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Comparing Quality of Life in Women after Vaginal Delivery and Cesarean Section

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ABSTRACT

Background & aim: Postpartum period is accompanied by significant changes in women's quality of life. These alterations can affect the health of mothers and children. Considering the importance of postnatal quality of life and its different contributing factors, this study aimed to compare women's quality of life after vaginal delivery and cesarean section.

Methods: This retrospective cohort study included a random sample of 2100 women, referring to Hamadan health care centers for congenital hypothyroidism screening or infant vaccination. The participants' quality of life was examined, using Short Form-36 (SF-36) questionnaire, evaluating five periods of time including one week, two months, four months, six months, and one year after delivery (either vaginal or cesarean delivery). Data were analyzed using t-test.

Results: Quality of life was significantly higher in women with vaginal delivery, compared to women with cesarean section in all periods including one week (68.77 vs. 42.44), two months (69.11 vs. 54.76), four months (78.19 vs. 53.02), six months (75.62 vs. 54.94),and one year(78.43 vs. 53.77) after delivery.

Conclusion: Considering women's higher quality of life after vaginal delivery, compared to cesarean section, it seems that vaginal delivery is a safer and less expensive option, which is recommended for all pregnant women.

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Introduction

Structural changes, imposed by technological advances, have altered the meaning and importance of concepts such as delivery and childbirth. Prevalence of caesarean section (abbreviated as c-section) can be considered as one of the first consequences of technological advances related to childbirth (1).

Rate of c-sections increasing in many countries around the world Caesarean rate is rising in Brazil and Taiwan and it is reported to be more than 60% in some countries. World Health Organization (WHO) has been warning about the rising rate of c-section in the world and recommends that countries maintain a rate of 10-15% (2).

As statistics indicated, in 1999, the prevalence of c-section was estimated at 35.4% in Iran and in 2004, it reached up to 42.3%. At the moment, c-section accounts for more than 50% of all deliveries (3).

Although many studies have shown that c-section could lead to numerous complications, according to statistics, mothers still find c-section a safer mode of delivery, compared to natural birth (4). It seems that pregnant women are not well aware of the consequences and disadvantages of different modes of childbirth;

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therefore, it is necessary to inform them about the advantages and disadvantages of c-section and vaginal delivery. By providing such information, mothers are able to make informed decisions concerning the mode of delivery (5).

Complications associated with each mode of delivery are related to mothers 'pain, physical functioning, and freshness. All the mentioned factors, as well as the way of an individual's living, can be summarized as an individual's quality of life. Quality of life is an extensive and intricate concept, which has mingled with an individual's physical health, mental state, independence, social contacts, and personal beliefs (6).

Childbirth affects mothers remarkably. After the postnatal period, the mother's quality of life is under the influence of medical, psychological, and social factors, associated with childbirth (such as mother's age, physical health during the prenatal period, beliefs, interests, and temperaments) (7). Traditionally, postnatal period is believed to last for six months; however, longitudinal studies, evaluating mothers' quality of life, have been indicative of physical and anxiety problems among 50% of women one year after delivery; even some of the symptoms persisted up to 18 months after c-section (8).

Many studies have been carried out regarding the consequences of different modes of delivery. Nikpoor et al. (9) assessed the quality of life of 290 women eight weeks after childbirth, based on the standards established by WHO. They realized that the scores of physical and mental domains in vaginal delivery were higher than those of c-section.

In another study, Torkan et al. (3) examined the quality of life of 100 women within intervals of 8, 12, and 14 weeks (during the postnatal period). The results indicated that natural childbirth was associated with higher quality of life, compared to c-section during the postnatal period; the subjects' physical health improved during this period. They found that caesarean delivery might deteriorate mothers' quality of life when surgical interference and problems, caused by hospitalization, increase.

C-section has unexpectedly spread in developing countries, particularly in Iran. Cesarean delivery is a surgical intervention, which imposes a financial burden on the family and requires hospitalization and anesthesia tolerance. Therefore, it seems necessary to meticulously examine and analyze this issue in our country. This study aimed to compare women's quality of life after vaginal delivery and c-section.

