

# Evaluation of Factors Affecting Depression and Sexual Dysfunction in the Postpartum Period

## Postpartum Dönemde Depresyon ve Cinsel Disfonksiyonu Etkileyen Faktörlerin Değerlendirilmesi

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### ABSTRACT

**Objective:** Postpartum depression and sexual dysfunction are common disorders in postpartum period and negatively effects infant's development. The aim is to evaluate the effect of parameters such as breastfeeding, mode of delivery and birth education program on depression and sexual dysfunction of postpartum women.

**Materials and Methods:** Postpartum women 3 months after childbirth were enrolled in this cross-sectional cohort study. Postpartum depression risk and sexual dysfunction were scanned by Edinburgh Postpartum Depression Scale (EPDS), Female Sexual Function Index (FSFI); socio-demographic and obstetric features were assessed through a self-developed survey including daily life style and breastfeeding.

**Results:** A total of 89 postpartum women without a history of psychiatric illness were included. 45/89(50.6%) of them completed the birth education program during antenatal period. EPDS and FSFI scores were  $6.57 \pm 7.2$ ,  $26.6 \pm 11.4$  in those who attended birth education program and  $9.70 \pm 8.3$ ,  $19.4 \pm 18$  in those who did not, respectively ( $p < 0.05$ ). According to the status of breastfeeding or mode of delivery, there was no statistically significant difference in postpartum depression risk and sexual function scores. Additionally, as secondary outcomes we assessed the relation of the birth education program with mode of delivery and breastfeeding. 64.4% of postpartum women who delivered vaginally participated to the birth education program, whereas only 35.6% of women who delivered with caesarean section participated ( $p = 0.056$ ). Secondly, when we compared the status of breastfeeding with participation in the birth preparation program, there was no significance ( $p = 0.4$ ).

**Conclusion:** This study has shown that systematic and multidisciplinary developed birth education program reduces the possibility of postpartum depression and improves level of sexual function.

**Key Words:** Breastfeeding, Edinburgh Postpartum Depression Scale, Female Sexual Function Index, birth preparation program, postpartum depression, sexual dysfunction

### ÖZET

**Amaç:** Postpartum depresyon ve cinsel işlev bozukluğu, postpartum dönemde sık görülen bozukluklardır ve bebeğin gelişimini olumsuz etkiler. Amacımız, emzirme, doğum şekli ve gebe eğitim programı gibi parametrelerin doğum sonrası kadınlarda depresyon ve cinsel disfonksiyon üzerindeki etkisini değerlendirmektir.

**Gereç ve Yöntem:** Doğumdan 3 ay sonra postpartum kadınlar kesitsel kohort çalışmasına alındı. Doğum sonrası depresyon riski ve cinsel işlev bozukluğu Edinburgh Doğum Sonrası Depresyon Ölçeği (EPDS), Kadın Cinsel İşlev İndeksi (FSFI); günlük yaşam tarzı ve emzirmeyi içeren sosyo-demografik ve obstetrik özellikler anket ile değerlendirildi.

**Bulgular:** Psikiyatrik hastalık öyküsü olmayan toplam 89 postpartum kadın dahil edildi. 45/89'u (% 50,6) doğum öncesi dönemde doğum eğitimi programını tamamlamıştı. Gebe eğitim programına katılanlarda EPDS ve FSFI skorları  $6.57 \pm 7.2$ ,  $26.6 \pm 11.4$  ve katılmayanlarda sırasıyla  $9.70 \pm 8.3$ ,  $19.4 \pm 18$  idi ( $p < 0.05$ ). Emzirme durumu veya doğum şekline göre, postpartum depresyon riski ve cinsel işlev skorları arasında istatistik olarak anlamlı bir fark yoktu. Ayrıca, ikincil sonuç olarak gebe eğitimi programının doğum şekli ve emzirme ile ilişkisini değerlendirdik. Vajinal doğum yapan postpartum kadınların % 64,4'ü öncesinde gebe eğitimi programına katılmışken, sezaryen ile doğum yapan kadınların sadece %35,6'sı bu eğitimi almıştı ( $p = 0,056$ ). Emzirmenin durumu ile gebe eğitim programına katılım arasında karşılaştırma yaptığımızda anlamlılık yoktu ( $p = 0.4$ ).

