.88)	0.35
Total mental health	4.70 (16.29)	0.30 (13.81)	0.01

*Positive values indicate improvements and negative values indicate deteriorations. Student *t*-test and the Mann–Whitney U-test were applied

functioning. Sexual health is perceived as an integral part of GH as it can affect postpartum depression.[27]

There are many studies that assess morbidity resulting from VD and CS, but a few studies have focused on women's postpartum HRQoL. However, our results are consistent with several studies but differ from some of the previous studies; in a prospective study 100 women were interviewed (50 with normal delivery and 50 with CS). QoL was measured using the SF-36 at two points (time 1: 6-8 weeks after delivery and time 2: 12-14 weeks after delivery; result showed VD group had a better QoL for almost all subscales in both assessment times, the differences were significant for VT, mental health and PF.[17] Another study was performed to investigated fatigue and HRQoL in women after VD, elective CS and emergency CS. A total of 141 women (71 after VD, 36 after elective CS and 34 after emergency CS) completed the HRQoLSF-36 questionnaires; result showed Patients after VD had higher mean physical HRQoL scores than after CS, but the mean mental HRQoL scores of the study groups were similar.[19] In contrast these results a Cross-sectional study evaluated the effect of delivery mode on women's postpartum QoL in rural China.[21] In this study, none of six dimensions and total score of QOL displayed significant difference between women with normal delivery and CS. In this study, CS rate was 70.0%, and most of them (59.7%) were selected by maternal request. The most important in this data being a high frequency of CS due to maternal request also other factors such as lower education level and male gender of infant were associated with poor QoL and whereas, in our study, these factors were similar in two groups. However, Socio-cultural determinants may contribute in influencing postnatal QOL. Safarinejad *et al*. In a cohort study showed the QoL parameters by using SF-36 questionnaire in planned CS women were generally higher than VD. There were differences significant for two physical health domains (GH and RP) and all of the mental health domains.[20] In this study planned CS compared to VD and all of the women were parity 1 and younger age. One might argue the findings were influenced by the fact that women with elective or emergency cesarean may experience rather different QOL during the postnatal period.[28] Furthermore in primipara women other reasons are associated with poor QoL.[15] In our study, CS consist of elective or emergency and parity was 1-3. In another study Dunn and O'Herlihy[29] compared satisfaction levels by early postnatal questionnaire among 140 women who had a vaginal birth after delivery (VBAC) with women who had cesarean section after vaginal delivery. The VBAC group experienced minimal pain after delivery and had felt better prepared for delivery. In our study, subscale pain at 2 month after delivery was similar in two groups; one reason was high frequency of episiotomy in VD group, it is important to pay attention to this risk factor to be able to offer good care and treatment to women during postpartum where necessary.

In a prospective study in mothers who requested cesarean section in the absence of medical indication, their reason for the request, self-estimated health and experience of delivery were investigated. Results showed women requesting cesarean section experienced their health as less good and were more often planning for one child only. They more often reported anxiety for lack of support during the labor, for loss of control and concern for fetal injury or death. After planned cesarean section women in this group reported a better birth experience compared to women planning a vaginal birth. There were no differences in signs of postpartum depression between the groups 3 months after birth.[30]

However intended caesarean delivery was found to be an independent risk factor for complications[31] and is associated with an increased risk of maternal rehospitalization.[32]

Furthermore mean duration of sickness and mean days required for returning to normal activities were also higher in case of caesarian section also it is expensive than normal vaginal delivery.[33]

Our research was a prospective study, data were obtained from the participants by trained questionnaires and study population was ethnically uniform. Unfortunately, we only used a general instrument and this might be considered as a limitation. Another limitation of the study was that the

type of cesarean section was not considered, women with elective or emergency cesarean may experience rather different QOL during postpartum.

Conclusion

The findings suggest that VD lead to a better physical health at 2 months after delivery and physical and mental health at 4 months after delivery.

Efforts should be made to reduce cesarean section. Furthermore, we recommend the future studies include both general and specific questionnaire in assessing postpartum QOL among women with VD, elective CS and emergency CS, in addition other studies needed for recognizing social and cultural factors that are related to physical and mental HRQOL after delivery.

Acknowledgment

This study was funded and supported by Deputy of Research, Kashan University of Medical Sciences (KAUMS), Grant No: 8603 we would like to thank the Research Deputy of KAUMS for their cooperation as well as all participants who made this study possible.

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How to cite this article: Sadat Z, Taebi M, Saberi F, Kalarhoudi MA. The relationship between mode of delivery and postpartum physical and mental health related quality of life. Iranian J Nursing Midwifery Res 2013;18:499-504.

Source of Support: Kashan University of Medical Sciences, grant number: 8603, **Conflict of Interest:** None declared.