

Postpartum Quality of Life in Primiparous Women after Normal Vaginal Delivery versus Caesarean Section

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Abstract

Background: Studies on either postnatal quality of life in general or studies that compare quality of life in new mothers after different mode of delivery are limited. An investigation on health related quality of life measures in women after different type of delivery showed that women who had vaginal delivery had better health related quality of life compared to those who had caesarean section. However, the best method of delivery, vaginal or caesarean for postpartum quality of life is a difficult question as it is a matter of controversy both from professional's perspectives and from women's experience during childbirth. **Objective:** To compare postpartum quality of life in primiparous women after vaginal delivery versus caesarean section. **Methods:** Prospective cross-sectional study was conducted at the department of Obstetrics and Gynecology, Salmaniya medical complex in Kingdom of Bahrain. 500 primiparous women who gave birth either vaginally or by cesarean section answered a questionnaire designed to include general information, questions from short form health survey questionnaire (SF-36) and specific questions regarding postnatal related symptoms. **Results:** Body pain, fatigue, wound pain, headache and backache were significantly higher in cesarean section group as compared to vaginal delivery group (p-value < 0.001). Poor appetite and breast-feeding difficulty were highly observed in cesarean section group (p-value 0.001 & 0.002 respectively). Women with vaginal delivery had a significant better health outcome and ability of self-care toileting, bathing as compared to cesarean group (p-value < 0.001). Vaginal delivery group found to be more socially active and social activities were negatively affected by cesarean section. However, hemorrhoids, urinary incontinence and pain during sexual intercourse were higher in patients with vaginal delivery (p-value < 0.001). **Conclusion:** Cesarean delivery has negatively affected the quality of life (QOL) of primiparous women. More studies with larger

sample sizes should be conducted to examine the effects of cesarean delivery on QOL in both primiparous and multiparas within a shorter period after delivery.

Keywords

Quality of Life, Primiparous, Vaginal Delivery, Caesarean Section

1. Introduction

The postpartum period defined according to WHO is the period right after birth up to 6 weeks. The postpartum period is a very important period for the health of the mother and her newborn as it is a critical time for her, her newborn and her family on a physiological, emotional and social level. The term quality of life (QoL) is the result of a historical process whose conceptual beginnings emerged when Aristotle referred to the association between happiness and well-being. The concept of QoL was outlined by philosophers, theologians and others, leading to improved conceptualizing of the topic over time [1].

Subsequently, from 1975 until the present, the concept of QoL has been investigated in diverse populations and health conditions and a wide variety of conceptual models exist to define quality of life. Overall, QoL is a multidimensional concept, measuring different aspects of life, including physical well-being as well as psychological and social functioning [2] [3].

In 1994, the World Health Organization Quality of Life group (WHOQOL) released its definition of QoL: An individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. It is a broad concept, affected in a complex way by the person's physical health, psychological state, level of independence, social relationships, personal beliefs, and their relationship with environmental characteristics [4].

Eventually QoL was included as a concept in health science research, and presently encompasses the physical, social, and emotional dimensions of wellness, and moves beyond the absence of disease. With the declining of maternal mortality rates and general improvement in pregnancy outcomes in recent decades, the aims of maternity care in developed countries are the detection and management of risk factors which threaten the outcome of pregnancy. One of the components of postnatal care is the assessment of maternal quality of life [5].

Several studies have been undertaken to investigate the effects of mode of delivery on maternal QOL. According to World Health Organization (WHO) recommendations, the reasonable rate for cesarean is 5% - 15% of all deliveries performed. Rates more than 15% are considered inappropriate and unnecessary and do not produce better health outcomes [6].

In most countries, and in developing countries in particular, it has been continuously rising and has gone well beyond the WHO recommendations, without

being accompanied by any decline in maternal mortality or morbidity rates [7].

The postpartum period can have a significant impact on the quality of life for new mothers due to extent of the postnatal morbidity after vaginal delivery and caesarean section which has been recognized in the recent years to be higher in women who delivered by caesarean section [8].

Backache, urinary infection/incontinence, constipation, painful perineum, wound problems, lack of sleep, tiredness and postpartum depression are common in the first 6 weeks after delivery [9].