**Sonuç:** Bu çalışma, sistematik ve multidisipliner geliştirilmiş gebe eğitimi programının, doğum sonrası depresyon olasılığını azalttığını ve cinsel işlev seviyesini geliştirdiğini göstermiştir

**Anahtar Kelimeler:** Emzirme, Edinburg Postpartum Depresyon Skalası, Kadın Cinsel Fonksiyon İndeksi, gebe hazırlık programı, postpartum depresyon, cinsel disfonksiyon

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## Introduction

Postpartum depression is an annoying childbirth complication and it is not easily recognised because of the similar changes in the habits of sleeping, eating and psychological mood during normal postpartum period (1). This subtype of major depressive disorder emerges within 1 year after the childbirth and is related with being irrelevant to the baby (2). Approximately 13% of postpartum women suffer from postpartum depression (3). Paediatricians have to be careful and cooperate as gynaecologists during the 1<sup>st</sup> year of infant [4, 5]. Further, the American Academy of Paediatrics recommends to screen this disorder at the 1<sup>st</sup>, 2<sup>nd</sup>, 4<sup>th</sup> and 6<sup>th</sup> month postpartum visits for infant (1, 4). Depression disrupts the mother's duties and can also negate the infant's growth and development.

On the other hand, sexual problems frequently eventuate in the postpartum period and the prevalence ranges between 30% and 60% during the first 3 months postpartum (6). Although it is a common disorder, both physicians and women may postpone sexual concerns during pregnancy and postpartum period due to the inconvenience in raising the issue (7).

The primary target of antenatal and postnatal follow-up is to ensure that woman continues her physically and psychologically healthy life with her fetus or infant. For this purpose, systematic and multidisciplinary birth education programs are offered during the 2<sup>nd</sup> and 3<sup>rd</sup> trimesters of pregnancy in our tertiary hospital. During this 4 – week period, introductory information is provided by doctors and nurses about diet, exercise, sexual life and encouragement to vaginal delivery and breastfeeding (Table 1). Adequate knowledge about the upcoming period during pregnancy may relieve anxiety and maintain a healthy life.

The main purpose of this study is to determine the effect of breastfeeding, mode of delivery and birth education program on postpartum depression and sexual dysfunction during early postpartum months in the Eastern Black Sea Region. Secondly, we investigate the relation of the birth education program with mode of delivery and breastfeeding.

## Materials and Methods

This is a cross-sectional cohort study of postpartum women admitted to Giresun University Maternal and Children Disease's

Education and Training Hospital for their infants between June 2019 and December 2019. The postpartum women 3 months after birth were scanned by the Edinburgh Postpartum Depression Scale, Female Sexual Function Index (FSFI) Scale. Obstetric and socio-demographic features were asked through a short self-developed survey including daily life style and breastfeeding.

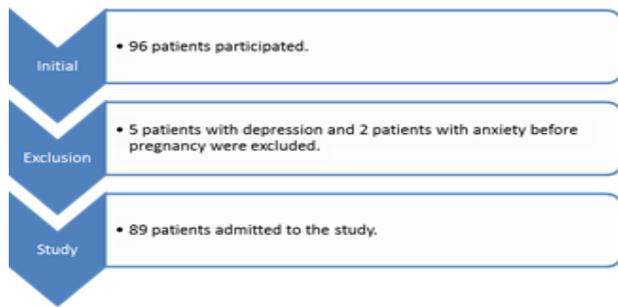
Inclusion criteria were as follows; mothers at age between 18 and 45 years who performed live birth deliveries under hospital conditions without intrapartum complications. Exclusion criteria were as follows; mothers who have preterm births, twin births or infants with congenital anomalies, deliveries at the age <18, prior history of major depressive disorder, substance abuse and single mothers. Also, mothers and infants with medical problems which required prolonged hospitalization (preeclampsia, postpartum hemorrhage etc) were excluded from the study.

Maternal socio-demographic features included maternal age (yrs), gravidity, and mode of delivery, education level, family income and maternal chronic disorders such as presence of diabetes, obesity or cardiac problems prior to pregnancy. Presence and frequency of breast feeding, use of additional infant formula, and the frequency of participation to the birth preparation program were interrogated. Diet style, amount of daily exercise, age at first sexual intercourse, smoking were questioned (Appendix 1).

