

# The Effect of Mode of Delivery on Postpartum Sexual Function and Sexual Quality of Life in Primiparous Women

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**Abstract:** Pregnancy and delivery are one of the most significant periods of women's life that causes hormonal and bodily alterations which could have major effects on sexual function and sexual quality of life. *The aim of the study* was to evaluate the effect of mode of delivery on postpartum sexual function and sexual quality of life in primiparous women. A comparative descriptive *design* was used. The study was conducted at the family planning outpatient clinic of Benha teaching hospital. A *purposive sample* of 277 primiparous women were divided in two groups vaginal delivery (n= 140) and cesarean section (n=137). *Three tools* were used for data collection; 1) Structured interviewing questionnaire to collect data about the women' demographic characteristics, gynecologic and sexual history. 2) Female sexual function index was used to evaluate sexual function of the studied women. 3) Sexual quality of life-female questionnaire. *The study results* showed that 65% of vaginal delivery group and 57.7% of cesarean section group had poor sexual function level, 76.4% of vaginal delivery group and 75.9% of cesarean section group had average level of sexual quality of life after delivery, which revealed no statistically significant differences ( $P > 0.05$ ) between the two groups as regard to postpartum sexual function and sexual quality of life. Moreover, there was a positive highly statistically significant correlation ( $P < 0.01$ ) between the women' sexual function scores and their sexual quality of life scores. *The study concluded* that there were no statistically significant differences between vaginal delivery and cesarean section groups as regard to postpartum sexual function and sexual quality of life. *The study recommended* that nurses should provide sexual education for women during postpartum period to enhance sexual functioning and sexual quality of life.

**Keywords:** Cesarean Section, Female Sexual Function, Quality of Life, Vaginal Delivery

## 1. Introduction

Sexuality is a phenomenon not to be neglected, as similar to other instinctive desires of mankind, it has existed since birth and has evolved in accordance with human development. [1] Sexual function is an important component of women's lives and has an essential role in the marriage stability and is recognized as a multidimensional phenomenon, which can be influenced by multi bio psychosocial factors. [2, 3]

Women's sexual activity changes at various stages of life

and is affected by numerous factors, one of them includes childbirth and maternity that deserves a closer analysis, as it promotes significant changes in women's, husband's and family lives. These factors also include fatigue, fear of subsequent pregnancy, concern about pain during intercourse, mode of delivery, parity and tenderness of breasts which can have different results because of different culture. [4]

Postpartum sexual function is affected by changes in anatomy, hormonal milieu, family structure, and husband relationships that accompany childbirth. Although the intimacy of beginning a family and supporting a newborn may enrich many couples' sexual experience many

postpartum obstacles may adversely influence sexual health. [5] There is a need to adapt to the demands of the newborn and the parental role that may adversely affect the intimacy of the couple, as well as changes in body image and the desexualized figure of woman, cultivated by society. [6]

According to Leal and his colleagues, women with episiotomy or perineal tears show higher pain intensity, less sexual satisfaction, lower levels of sexual arousal, lubrication, greater changes regarding the orgasm's intensity and duration, and total sexual function, than women with intact perineum and the Cesarean Section (CS) group. [7] In addition women who were breastfeeding had lower lubrication, more dyspareunia, and longer time to resume sexual activity. [8]

The rate of cesarean delivery has raised dramatically worldwide in the last decades particularly in high- and middle income countries. The explanations for this increase are multifactorial and not well-defined. Increasing malpractice pressure, changes in maternal characteristics and professional practice styles, as well as organizational, economic, cultural and social factors have all been associated in concern. [9, 10] It seems that the majority of women choices CS due to the ability to retain a successful and satisfying sex after delivery. [11]

Postpartum female sexual dysfunction is a behaviour resulting from a combination of psychological, biological, social and cultural factors, which makes a total or partial blockage of the sexual response of subjects related to desire, arousal and orgasm. It is a serious morbidity and may lead to a variety of physical, social and adverse effects on the woman. Moreover, the consequent cycle of fear might compound the initial sexual disorder and makes it more difficult to treat. [12] It has been increasingly recognized as an important public health issue with impact on the health, well-being and quality of life of women. [13, 14] So, early diagnosis and treatment is crucial to avoid later sequelae on sexual and reproductive life. However, early diagnosis may be challenged by many factors, where many women will be embarrassed of talking about sexual matters or preoccupied by the newborn after delivery, which makes it very important for the midwifery, medical, or nursing staff to raise the issue at the postnatal care settings. [13]