Studies on either postnatal quality of life in general or studies that compare quality of life in new mothers after different mode of delivery are limited. An investigation on health related quality of life measures in women after different type of delivery showed that women who had vaginal delivery had better health related quality of life compared to those who had caesarean section. However, the best method of delivery, vaginal or caesarean for postpartum quality of life is a difficult question as it is a matter of controversy both from professional's perspectives and from women's experience during childbirth [10].

2. Methods

This study was designed to compare postpartum quality of life and the incidence of different postpartum morbidities in primiparous women who delivered vaginally versus cesarean section.

2.1. Study Design

Prospective cross-sectional study.

2.2. Study Area

Obstetrics and Gynecology department in Salmaniya Medical Complex in kingdom of Bahrain.

2.3. Study Subjects

500 women who gave birth were distributed according to inclusion and exclusion criteria.

2.4. Inclusion Criteria

- Primiparous women
- Age \geq 18 years
- Medically free
- Delivered a live healthy baby
- No obstetrical complications
- Non instrumental delivery

2.5. Exclusion Criteria

- Multiparous women

- Multiple gestation
- Medical conditions before pregnancy (ex: chronic back pain, chronic constipation, breast disease and urinary problems)
- Depression and disabilities
- Instrumental or complicated delivery
- Infant with congenital anomalies

2.6. Sample Size

Minimal sample size was calculated through survey monkey formula by using the total deliveries number per year in Salmaniya medical complex including vaginal delivery and caesarean section which is roughly 8000 per year, with confidence level 95% and confidence interval of 5%. The minimum sample size result is 367. So the decided sample size will be 500 patient. (250 vaginal deliveries and 250 caesarean sections).

- **Ethics:**

Ethical approval has been obtained from secondary health care research subcommittee. All patients signed an informed consent form followed by explanation of risk, benefit and limitation of the study.

- **Data collection method:**

Data collection tool in this study was a questionnaire designed to include: general information, questions from short form health survey questionnaire (SF-36) and specific questions regarding postnatal related symptoms. (A copy of the questionnaire attached: APPENDIX).

Pilot study was done at the start of data collection over 20 patients followed by modification in the questionnaire. All primiparous women who delivered between October 2018 to June 2019 who agreed to participate in this study were interviewed in the hospital in 2nd day post-delivery and were contacted through phone call after 6 weeks postdelivery.

2.7. Statistical Analysis

Descriptive statistics including numbers, percentage, mean and standard deviations were used to present the data. Quality of life was compared between women after vaginal delivery and caesarean section. Recorded data were analyzed by using Microsoft Excel office 2013 and the statistical package for social sciences, version 20.0 (SPSS Inc., Chicago, Illinois, USA). Quantitative data were expressed as mean \pm standard deviation (SD). Qualitative data were expressed as frequency and percentage.

The following tests were done:

- Independent-samples t-test of significance was used when comparing between two means.
- Chi-square (χ^2) test of significance was used in order to compare proportions between qualitative parameters.
- The confidence interval was set to 95% and the margin of error accepted was set to 5%. So, the p-value was considered significant as the following:

- Probability (p-value)
- p-value < 0.05 was considered significant.
- p-value < 0.001 was considered as highly significant.
- p-value > 0.05 was considered insignificant

3. Results

The majority of primiparous women who had delivered vaginally (74.4%) and by cesarean section (62%) were between 21 - 30 years of age (**Table 1**).

Table 1. The age of primiparous women with vaginal delivery and cesarean section.

Age (years)	Vaginal delivery N = 250		Cesarean section N = 250		Chi-square test	
	No.	%	No.	%	x ²	p-value
≤20 Years	24	9.6%	19	7.6%		
21 - 30 Years	186	74.4%	155	62%	19.112	<0.001**
31 - 40 Years	36	14.4%	67	26.8%		
>40 Years	1	0.4%	9	3.6%		

The mean ± SD of maternal age with vaginal delivery was 25.66 ± 4.55 and with cesarean section 27.89 ± 5.76 (**Table 2**).

Table 2. Comparison between vaginal delivery and cesarean section groups according to mean age.

Age (years)	Mean	±SD	95% CI		t-test	
			Lower	Upper	t	p-value
Vaginal delivery N = 250	25.66	±4.55	25.09	26.22	4.804	<0.001**
Cesarean section N = 250	27.89	±5.76	27.17	28.60		

The cesarean group were significantly older than the vaginal delivery (p-value < 0.001**).

