

Can we predict postpartum depression in pregnant women?

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Summary

Objective: The authors aimed to determine risk factors for postpartum depression (PPD) in this prospective study. **Materials and Methods:** The study included 285 pregnant women. The first assessment was conducted during pregnancy and a second time at 24 weeks after delivery. The participants were asked to fill out a series of questionnaires, which included psychosocial variables and socio-demographic characteristics, the Beck Depression Inventory (BDI), and Edinburgh Postnatal Depression Scale (EPDS). After delivery, 276 mothers participated again in the study and filled out a similar series of questionnaires. **Results:** A significant difference was not found between the socio-demographic and obstetric factors of mothers. A significant relation was found between the BDI score, which is used in antepartum depression evaluation, and EPDS score, which is used on postpartum depression evaluation (ρ : 0.433 to 0.645, $p < 0.0001$). In cases in which BDI score was more than 6 were selected, phenomena in which could develop PPD had 90.3% sensitivity and 45.3% specificity. **Conclusions:** The authors found that there was a correlation between EPDS score and BDI. The rate of PPD was found to be significantly higher in women, who had a depression history. Patients who have a potential risk of PPD should be evaluated during the postpartum period in terms of depression.

Key words: Postpartum depression; Pregnancy; Beck Depression Inventory; Edinburgh Postnatal Depression Scale.

Introduction

Postpartum depression (PPD) is a significant public health issue, which is considered to be affecting about 10-15 % of women across the world [1-5]. Findings related to PPD can be observed two weeks after childbirth or within a year; most medical staff do not recognize this condition or relevant symptoms do not suggest PPD [6-8].

PPD's rate of incidence ranges between 3.5% and 40% according to geographical and cultural characteristics of the region, where the study was conducted [9-16]. Symptoms of PPD can be mistaken for maternity blues, which affects 60-70% of mothers and it can be quite difficult to distinguish such symptoms. On the other hand, symptoms of PPD can be somatic complaints, extreme fatigue, weeping, lack of appetite, feeling of guilt, hopelessness, and under more serious conditions, self-recrimination, and suicidal ideation and attempts. This condition affects family, particularly and significantly the relationship between mother and child [17-19]

It is suggested that various factors play a role in the development of PPD. One of these is hormonal changes. Social, psychological and physical changes also play a role in the development of PPD [20-22].

Pregnancy and postpartum period are the most important and happiest periods of a woman's life; however, since responsibility of being a mother on the one hand, and emotions related to this role on the other, may disrupt the woman's mental balance, depression is a condition,

which must be taken into account during pregnancy monitoring and postpartum controls. Therefore, the authors aimed to conduct this study in order to determine the risk factors, which might play a role in the frequency and development of PPD.

Materials and Methods

The study groups were conducted in 285 pregnant woman attending Bezmialem Medical Faculty Gynecology and Obstetrics Clinic. Three forms were used in order to collect data required for the study. The first form is a document prepared for determining socio-demographic characteristics of mothers who were included to the study, the second form was the Beck Depression Inventory (BDI), which is developed by Beck *et al.* and adapted to Turkish, the third form was the Edinburgh Postnatal Depression Scale (EPDS), a postpartum depression risk determining document, developed by Cox *et al.*, and adapted to Turkish by Ergindeniz *et al.* [23-25]. After the women signed informed consent forms submitted to them by the researcher, the survey was filled in by researchers and the BDI and EPDS forms were filled in by the participants.

First, BDI was implemented in 285 pregnant women, who applied to Bezmialem Medical Faculty Gynecology and Obstetrics Clinic. Nine pregnant women, whose Turkish cut-off score was over 17, were considered to be depressive, excluded from the study, and directed to Psychiatry Polyclinic. Remaining 276 pregnant women were given demographic survey and an interview was planned for the 24th week after childbirth. Ten women, who developed complications during and after the birth, were excluded from the study. Researchers could not reach 96 of 266 women, who were included in the study or they did not accept

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Table 1. — *Socio-demographic data of mothers.*

Maternal age (mean ± SD)	28.8 ± 5.6 (min=17, max=40)
Duration of marriage	
Shorter than 1 year	27 (15.8%)
Between 1-5 years	53 (31.2%)
Between 5-10 years	45 (26.5%)
Longer than 10 years	45 (26.5%)
Working status	
Yes	26 (15.3%)
No	144 (84.7%)
Number of living children (mean ± SD)	0.9 ± 0.9 (min=0, max=5)
Economic status	
Low	110 (67.7%)
Medium	58 (34.1%)
High	2 (1.2%)
Parity	
Primiparous	59 (34.7%)
Multiparous	111 (65.3%)
Planned pregnancy	156 (91.7%)
Unplanned pregnancy	14 (8.3%)
Education status	
Primary school	45.3%
Secondary school	27%
High school	20.5%
University	7.2%
Delivery method	
Normal delivery	88 (51.8%)
Operative delivery	82 (48.2%)
Smoking	
Yes	22 (12.9%)
No	148 (87.1%)
Depression history	
Yes	15 (8.8%)
No	155 (91.2%)
Residence	
Rent	77 (45.3%)
Own property	93 (54.7%)
Domestic violence	0
Hb level	
Antepartum	11.3±1.2 (min=9,1, max=14,1)
Postpartum	11.8±1.1 (min=9, max=14,5)