Sexual quality of life (SQOL) is an important issue for assessing short- and long-term outcomes due to sexual problems. [15] Sex has a fundamental role in reproductive life, that integrates physical, emotional and psychological factors and affects quality of life. [16, 17] The sexual quality of life-female questionnaire is a short tool that assesses the relationship between female sexual dysfunction and quality of life. It has good psychometric properties with beneficial role to evaluate the female SQOL in maternity care settings. [18]

Improve the nurses' awareness about the importance of patient's healthy sexual function for good quality of life and full sexual and psychological evaluation of patients will allow for early interventions and will promote positive patient outcomes and compliance with treatment pathways. [19] Healthcare professionals should evaluate women in

terms of their sexual functions during both pregnancy and postpartum period. Health education, referral services for early diagnosis and treatment might contribute to the protection and improvement of the sexual health of women during the postpartum period. [20]

Nurses play a key role in the prevention, evaluation, and treatment of postpartum sexual concerns during postpartum period. They should discuss perineal pain, dyspareunia, and initiation of postpartum sexual activity before hospital discharge, assess sexual function and address concerns, including considering the use of a brief sexual function screening questionnaire, assess perineal repair if dyspareunia is present, assess urinary and fecal incontinence symptoms, encourage vaginal lubricants, particularly in breast-feeding women with a physiologic hypo-estrogenic state, consider alternative positions, and assess for postpartum mood changes, adequate rest, and time for intimacy. Postpartum sexual counselling should be a part of antenatal and postnatal follow-up that enhancing women to disclose their sexual complains and fears in order to improve their SQOL. [5]

### ***1.1. Significance of the Study***

During the postpartum period, women encounter numerous physical, psychological and socio cultural factors that negatively affect both sexual function and quality of life causing postpartum sexual problems. [20] It has been reported that decrease sexual function adversely affects women's quality of life and interpersonal relationships. [21]

Postpartum sexual dysfunction can influence physical, mental, and social aspects of individuals' life with a prevalence rate of 20- 73% in women. [12] Research shows that the integrity of care in women is neglected, since most of the orientations of healthcare team about postpartum sexuality are limited to recommend the resumption period of sexual activity, without addressing the aspects of the quality and the strategies to deal with the changes resulting from pregnancy-puerperal cycle. [22]

It is unclear whether CS is protective of postpartum sexual complaints. Because it avoids genital tract trauma, and assumed to protect postpartum sexual function. [23] Several studies confirmed the relationship between sexual function and mode of delivery, episiotomy, and laceration. [8, 24] While other studies found no association between sexual function and delivery mode. [25, 26] These inconsistent findings require numerous studies to fill the research gap in this respect. Moreover, Eniel and Petri [27] indicated the need for more adequately powered studies based on validated tools to answer the question of effects of mode of delivery on sexual function.

### ***1.2. Aim of the Study***

The aim of this study was to evaluate the effect of mode of delivery on postpartum sexual function and sexual quality of life in primiparous women through:

- a. Comparing postpartum sexual function between VD and CS groups.

- b. Comparing SQOL between VD and CS groups.

### 1.3. Research Questions

- Is there a difference between VD and CS groups regarding postpartum sexual function?
- Is there a difference between VD and CS groups regarding SQOL after delivery?
- Is there a relationship between the studied subjects' postpartum sexual function and their SQOL?

## 2. Subjects and Methods

### 2.1. Research Design

A comparative descriptive design was used to answer the research questions.

### 2.2. Setting

This study was conducted at the family planning outpatient clinic of obstetrics & gynecology department, Benha teaching hospital, affiliated to Benha city. This particular setting was chosen because it is the main governmental hospital. This department is specialized in providing maternity care for women with different social backgrounds.

### 2.3. Subjects

#### 2.3.1. Subject Type and Criteria

A purposive sample of 277 primiparous women were recruited for the study and were divided in two groups VD (n= 140) and CS (n=137) with the following inclusion criteria; woman having a healthy single neonate, with an interval of 3-6 months after childbirth, free from obstetric problems during labor as third or fourth degree perineal tear or other chronic disorders such as (heart disease, diabetes, hypertension, asthma or epilepsy), free from psychological disorders as (postpartum depression or psychosis) or stressful events during the last six months and willing to participate in the study.

#### 2.3.2. Subject Size

Sample size was calculated based on the previous year census report of Benha Teaching Hospital. The total number of postpartum primiparous women seeking family planning

methods = 900 women (Benha Teaching Hospital Census, 2015). Sample size was calculated utilizing Yamane formula.

$$n = \frac{N}{1+N(e)^2}$$

Where:

n= sample size

N= total population number (900).

e= margin error (0.05)

### 2.4. Tools of Data Collection

#### 2.4.1. First Tool

Structured interviewing questionnaire was developed by the researchers in Arabic language after reviewing related literature. It involved three main parts:

- Demographic data of the studied women such as; age, educational level, occupation, residence and monthly income.
- Gynecologic and sexual history of the studied women such as; history of circumcision, onset of menstruation after delivery, time of resumption and frequency of sexual intercourse after delivery and calm environment during intercourse.
- Husband information such as; occupational status, age, and suffering from chronic disease.