The likert type validated Edinburgh Postpartum Depression Scale, which was prepared for screening purposes to determine the risk of depression in postpartum women, consists of 10 items (8). Women with a scale score of 13 and above are considered to be at risk of depression with 61.5% sensitivity and 77.4% specificity in a Turkish validation study (9).

The validated FSFI is a self-report Likert type 19-item scale that measures sexual functions including six sexual domains: sexual desire, lubrication, orgasm, arousal, pain and satisfaction at the last 4 week period (10). The FSFI score ranges between 2.0 and 36.0. The sexual function is good as it scores and cut-off value of the scale was accepted as 23 during the analysis of data. The widely used scale was translated into Turkish and its validity was provided (11).

The primary outcomes were the factors affecting the postpartum EPDS and FSFI mean score. Secondary outcomes were the relation of the birth education program with the mode of delivery and the breastfeeding.



**Fig. 1.** Flow-chart of the participants who admitted to the study

**Statistical Analysis:** Statistical analyses were performed by using IBM SPSS Statistics version 11. Two group comparisons were performed by Student *t* test. Chi-square test was used to determine relationships between categorical variables. The *p* value <0.05 was considered as statistically significant.

## Results

96 patients were initially asked to participate in the study, however 7 of them were excluded because 5 diagnosed with depression and 2 diagnosed with anxiety before pregnancy (Figure 1). A total of 89 postpartum women between the ages of 18-43 and without a history of previously diagnosed psychiatric disorders admitted to the study. In the demographic analysis, the mean maternal age was  $27.8 \pm 5.1$  yrs, with the age of first sexual intercourse  $23.2 \pm 3.6$ . Of those, 40.4% women were high school graduates and 44.9% women were middle income (minimum 2000 TL). Only 4 (4.5%) of them had a prior history of chronic comorbid diseases without requirement of prolonged hospitalization and using related medication, these were hypothyroidism, migraine, hypertension and diabetes mellitus. 15 (16.9%) of postpartum women were cigarette smokers (Table 2).

45/89 (50.6%) of postpartum women completed the birth education program which is organised as 4 periods once a week during their antenatal period. While 49 (55.1%) of postpartum women gave birth vaginally; 40 (44.9%) of them had caesarean section. 63 (70.8%) infants received only breastfeeding. Very few like 13 (14.6%) of women were on diet, while 24 (27%) of them were doing exercise (Table 2).

The EPDS mean score was  $6.57 \pm 7.2$  in those who attended the birth education program and  $9.70 \pm 8.3$  in those who did not. Statistically significantly higher score were found in non attendant group ( $p < 0.05$ ). The FSFI mean score in the group of women participating to the program

was  $26.6 \pm 11.4$ , whereas this score remains  $19.4 \pm 18$  in the non-participating group during the postpartum period. Accordingly, the FSFI score comparisons demonstrated significantly higher postpartum sexual function in patients participating to the birth education program ( $p < 0.05$ ).

The mode of delivery, including caesarean delivery and spontaneous vaginal delivery was compared. There was no statistically significant difference between caesarean delivery and spontaneous vaginal delivery in terms of postpartum depression risk and female sexual function. According to the status of breastfeeding, there was no statistically significant difference in terms of postpartum depression risk and sexual function. The EPDS and the FSFI mean scores are in Table 3.

Additionally, as secondary outcomes we assessed the relation of the birth education program with the mode of delivery and breastfeeding. 64.4% of postpartum women who delivered vaginally participated to the birth preparation program, whereas only 35.6% of women who delivered with caesarean section participated to the same program. Although *p* value is 0.056, we may interpret that it has possible trend towards significance. Secondly, when we compared the status of breastfeeding with participation in the birth education program, there was no statistically significance ( $p = 0.4$ ) (Table 4).