Out of 250 patient who delivered vaginally, 175 (70%) were Bahraini and 75 (30%) were non-Bahraini (**Table 3**). While out of 250 patient who had cesarean section 159 (63.6%) were Bahraini and 91 (36.4 %) were non-Bahraini (**Table 3**). There was no statistically significant difference between the two groups according to the nationality (p value: 0.154).

Out of 250 primiparous women who had cesarean section 116 (46%) were highly educated with degree certificate compared to those who had vaginal delivery 108 (43.2%). The result shows that cesarean section group have a significant higher education level as compared to the vaginal delivery group (p-value 0.027) (**Table 4**).

Table 3. Comparison between vaginal delivery and cesarean section groups according to the nationality.

Nationality	Vaginal delivery N = 250		Cesarean section N = 250		Chi-square test	
	No.	%	No.	%	x2	p-value
Bahraini	175	70%	159	63.6%	2.029	0.154
Non Bahraini	75	30%	91	36.4%		

Table 4. Comparison between vaginal delivery and cesarean section groups according to the education level.

Education Level	Vaginal delivery N = 250		Cesarean section N = 250		Chi-square test	
	No.	%	No.	%	x2	p-value
Grade 9 - 11	20	8%	34	13.6%	4.882	0.027*
Grade 12	122	48.8%	100	40%		
Degree	108	43.2%	116	46.4%		

Our result shows that 149 patient out of 250 (59.6%) who had vaginal delivery were unemployed while the number of unemployed patient in cesarean section group were 140 (56%). This table shows no statistically significant difference between groups according to occupation p-value 0.477 (**Table 5**).

Table 5. Comparison between vaginal delivery and cesarean section groups according to the occupation.

Occupation	Vaginal delivery N = 250		Cesarean section N = 250		Chi-square test	
	No.	%	No.	%	x2	p-value
Student	37	14.8%	47	18.8%	1.479	0.477
Employed	64	25.6%	63	25.2%		
Unemployed	149	59.6%	140	56%		

The mean weight for vaginal delivery group is 76.57 ± 17.58 while in cesarean section group is 74.73 ± 15.37 (**Table 6**). There was no statistically significant difference between both groups according to weight (kg).

Table 6. Comparison between vaginal delivery and cesarean section groups according to mean value of maternal weight (kg).

Weight (kg)	Mean	±SD	95% CI		t-test	
			Lower	Upper	T	p-value
Vaginal delivery N = 250	76.57	17.58	74.39	78.75	1.246	0.213
Cesarean section N = 250	74.73	15.37	72.82	76.63		

The mean height (cm) of vaginal delivery group was 159.06 ± 5.32 and the mean height for cesarean section group was 158.14 ± 5.98 . There was no statistically significant difference between both groups according to height p-value 0.070 (**Table 7**).

Table 7. Comparison between vaginal delivery and cesarean section groups according to mean value of maternal height (cm).

Height (cm)	Mean	±SD	95% CI		t-test	
			Lower	Upper	t	p-value
Vaginal delivery N = 250	159.06	5.32	158.40	159.72	1.817	0.070
Cesarean section N = 250	158.14	5.98	157.39	158.88		

The mean value of body mass index (BMI) in vaginal delivery group was 30.10 ± 6.31 and cesarean section group was 29.80 ± 5.72 and the difference was no statistically significant (p-value: 0.577) (**Table 8**).

Table 8. Comparison between vaginal delivery and cesarean section groups according to the mean value of BMI.

BMI	Mean	±SD	95% CI		t-test	
			Lower	Upper	t	p-value
Vaginal delivery N = 250	30.10	6.31	29.32	30.88	0.557	0.577
Cesarean section N = 250	29.80	5.72	29.09	30.51		

Cesarean group has delivered more male newborns (141, 56.4%) as compared to vaginal delivery group (111, 44.4%) and the difference was significant between both groups (p-value 0.009) (**Table 9**).

Table 9. Comparison between vaginal delivery and cesarean section groups according to the newborn sex.

Newborn sex	Vaginal delivery N = 250		Cesarean section N = 250		Chi-square test	
	No.	%	No.	%	χ ²	p-value
Female	139	55.6%	109	43.6%	6.728	0.009*
Male	111	44.4%	141	56.4%		

Cesarean section group have higher mean of newborn weight 3.18 ± 0.50 compared to vaginal delivery group 3.01 ± 0.41 (**Table 10**). There was highly statistically significant difference between both groups p-value < 0.001.

