

## Original Article

# Postpartum Depression and Affecting Factors in Primary Care

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ABSTRACT

**Aim:** The aim of this study was to determine the frequency and affecting factors of postpartum depression (PPD) in Edirne city center. This cross-sectional study was conducted among 111 pregnant women in their third trimester in Family Health Centers in Edirne, Turkey. **Materials and Methods:** The participants filled out a questionnaire on sociodemographic factors developed by the researchers along with the Beck Depression Inventory for Primary Care (BDI-PC) before childbirth. Women with a probability of depression, determined with the BDI-PC, were excluded, and the remaining 100 participants were applied the Edinburgh postpartum depression scale (EPDS) in the first and second months after childbirth. **Results:** The frequency of PPD was 14% ( $n = 14$ ) in the first month and 17% ( $n = 17$ ) in the second month of delivery. Thus, 24 different mothers out of 100 were determined to have PPD in the first two months after childbirth. The probability of PPD, measured with EPDS, was significantly higher among younger mothers, mothers with unemployed husbands, mothers with lower income, mothers with a health problem of the child, and mothers who do not breastfeed. There was no significant relationship between PPD and mother's education status, marriage age, the age of first labor, PPD after previous childbirth, psychiatric disorders in first-degree relatives, higher number of children, method of delivery, and unwanted pregnancies. **Conclusion:** PPD is an important community problem. Thus, it is useful to monitor the risky mothers in primary care and screen them with the practical EPDS in order to prevent the negative effects on the baby and the mother.

**KEYWORDS:** *Edinburgh postpartum depression scale, postpartum depression, risk factors*

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## CONTRIBUTION DETAILS

All authors contributed in the design, definition of intellectual content, manuscript preparation, manuscript editing, and manuscript review. Serdar Oztora and Ahmet Arslan were also responsible for literature search, data acquisition, and statistical analysis and for the integrity of the work.

## INTRODUCTION

Pregnancy period is an important process in women's life, when physiological, psychological, and social changes occur, which requires adaptation to those changes. Pre- and postpartum changes might cause pregnant women to experience various problems and have health issues. Symptoms appear in the late period, and most women

hide them because they feel guilty about having depressed feelings in a period when they are supposed to feel happy; so postpartum depression (PPD) might easily go unnoticed. PPD causes the mother, child, and family to have various difficulties and might affect the relation between mother and child and mother's learning of baby-care and parental role. One of the most important aims of detecting PPD was to prevent mothers with untreated depression from negatively affecting child's development.<sup>[1]</sup>

Gestation and postpartum diet, activity, resting, motherhood, and social relations differ between societies

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due to cultural characteristics. Therefore, many cultures treat the postpartum period as a sensitive period and perform various traditional practices to protect mother and child health. While traditional practices might have some positive impacts on health, they might become life-threatening on occasion. For this reason, it is important for the family physicians and family health personnel, who provide health care to the mother and her family, to assess women in their own cultural environment.<sup>[2]</sup>

PPD is a psychiatric disorder that can affect all aspect of the lives of mother and child. Main duties of primary care physicians include the close follow-up of mothers at risk for PPD and referring them for treatment when necessary.

Most of the studies on PPD were conducted in western countries. Different ratios were reported by the studies on the prevalence of PPD in various countries.<sup>[3]</sup> Although the frequency of PPD differs according to the measuring instruments and diagnostic criteria, the frequency is reported between 10% and 15% in different studies.<sup>[4-6]</sup>

The aim of this study was to determine the frequency of PPD risk among pregnant women, enrolled in Family Health Centers (FHCs) in Edirne city center, which is located in the western part of Turkey, and examine the associated risk factors that increase the tendency to PPD with simple and easy-to-use instruments in primary care.

## MATERIAL AND METHODS

This study was conducted by the Family Medicine Department of Medical Faculty at Trakya University, Edirne, Turkey. After receiving the approvals of the Ethics Council and the Edirne Governorship, phone calls were made with 227 pregnant women, who were in their last trimester and enrolled in FHCs in Edirne city center. Pregnant 111 women consented to participate in our study and came to their enrolled FHC on the appointment date, thus formed this study's sampling.