## Discussion

The postpartum period is influenced by physical, psychological and hormonal alterations; social and cultural structures are also play role in postpartum depression and sexual dysfunction (11). Even though physically low-self-image, hormonal mood instability and psychologically parental relationship are the factors creating the postpartum depression risk and sexual dysfunction in this period; the mode of delivery, breastfeeding and the participation to the birth education program may also have an impact. In the present study, the findings showed that a significantly lower risk of postpartum depression and sexual dysfunction in the birth preparation group. However, the other factors such as breastfeeding and the mode of delivery did not play a role in depression risk or sexuality in this period.

Various emotional or social risk factors may play role in the ethology of postpartum depression such as previous psychiatric disorders, single mother, congenital anomalies (12). Meko et al. studied the prevalence of postpartum depression related with

**Table 1.** The subjects in birth education program

Season 1	Season 2	Season 3	Season 4
The anatomy and function of the reproductive organs	Antenatal exercises and yoga	The signs and stages of labor	Postpartum contraception methods
The growth of fetus	Perineal massage for vaginal route delivery	Breath exercises	Antenatal and postpartum sexual life
General knowledge about antenatal period	Diet during pregnancy	Pain relief techniques	Breastfeeding and neonatal care

**Table 2.** Maternal socio-demographic features

	N	Minimum	Maximum	Mean	Std. Deviation
Age (yrs)	89	18	43	27.84	5.07
First sexual intercourse (yrs)	89	15	37	23.21	3.61
		Frequency		Percent (%)	
The mode of delivery	Vaginal	49		55.1	
	Caesarean	40		44.9	
Breastfeeding	Yes	63		70.8	
	No	22		24.7	
	With formula	4		4.5	
Birth education program	Yes	45		50.6	
	No	44		49.4	
Education level	Primary	3		3.4	
	Secondary	25		28.1	
	High school	36		40.4	
	University	23		25.8	
Economic income	Postgraduate	2		2.2	
	Low	39		43.8	
	Moderate	40		44.9	
Smoking	High	10		11.2	
	Yes	15		16.9	
Chronic Disease	No	74		83.1	
	Yes	4		4.5	
Diet	No	85		95.5	
	Yes	13		14.6	
Exercise	No	76		85.4	
	Yes	24		27	
	No	65		73	

mode of delivery in 370 women and found that postpartum depression risk in vaginal delivery group was significantly lower than that of both elective and emergency caesarean sections (13). On the contrary, Faisal-Cury et al. compared uncomplicated vaginal deliveries (without lacerations), complicated vaginal deliveries (with second or third degree lacerations) and caesarean

sections among 482 women and concluded that there was no greater difference in terms of the risk of postpartum depression in the medium and long term (14). Similarly, our results did not differ in the risk of postpartum depression depending on the mode of delivery.

Figueiredo et al. indicated that breastfeeding regulates the sleep and wake patterns for mother

**Table 3.** EPDS and FSFI mean scores according to the mode of delivery, breastfeeding and participation to the birth education program

	The mode of delivery	N	Mean	Std. deviation	p value
EPDS	Vaginal route	49	7.08	7.68	>0.05
	Caesarean	40	9.40	7.98	
FSFI	Vaginal route	49	23.26	14.07	>0.05
	Caesarean	40	22.80	17.05	
Breastfeeding					
EPDS	Yes	63	9.00	8.54	>0.05
	No	22	6.32	5.59	
FSFI	Yes	63	23.83	17.04	>0.05
	No	22	22.01	10.007	
Birth education program					
EPDS	Yes	45	6.58	7.18	<0.05
	No	44	9.70	8.28	
FSFI	Yes	45	26.65	11.37	<0.05
	No	44	19.37	18.03	

**Table 4.** The impact of birth education program on the mode of delivery and breastfeeding

		The mode of delivery			p value	
		Vaginal	Caesarean	Total		
Birth education program	Yes	29	16	45	0.056	
		64.4 %	35.6 %	100 %		
	No	20	24	44		
		45.5 %	54.5 %	100 %		
	Total	49	40	89		
		55.1 %	44.9 %	100 %		
Breastfeeding						
		Yes	No	With formula	Total	
Yes		31	13	1	45	0.4
		68.9 %	28.9 %	2.2 %	100 %	
No		32	9	3	44	
		72.7 %	20.5 %	6.8 %	100 %	
	Total	63	22	4	89	
		70.8%	24.7 %	4.5%	100 %	

and infant; it helps emotional attachment. They also demonstrated that breastfeeding is useful to reduce cortisol response to stress in women and to decrease the risk of postpartum depression (15). However, in this study, we did not demonstrate the protection of breastfeeding from postpartum depression.