Table 10. Comparison between vaginal delivery and cesarean section groups according to mean value of newborn weight.

Newborn weight	Mean	±SD	95% CI		t-test	
			Lower	Upper	t	p-value
Vaginal delivery N = 250	3.01	0.41	2.959	3.061	4.157	<0.001**
Cesarean section N = 250	3.18	0.50	3.118	3.242		

Vaginal delivery group have better health on 2nd day post-delivery compared to cesarean section group with highly statistically significant difference p-value < 0.001 (**Table 11**).

Table 11. Comparison between vaginal delivery and cesarean section groups according to general health on 2nd day post-delivery.

General health	Vaginal delivery N = 250	Cesarean section N = 250	Chi-square test	p value
In general what would you say regarding your health:			29.763	<0.001**
Excellent	44 (17.6%)	14 (5.6%)		
Very good	75 (30%)	62 (24.8%)		
Good	89 (35.6%)	104 (41.6%)		
Fair	42 (16.8%)	62 (24.8%)		
Poor	0 (0%)	8 (3.2%)		

Table 12 shows that 104 (41.6%) women in the cesarean section group have a lot of limitation in walking compared to 75 (30%) in the vaginal delivery group. and bathing, vaginal delivery group the majority have no or little limitation with toileting 105 (42%), 181 (72.4%) respectively compared to cesarean section group which the majority they have a little limitation in toileting 120 (48%) and bathing 127 (50.8%). About 85 % of vaginal delivery group can take care of themselves without the need of help on 2nd day post-delivery compared to 33% of cesarean section group. Our result shows that walking, bathing, toileting, and self-care were significantly better in vaginal delivery (**Table 12**).

Table 12. Comparison between vaginal delivery and cesarean section groups according to activity limitation on 2nd day post-delivery.

Does your health now limited your daily activity	Vaginal delivery N = 250	Cesarean section N = 250	Chi-square test	p value
Walking			10.806	0.005*
Limited a lot	75 (30%)	104 (41.6%)		

Continued

Limited a little	123 (49.2%)	116 (46.4%)		
Not limited	52 (20.8%)	30 (12%)		
Toileting			25.554	<0.001**
Limited a lot	51 (20.4%)	77 (30.8%)		
Limited a little	94 (37.6%)	120 (48%)		
Not limited	105 (42%)	53 (21.2%)		
Bathing			70.902	<0.001**
Limited a lot	10 (4%)	35 (14%)		
Limited a little	59 (23.6%)	127 (50.8%)		
Not limited	181 (72.4%)	88 (35.2%)		
Self-care without help			135.874	<0.001**
Yes	213 (85.2%)	84 (33.6%)		
No	37 (14.8%)	166 (66.4%)		

There was no body pain on the second post-delivery day in 118 women (47.2%) following vaginal delivery as compared to 51 women (20.4%) in cesarean section group. However, 17 women (6.8%) in the vaginal delivery group had severe body pain as compared to 5 women (2%) (47.2%). There was more severe body pain in cesarean group and the difference was highly statistically significant (p-value < 0.001). Wound pain was also more in cesarean section group as 219 women in this group had moderate to severe pain (87.6%) as compared to 180 ladies (72%) in the vaginal delivery group. The result shows highly statistically difference between both group in wound pain (p-value < 0.001) (Table 13).

Table 13. Comparison between vaginal delivery and cesarean section groups according to body and wound pain on 2nd day post-delivery.

Body and wound pain severity	Vaginal delivery N = 250	Cesarean section N = 250	Chi-square test	p value
Body pain			47.457	<0.001**
Non	118 (47.2%)	51 (20.4%)		
Mild	97 (38.8%)	118 (47.2%)		
Moderate	30 (12%)	64 (25.6%)		
Severe	5 (2%)	17 (6.8%)		
Wound pain			39.950	<0.001**
Non	0 (0%)	0 (0%)		
Mild	60 (24%)	13 (5.2%)		
Moderate	110 (44%)	113 (45.2%)		
Severe	70 (28%)	106 (42.4%)		
Extra-ordinary	10 (4%)	18 (7.2%)		

Out of 250 patient who delivered by cesarean section, 182 (72.8%) complained of mild fatigue and moderate fatigue 59 (23.6%). While 87 (34.8%) vaginal delivery group had no fatigue, 121 (48.4%) mild fatigue and 41(16.4%) had moderate fatigue 87 (34.8%). Cesarean section group had a significant higher fatigue level as compared to vaginal delivery group (p-value < 0.001) (**Table 14**). However, fatigue did not interfere significantly with the ability of new mothers in taking care of their newborn in both groups p-value 0.321 (**Table 14**).

