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Evaluation of the relationship between sexual functions and depressive symptoms among pregnant patients during the second trimester

Özgül Özgan Çelikel[1] · Serdar Bulut[2]

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Abstract

Purpose Pregnancy is a process during which anatomical, physiological, and emotional changes occur. During this process, the sex lives of couples can be affected. Possible depressive symptoms and female sexual dysfunction can affect the relationship between partners, pregnancy–delivery process, and as a result, the newborn. The objective in the present study was to evaluate the relationship of female sexuality during pregnancy with sociodemographic parameters and depressive symptoms.

Methods 150 pregnant women during the second trimester of their pregnancy and age-matched 150 healthy volunteers were included in the study. Sociodemographic data were recorded. "Female Sexual Function Index" (FSFI) was used to evaluate sexual functions and "Beck Depression Inventory" (BDI) was used to evaluate depressive symptoms. The data were analysed using SPSS 23 statistical software. The results were interpreted with "Independent Samples *t* Test", Spearman's Rho correlation coefficient, Mann–Whitney *U* analysis and Chi-square test, and a *p* value of <0.05 was considered statistically significant.

Results It was detected that FSFI score of the pregnant group was lower compared to that of the non-pregnant group (16.953 ± 8.24; $p=0.000$). There was no difference between the groups in terms of BDI scores ($p=0.100$). There was no relationship between the FSFI score and the BDI score in the pregnant group ($r=-0.087$; $p=0.144$).

Conclusion It was found that female sexual dysfunction occurs in pregnant women, depressive symptoms remained unchanged when compared to non-pregnant women and sexual functions remain unaffected.

Keywords Pregnancy · Depression · Sexual function

Introduction

Sexuality is a basic instinct required to survive and continue life. Female sexual dysfunction (FSD) is a common problem occurring at a rate of 20–50% [1, 2]. Studies show that there is a strong relationship between sexual dysfunction and physical and emotional state [3]. It is one of the main factors affecting women's general health condition and quality of life [4]. Sexual dysfunction causes loss of confidence, deterioration of inter-personal relationships, and often to emotional stress [5]. Sexual function and sexual dysfunction in women have been less extensively studied in countries such as Turkey [6].

Pregnancy is a process during which anatomical and physiological changes occur. Sexual life changes in pregnancy. It was reported that 86% of couples are sexually active during pregnancy [7].

It is not necessary to limit sexual activity during a healthy pregnancy [8]. With increased progesterone and estrogen levels in the circulation, pregnant women become more sensitive with smooth skin, shiny hair, enlarged breast tissue, and increased vascularity and congestion in the sex organs. A decrease in sexual functions is observed during the first trimester of pregnancy due to nausea, vomiting, dyspeptic problems, and the concern of harming and losing the baby [9]. During the second trimester, it is observed that the interest in sexuality increases in pregnant women with

✉ Özgül Özgan Çelikel
drozgulozgan@gmail.com

Serdar Bulut
drsbulut@hotmail.com

[1] Gynecology and Obstetrics Clinic, Yenimahalle Training and Research Hospital, Yildirim Beyazıt University, Ankara, Turkey

[2] Psychiatry Clinic, Yenimahalle Training and Research Hospital, Yildirim Beyazıt University, Ankara, Turkey

a decrease in physical complaints [10]. Second trimester is the most appropriate period in terms of sexual functions. During the third trimester, physical symptoms associated with the enlargement of uterus and the onset of birth anxiety can decrease libido and thus interest towards sexuality [9].

In our study, the objective was to evaluate the relationship of sexual functions of pregnant women during second trimester with sociodemographic parameters and depressive symptoms by comparing with non-pregnant women.

Materials and methods

The G* power program was used to calculate the number of patients to be included in the study. In the analyses performed on 150 pregnant women and non-pregnant women, the effect width was calculated as 0.475 minimum. The power of the study calculated over this effect width was found to be 97.75%. The sample numbers included in the study were found to be sufficient. Sexually active 150 pregnant women during the second trimester of their pregnancy (12–24 weeks) and age-matched 150 non-pregnant, married patients between the ages of 18 and 45 were included in the study. Pregnant women with a risk of miscarriage, pregnant women who were not allowed sexual intercourse due to medical reasons, patients with hypertension, liver failure, thyroid dysfunction, diabetes mellitus, chronic kidney failure, gynecological malignancy, primary ovarian insufficiency, hypothalamic amenorrhea, patients receiving hormone replacement therapy, menopausal patients, patients diagnosed with a psychiatric disorder, patients receiving therapy, patients with chronic medication use were excluded from the study. Ethics committee approval was obtained from the Yıldırım Beyazıt University Yenimahalle Training and Research Hospital and informed consent was obtained from the participants. Sociodemographic data form containing the necessary information for the study was filled.