#### 2.4.2. Second Tool

The Female Sexual Function Index (FSFI) was used to evaluate sexual function of the studied women. It consists of 19 questions, making up 6 domains, namely; sexual desire, arousal, lubrication, orgasm, satisfaction, and pain. Each item yields a score ranging from 0 to 5. Scores obtained for each item are then summed up within each domain and then multiplied by a constant factor to yield individual domain scores. The total FSFI score is the sum of scores obtained for each domain, and ranges from 2 to 36, with a higher score associated with a lesser degree of sexual dysfunction. Sexual activity was classified as good if FSFI=30 or more, intermediate if FSFI= 23-29 and poor if FSFI was <23. [29]

**Table 1.** Distribution of the 6 domains of FSFI, the corresponding items, their score range, and the weight factor.

Domain	Items	Score range	Factor	Min score	Max score
Desire	1, 2	1 – 5	0.6	1.2	6
Arousal	3, 4, 5, 6	0 – 5	0.3	0	6
Lubrication	7, 8, 9, 10	0 – 5	0.3	0	6
Orgasm	11, 12, 13	0 – 5	0.4	0	6
Satisfaction	14, 15, 16	0/1 – 5	0.4	0.8	6
Pain	17, 18, 19	0 – 5	0.4	0	6
Scale range				2	36

#### 2.4.3. Third Tool

The sexual quality of life-female (SQOL-F) questionnaire: It was developed by Symonds et al. [28] It is a valid and reliable instrument for evaluation of female

SQOL that focuses on sexual self-esteem, emotional and relationship issues. It consists of 18 items and each item is rated on a six-point response ranged from (completely agree to completely disagree). The response categories could be scored either 1 to 6 giving a total score of (18–

108). Higher score indicates better female SQOL. The questionnaire items were randomly distributed in order to avoid leading sentences. The items categorized in to four factors as a following:

Factor 1 (psychosexual feelings) including 7 items (item 2, 3, 7, 8, 10, 16, and 17).

Factor 2 (sexual and relationship satisfaction) including 5 items (item 1, 5, 9, 13, and 18).

Factor 3 (self-worthlessness) including 3 items (item 4, 6 and 15).

Factor 4 (sexual repression) including 3 items (item 11, 12, and 14).

## 2.5. Methods

The study was executed according to the following steps

### 2.5.1. Approvals

A written official approval to conduct this research was obtained from the director of Benha teaching hospital that was taken and delivered to the director of the outpatient clinics, in order to obtain their agreement to conduct the study after explaining its purpose.

### 2.5.2. Tools Validity

The validity of questionnaires were reviewed for content validity by a jury of five experts in the field of community health nursing and obstetrics & woman health nursing at Ain shams university and Zagazig university to ascertain relevance and completeness of tools. Moreover, the validity of FSFI was confirmed by Rosen et al. and Mohammadi et al. [29, 30] Content, face and construct validity of the SQOL-F questionnaire was evaluated by exploratory factor analysis by Maasoumi et al. [18]

### 2.5.3. Tools Reliability

Reliability was done by using Cronbach's Alpha coefficient test which revealed that each of the two tools consisted of relatively homogenous items as indicted by the high reliability. Internal consistency of FSFI = 0.89 and SQOL-F = 0.85. According to Cronbach [31] values equal or greater than 0.70 considered satisfactory.

### 2.5.4. Ethical Considerations

Permission was obtained orally from each woman before conducting the interview and after giving a brief orientation to the purpose of the study. The woman were reassured that

all gathered information is confidential and used only for the purpose of the study. No name was required on the forms to ensure anonymity and confidentiality. They were also informed about their right to withdraw at any time from the study without giving any reasons.

### 2.5.5. Pilot Study

A pilot study was carried out on 10 % of the sample (28) primiparous women and were excluded from the main sample. With the main purpose to test the relevance and applicability of the tools, detect any problem peculiar to the tools, determine the time needed to fill the study tools, and find out any problem that may interfere with the process of data collection. The pilot study revealed that statements of the questions were relevant.