Materials and Methods

In this retrospective, cohort research, study population included mothers with childbirth experience over the last year. The sample included all mothers, who referred to healthcare centers for congenital hypothyroidism screening or infant vaccination2, 4, 6, and 12 months after delivery. According to the study performed by Wong et al (10), the mean and standard deviation were reported to be 26.9 and 35for mothers with natural delivery and 18 and 18.9 for those with c-section.

Finally, the sample size consisted of 210 subjects, with a 95% significance level and 90% statistical power for each group (vaginal delivery and c-section groups) at each period (1 week, 2 months, 4 months, 6 months, and 12 months after delivery). Furthermore, the total size of the population included 2,100 subjects since the study consisted of 10 groups of 210 subjects.

Quality of life questionnaire (SF-36): Ware and Sherbourne (11) developed the Short Form-36 (SF-36) questionnaire. This instrument evaluates one's quality of life and includes36 items; normal individuals need 5-15 min to answer the questionnaire. The scores obtained in this questionnaire range from 0 to 100. In fact, higher scores indicate higher quality of life.

This questionnaire includes 9 sections of items related to quality of life in domains of physical performance, activity limitation due to physical injury, activity restriction caused by spiritual trauma, energy, exhaustion, vitality, social functioning, physical pain, and general health. Each item is gradedfrom0to 100 and high scores indicate high quality of life in each section.

Numerous studies have confirmed the validity and reliability of this questionnaire. Ware and Sherbourne (11) have measured its internal reliability as0.94, based on *Cranach's alpha*. Previous research on life quality has revealed the high validity and reliability of this questionnaire in Iran (12,13). Montazeri,

Ghashtasbi, and Vahdaninia (14) estimated the validity and reliability of this questionnaire among 4,163 mostly married subjects for the first time in Iran. The reliability index in eight subscales was estimated at 0.77-0.95.In addition, Motamed et al. (15) examined the reliability of this instrument in Shiraz and calculated the *Cranach's alpha* of Farsi version.

Montazeri et al. (14) used the convergent validity to examine the validity of the test. The obtained results were satisfactory and all correlation coefficients turned out to be higher than the suggested amount of 0.4 (with a range of 0.58 to 0.95). They also introduced two major domains (physical and mental aspects) by factor analysis, which explained 65.9% dispersion among the questionnaire scales.

Demographic questionnaire: A demographic questionnaire was designed to gather women's demographic data and personal information. The questionnaire was in accordance with research objectives and included the subject's age, weight, height, number of children, frequency of childbirth, setting of birth, conditions of pregnancy, health status of the newborn, mode of childbirth, education, occupation, as well as husband's education, age, and occupation.

A permission was obtained from hospital authorities in order to perform the study. After describing the study objectives to the participants, their consents were obtained and they were asked to complete the questionnaire in cooperation with research administrators (who were taught how to complete the questionnaire).

Sampling was performed at all healthcare centers and hygiene stations, located in Hamadan city. Accordingly, mothers completed the demographic and quality of life questionnaires after they were trained and monitored by the authorities. The completed questionnaires were collected and evaluated each week. During the study period, the performance of research administrators was continuously monitored.

Mothers, who had experienced childbirth over the past year and were currently in perfect health, were included in the study. The exclusion criteria were as follows: 1) previous history of diabetes, connective tissue diseases, cardiac diseases, epileptic disorders, kidney problems, and other

Table 1. Demographic characteristics of participants

Mode of delivery	Vaginal delivery		C-section	
	Frequency	Percentage	Frequency	Percentage
Education				
Master's degree	7	7 (0.66)	53	5.04
Bachelor's degree	74	74 (7.05)	179	17.04
Associate degree	21	21 (2)	46	4.39
High school degree	279	26.58	187	17.81
Pre-high school education	669	63.71	585	55.72
Total	1050	100	1050	100
Weight (kg)				
>80	75	7.14	127	
60-80	671	63.91	701	66.77
<60	304	28.95	222	21.14
Total	1050	100	1050	100
Age (years)				
>35	76	7.24	71	6.76
25-35	541	51.52	742	70.67
<25	433	41.24	237	22.57
Total	1050	100	1050	100
Newborn's gender				
Female	555	52.86	493	46.95
Male	495	47.14	557	53.05
Total	1050	100	1050	100

types of debilitating diseases; 2) psychological disorders such as depression, mania, and anxiety disorders, based on medical charts; 3) obstetric complications; 4) stressful events in recent months; 5) non-addiction to drugs; 6) preterm birth; 7)twins and multiple births; 8) being under infertility treatment; 9) undergoing tubectomy; and 10) childbirth experience within the past two years.