The Turkish version [12] of the Likert-type female sexual function inventory (FSFI) [11] consisting of 19 items and evaluating female sexual dysfunction was used to assess sexual function. The inventory consists of desire (items 1 and 2), arousal (items 3, 4, 5 and 6), lubrication (items 7, 8, 9 and 10), orgasm (items 11, 12 and 12), satisfaction (items 14, 15 and 16), and pain (items 17, 18 and 19) domains. In the study by Rosen et al. [11] and in the study conducted in Turkey, the functional state was considered as good if the FSFI score is ≥ 30, moderate if the score is 23–29, and a score of ≤ 23 was considered to indicate sexual dysfunction [13].

Beck Depression Inventory (BDI) [14], for which the validity and reliability study in Turkey was conducted by Hisli [15], was used to evaluate behavioral symptoms of depression. It measures 21 symptom categories. Accordingly, the scores are classified as minimal symptoms (0–9 points), mild symptoms (10–16 points), moderate symptoms (17–29 points), severe symptoms (30–63 points). Patients with a BDI score of 10 or above were referred to the psychiatry clinic.

The collected data were analysed using SPSS 23 statistical software. The frequency distributions were calculated by calculating the mean ± standard deviation (SD) values of data. An "Independent Samples *t* test" was used to evaluate the differences between the data of the groups. The relationship between two independent quantitative variables was analysed using Spearman's Rho correlation coefficient. The differences between two independent groups were analysed using a Mann–Whitney *U* test. The relationship between two independent categorical variables was analysed using a Chi-square test. The strength of the relationship between FSFI and BDI scores of the groups and other data were analysed with "Spearman's Rho correlation coefficient". Correlation coefficients (r = correlation coefficient) were determined. An "r" value of 0.00–0.05 was defined as "very weak correlation", an "r" value of 0.26–0.49 was classified as "weak correlation", an "r" value of 0.50–0.69 was classified as "moderate correlation", an "r" value of 0.70–0.89 was classified as "strong relationship", and an "r" value of 0.90–1.00 was classified as "very strong relationship". A p value of < 0.05 was considered statistically significant.

Results

Descriptive statistics of pregnant and non-pregnant groups are presented in Table 1. While the mean age of the two groups was similar, duration of education (pregnant group: mean ± SD 10.15 ± 3.85; non pregnant group mean ± SD 9.09 ± 4.92 $p = 0.039$) was higher in the pregnant group and the duration of marriage (pregnant group mean ± 5.53 ± 3.68; non-pregnant group mean ± SD 6.71 ± 4.98 $p = 0.021$) was higher in the non-pregnant group. The mean gestational age was 18.35 ± 3.49 weeks in the pregnant group.

Table 2 shows that the lack of sexual appetite was more common among the expectant partners ($p = 0.001$). The comparison of the FSFI score between the groups showed that the mean FSFI score was lower in the pregnant women group than in the non-pregnant women group (pregnant group mean ± SD 16.953 ± 8.24; non-pregnant group mean ± SD 24.68 ± 9.09 $p = 0.000$). It was found that there was no difference between the groups in terms of the BDI score (pregnant group mean ± SD 6.02 ± 6.16; non-pregnant group mean ± SD 7.38 ± 8.34 $p = 0.100$) (Table 2).

