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Postpartum Depression and its Risk Factors: A Primary Care Study from Samsun, Turkiye

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ABSTRACT

Objectives: This study aims to assess the risk of postpartum depression (PPD) and identify sociodemographic, psychiatric, and psychosocial factors that influence this risk.

Methods: This cross-sectional, descriptive study examined 400 mothers who visited the Pediatric Health and Diseases outpatient clinics at Samsun Training and Research Hospital between July 1 and September 30, 2023, and who had 1-year-old infants. Data were collected through face-to-face interviews using a sociodemographic information form and the Edinburgh Postnatal Depression Scale (EPDS). A score of ≥13 on the EPDS was considered indicative of PPD risk. Data were analyzed using Statistical Package for the Social Sciences 23.0 software.

Results: PPD risk was detected in 19.8% of participants. Statistically significant relationships were found between PPD risk and the following factors: İndividual psychiatric history ($p<0.001$), previous postpartum psychiatric problems ($p<0.001$), premenstrual emotional symptoms ($p<0.001$), low marital satisfaction ($p=0.023$), and insufficient social support (spouse, family, and spouse's family support). No significant relationships were found with other variables, such as educational status, income level, marital status, and tobacco use.

Conclusion: PPD is a complex mental health issue shaped by psychosocial interactions rather than individual factors. In primary healthcare, it is important to assess marital relationships, psychiatric history, and social support levels for the early diagnosis and referral of at-risk mothers.

Keywords: Postpartum depression, preventive medicine, primary health care

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INTRODUCTION

Postpartum depression (PPD) is a prevalent mental health condition affecting new mothers. The significance of PPD lies not only in its characteristic onset as a major depressive episode within the 1st year following childbirth but, crucially, in its considerable and serious influence on maternal health and subsequent infant development. Therefore, understanding and addressing PPD is of paramount importance.[1]

The postpartum period is a delicate phase in which physiological, psychological, and social transformations may precipitate depressive symptoms. PPD affects approximately 10–20% of women worldwide after childbirth. It is also one of the most common morbidities associated with childbirth.[2,3] To define the global dimension of the problem, the pooled prevalence of PPD is generally accepted to be approximately 14% globally. A multi-country meta-analysis revealed a significant disparity, with PPD prevalence typically around 10% in developed coun-

tries but reaching up to 30% in developing countries.[2] Translating to the national context, a multicenter systematic review and meta-analysis conducted in Turkey reported that the prevalence of PPD varies widely (6–50%). More specifically, when rates were examined, the rate was approximately 21.2% in developed cities and 25.0% in developing cities.[4] This phenomenon is influenced by a multitude of factors, including cultural, socioeconomic, and healthcare delivery aspects, which play a role in the onset and diagnosis of PPD.[5] Hormonal changes and psychosocial factors have been identified as potential contributors to the development of PPD.[6] Risk factors for PPD include unplanned pregnancy, low socioeconomic status, marital problems, and inadequate social support.[7-9]

Given the significant global and national differences, it is crucial to examine the specific local data in Samsun province to accurately assess the PPD burden. This study aims to determine PPD prevalence and risk factors in Samsun to guide local intervention development.

METHOD

This study is cross-sectional in nature. It was conducted between July 1 and September 30, 2023, at the Samsun Training and Research Hospital Pediatric Health and Diseases Outpatient Clinics.

The study population comprised mothers with infants under 1 year of age who visited the relevant outpatient clinics during the study period. The minimum sample size was manually calculated to be 360 using the sample size calculation formula with a 5% margin of error, 95% confidence level, and 50% probability value, given the known population size. A random sampling method was used to reach 400 participants who met the criteria. Each mother was included in the study only once.

The following criteria must be met to be considered for inclusion:

- The age requirement is 18 years of age or older
- The occurrence of a new birth within the initial 12-month period
- The application to the outpatient clinic has been submitted
- The act of participating voluntarily is of particular interest in this context.

The following criteria were used to determine exclusion from the study:

- To avoid potential confusion between maternal blues and PPD diagnosis, mothers in the first 2 weeks postpartum were excluded from the study.