To analyze the data, the researchers used descriptive statistics including mean and standard deviation, as well as inferential statistics such as independent t-test and analysis of variance. SPSS version 18 was used for data analysis.

Results

Overall, 2100 mothers participated in this study. They were divided into two groups of 1050 participants. The demographic characteristics of the study population are shown in Table 1. According to Table 2, the difference between natural delivery and caesarean groups was highly significant in terms of the mean score of quality of life in all periods. In fact, after vaginal delivery, the quality of life during the first week, second month, fourth month, sixth month, and twelfth month was significantly higher than that observed in caesarean delivery. In Figure 1, it can be clearly seen that the mean scores of quality of life for natural delivery are higher than those of c-section in all periods of the study.

Two-way analysis of variance was used to identify major interactive effects of variables including delivery mode and passage of time on mothers' postnatal quality of life.

According to Table 3, the amount of the obtained Fwas1223.79; the significance level was less than 0.05 with the degree of freedom of 1 and 2090 ($F_{(1 \text{ and } 2090)}$=1223.79, P=0.001). Thus, the difference between natural delivery and c-section groups was significant regarding the mean score of quality of life; with 95% confidence, it can be said that quality of life of mothers with natural delivery was higher than that of the c-section group.

According to eta-squared measurements, the effect rate was estimated at 37%. With regard to the factor of time, the obtained amount was 38.31; moreover, its significance level was less than 0.05, with a degree of freedom of4 and 2090 ($F_{(4 \text{ and } 2090)}$=38.31, P=0.001). Thus, the difference in the mean scores of mothers' quality of life was highly significant after delivery at different times. With 95% confidence, mothers' quality of life gradually improved after delivery.

Considering the eta-squared measurements, the effect rate was 7% (Table 3). As shown in table 3, the calculated amount of F for interactive effects of mode of delivery and time factor was 11.87 ($F_{(4 \text{ and } 2090)}$=11.87, P=0.001). Hence, the difference in the mean scores of mothers' quality of life was interaction ally significant, considering the mode of childbirth and factor of time; with 95% confidence, it can be said that mothers' quality of life gradually improved after natural delivery; the rate of interaction effect was estimated at 2%, according to eta square.

Discussion

The findings of the current research are in consistence with the results of studies carried out by Bahrami (16) and Lydon-Rochelleand colleagues (17). Various reasons can explicate the obtained results. One reason might be the pain mothers experience after both modes of delivery. Fabris (18) compared the pain of mothers who had undergone natural delivery or c-section. As he stated, individuals with vaginal delivery experienced acute pain for a short period of time.

The International Association for the Study of Pain (IASP) considers childbirth pain as an unpleasant feeling and a stressful experience, caused by injuries to body tissues or the like. Chronic pains might take longer to recover, compared to particular types of injuries or illnesses. Melzac et al. (19) reported that 65-68% of mothers, who had a previous experience of vaginal delivery, described their pain as severe or acute. Moreover, 23% of mothers who had their first natural delivery and 11% of women with previous natural birth experiences described their pain as excruciating.

Pain of vaginal delivery may be caused by the contractions of myometrium against cervical and perineal resistance, incremental expansion of the cervix and lower parts of the uterus, and tension or pressure on the pelvis and perineum (20). Clement stated that the contraction of

Table 2. Independent sample t-test for examining the differencein quality of life after caesarean or vaginal delivery