Study inclusion criteria were as follows: being in the last trimester of gestation, being older than 18 years, and consenting to participate in the study. Exclusion criteria were as follows: having mental and speech disorders preventing communication, having depression during gestation, being under 18, and refusing to participate in the study [Figure 1].

A questionnaire/information form including sociodemographic data was developed to collect data. It collected demographic data, such as pregnant women's ages, marital status, marriage durations, marriage ages, number of children, education status and occupations of women and their spouses, income

levels, health insurances, number of people at home, identity of people living at home, histories of diseases and depression, habits such as smoking, alcohol consumption, previous delivery methods, histories of stillbirth or miscarriage, previous labor complications, first labor age, and existence of domestic violence or discord. Information form was filled by the researcher at the FHC during the first prenatal interview. Beck Depression Inventory for Primary Care (BDI-PC) was also applied and filled by participants, along with the information form in the first interview. The pregnant women, whose BDI-PC cutoff score was 5 and above, were considered as probable depression. Eleven participants were excluded from the study because their BDI-PC scores were 5 and above, and their family physicians were called and informed about the screening result for medical evaluation. The second interviews were made in the first postpartum month, and the third interviews were made in the second postpartum month. The second and third interviews were made on the phone by getting participants' verbal consent for this during the first interview. The purpose of making phone calls was to keep the participant number high. Thus, in the second interview, we reached the remaining 100 participants and applied the Edinburgh Postnatal Depression Scale (EPDS). EPDS was also applied in the third interview (second postpartum month) for comparison purposes. Women, whose EPDS cutoff scores were 12 and above, were considered as probable PPD.

BDI-PC was developed by Beck *et al.*<sup>[7]</sup> and the Turkish validity and reliability study was made by Aktürk *et al.*<sup>[8]</sup> BDI-PC is a screening test inquiring depression symptoms in seven domains and decreasing false-negative results. Every domain has a scoring between 0 and 3; and BDI-PC score is obtained by adding the highest scores in each domain. Even if there is no precise cut-off point for diagnosis of depression, a score higher than 4 has a probability of depression over 90%.

The Turkish validity and reliability study of EPDS, which was developed by Cox *et al.*<sup>[9]</sup> was made by Engindeniz *et al.*<sup>[10]</sup> EPDS is used to identify the PPD risk and measure its level and severity change. It is a self-evaluation scale. It is applied to women in postpartum period. It includes 10 questions and measures depression. It provides a 4-point Likert-type scale. It is easy to apply because it is short and understandable, and the subjects fill it by themselves. Its instruction is given at the beginning of the scale, and the subjects are requested to mark the statement that is closest to them. Each item has a different scoring. The 3, 5, 6, 7, 8, 9,

and 10<sup>th</sup> items indicate gradually declining severity with a scoring of 3, 2, 1, and 0. The 1, 2, and 4<sup>th</sup> items are scored as 0, 1, 2, and 3. The total score of the scale is obtained by summing the scores of those items. As a result of the study made in Turkey, the cutoff score of the scale was calculated as 12/13.<sup>[10,11]</sup> In this study, EPDS was applied twice, namely in the first and second postpartum months. The family physicians of those, whose EPDS cutoff scores were  $\geq 12$ , were informed by phone – for medical evaluation – due to the positive screening result in terms of PPD.

Descriptive statistics, Chi-square, and Mann–Whitney *U*-tests were used for analyzing the study data. Statistical significance level (*P*) was shown with relevant tests, and it was considered significant when  $P < 0.05$ .

## RESULTS

The study focused on the pregnant women enrolled in FHCs in Edirne city center. First interviews were made with a total of 111 pregnant women, then 11 women whose BDI-PC cutoff scores were  $\geq 5$  were excluded. The second and third interviews collected data for 100 mothers for evaluation.