Table 3 shows that there was a difference between pregnant and non-pregnant women in the domains of desire, arousal, lubrication, orgasm, satisfaction, pain, and FSFI dysfunction ($p < 0.05$) (Table 3). Accordingly,

Table 1 Sociodemographic data of pregnant and non-pregnant groups

	Pregnancy ($n=150$) Mean ± SD	Non-pregnant ($n=150$) Mean ± SD	p value
Age	29.88 ± 5.38	30.65 ± 6.36	0.257
Gravida	2.23 ± 1.25	2.10 ± 1.43	0.416
Length of marriage	5.53 ± 3.68	6.71 ± 4.98	0.021*
Education time	10.15 ± 3.85	9.09 ± 4.92	0.039*

Independent samples t test

*$p<0.05$ (statistically significant)

Table 2 FSFI score and BDE value data of pregnant and non-pregnant groups

	Pregnancy ($n=150$) Mean ± SD	Non-pregnant ($n=150$) Mean ± SD	p value
Reluctance in man (+)	27(18%)	9 (6%)	0.001*
FSFI score	16.953 ± 8.24	24.68 ± 9.09	0.000*
BDE value	6.02 ± 6.16	7.38 ± 8.34	0.100

Independent samples t test

*$p<0.05$ (statistically significant)

Table 3 FSFI score distribution of groups and the comparison of mean values

FSFI score	Pregnant ($n=150$)	Non-pregnant ($n=150$)	p value
Desire	2.80 ± 1.71	4.73 ± 1.40	0.000*
Arousal	2.98 ± 1.99	4.38 ± 1.50	0.000*
Lubrication	2.73 ± 1.71	4.27 ± 1.69	0.000*
Orgasm	2.33 ± 1.71	3.29 ± 2.15	0.000*
Satisfaction	2.87 ± 1.80	3.97 ± 1.78	0.000*
Pain	3.15 ± 1.94	4.06 ± 1.90	0.000*
FSFI score	16.95 ± 8.4	24.40 ± 9.09	0.000

Mann–Whitney U

*$p<0.05$ (statistically significant)

non-pregnant women had higher desire, arousal, lubrication, orgasm, satisfaction and pain domain scores and higher total FSFI scores than pregnant women ($p<0.05$).

In the analysis of BDI subgroups as shown in Table 4, the rate of women with a score of "minimal depressive symptoms" was higher in pregnant women than in non-pregnant women [pregnant group 80% ($n=120$); non pregnant group 66.7% ($n=100$) $p=0.010$].

The strength of relationship between the "FSFI scores" and "BDI" scores of the two groups is presented in Table 5. Accordingly, there was a significant, weak negative correlation between the FSFI score and age ($r=-0.210$; $p=0.010$) and duration of marriage ($r=-0.183$; $p=0.025$) in pregnant women. There was a significant, weak positive correlation between the BDI score and age ($r=0.185$; $p=0.023$) and duration of marriage ($r=0.187$; $p=0.022$) in pregnant women.

There was a significant, weak negative correlation between the FSFI score and age ($r=-0.296$; $p=0.000$) in non-pregnant women. There was a significant, moderate negative correlation between the FSFI score and gravida ($r=-0.344$; $p=0.000$) and duration of marriage ($r=-0.367$; $p=0.000$) in non-pregnant women. There was a significant, weak positive correlation between the FSFI score and the duration of education ($r=0.241$; $p=0.003$). There was a significant, weak positive correlation between the BDI score and age ($r=0.240$; $p=0.003$), gravida ($r=0.263$; $p=0.001$) and duration of marriage ($r=0.298$; $p=0.000$) in non-pregnant women.

When the relationship between the FSFI score and the BDI score was examined, there was a significant, moderate negative correlation between the BDI score and the FSFI score in the non-pregnant women group ($r=-0.548$; $p=0.000$) (Table 5).

Discussion

Female sexual function has a negative effect on genetic predisposition, biological, cognitive, emotional, social factors, sexual orientation, belief, attitude, value judgments, motivation and psychological status [16]. Pelvic organ prolapse and urinary incontinence can cause sexual dysfunction [17]. A single inventory of repetitive vaginal prolapse appears to improve the sexuality of bilateral sacrospinous fixation [18]. Sociodemographic characteristics, Beck Anxiety Inventory and Beck Depression Inventory were evaluated in 67

Table 4 Comparison of the depressive symptoms of the groups

BDE value	Pregnant	Non-pregnant	Total	Ki Kare	*p*
Minimal symptoms (0–9)					
Sayı	120	100	220		
%	80.0	66.7	73.3	11.38	0.010*
Mild symptoms (10–16)					
Sayı	18	30	48		
%	12.0	20.0	16.0		
Moderate symptoms (17–29)					
Sayı	9	7	16		
%	6.0	4.7	5.3		
Severe symptoms (30–63)					
Sayı	3	13	16		
%	2.0	8.7	5.3		
Total					
Sayı	150	150	300		
%	100.0	100.0	100.0		