### 2.5.6. Procedures

The study was carried out from the beginning of October 2016 to the end of April 2017, covering a period of 7 months. The previous mentioned setting was visited by the researchers two days/week (Sunday and Wednesday) from 9.00 am to 12.00 pm according to the schedule of the family planning outpatient clinic. The researchers interviewed the primiparous women during their follow up to the family planning outpatient clinic after reviewing her medical record, ensure her health status, explained the aim of the study, and asked for participation. Upon consent to participate, women were asked to fill the questionnaires, FSFI and SQOL-F questionnaires. Average time for the completion of questionnaires (20-25 minutes). A number of interviewed women / week ranged from 9-10 women.

### 2.5.7. Statistical Analysis

Data analysis was performed using Statistical Package for Social Sciences (SPSS version 20.0) Descriptive statistics were used to describe characteristics of the study subjects (e. g. frequency, percentages, mean, and standard deviation). Test of significance (independent t test, and chi-square test) was applied to test the differences between the groups. Fisher's Exact Test (FET) was used to evaluate the differences between the groups if there are small expected values. Correlation coefficient was applied to evaluate the association between the FSFI score and SQOL score. A statistically significant difference was considered at  $p\text{-value} \leq 0.05$ , and a highly statistically significant difference was considered at  $p\text{-value} \leq 0.01$ , while the  $p\text{-value} > 0.05$  indicates non-significant results.

## 3. Results

**Table 2.** Distribution of the studied women according to their demographic characteristics (n= 277).

Variables	Vaginal delivery n= 140		Cesarean section n= 137		FET/ $\chi^2$	P value
	No	%	No	%		
Age						
<20	6	4.3	7	5.1	4.222	> 0.05
20- <30	103	73.6	105	76.6		
30- <40	31	22.1	22	16.1		
≥41	0	0.0	3	2.2		

Variables	Vaginal delivery n= 140		Cesarean section n= 137		FET/ $\chi^2$	P value
	No	%	No	%		
Mean $\pm$ SD	27.05 $\pm$ 3.758		26.55 $\pm$ 5.495		t= 0.662	> 0.05
<b>Educational level</b>						
Illiterate	2	1.4	0	0.0	3.721	> 0.05
Read and write	16	11.4	10	7.3		
Primary education	62	44.3	58	42.3		
Secondary education	60	42.9	69	50.4		
<b>Occupation</b>						
Working	98	70.0	102	74.5	0.681	> 0.05
Housewife	42	30.0	35	25.5		
<b>Residence</b>						
Urban	73	52.1	74	54.0	0.097	> 0.05
Rural	67	47.9	63	46.0		
<b>Monthly income</b>						
Not enough	38	27.1	34	24.8	5.005	> 0.05
Sufficient	72	51.4	86	62.8		
Sufficient and save	30	21.5	17	12.4		

$\chi^2$ : Chi-Square test, FET: Fisher's exact test, t: Independent t test.

Table 2 reveals that there were no significant differences ( $p > 0.05$ ) between the two groups in relation to their age, educational level, occupation, residence and monthly income. It was clear that 73.6% and 76.6% of VD and CS groups were aged 20- <30 years with a mean age 27.05 $\pm$ 3.758 and 26.55 $\pm$ 5.495 years respectively. Regarding educational level,

42.9% of VD group and 50.4% of CS group had attained secondary level of education. Furthermore, 70.0% and 74.5% of both VD and CS groups respectively were working. Also, 52.1% of VD group and 54.0% of CS group were urban areas residents. In addition, 51.4% and 62.8% of both groups respectively reported that their monthly income was sufficient.

**Table 3.** Distribution of the studied groups according to their gynecologic and sexual history (n= 277).

Variables	Vaginal delivery n = 140		Cesarean section n = 137		$\chi^2$	P value
	No	%	No	%		
<b>History of circumcision</b>						
Yes	133	95.0	128	93.4	0.313	> 0.05
No	7	5.0	9	6.6		
<b>Onset of menstruation after delivery</b>						
Yes	83	59.3	95	69.3	3.050	> 0.05
No	57	40.7	42	30.7		
<b>Calm environment during intercourse</b>						
Yes	41	29.3	44	32.1	0.261	> 0.05
No	99	70.7	93	67.9		
<b>Time of resumption of sexual intercourse after delivery</b>						
Fifth week	13	9.3	7	5.1	0.225	> 0.05
Sixth week	109	77.9	105	76.6		
Seventh week	18	12.8	25	18.2		
<b>Frequency of sexual intercourse after birth</b>						
less than 1 week	38	27.1	40	29.2	1.370	> 0.05
1-2 weeks	93	66.4	93	67.9		
3-4 weeks	9	6.5	4	2.9		