Akca et al. reported that systematic birth preparation program promotes better communication between patient and health care

providers and increases the postpartum women satisfaction with childbirth (16). There are also a few studies that offer mindfulness as an alternative program during postpartum period (17). In this study, we demonstrated that both EPDS and FSFI scores are better in postpartum women who participated to the antenatal birth education program. Thus, this kind of programs should be encouraged during antenatal period.

## Appendix 1. Self-developed questionnaire

- 1-Maternal age
- 2- Age at first sexual intercourse
- 3- The participation to the birth education program: Yes / No
- 4- The mode of delivery: Vaginal route / Caesarean
- 5- How do you feed your infant?  
Breastfeeding / Breastfeeding and infant formula together / Only infant formula
- 6- Education level: primary school / secondary school / high school / university / postgraduate
- 7- Economic income: Low (<2000 TL) / Moderate (2000-5000 TL) / High (>5000 TL)
- 8- Smoking: Yes /No
- 9- Chronic disease: Yes /No; if yes, please specify .....
- 10- Do you perform a diet? Yes /No
- 11- Exercise: Yes / No

Postpartum sexual dysfunction including dyspareunia can vary in 41–83% of women 2–3 months after birth (18). Physicians usually neglect to inform the patient about the postpartum sexual life. Some postpartum women may be anxious about becoming pregnant again and this concern can cause sexual dysfunction (18). Detailed information about hormonal changes and postpartum contraception methods should be given during pregnancy. Barrett et al. showed that although 69% of women were informed about timing of safe sexual intercourse by their physician, only 18% of them were told about changes in postpartum sexual function (19). In contrast, some of the health care providers are supplying proper sexual health training in birth preparation education program. In our tertiary hospital, there is birth education program for pregnant women who desire to participate and this program includes a daily section about safe sexual intercourse after birth. In this study, postpartum sexual function was found statistically significant higher in patients participating to the birth education program.

There are some studies in the literature that whether vaginal or cesarean delivery result in better postpartum sexual function. Hannah et al. indicated that the outcomes at 3 months after vaginal or cesarean delivery were same in sexual function (20). However, their study contained both nulliparous and multiparous postpartum women; thus the heterogeneity hides the reliable effect of the mode of deliveries on sexual

function. Barrett et al. reported that cesarean delivery seems to reduce the dyspareunia till postpartum 6<sup>th</sup> month, but the mode of delivery does not differ sexual function in later times (21). Similarly, our results did not associate the mode of delivery with sexual function.

Breastfeeding changes hormonal levels in postpartum period. As prolactin increases, decreased levels of androgens and estrogens due to the ovarian suppression may cause sexual dysfunction. Oppositely, the elevated oxytocin may stimulate sexual arousal and milk extraction may occur after orgasm during postpartum period (22). Avery et al. demonstrated that breastfeeding had a slightly negative effect on physiologic features of sexuality and partner relationship (23). In this study, the presence of breastfeeding did not change the sexual function index. However, we offer to give breastfeeding education starting from pregnancy and to inform women about these postpartum sexual changes.

Strengthens of the present study is the exclusion criteria such as preterm births and twin births which are the factors increasing the risk of postpartum depression. Currently, both the American Academy of Pediatrics and the American College of Obstetrics and Gynecology recommend screening all postpartum women who gave preterm birth (1).

One of the limitations of the present study is to have a low sample size. The other limitation is the social and cultural factors which play important role during postpartum period should be more detailed in further studies. Additionally, poor social support and society's dominant culture should be considered (12).

This study has shown that systematic and multidisciplinary developed birth education program reduces the possibility of postpartum depression and improves the level of sexual function. Both obstetricians and paediatricians in antenatal and postnatal settings are major health care professions to prevent and/or detect the risk of postpartum depression. Obstetricians should provide support to pregnant women about healthy sexual life through the birth education programs starting from antenatal period.

**Disclosure Statement:** The authors declare that they have no competing interest.

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