"ki kare analizi"

*$p < 0.05$ (statistically significant)

Table 5 Analysis of the relationship of FSFI and BDI scores with age, gravida, duration of marriage, duration of education across the groups

	Pregnant		Non-pregnant	
	FSFI score	BDE value	FSFI score	BDE value
Age				
r	− 0.210	0.185	− 0.296	0.240
p	0.010*	0.023*	0.000*	0.003*
Gravida				
r	− 0.133	0.123	− 0.344	0.263
p	0.104	0.135	0.000*	0.001*
Length of marriage				
r	− 0.183	0.187	− 0.367	0.298
p	0.025*	0.022*	0.000*	0.000*
Education time				
r	0.157	− 0.077	0.241	− 0.009
p	0.056	0.352	0.003*	0.910
BDE value				1.0
r	− 0.087	1	− 0.548	
p	0.144		0.000*	
FSFI score				
r	1	− 0.87	1.0	− 0.548
p		0.144		0.000*

r direction	Relationship level	Relationship
0.00	No relationship	*r* = − negative relationship *r* = + positive relationship
0.01–0.29	Low	
0.30–0.69	Middle	
0.70–0.99	High	
1.00	Perfect relationship	

r Spearman's Rho correlation coefficient

*$p < 0.05$ (statistically significant)

HPV-infected patients and 66 healthy control patients, where depression and sexual dysfunction were more prevalent in HPV-treated patients. It was determined that sexual dysfunction was associated with depression and anxiety [19].

In deep infiltrated endometriosis, significant sexual dysfunction is observed [20]. Some drugs used in the treatment of panic disorder can cause sexual function impairment as a side effect [21]. Patients with diagnosed psychiatric disorders and drug use were not included in our study. The patients included in our study could not be evaluated for pelvic organ prolapse or urinary incontinence.

In our study, FSFI score of the non-pregnant group ($n=150$) was 24.68; in the pregnant group ($n=150$), we found FSFI of 16.95 ($p<0.000$) (Fig. 1). In pregnant women, we also found significant sexual functional impairment. Sexual dysfunction in pregnant women has been reported in 49% of the studies. [22]. We found this rate higher with 71.33% ($n=107$). Our result in studies in pregnant women in Turkey [23] is closer to the rate of 63.4%. In the same study, the FSFI score was 21.1. Sexual dysfunction in women is an increasing problem with age, but it is also seen in young women [24]. In our study, we found that there was a decrease in FSFI score in the pregnant group ($r=-0.210$; $p=0.010$) and in non-pregnant group ($r=-0.296$; $p=0.000$) (Table 5).

Elnashar et al. [25] found that 31.5% [25] of women and 39.5% of Valadares et al. [26] had pain problems during sexual intercourse [26]. In our study, all parameters of FSFI were negatively affected (Table 3). In a different study, FSFI score was found to be lower in pregnant women (18.9 and 22.7; $p<0.05$). When the sub-group analyses of FSFI scores were examined; It was found to be lower in the pregnant group ($p<0.05$). In addition, the rate of sexual dysfunction in pregnant women was found to be higher than

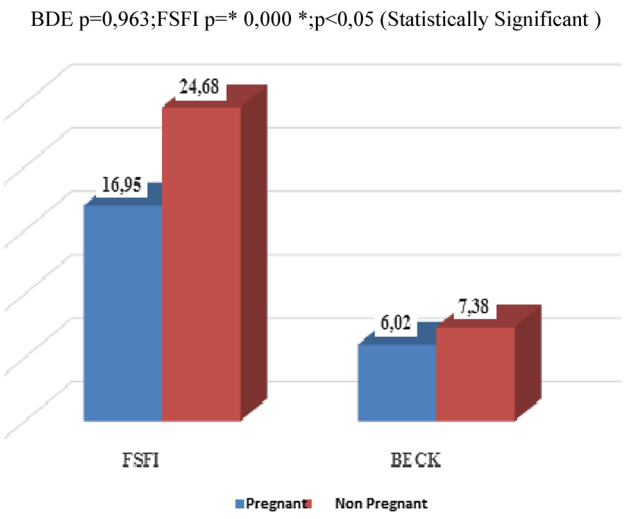

Fig. 1 FSFI and BECK Depression Inventory values according to groups

non-pregnant women (91.6% vs. 67.61%, $p=.0001$) [16]. The results of this study are similar to ours. On the other hand, in the study about pregnant women of different trimesters, it was found that most of the pregnant women had a decrease in only sexual intercourse and desire [27].