Participants' age varied between 18 and 45 years, and the average age was  $27.68 \pm 5.77$  years. Table 1 indicates the sociodemographic information on participants and PPD evaluation according to EPDS in the first and second postpartum months.

In first postpartum month with an EPDS cutoff score 12, 86% of mothers ( $n = 86$ ) did not have PPD risk, whereas 14% ( $n = 14$ ) did. In the second postpartum month, 83% of mothers ( $n = 83$ ) did not have PPD risk, whereas 17% ( $n = 17$ ) did.

A low level of significant negative relation was found between mother's age and EPDS score ( $P = 0.019$ ,  $Z = -2.230$ ); i.e., as mother's age increased, the probability of PPD decreased. When mother's age was compared with the cases with an EPDS score of  $\geq 12$  in the first postpartum month (PPD-1), 64% of mothers with probable PPD ( $n = 9$ ) were between the age of 18 and 25 years, and 35.7% ( $n = 5$ ) were between the age of 26 and 34 years. When compared the cases with an EPDS score of  $\geq 12$  in the second postpartum month (PPD-2), 52.9% of mothers with probable PPD ( $n = 9$ ) were between the age of 18 and 25 years, 41.2% ( $n = 7$ ) were between the age of 26 and 34 years, and 5.9% ( $n = 1$ ) were  $\geq 35$ . There was a statistically significant relation between mothers' age and PPD in the first postpartum month ( $P = 0.049$ ,  $\chi^2 = 6.788$ ).

In the first postpartum month, a significant relation was found between spouse's occupation and probable PPD ( $P = 0.001$ ,  $\chi^2 = 21.937$ ). When compared with PPD-2, 58.8% of spouses ( $n = 10$ ) were workers, 11.8% ( $n = 2$ ) were shopkeepers, 5.9% ( $n = 1$ ) were civil servants, 17.6% ( $n = 3$ ) worked in private sector, and 5.9% were unemployed in depression cases.

In the first postpartum month, there was a significant relation between monthly income and depression ( $P = 0.016$ ,  $\chi^2 = 9.172$ ).

There was no statistically significant relation between PPD risk and employment status, condition of residence, family type, health insurance, participants' education status, spouses' education status, marriage age, smoking, previous history of depression, and existence of psychiatric diseases in the family.

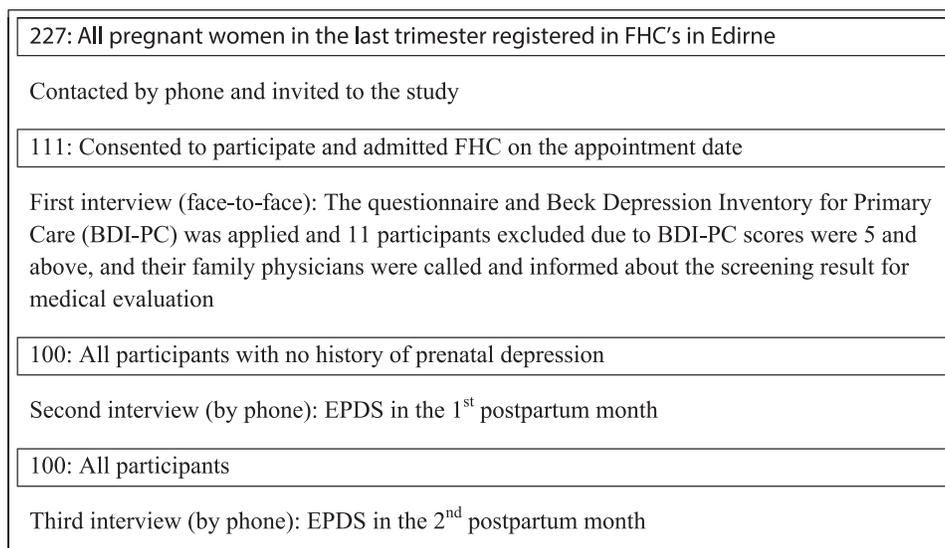


Figure 1: Flowchart of participant selection

**Table 1: Demographic factors and probable depression according to Edinburgh postpartum depression scale in the first and second postpartum months**