$\chi^2$ : Chi-Square test

Table 3 indicates no significant differences ( $p > 0.05$ ) between VD and CS groups in relation to the history of circumcision, onset of menstruation, time and frequency of sexual intercourse after delivery and calm environment during intercourse. It was found that 95.0% and 93.4% of both VD and CS groups respectively were circumcised. Moreover, 59.3% of VD group and 69.3% of CS group were experienced the onset of menstruation after delivery. Also,

70.7% and 67.9% of both groups respectively didn't find calm environment during intercourse. With regard to the time of resumption of sexual intercourse after delivery 77.9% and 76.6% of both groups respectively were resumed sexual intercourse sixth week after delivery. Regard to frequency of sexual intercourse after birth, 66.4% and 67.9% of VD and CS groups respectively indicated 1-2 weeks interval.

**Table 4.** Distribution of the studied groups according to their husband information and their need for consultation regarding sexual issues (n= 277).

Variables	Vaginal delivery n = 140		Cesarean section n = 137		FET	P value
	No	%	No	%		
<b>Occupational status of the husband</b>						
Working	139	99.3	135	98.5	0.359	> 0.05
Not working	1	0.7	2	1.5		

Variables	Vaginal delivery n = 140		Cesarean section n = 137		FET	P value
	No	%	No	%		
<b>Suffering from chronic illness</b>						
Yes	0	0.0	2	1.5	2.059	> 0.05
No	140	100.0	135	98.5		
<b>Husband age (Mean <math>\pm</math> SD)</b>	33.52 $\pm$ 4.12		34.02 $\pm$ 5.23		t= 0.976	> 0.05
<b>Need for consultation regarding sexual issues</b>						
Yes	111	79.3	117	85.4	1.779	> 0.05
No	29	20.7	20	14.6		

FET: Fisher's exact test, t: Independent t test

Table 4 represents that there were no statistically significant differences ( $p > 0.05$ ) between VD and CS groups in the term of husbands' age, occupational status, suffering from chronic illness and need for consultation regarding sexual issues.

**Table 5.** The Differences of the FSFI mean score between vaginal delivery and cesarean section groups. (n= 277).

Variables	Maximum score	Vaginal delivery n= 140	Cesarean section n= 137	t test	P value
		Mean $\pm$ SD	Mean $\pm$ SD		
Desire	6	3.64 $\pm$ 0.56	3.58 $\pm$ 0.65	0.764	> 0.05
Arousal	6	3.11 $\pm$ 0.77	3.32 $\pm$ 0.64	0.851	> 0.05
Lubrication	6	3.60 $\pm$ 0.69	3.51 $\pm$ 0.55	1.125	> 0.05
Orgasm	6	3.26 $\pm$ 0.53	3.49 $\pm$ 0.51	1.072	> 0.05
Satisfaction	6	3.70 $\pm$ 0.59	3.68 $\pm$ 0.45	0.285	> 0.05
Pain	6	4.09 $\pm$ 1.24	4.65 $\pm$ 1.41	1.120	> 0.05
<b>Total sexual function</b>	<b>36</b>	<b>21.41<math>\pm</math>2.82</b>	<b>22.27<math>\pm</math>2.27</b>	<b>1.029</b>	<b>&gt; 0.05</b>

t: Independent t test

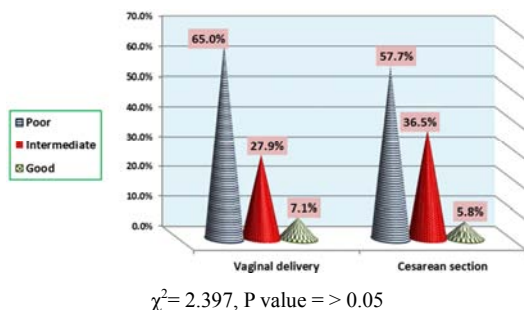
Table 5 shows the differences of the FSFI mean score between VD and CS groups. There were no statistically significant differences ( $P > 0.05$ ) between VD and CS groups as regard to all elements of FSFI including desire, arousal, lubrication, orgasm, satisfaction and pain. Moreover, total sexual function score in both groups were 21.41 $\pm$ 2.82 and 22.27 $\pm$ 2.27, respectively, which indicated no statistically significant difference between the groups ( $P > 0.05$ ).