to attend these meetings; 170 women in the postpartum period, who were invited to controls in the 24th week, filled in the EPDS forms. According to the score valid for studies conducted in Turkey, those whose score that were 13 and over were considered to be depressive. After the evaluation of forms, mothers, who were considered to be at risk (those achieving 13 and over from EPDS), were informed about their condition, and directed to apply to psychiatry department.

Mothers were divided into two, namely those who had the possibility of being diagnosed with depression, and those who did not, according to EPDS score. Chi square was used for categorical variables in the comparison between two groups. Student-t test was used for numeric variables. Pearson's correlation analysis was used to determine independent factors related to PPD. Estimated value for PPD of Beck score was calculated by using Roc curve.

Results

The study was conducted in 170 cases, who applied to Bezmialem Medical Faculty's Outpatient Policlinics of Gynecology and Obstetrics Clinics. Socio-demographic data of mothers, who participated in the study is shown in Table 1. A significant difference was not found between the socio-demographic characteristics of mothers, who participated in the study (age, duration of marriage, working status, number of living children, economic status, parity, abortion history, education status, delivery method, and smoking). When EPDS cut-off score was assumed as ≥ 13 , while postpartum depression was not observed in 81.7% of mothers ($n = 139$) in the 24th week; incidence rate of depression was 18.3% ($n = 31$) (Table 2). However, rate of PPD was found to be significantly higher in women, who had a history of depression.

A significant relation was found between the BDI score, which was used in antepartum depression evaluation, and EPDS score, which was used on postpartum depression evaluation (ρ : 0.433 to 0.645, $p < 0.0001$) (Figure 1). When cases in which Beck score was more than 6 were selected phenomena, which could develop PPD had a 90.3% sensitivity and 45.3% specificity (Figure 2).

Discussion

PPD is risky not only for the mother, but also for the child, and it can be ignored even by healthcare staff [26]. Although pregnancy and childbirth are normal physiologic phenomena, they may negatively effect maternal health [27]. Postpartum period is a sensitive period, in which risks of psychiatric diseases increase for women [28]. While many women can adapt themselves to developing physiologic, psychological, and social changes related to pregnancy and childbirth, some women may develop mental disorders at different levels. In this study, pregnant women were evaluated during their postpartum periods and incidence rate of PPD was found to be 18.3%. According to various studies conducted, this rate is higher compared to the rate of PPD for women who are living in Western countries, and similar to the rate of postpartum depression for women living in Latin America countries. [29, 30]

When the literature is analyzed, it is observed that clinic depression can develop in 13% of women after delivery. [11]. This rate increases to 26% for adolescent mothers, to 38.2% for women with low income, who give birth for the first time. [31, 32] However, a relationship was not found between parity, economic status, and PPD in some studies. [33]. In the present study, a relationship between level of income and parity was found.

When PPD's relation with the education status of mothers was analyzed, studies with different findings are available. In some studies, it was concluded that a low level of education can be one of the significant risk factors [34, 35]. On the other hand, there are also studies, which could not

Table 2. — Comparison of the data of the groups with or without postpartum depression.