Table 14. Comparison between vaginal delivery and cesarean section groups according to fatigue level on 2nd day post-delivery.

Fatigue	Vaginal delivery	Cesarean section	Chi-square	p value
	N = 250	N = 250	test	
Fatigue level			78.894	<0.001**
Non	87 (34.8%)	9 (3.6%)		
Mild	121 (48.4%)	182 (72.8%)		
Moderate	41 (16.4%)	59 (23.6%)		
Severe	0 (0%)	0 (0%)		
Fatigue level interference with the ability to take care of the newborn			0.985	0.321
Yes	24 (9.6%)	32 (12.8%)		
No	226 (90.4%)	218 (87.2%)		

About 36 women who had cesarean section (14.4%) were anxious about this new life compared to those who delivered vaginally 30 (12%) and the difference between both groups was not significant (p value: 0.509). The majority in both groups have reported a good family support post-delivery around 233 patients (93.2%) in vaginal delivery group and 236 patients (94.4%) in cesarean section group. There was no statistically difference between both groups in family support post-delivery (p value: 0.712). Women who had delivered vaginally have better appetite than those who delivered by cesarean section. Ninety-four patients (37.6%) reported a poor appetite after cesarean section while 49 patients (19.6%) have poor appetite after vaginal delivery. Our result shows highly statistically significant difference between groups according to appetite p-value < 0.001 (**Table 15**). Women in both groups were feeling happy for being a mother. In the vaginal delivery group; 248 (99.2%) were happy compared 242 (96.8%) in the cesarean section group. Two patients in the vaginal delivery group (0.8%) were not happy as compared to 8 (3.2%) in the cesarean section group. The difference between both groups in happiness was not significant (p value: 0.112) (**Table 15**).

Table 15. Comparison between vaginal delivery and cesarean section groups according to emotional health on 2nd day post-delivery.

Emotional health	Vaginal delivery N = 250	Cesarean section N = 250	Chi-square test	p value
Happy			2.551	0.112
Yes	248 (99.2%)	242 (96.8%)		
No	2 (0.8%)	8 (3.2%)		
Anxious			0.436	0.509
Yes	30 (12%)	36 (14.4%)		
No	220 (88%)	214 (85.6%)		
Family support			0.138	0.712
Yes	233 (93.2%)	236 (94.4%)		
No	17 (6.8%)	14 (5.6%)		
Appetite			18.961	<0.001**
Good	201 (80.4%)	156 (62.4%)		
Poor	49 (19.6%)	94 (37.6%)		

As our hospital policy strongly support breast feeding, all patient who participate in this study in both groups started breast feeding post-delivery. Breast feeding difficulty in new mothers was more in cesarean section as 138 patients (55.2%) complained of breastfeeding difficulty compared to 103 patients (41.2%) who delivered vaginally. There was higher significant difference in breast feeding difficulty amongst caesarean section group (p-value 0.002). After 6 weeks post-delivery; 190 (76%) patients who had vaginal delivery they are still breast feeding compared to 181 (72.4%) in the caesarean section group but the difference was not statistically significant (p-value 0.414) (**Table 16**).

Table 16. Comparison between vaginal delivery and cesarean section groups according to breast feeding.

Breast feeding	Vaginal delivery N = 250	Cesarean section N = 250	Chi-square test	p value
Breast feeding after delivery			0.000	1.000
Yes	250 (100%)	250 (100%)		
No	0 (0%)	0 (0%)		
Breast feeding difficulty			9.360	0.002*
Yes	103 (41.2%)	138 (55.2%)		
No	147 (58.8%)	112 (44.8%)		
Breast feeding after 6 weeks			0.669	0.414
Yes	190 (76%)	181 (72.4%)		
No	60 (24%)	69 (27.6%)		