Sociodemographic factors	Total <i>n</i> =100	Depression in the first PP month		Depression in the second PP month	
		Present, <i>n</i> (%)	Not, <i>n</i> (%)	Present, <i>n</i> (%)	Not, <i>n</i> (%)
Mother's age (years)					
18-25	35	9 (64.3)*	26 (30.2)	9 (52.9)	26 (31.4)
26-34	54	5 (35.7)	49 (57)	7 (41.2)	47 (56.6)
≥35	11	0 (0)	11 (12.8)	1 (5.9)	10 (12)
Employment					
Yes	60	11 (78.6)	49 (57)	13 (76.5)	47 (56.6)
No	40	3 (21.4)	37 (43)	4 (23.5)	36 (43.4)
Education					
Primary school or less	24	3 (21.4)	21 (24.4)	6 (35.3)	18 (21.7)
Secondary school and high school	49	6 (42.9)	43 (50)	6 (35.3)	43 (51.8)
University	27	5 (35.7)	22 (25.6)	5 (29.4)	22 (26.5)
Spouses' education					
Primary school or less	16	4 (28.6)	12 (14)	4 (23.5)	12 (14.5)
Secondary school and high school	56	7 (50)	49 (56.9)	9 (53)	47 (56.6)
University	28	3 (21.4)	25 (29.1)	4 (23.5)	24 (28.9)
Spouses' occupation					
Unemployed	6	4 (28.6)*	2 (2.3)	1 (5.9)	5 (6)
Worker	50	4 (28.6)	46 (53.5)	10 (58.8)	40 (48.2)
Shopkeeper	11	4 (28.6)	7 (8.1)	2 (11.8)	9 (10.8)
Civil servant	8	0 (0)	8 (9.3)	1 (5.9)	7 (8.5)
Private sector	25	2 (14.2)	23 (26.8)	3 (17.6)	22 (26.5)
Residence					
Rented	35	4 (28.6)	31 (36)	7 (41.2)	28 (33.7)
Self-owned	65	10 (71.4)	55 (64)	10 (58.8)	55 (66.3)
Family type					
Nuclear	73	10 (71.4)	63 (73.3)	13 (76.5)	60 (72.3)
Extended	27	4 (28.6)	23 (26.7)	4 (23.5)	23 (27.7)
Monthly income (TL)					
<700	7	3 (21.4)*	4 (4.6)	1 (5.9)	6 (7.2)
700-939	21	4 (28.6)	17 (19.8)	6 (35.3)	15 (18.1)
940-3062	60	4 (28.6)	56 (65.1)	8 (47)	52 (62.7)
≥3063	12	3 (21.4)	9 (10.5)	2 (11.8)	10 (12)
Health insurance					
Present	4	1 (7.1)	3 (3.5)	0 (0)	4 (4.8)
Not	96	13 (92.9)	83 (96.5)	17 (100)	79 (95.2)
Marriage age (years)					
≤17	12	3 (21.4)	9 (10.5)	2 (11.8)	10 (12)
Between 18 and 24	54	7 (50)	47 (54.6)	9 (52.9)	45 (54.2)
≥25	34	4 (28.6)	30 (34.9)	6 (35.3)	28 (33.8)
Psychiatric history in family					
Present	91	12 (85.7)	79 (91.9)	14 (82.4)	77 (92.8)
None	9	2 (14.3)	7 (8.1)	3 (17.6)	6 (7.2)

\**P*<0.05. PP=Postpartum; *n*=number of people

There was no statistically significant relation between PPD prevalence and the factors related to previous pregnancies and labor, such as the number of children, first labor age, history of miscarriage, and previous delivery method.