Quality of life (and subscales)	Vaginal delivery (n=210) mean±SD	C-section(n=210) mean±SD	t	P
First week				
Physical functioning	72.23±21.35	34.94±29.55	14.82	<0.001
Physical limitations	69.71± 34.20	23.58±25.65	15.63	<0.001
Emotional limitations	73.82±30.39	22.50±29.96	17.42	<0.001
Fatigue	61.99±15.47	42.70±24.07	9.76	<0.001
Mental health	73.54±19.23	55.57±20.87	9.17	<0.001
Social functioning	72.14±19.22	58.20±18.45	7.57	<0.001
Physical pain	67.84±22.86	50.00±23.58	7.87	<0.001
General health	69.89±16.51	51.57±49.31	5.10	<0.001
Total score	68.77±14.20	42.43±14.77	18.62	<0.001
Second month				
Physical functioning	86.28±16.92	61.60±27.61	11.04	<0.001
Physical limitations	63.67±33.13	42.52±35.77	6.28	<0.001
Emotional limitations	77.98±33.38	51.76±38.84	7.41	<0.001
Fatigue	57.21±17.23	53.63±17.46	2.1	<0.001
Mental health	65.98±19.12	60.12±19.90	3.07	<0.001
Social functioning	72.10±18.50	62.29±22.20	4.92	<0.001
Physical pain	77.26±17.34	55.00±26.63	10.14	<0.001
General health	66.00±18.54	62.21±19.95	2.01	<0.001
Total score	69.11±13.81	54.76±15.73	9.93	<0.001
Fourth month				
Physical functioning	85.68±18.13	60.66±22.55	12.52	<0.001
Physical limitations	82.50±27.50	35.66±36.01	14.97	<0.001
Emotional limitations	85.19±30.32	39.93±36.38	13.84	<0.001
Fatigue	71.46±20.73	55.83±17.02	44.8	<0.001
Mental health	75.00±15.06	64.60±17.29	6.57	<0.001
Social functioning	75.09±21.64	72.37±27.62	1.12	<0.001
Physical pain	80.98±26.62	47.16±30.92	12.00	<0.001
General health	74.58±17.58	57.35±16.76	10.27	<0.001
Total score	78.19±14.89	53.02±16.19	16.57	<0.001
Sixth month				
Physical functioning	85.00±19.45	57.90±30.56	10.83	<0.001
Physical limitations	82.36±30.12	50.14±37.28	9.74	<0.001
Emotional limitations	81.44±33.44	47.57±37.79	9.72	<0.001
Fatigue	64.27±16.56	53.51±17.35	6.49	<0.001
Mental health	72.96±17.57	59.44±20.95	7.16	<0.001
Social functioning	77.91±18.89	60.55±26.75	7.63	<0.001
Physical pain	78.39±20.49	65.96±27.73	5.22	<0.001
General health	76.52±14.09	58.42±19.54	10.88	<0.001
Total score	75.62±12.31	54.94±16.72	14.32	<0.001
Twelfthmonth				
Physical functioning	90.28±14.87	66.25±23.93	12.35	<0.001
Physical limitations	88.30±24.73	46.70±28.47	15.98	<0.001
Emotional limitations	87.94±26.33	35.76±34.71	17.35	<0.001
Fatigue	65.16±17.85	54.08±18.88	6.18	<0.001
Mental health	72.78±15.42	62.33±17.31	6.52	<0.001
Social functioning	76.70±17.53	64.96±19.40	6.50	<0.001
Physical pain	83.44±21.11	60.31±22.06	10.97	<0.001
General health	70.69±18.11	49.86±26.34	9.43	<0.001
Total score	78.43±11.06	53.77±15.02	19.15	<0.001

myometrium and perineum tear led to severe pain after delivery (21). This pain lasted up to three months for 11% of mothers. In addition, Nikolajsen et al. showed that 36% of mothers with vaginal delivery experienced severe pain a day after childbirth, whereas only 6% felt the same amount of pain a week after delivery (22).

C-section is usually performed by making a semi-circular or horizontal cut on the skin and a small part of the womb. Lee & Lee (23) conducted a research to evaluate pain after caesarean surgery. The results showed that 12% of mothers, who underwent c-section, suffered from chronic pain, even18 months after

Table 3. Two-way analysis of variance (ANOVA) for evaluating the effects of modeof delivery and time on mothers' quality of life

Effect source	F	df	P	Eta
Mode of delivery	1223.79	1 & 2090	<0.001	0.37
Time	38.31	4 & 2090	<0.001	0.07
Mode of delivery and time	11.87	4 & 2090	<0.001	0.02