Backache was significantly more prevalent in the caesarean; as 109 patients (43.6%) in this group complained of backache compared to 73 patients (29.2%) of the vaginal delivery group (p-value < 0.001). Caesarean section group has more significant increase in headache; as 76 patients (30.4%) complained of headache compared to 55 patients (22%) in the vaginal delivery group (p-value 0.028). However, hemorrhoids were significantly higher in the vaginal delivery group; as 70 patients (28%) compared to 30 patients (12%) in the cesarean section group (p-value < 0.001). Around 18 patients (7.2%) who had vaginal delivery complained of urinary incontinence compared to 4 patients (6%) with cesarean section. The result shows highly statistically increase difference between both in urinary incontinence following vaginal delivery (p-value < 0.001). There was no statistically significance between vaginal delivery group and cesarean section group in constipation, gas incontinence, mastitis, urinary tract infection, and vaginal infection (**Table 17**). In both groups; no patient reported fecal incontinence within 6 weeks postdelivery. There was no statistically difference between both groups in wound gapping and wound infection. However, in cesarean section group 4 patients out of 8 who had wound gapping required readmission for surgical intervention compared to 2 out of 7 in the vaginal delivery group. This result shows patients with cesarean section group had required surgical intervention more than vaginal delivery patients p-value < 0.001 (**Table 17**).

Table 17. Comparison between vaginal delivery and cesarean section groups according to postnatal morbidities.

Postnatal morbidities	Vaginal delivery N = 250	Cesarean section N = 250	Chi-square test	p value
Backache	73 (29.2%)	109 (43.6%)	12.282	<0.001**
Headache	55 (22%)	76 (30.4%)	4.814	0.028*
Hemorrhoids	70 (28%)	30 (12%)	23.584	<0.001**
Constipation	71 (28.4%)	58 (23.2%)	1.817	0.178
Urinary incontinence	18 (7.2%)	4 (1.6%)	10.667	<0.001**
Fecal incontinence	0 (0%)	0 (0%)	0.000	1.000
Gas incontinence	4 (1.6%)	2 (0.8%)	0.272	0.602
Mastitis	2 (0.8%)	2 (0.8%)	0.000	1.000
UTI	6 (2.4%)	10 (4%)	0.715	0.398
Vaginal infection	17 (6.8%)	10 (4%)	1.797	0.180
Wound gapping	7 (2.8%)	8 (3.2%)	0.002	0.968
Wound infection	7 (2.8%)	8 (3.2%)	0.002	0.968
How many patients with wound gapping and infection had required Readmission for surgical intervention	2 (0.8%)	4 (1.6%)	26.793	<0.001**

All women in both groups had stated that their relationship with their husband had not deteriorated following delivery. The relationship had improved in 128 women (51%) following vaginal delivery as compared to 73 (29%) who had cesarean section. The difference between both groups was statistically significant (p-value < 0.001) (Table 18).

Table 18. Comparison between vaginal delivery and cesarean section groups according to relationship with husband.

Relationship with husband and sexual intercourse	Vaginal delivery N = 250	Cesarean section N = 250	Chi-square test	p-value
Relation with husband compared with before the birth of your baby			24.260	<0.001**
Worse	0 (0%)	0 (0%)		
Same	122 (48.8%)	177 (70.8%)		
Better	128 (51.2%)	73 (29.2 %)		

Fifty percent of the Cesarean section group (125) have resumption of sexual activity within 6 week post-delivery as compared to 109 (43.6%) in the vaginal delivery group and the difference was not statistically significant (p-value 0.396). Out of 109 patients who had resumed their sexual activity in the vaginal delivery group 73 patients (67%) reported mild pain during intercourse, 18 patients (16.5%) moderate dyspareunia and 18 patients (16.5%) had no dyspareunia. While in the cesarean section group; 111 (88.8%) out of 125 patient who had resumed their sexual activity stated that they have no pain during intercourse and 14 patients only (11.2%) reported mild pain. Our result shows that vaginal delivery group have significant more dyspareunia as compared with cesarean section group (p-value < 0.001). Vaginal dryness was more significant in the vaginal delivery group as compared with cesarean section group (p-value 0.006) (Table 19).