Risk factor	EPDS ≥ 13 - n (%) 31	EPDS < 13 - n (%) 139	Chi square	Odds ratio	p value
Maternal age (mean ± SD)	28.6 ± 5.8 (19-40)	29.2 ± 5.2 (17-40)			0.57
Duration of marriage					
Shorter than 1 year	4 (12.9%)	22 (16%)	<i>p</i> = 0.064	OR:0.78 <i>p</i> = 0.68 < 1 year/other	0.87
Between 1-5 years	9 (29.1%)	44 (32%)			0.91
Between 5-10 years	10 (32.2%)	35 (25%)			0.55
Longer than 10 years	8 (25.8%)	38 (27%)			0.93
Working status					
Yes	4 (13%)	22 (15,8%)		OR:1.26	0.9
No	27(87%)	117 (84.2%)		<i>p</i> = 0.68	0.9
Number of living children (mean ± SD)	1.06 ± 1.06	0.94 ± 0.87			0.5
Economic status					
Low	21 (67.7%)	89 (64%)	<i>p</i> = 0.42	OR:1.17 <i>p</i> = 0.69 Low / medium + high	0.85
Medium	9 (29%)	49 (35.2%)			0.65
High	1(3.3%)	1 (0.8%)			0.81
Parity					
Primiparous	9 (29%)	50(36%)		OR:0.72	0.59
Multiparous	22(%70,1)	89(64%)		P=0.46	0.66
Abortion					
Yes	6 (19.%)	35 (25.%)		OR: 0.71	0.65
No	25 (80.%)	104 (74.%)		<i>p</i> = 0.49	0.65
Planned pregnancy	26 (83.%)	130 (93.5%)		OR: 0.36	0.15
Unplanned pregnancy	5 (16.2%)	9 (6.5%)		<i>p</i> = 0.08	0.15
Education status					
Primary school	16 (51.6%)	61(43.8%)	<i>p</i> = 0.66	OR:1.36 <i>p</i> = 0.43 Primary school/other	0.55
Secondary school	6 (19.%)	40 (28.8%)			0.39
High school	6 (19.%)	29 (20.9%)			0.96
University	3 (9.8%)	9 (6.5%)			0.79
Delivery method					
Normal delivery	16 (51.6%)	81 (58.3%)		OR: 0.76	0.63
Operative delivery	15 (48.4%)	58 (41.7%)		<i>p</i> = 0.49	0.63
Smoking					
Yes	2(6.5%)	20 (14.4%)		OR: 0.41	0.37
No	29 (93.5%)	119 (85.6%)		<i>p</i> = 0.24	0.37
Depression history					
Yes	6 (19.4%)	9 (6.5%)		OR: 3.4	0,052
No	25 (80.6%)	130 (93.5%)		<i>p</i> = 0.029	0.052
Residence					
Rent	11 (35.5%)	66 (47.5%)		OR: 0.6	0.31
Own property	20 (64.5%)	73 (52.5%)		<i>p</i> = 0.22	0.31

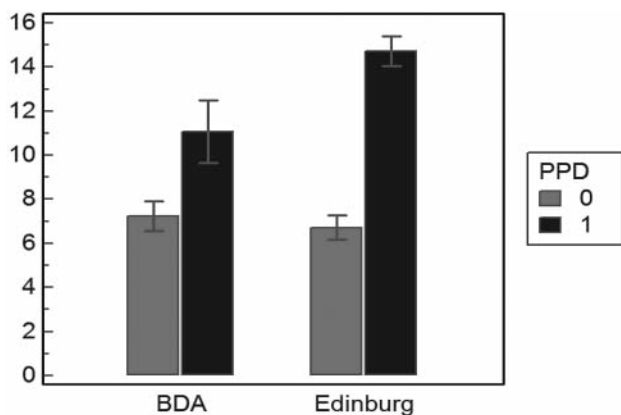


Figure 1. — A significant relation was found between the Beck Postpartum analysis and EPDS score in postpartum depression (rho: 0.433 to 0.645, *p* < 0.0001).

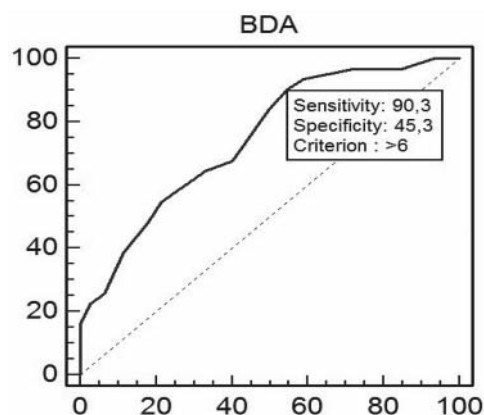


Figure 2. — In cases in which Beck score is more than 6 were selected phenomena, which could develop PPD had a 90.3% sensitivity and 45.3% specificity.

determine a correlation between mother's educational level and EPDS scores [36, 37]. In the present study, a statistically significant relation was not found between mothers' education status and rate of PPD.

When rate of PPD was compared with mother's occupation, or whether the mother's was working, it was determined in some studies that mothers' professional status did not significantly affect level of PPD [38-40]. In the present study, a statistically significant relation was not found between mothers' occupation status and rate of PPD, which is in line with the literature.

While a correlation with delivery method was found in some studies, a difference was not found in the present study, similar to some other studies [32, 41, 42].

In many studies, the fact that the pregnant woman has a depression history was evaluated as a significant risk factor for depression [8, 11]. In the present study, it was determined that 19.4% of the cases had a depression history (OR: 3.4, $p = 0.029$). When it was evaluated accordingly, the present authors can conclude that depression history is the most significant risk factor for postpartum depression.

In the present study group, the authors found that there was a correlation between EPDS score and BDI. Incidence rate of depression for women, whose BDI score was determined as 6 and more in the antenatal period, was found to be significantly higher. As healthcare personnel, we must identify patients who have a potential risk of postpartum, and evaluate them during the postpartum period in terms of depression.

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