Of the participants, 23 (23%) reported that they had medical problems during this pregnancy. When compared

with PPD-1, 28.6% (*n* = 4) faced medical problems during this pregnancy; when compared with PPD-2, 41.2% (*n* = 7) faced medical problems during this pregnancy. In these deliveries, 28% of participants had normal delivery and 72% had cesarean sections. While 7% had a problem or complication in these deliveries, 93% had no problems. Table 2 indicates factors related

**Table 2: Factors related to these pregnancies and deliveries, and probable depression according to Edinburgh postpartum depression scale in the first and second postpartum months**

Factors related to these pregnancies and deliveries	Depression in the first PP month		Depression in the second PP month	
	Present, <i>n</i> (%)	Not, <i>n</i> (%)	Present, <i>n</i> (%)	Not, <i>n</i> (%)
Planned pregnancy?				
No	1 (7.1)	11 (12.8)	2 (11.8)	10 (12)
Yes	13 (92.9)	75 (87.2)	15 (88.2)	73 (88)
Knew baby's gender before birth?				
No	1 (7.1)	1 (1.2)	1 (5.9)	1 (1.2)
Yes	13 (92.9)	85 (98.8)	16 (94.1)	82 (98.8)
Baby's gender?				
Male	8 (61.5)	42 (49.4)	10 (62.5)	40 (48.8)
Female	5 (38.5)	43 (50.6)	6 (37.5)	42 (51.2)
Did learning baby's gender before birth cause an attitude change in your spouse or his family?				
No	12 (92.3)	83 (97.6)	16 (100)	79 (96.3)
Yes	1 (7.7)	2 (2.4)	0 (0)	3 (3.7)
Any medical problems during this pregnancy?				
No	10 (71.4)	67 (77.9)	10 (58.8)	67 (80.7)
Yes	4 (28.6)	19 (22.1)	7 (41.2)	16 (19.3)
Healthy child?				
No	4 (28.6)	10 (11.6)	6 (35.3)*	8 (9.6)
Yes	10 (71.4)	76 (88.4)	11 (64.7)	75 (90.4)
Delivery method?				
Normal	3 (21.4)	25 (29.1)	4 (23.5)	24 (28.9)
C-section	11 (78.6)	61 (70.9)	13 (76.5)	59 (71.1)
Regular breastfeeding?				
No	3 (21.4)*	3 (3.5)	2 (11.8)	4 (4.8)
Yes	11 (78.6)	83 (96.5)	15 (88.2)	79 (95.2)
Labor problems/complications?				
None	11 (78.6)	82 (95.3)	14 (82.4)	79 (95.2)
Present	3 (21.4)	4 (4.7)	3 (17.6)	4 (4.8)

\* $P < 0.05$ . PP=Postpartum; *n*=number of people

to these pregnancies and deliveries and the evaluations related to probable PPD.

In response to the question of "Have you delivered a healthy child?" 86% said "yes" and 14% said "no." When compared with PPD-1, 71.4% of those with probable PPD ( $n = 10$ ) delivered healthy children and 28.6% ( $n = 4$ ) delivered children with health problems. When compared with PPD-2, 64.7% of those with probable PPD ( $n = 11$ ) delivered healthy children, and 35.3% ( $n = 6$ ) delivered children with health problems. The ratio of having unhealthy children was significantly higher in those with probable depression compared with those without depression (for PPD-2:  $P = 0.005$ ,  $\chi^2 = 7.714$ ).

Of the participants, 94 (94%) reported that they regularly breastfed their babies. When breastfeeding was compared with PPD-1, 78.6% of those with probable PPD ( $n = 11$ ) breastfed regularly, and 21.4% ( $n = 3$ ) breastfed irregularly or did not breastfeed. The ratio of irregular breastfeeding or not breastfeeding was significantly higher in those with probable depression

compared with those without depression (for PPD-1:  $P = 0.034$ ,  $\chi^2 = 6.871$ ). When compared with PPD-2, 88.2% of those with probable PPD ( $n = 15$ ) breastfed regularly, and 11.8% ( $n = 2$ ) breastfed irregularly or did not breastfeed.