**Table 6.** The differences of the SQOL mean score between vaginal delivery and cesarean section groups. (n= 277).

Variables	Maximum score	Vaginal delivery n= 140	Cesarean section n= 137	t test	P value
		Mean $\pm$ SD	Mean $\pm$ SD		
Psychosexual feelings	42	21.02 $\pm$ 3.96	20.80 $\pm$ 4.61	1.373	> 0.05
Sexual and relationship satisfaction	30	18.34 $\pm$ 3.41	18.78 $\pm$ 3.21	1.098	> 0.05
Self-worthlessness	18	7.25 $\pm$ 2.06	7.72 $\pm$ 2.37	0.972	> 0.05
Sexual repression	18	9.62 $\pm$ 2.18	9.75 $\pm$ 2.39	0.447	> 0.05
<b>Total SQOL</b>	<b>108</b>	<b>56.25<math>\pm</math>7.17</b>	<b>55.05<math>\pm</math>7.87</b>	<b>1.317</b>	<b>&gt; 0.05</b>

t: Independent t test

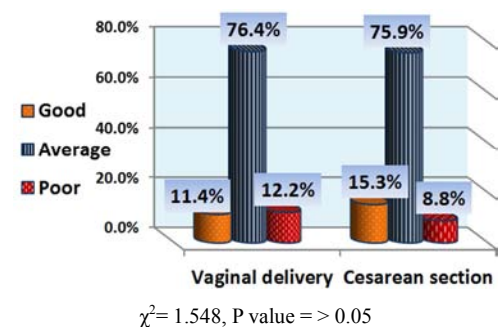
Table 6 clarifies that, there were no statistically significant differences ( $P > 0.05$ ) between VD and CS groups regarding SQOL total and subtotal mean score including psychosexual feelings, sexual and relationship satisfaction, self-worthlessness and sexual repression.



**Figure 1.** The relationship between the studied subjects mode of delivery and their sexual function level after delivery (n= 277).

Figure 1 portrays that, there was no statistically significant difference ( $P > 0.05$ ) between VD and CS groups regarding their sexual function level after delivery. where 65% of VD

group and 57.7% of CS group had poor sexual function level after delivery. Only 7.1% and 5.8% of both groups respectively had good sexual function level after delivery.



**Figure 2.** The relationship between the studied subjects mode of delivery and their SQOL level after delivery (n= 277).

Figure 2 illustrates that, there was no statistically significant difference ( $P > 0.05$ ) between VD and CS groups regarding their SQOL level after delivery. Whereas 76.4% of VD group and 75.9% of CS group had an average level of SQOL after delivery. Only 11.4% and 8.8% of both groups, respectively had good level.

**Table 7.** Correlation coefficient between the total FSFI score and SQOL total score among the studied groups.

Variables	FSFI	
	<i>r</i>	<i>P</i>
SQOL	0.449	< 0.01**

\*\*A highly statistical significant correlation ( $p \leq 0.01$ )

Table 7 clarifies that, there was a positive highly statistically significant correlation between studied subjects FSFI total score and SQOL total score. ( $P < 0.01$ )

## 4. Discussion

Pregnancy and delivery are one of the most significant periods of women's life that causes hormonal and bodily alterations which could have major effects on sexual function. One of the most important concerns affecting the stability of marriage is sexual function, so its problem can lead to divorce or separation of the couple. [11]

The results of this study will be discussed in frame of previously mentioned research questions. The present study finding revealed that there were no significant differences ( $p > 0.05$ ) between VD and CS groups in relation to their age, educational level, occupation, residence and monthly income. Also, in relation to their husbands' information. These findings mean that the two groups under study are homogenous and comparable. These results were in line with Dabiri et al. and Amiri et al. [32, 33] where *the former* had studied "the effect of mode of delivery on postpartum sexual functioning in primiparous women". *The latter* had investigated "the difference of the sexual function after the normal VD and the CS". They pointed out that, there was no difference between the groups (VD and CS groups) with regard to demographic characteristics including age, education and occupation.

The present study results indicated absence of any significant differences ( $p > 0.05$ ) between VD and CS group with regard to their history of circumcision, onset of menstruation, time of resumption of sexual activity, frequency of sexual intercourse after delivery and calm environment during intercourse. The first intercourse after delivery may give rise to many concerns. Such as concerns related to dyspareunia, the possibility of becoming pregnant again, the episiotomy or CS wound, the relationship between the partners, the sense of lost attractiveness, or any negative memories related to delivery, may contribute to the woman's decision to delay resuming sexual intercourse after delivery. [34] The present study results illustrated that three quarters of both VD and CS groups were resumed sexual intercourse sixth week after delivery, with no significant difference

between both groups. This finding may be attributed to that the resumption of sexual activity within six weeks postpartum is generally prohibited based on religious and cultural beliefs as a Muslim countries [35] The finding is similar to that of Dabiri et al. [32] who had stated that no statistically significant difference was observed between the two groups regarding their resuming sexual intercourse after delivery. Also, Alum et al. [36] who had studied "factors associated with early resumption of sexual intercourse among postnatal women in Uganda" reported that more than half of their studied subjects had resumed sexual intercourse by 6 weeks postpartum. Moreover, Barbara et al. [8] who had studied "the impact of mode of delivery on female postpartum sexual functioning" showed that the type of delivery did not significantly affect time to resumption of intercourse.