Table 19. Comparison between vaginal delivery and cesarean section groups according sexual intercourse.

sexual intercourse	Vaginal delivery N = 250	Cesarean section N = 250	Chi-square test	p-value
Resumption of sexual activity within 6 weeks post-delivery			0.718	0.396
Yes	109 (43.6%)	125 (50%)		
No	141 (56.40%)	125 (50%)		

Continued

	Vaginal delivery N = 109	Cesarean section N = 125		
Pain during sexual intercourse			124.546	<0.001**
Non	18 (16.51%)	111 (88.8%)		
Mild	73 (66.97 %)	14 (11.2%)		
Moderate	18 (16.51%)	0 (0%)		
Severe	0 (0%)	0 (0%)		
Vaginal dryness	34 (31.19%)	19 (15.2%)	7.610	0.006*

In comparison between both groups, our result shows that patients who had vaginal delivery have a significant better social life than those who delivered by cesarean section as 161 (64.4%) women in the cesarean section group reported that their physical and emotional health had interfered with their social activities all or most of the time as compared to 89 (35.6%). This table shows statistically significant difference between both groups in social activities (p value < 0.001) (Table 20).

Table 20. Comparison between vaginal delivery and cesarean section groups according to social activities.

Social activities	Vaginal delivery N = 250	Cesarean section N = 250	Chi-square test	p-value
During the past 6 weeks how much had your physical or emotional health interfered with your social activity like visiting family, friends, etc.?			77.110	<0.001**
All of the time	38 (15.2%)	118 (47.2%)		
Most of the time	51 (20.4%)	43 (17.2%)		
Some of the time	82 (32.8%)	28 (11.2%)		
A little bit	28 (11.2%)	35 (14%)		
None	51 (20.4%)	26 (10.4%)		

4. Discussion

This study showed that there was no significant difference between vaginal delivery and caesarean section groups in nationality, occupation, maternal weight, height and BMI. However, there was highly statistically significant difference between the two groups in maternal age with more cesarean section rate with advanced maternal age (p ≤ 0.001). The same observation was observed in the

study of Mousavi *et al.* [11] as cesarean section group were significantly older than vaginal delivery group. On the other hand, Sadat *et al.* [12] found that there were no significant differences between vaginal delivery and cesarean groups regarding maternal age. Kaya and Çiğdem [13] who investigated the impact of the mode of delivery on the occurrence of postpartum depression in primiparous mothers found that there was no significant relationship between both groups in age, occupation, income, place of accommodation, and Edinburgh Postnatal Depression Scale scores.

Our results showed that there was statistically significant difference between the two groups in the education level as cesarean section group have higher education level compared to patients who had vaginal delivery ($p = 0.027$). Sadat *et al.* [12] observed no significant differences between vaginal delivery and cesarean groups regarding the maternal education level.

In comparison between vaginal delivery group and cesarean section group in newborn weight our study showed that there was highly statistically significant difference between groups according to newborn weight in which higher newborn weight was found in cesarean section group ($p \leq 0.001$). In contrast, Sadat *et al.* [12] found that there were no significant differences between vaginal delivery and cesarean groups regarding birth weight ($p = 0.21$).

This study showed that primiparous women with normal vaginal delivery had a significant better general health (walking, toileting, bathing and self-care) as compared to those who had cesarean section ($p \leq 0.001$). Body pain, fatigue level and wound pain were also higher with cesarean section group than normal vaginal delivery ($p \leq 0.001$). Sadat *et al.* [12] agreed with us and found that total physical health score (physical functioning, and general health) in vaginal delivery women was better and higher than cesarean section group; 2 months after delivery ($p = 0.034$); 4 months after delivery ($p = 0.05$). Majzoobi *et al.* [14] stated that general health and physical functioning were significantly higher and physical limitations, fatigue and physical pain were significantly lower in women with vaginal delivery, compared to women with cesarean section in all periods including one week, two months, four months, six months and one year after delivery.

There was highly statistically significant difference between the two groups regarding emotional health specially appetite which extremely affected the cesarean section group more than normal vaginal delivery ($p \leq 0.001$). Sadat *et al.* [12] agreed with us and found that total mental health score (social functioning, emotional well-being and vitality) in vaginal delivery women was higher than cesarean section group 4 months after delivery ($p = 0.036$). AlShehri *et al.* [15] had observed greatest differences in mental health and role-emotional subscales between both groups with negative effect with cesarean section than vaginal delivery.

Our results showed that breastfeeding difficulty was observed more significantly in cesarean section patients as compared to normal vaginal delivery ($p =$

0.002). This could be attributed to significant differences in physical and emotional health parameters amongst these two groups. In contrary; Mousavi *et al.* [11] found no significant differences between cesarean section and vaginal delivery groups regarding sore nipples, cracked nipples, breast engorgement, breast infection, and breast feeding.