There was no statistically significant relation between PPD prevalence and the number of follow-ups in these pregnancies, follow-up locations, whether the pregnancy was planned, knowing baby's gender before birth and the attitude change, this might cause in spouse's family, delivery method, and labor complications.

## DISCUSSION

This study was conducted in among pregnant women in the third trimester registered to FHC's in Edirne city center. According to the health care system in Turkey requirements, all pregnant women must be monitored by family physicians in FHC's, even if they admit to the hospitals. So, nearly all pregnant women at the time were reached.

PPD was found in 24 different people among 100 participants in two postpartum months. While prevalence was 14% in the first postpartum month, it was 17% in the second postpartum month. Prevalence studies made in various countries on this subject found different rates. Generally, while studies in Western countries reported a prevalence rate of 10%–15%, rates were also reported between 0.5% and 60% depending on cultural differences in various parts of the world.<sup>[3]</sup> Studies made in Turkey reported varying rates between 14% and 40.4% for PPD prevalence.<sup>[12-22]</sup>

Mother's being young was identified as a risk factor for PPD. We found that PPD probability decreased as mother's age increased. About 64.3% of those with probable PPD in the first postpartum month and 52.9% in the second postpartum month were in the age range of 18–25 years. It was found that PPD prevalence decreased as women's age for delivery increased. Whereas some studies found the relation between age and EPDS scores statistically not significant, some reported that the PPD prevalence in young mothers was around 26%.<sup>[23,24]</sup>

Spouse's being unemployed was also identified as a risk factor. The husbands of 28.6% of those with probable PPD were unemployed. In addition, low monthly income was a risk factor. Whereas 21.4% of those with probable PPD had an income below minimum wage, 50% had an income below the hunger limit. A statistically significant relation was found between PPD risk and the occupation of participants' spouse. Poor living conditions caused by poverty and low socioeconomic status were a risk factor for depression, and this might verify those results.

Baby's having health problems was an important risk factor. About 28.6% of those with probable PPD had babies with health problems. Other studies also showed that babies' health problems increased PPD risk.<sup>[12,13]</sup>

Of the mothers with probable PPD, 21.4% did not breastfeed their babies. A statistically significant relation was found between PPD risk and not breastfeeding regularly. The reasons might include the following: breastfeeding's positive impact on mother, breastfeeding's positive impact on mood, and the fact that it activates parasympathetic nervous system and decreases mother's stress, and that the social pressures and sense of guilt due to quitting breastfeeding present an additional stress factor.<sup>[25]</sup> There are also studies suggesting that non-breastfeeding is not a risk factor for PPD, rather an outcome of depression.<sup>[26]</sup>

We found no significant relation with factors such as low education level, early marriage, giving birth at early ages, history of depression after a previous birth, history of psychiatric disease in immediate family, having

too many children, delivery method, and unwanted pregnancy, which were reported among the risk factors for PPD in literature.

Our study is designed as a screening on PPD in a population level in our city. Even though the participants with the high probability of PPD were directed to their family physicians for further evaluation, the lack of the information on the subsequent evaluation can be addressed as a limitation of our study. But, EPDS is a valid and reliable scale that has been implemented to investigate the risk of PPD throughout the world.

## CONCLUSION

We recommend that women with one or more risk factors are screened for PPD in the first or second postpartum month. The most frequently used and valid method for screening is the application of EPDS. We think that organizing training programs for all expectant mothers and their spouses and informing them on the possible emotional changes postpartum, adopting those trainings in all health care facilities, particularly in primary care, as a consultancy service, and enlarging the target population will be beneficial. Therefore, PPD should be kept in mind during the follow-up of pregnant and confined mothers in primary care. The physicians have important responsibilities to perform effective depression screenings for identifying depression in this period.

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## Conflicts of interest

There is no financial or other relationship that might lead to a conflict of interest. The authors declare that the manuscript has been read and approved by all the authors, the requirements for authorship have been met, and that each author believes that the manuscript represents honest work.

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