Perinatal period is associated with the risk of experiencing mental health problems for all women [28]. 15–20% of pregnant women suffer from mental illness and 86% are not treated because of potential teratogenic risks to the fetus [17, 29]. Maternal depression is the most common psychiatric disorder during pregnancy [30]. By altering fetal development, it may leave a lasting effect on the neurological and behavioral development of the newborn [31]. It affects the birth experience of women, the first emotional bond with the child and the welfare of the newborn [32].

In our study, the BDI value was found to be 6.02 ± 6.16 in the pregnant group ($n=150$) and 7.38 ± 8.34 in the non-pregnant group ($n=150$). Mental distress may be less in pregnant women. However, this difference between the groups was not significant ($p=0.100$). According to a recent meta-analysis, 25.3% (95% CI 21.4–29.6%) of prenatal depression was reported in low- and middle-income countries, unlike our study [31]. When examined in groups; minimal depressive symptoms were found to be high in 80% of pregnant women ($p=0.010$). Severe depressive symptoms were 16% in the total study population and there was no difference between the groups. Pregnant women experience more stressful events than non-pregnant women [33, 34]. They complain from fatigue or weakness, symptoms associated with depression and anxiety. We found moderate and severe depressive symptoms (BDI value of 17 and above) to be 8% ($n=10$) in pregnant women and 13.4% (n = 20) in non-pregnant women. There was no correlation between depressive symptoms and FSFI score in pregnant women ($r=-0.087$; $p=0.144$) (Table 5).

In this study, sexual reluctance rate was found to be 18% ($n=27$) in spouses of the pregnant group ($n=150$) and 6% ($n=9$) in spouses of the non-pregnant group ($n=150$); It was found that the level of sexual reluctance of spouses was higher in pregnant women ($p=0.001$) (Table 2). Men's interest in sexuality is influenced by the transition to paternity. Sexual performances are changing [35]. Fear of fetus injury and fear of harming women [36] affect arousal and desire. In addition, women may be worried about not satisfying their spouses sufficiently. In this case, sexual functions may be affected adversely. However, there are not enough studies in the literature. [37]. In our study, it was observed that pregnancy affects sexual functions. The fact that spouses do not want sexual intercourse also has an effect on this result. It has been found in the literature that having a low education level increases the risk of sexual dysfunction [38]. In our study, no connection was found between education level and sexual functions in the pregnant group, whereas

in the non-pregnant group, a significant positive correlation was found between FSFI score and level of education ($r=0.241$; $p=0.003$). In the non-pregnant group, it was concluded that sexual functions were better in those with higher education level. In our study, we did not find any connection between education level and depressive symptoms in pregnant women. ($r=-0.077$; $p=0.352$).

As a result, FSFI score was found to be lower in pregnant women than non-pregnant women. There was a negative correlation between age and FSFI. When desire, arousal, lubrication, orgasm, satisfaction and pain were examined separately, it was found that all values decreased in pregnant women. BDE values were found to be similar in pregnant and non-pregnant women. When the BDI value was examined in terms of depressive symptoms, it was seen that minimal depressive symptoms were higher in pregnant women. Also, it was shown that although BDI value was associated with various parameters in pregnant group, it was not associated with FSFI score.

Limitations

Patients with gynecological diseases were not included in our study. These diseases may interfere with sexual functions. Pregnant women who delivered on time were included. The relationship between preterm delivery and depressive symptoms could not be evaluated. More participants will make the results more reliable.

Conclusion

As we found in our study, during pregnancy, mental distress increases. Severity of depressive symptoms, pregnancy process, birth, mother's attachment to the baby can affect the physical and mental development of the newborn. It is thought that neglect and postponement of sexuality in this period triggers psychological distress or may impair sexual functions due to increasing mental distress during pregnancy. But, in our study, no significant relationship was found between depressive symptoms and sexual function. For the improvement of depressive symptoms that may affect the clinic of newborn and pregnant, couples' sexual functions should be considered. It is considered that gynecological examination findings that may affect the sexual functions of women are also examined and researches consisting of more participants should be conducted.

Compliance with ethical standards

Conflict of interest We declare that we have no conflict of interest.

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