This study showed that there was highly statistically significant difference between cesarean and vaginal delivery groups in postnatal morbidities. Backache and headache were more with cesarean section ($p \leq 0.001$) ($p = 0.028$) respectively, while hemorrhoids and urinary incontinence were higher in patients who delivered vaginally ($p \leq 0.001$). There was no statistically difference between both groups in constipation, fecal and gas incontinence, mastitis, urinary tract infection, vaginal infection, wound infection and wound gapping ($p \geq 0.05$). However, the need for wound surgical intervention was higher in cesarean section group ($p \leq 0.001$). Mousavi *et al.* [11] agreed with our results regarding readmission for surgical intervention which was higher in cesarean section group ($p = 0.043$).

Regarding the relationship with husband, vaginal delivery group stated that they had a better husband-wife relationship after delivery in comparison of cesarean section group ($p \leq 0.001$). However, delayed resumption of sexual activity was more with normal vaginal delivery as compared to cesarean group ($p \leq 0.001$). This could be explained by significant increase in dyspareunia and vaginal dryness in vaginal delivery group. Safarinejad *et al.* [16] agreed with this observation and concluded that instrumental deliveries in healthy women with normal singleton pregnancies at term were associated with the highest rate of long-term maternal and paternal sexual dysfunction as compared to planned cesarean section. Women who experienced a planned cesarean section had lowest pain scores, and women who had operative vaginal delivery had highest pain scores at first sexual intercourse. In contrast, Mousavi *et al.* [11] found that there were no significant differences between the vaginal delivery and cesarean section groups in sexual desire.

Our study showed that there was statistically significant difference between the two groups in social activities as it was decreased significantly with cesarean section as compared to vaginal delivery ($p \leq 0.001$). Majzooobi *et al.* [14] observed that mental health and social functioning were significantly higher and emotional limitation was significantly lower in women with vaginal delivery, compared to women with cesarean section in all periods including one week, two months, four months, six months and one year after delivery. However, Al-Shehri *et al.* [15] found that there was no significant differences observed in the mean scores for social functioning subscale between cesarean and vaginal delivery groups ($p = 0.642$).

In conclusion, this study showed that cesarean delivery negatively affected the QOL of primiparous women. Sadat *et al.* [12] has demonstrated that vaginal delivery leads to a better physical health at 2 months after delivery and mental

health at 4 months after delivery. Majzoobi *et al.* [14] also stated that quality of life was significantly higher in women with vaginal delivery, compared to women with cesarean section in all periods including one week, two months, four months, six months and one year after delivery. AlShehri *et al.* [15] also stated that women who underwent caesarean section had significantly worse mean scores for all health-related quality of life domains, except for body pain, while the normal delivery women reported the highest health related quality of life scores. Mousavi *et al.* [11] study agreed with our results regarding primiparous, but there was no relationship between QOL and type of delivery in multiparous. On the other hand, Kaya and Çiğdem [12] found that modes of delivery, induction, episiotomy, and spinal anesthesia were not linked with Edinburgh Postnatal Depression Scale scores.

5. Conclusion

In conclusion, our study showed that cesarean delivery negatively affected the QOL of primiparous women. More cesarean section rate occurred with advanced maternal age, increased newborn weight and increased maternal education level. Walking, toileting, bathing and self-care were better with normal vaginal delivery than cesarean section while body pain, fatigue level, wound pain, backache, headache and readmission for wound surgical intervention were higher with cesarean section. Emotional health especially appetite, breast feeding, and social activities were negatively affected with cesarean section than normal vaginal delivery. Hemorrhoids, urinary incontinence and pain during sexual intercourse were more with normal vaginal delivery.

6. Implication of This Study Results to Population Health and Health System Policy in Bahrain

This study will highlight the extent of unreported postnatal morbidity as majority of women in postnatal period will not seek any medical advice and they will not discuss their own health problem with their health provider.

In addition, improved knowledge regarding the postpartum morbidity may assist in the development of health interventions to enhance the quality of life in this population.

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Despite the study limitations, Authors would like to extend the study by increasing the sample size and following up the patients post-delivery for longer duration.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

Ethical Approval

The study was approved by the Institutional Ethics Committee.

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