On the other hand Anzaku and Mikah [37] who conducted their study in Nigeria to evaluate "postpartum resumption of sexual activity and sexual morbidity among Nigerian women". They had reported that sexual intercourse was resumed by more than two third of women with a mean time to resuming sexual intercourse of 8.2 weeks postpartum. This difference in time of resumption of postpartum sexual intercourse between the current study and the study of Anzaku and Mikah may be attributable to diverse religious and cultural beliefs and sexual attitudes of women in different parts of the world.

With regard to the onset of menstruation after childbirth, no significant difference was found between VD and CS groups. This finding is in the same line with Alesheikh et al. [26] who had studied "the relationship between mode of delivery and sexual function in nulliparous women" found that the mode of delivery did not significantly affect the onset of menstruation among their studied groups.

*Regarding research question 1* the current study results confirmed that there were no statistically significant differences ( $P > 0.05$ ) between VD and CS groups regarding all elements of FSFI including desire, arousal, lubrication, orgasm, satisfaction and pain. Moreover, total sexual function score in both groups were  $21.41 \pm 2.82$  and  $22.27 \pm 2.27$ , respectively, which indicated no statistically significant differences ( $P > 0.05$ ) between the groups. These findings are consistent with the findings of at least other five studies. *First*, Baghdari et al. [38] had conducted a study entitled "comparison of women's sexual function after natural childbirth and CS in women referring to the healthcare centers of Mashhad". Reported no statistical difference was shown in sexual function between natural childbirth and CS groups. *Second*, Hosseini et al. [39] in their study entitled "sexual function of primiparous women after elective CS and normal VD" followed the women for two years after delivery and reported that there was no difference between mode of delivery and sexual function. *Third*, De Souza et al. [40] had conducted a prospective study to evaluate "the effects of mode of delivery on postpartum sexual function". They showed that no significant difference in the sexual function of women

having a CS compared with women having a VD at 12 months after childbirth. *Fourth*, previously mentioned study of Alesheikh et al. [26] which revealed no statistically significant difference between VD and CS groups ( $P=0.509$ ). *Fifth*, Malchi et al. [25] who had assessed “the relationship between modes of delivery and sexual function in primiparous women, and concluded that, there is no relationship between mode of delivery and sexual function of primiparous women. *Sixth*, Kahramanoglu et al. [41] who had studied “the impact of mode of delivery on the sexual function of primiparous women” found that CS is not superior to VD in terms of conservation of normal sexual function, regardless of short-term postpartum effects.

On the contrary, at least two other studies disagreed with the current study finding. *First*, Al-Sherbeny [24] who had conducted a comparative study in Egypt to “evaluate the impact of birth trauma on female sexual activity in primiparous women” using FSFI. Demonstrated that women had unrepaired perineal tears and CS reported significantly higher FSFI scores compared to those had repaired perineal tears or episiotomy three months postpartum. *Second*, the previously mentioned Barbara et al. study [8] which mentioned that women who experienced an operative VD had poorer scores on arousal, lubrication, orgasm, and total sexual functioning compared with the CS group and lower orgasm scores compared with the spontaneous VD group ( $P < 0.05$ ). This discrepancy between the current study results and those of the latter studies may be attributed to the differences of comparative groups among the studies. In the contradicting studies, the participants were divided to different categories according to the status of perineum to episiotomy, repaired perineal tears, and unrepaired perineal tears. While in the current study there is no possibility to compare between the different categories because all VD group were undergoing episiotomy.

*Regarding research question 2* the current study findings revealed no statistically significant differences ( $P > 0.05$ ) between VD and CS groups regarding total and subtotal SQOL mean score including psychosexual feelings, sexual and relationship satisfaction, self-worthlessness and sexual repression. There are many studies that assess health related quality of life among VD and CS, but a few studies have focused on women's postpartum SQOL. However, the current results are consistent with some studies but vary from some previous studies; in hand with these findings, Varghese et al. [42] who had conducted a study in India entitled “sexual dysfunction among young married women” documented that the common disorders included reduce desire and arousal and orgasmic disorders and those had sexual dysfunction had a significantly poorer quality of life in general and had impaired social relationships. In fact, neglect sexual problem lead to feeling of reduced femininity and sexual failure, low self-confidence, absence of security, and feeling inferior in front of a husband. Therefore, these problems lead to many social problems such as crime, divorce, drug addiction and physical and mental disorders. [43, 11]

Mousavi et al. [44] who had evaluated the quality of life

after VD and CS, reported different results, and found that women with VD were more satisfied with their sexual lives and bodily appearance in the postpartum period than women with CS. This difference with current study could be due to the difference in sample size, study design or demographic differences.