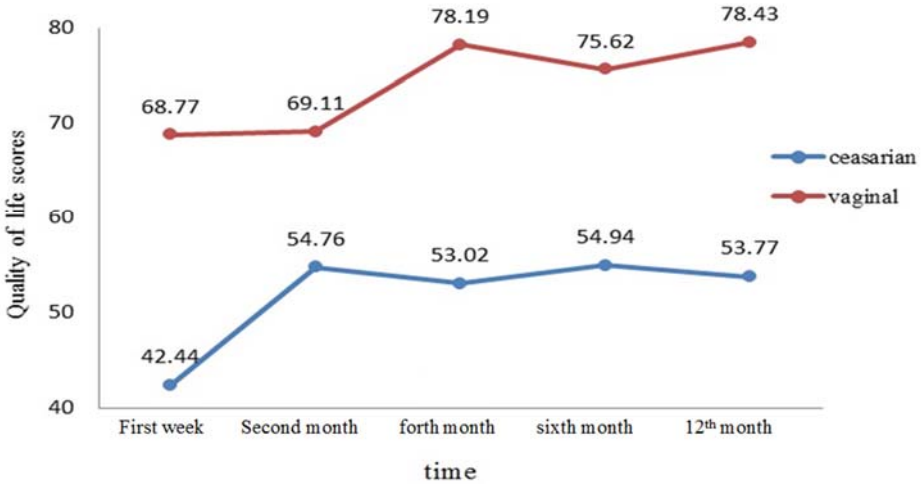

Figure 1. Quality of life scores in vaginal delivery and c-section

delivery. On the other hand, the study performed by Kaur & Kaur (24) indicated that 67% of women, who complained of pelvic pain, had a previous c-section experience.

Results of a study in Ireland revealed a significant difference between the average pain of mothers with vaginal delivery (20.209) and those with c-section (44.2290) even after one year; however, it is normal to feel severe pain (for a short period) after vaginal or caesarean delivery. Meanwhile, the pain after c-section is usually chronic and continues up to 18 months in some cases after childbirth.

Apparently, chronic pain leads to the reduction of quality of life after caesarean surgery; it may also disturb the individual's life. In the current study, in an attempt to assess mothers' quality of life (using a pain questionnaire), the quality of life of mothers with vaginal delivery tended to gradually improve over time (first week: 67.84; second month: 77.27; fourth month: 80.98; sixth month: 83:44; and twelfth month: 88.39). Meanwhile, mothers with caesarean childbirth demonstrated a very slow improvement in the quality of life (first week: 50; second month: 55; fourth month: 47; sixth month: 60.31; and twelfth month: 65); their slow recovery was caused by chronic pain. The same results were obtained regarding the subscales of physical performance and limitations.

Another physical aspect related to quality of life is fatigue. The results of the current study showed that mothers with c-section feel more

exhausted than those with vaginal delivery, even a year after childbirth. These findings are congruent with the results of Lee & Lee (23), who compared sleep pattern and exhaustion of individuals in both modes of delivery.

The results of the mentioned study indicated that both groups experienced sleep disorders 3-5 days after delivery; after c-section, the average sleeping hours of mothers was4 hours per day; in fact, 34% of women sometimes woke up in the middle of their sleep. The average for mothers with vaginal delivery was reported to be 6.5 hours per day; only 14% of the subjects woke up in the middle of sleep.

Furthermore, the results indicated that mothers with c-section were able to sleep during day time, while they failed to sleep well at night: therefore, they felt more exhausted the next morning (23). However, mothers with natural birth slept well at night, so they felt less exhausted during day time. One can observe the mental and physical aspects associated with quality of life. In terms of mental aspects, mothers with a previous experience of c-section obtained significantly lower scores, compared to mothers with natural delivery.

Most of the previously conducted research, examining the mental aspects of c-section, has been quantitative studies. Accordingly, most of these studies provide limited amount of data with regard to distress after c-section. However, Clement (2) categorized distress as sense of loss, fractured relationship with the infant, feeling of being victimized, and aggression towards by standers or caretakers.

Given the cross-sectional nature of this study, it is recommended that researchers perform longitudinal studies to examine this issue in the future. It is suggested that women with emergency c-section experiences be included, as well.

Conclusion

Considering the mothers' higher quality of life after vaginal delivery, compared to cesarean section, it seems that vaginal delivery is a safer and less expensive option, recommended for all pregnant women.

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Conflicts of Interest

The authors declare no conflicts of interest.

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