The present study findings cannot confirm the protective factor for sexual dysfunction of caesarean section; indeed, in current study more than two third of VD group and more than half of CS group had poor sexual function level after delivery indicating sexual dysfunction. Only less than one tenth of both groups had good sexual function level after delivery with no statistically significant difference ( $P > 0.05$ ) between VD and CS groups. The decrease in postpartum sexual function in women in both groups may be attributed to a hypo estrogenic state that can happen due to breast feeding; emotional changes such as the altering body image; fatigue due to the baby's needs; and the quality of the relation with her husband. In this regard the previously mentioned study of Amiri et al. [33] which showed that there was no significant difference between primiparous women who had VD through midiolateral episiotomy and those who experienced CS with regard to their sexual function level. In addition, Laganà et al. [45] conducted study to evaluate “the quality of sexual activity of women during postpartum period in relation to the mode of delivery”. Found that female sexual dysfunction represent more than two third of their studied subjects with no evidence and significant relation between mode of delivery and onset of female postpartum sexual dysfunction. Moreover, Lurie et al. [46] evaluated “sexual function after childbirth by the mode of delivery”. Concluded that elective CS was not associated with a protective effect on sexual function after birth.

There are two very recent studies conducted by Rezaei et al. and Ghorat et al. [35, 47] *The former* studied “postpartum sexual functioning and it's predicting factors among Iranian women”. He found more than three quarters of the participants had sexual dysfunction. *The latter* evaluated “long term effect of VD and CS on female sexual function in primipara mothers” showed that delivery type has no long-term effect on female sexual function and appropriate education about the sexual issues after delivery and effect of birth giving on sexual function are necessary for this group of society. Accordingly, the findings of this study highlight the importance of educating pregnant women who request a CS about the advantages and disadvantages of this procedure.

On the other hand Holanda et al. [48] who studied “sexual dysfunction and associated factors reported in the postpartum period”. Found that the prevalence of sexual dysfunction was 43% among postpartum women and the type of delivery one of the associated factors whereas VD with suture represented a threefold higher risk for sexual dysfunction when compared to the CS birth. The cause of the difference in findings between Holanda et al. study and that of the present study is probably due to the difference in obstetrical data. While



Holanda et al. study conducted on different parity and included 44.5% primiparous women only, in the current study all subjects are primiparous women.

Regarding research question 3 the correlations between studied subjects FSFI score and SQOL score were investigated in the current study. Accordingly, there was a positive highly statistically significant correlation ( $P < 0.01$ ) between the studied subjects sexual function scores and their SQOL scores. This finding suggests poorer sexual function could have a negative impact on SQOL and overall quality of life. This result was supported by Hosseini-Tabaghdehi et al.[49] who had studied “the prevalence and predictors of female sexual dysfunction”, reported that sexual dysfunction leads to reduced quality of life among women and dissatisfaction in relation to others. Furthermore, Varma et al. [50] investigated “sexual functioning and quality of life of women with opioid dependence, showed significant correlation between quality of life and sexual functioning. ( $p=0.0004$ ). Finally, Mohammed et al. [19] in their study entitled “sexual function after childbirth according to the mode of delivery” recommended encouraging women to disclose their sexual complains and worries with their physicians in order to improve their SQOL. Therefore, to enhance the SQOL in postpartum women with sexual dysfunction, more attention should be made on educational intervention to increase the awareness about sexual issues after child birth.

## 5. Conclusion

Based on the overall findings of the present study and answering of research questions it can be concluded that, there were no statistically significant differences between VD and CS groups as regard to postpartum sexual function and SQOL. The findings also stated that there was a positive highly statistically significant correlation between the women sexual function score and their SQOL score.

## Recommendations

- Nurses should implement health education classes for pregnant women regarding the advantages and disadvantages of vaginal and cesarean delivery in order to change their concept of delivery and develop a positive attitude towards vaginal delivery.
- Nurses should provide sexual education for women during postpartum period to enhance sexual functioning and SQOL.
- Further study is required to evaluate the postpartum sexual dysfunction and its associated factors.
- Replication of the present study on larger sample, and different geographical area in Egypt.

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