The following instruments are to be utilized for the purpose of data collection:

The data were collected using a 68-item sociodemographic data form. This form was prepared by reviewing the literature and the Edinburgh postnatal depression scale (EPDS). The EPDS was developed by Cox et al.[10] and validated and reliability tested in Turkish by Aydin et al.[11] In the evaluation of the scale, all questions are scored on a scale of 0–3, and the maximum score that can be obtained on the scale is 30. Questions 1, 2, and 4 are scored on a 0-1-2-3 scale, while questions 3, 5, 6, 7, 8, 9, and 10 are scored on a 3-2-1-0 scale. The scale's cutoff point is 13. In the Turkish validity and reliability study of the EPDS conducted by Aydin et al.[11], the Cronbach's alpha value was found to be 0.79. The form and scale were administered by the first researcher using the face-to-face interview method, and the average response time of the participants was 20 min. A score of 13 or higher on the scale is considered an indicator of PPD risk. Individuals identified as being at risk were referred to the relevant healthcare unit.

The present study was reviewed and approved by the Samsun University Clinical Research Ethics Committee on May 24, 2023, with the reference number SÜKAEK-2023/10/2. Written informed consent was obtained from the participants.

The data were analyzed using IBM Statistical Package for the Social Sciences V23 software. The normality of the distribution was assessed using the Kolmogorov-Smirnov and Shapiro–Wilk tests. When appropriate, the Mann–Whitney U, Yates-corrected Chi-square, Fisher's exact, Pearson Chi-square, and Bonferroni-corrected Z tests were used. Analysis: The results are presented as frequency (percentage), mean±standard deviation, and median (min–max). The statistical significance was set at $p<0.05$.

RESULTS

A total of 400 mothers with infants aged 0–12 months were included in the study. The mean age of the participants was 29.88±5.51 years. The mean age at marriage was 23.34±4.31 years. Thirty-eight percent of participants had a high school diploma. The highest percentage of participants were housewives. 92.8% of mothers had health insurance. The largest percentage of monthly income was in the 8,500–20,000 TL range. 49.8% of participants live in rented accommodations, and 97.3% are married. The most common household size was two people. 62.3% of mothers stated that they have never smoked. Regarding alcohol

consumption, 91.0% of participants stated that they have never consumed alcohol. The sociodemographic characteristics of the participants are presented in Table 1.

When the feeding practices of the babies of mothers participating in the study were examined, it was found that 59.8% of babies under 6 months of age were exclusively breastfed. For babies older than 6 months, the most common feeding practice was the combined use of breast milk and complementary foods. 78% of women received support from their partners during and after pregnancy, while 85% received support from their own families. Data on infant feeding practices and social support status are presented in Table 2.

Table 1. Demographic data of participants

	Number Percentage n (%)
Age range	
18–24	71 (17.8)
25–30	159 (39.8)
31–35	86 (21.5)
36 and above	84 (21.3)
Age of marriage	
Under 18	51 (12.8)
18–24	213 (53.3)
25–29	104 (26.0)
30 and above	32 (8.1)
Education level	
Primary education	48 (12.1)
Middle school	86 (21.5)
High school	153 (38.3)
University	113 (28.2)
Working status	
Housewife	322 (80.5)
Civil servant	37 (9.5)
Private sector	41 (10.3)
Monthly income	
≤8500 TL	88 (22.0)
8500–20000 TL	181 (45.3)
20000–30000 TL	93 (23.3)
30000–40000 TL	18 (4.5)
>40000 TL	20 (5.0)
Number of persons living in the household	
2	140 (35.0)
3	110 (27.5)
4 and above	150 (37.5)

The EPDS was used to assess the level of PPD of the participants, and the total mean score was 7.90±5.68. Of the participants, 19.8% scored 13 or higher on the scale (considered at risk for depression), with an average score of 16.7±3.61. Cronbach's alpha was calculated as 0.833 for the scale in this study.

This study examined in detail the relationships between PPD risk and various sociodemographic and behavioral variables. A significant relationship was found between PPD risk and the number of people living in the same household, marital satisfaction, and whether the baby affected the marriage. However, no statistically significant relationship was found between PPD and other variables, such as educational level, employment status, health insurance, income level, marital status, age group, tobacco, and alcohol use. These findings suggest that an individual's social environment and marital dynamics may be decisive in the development of PPD. Detailed data are presented in Table 3.

Table 2. Nutritional status of ınfants and social support status of mothers participating in the study

	Number Percentage n (%)
Nutrition for ınfants under 6 months	
Only breast milk	150 (59.8)
Only formula	25 (10.0)
Formula, in addition to breast milk, complementary foods	76 (30.3)
Nutrition for babies aged 6 months and older	
Breast milk only	4 (2.7)
Breast milk, formula, and complementary foods	113 (75.9)
Formula and complementary foods	32 (21.4)
Is there anyone who helps you care for your baby?	
Yes	195 (48.8)
No	205 (51.2)
Support from your spouse during pregnancy and after childbirth	
Supportive	313 (78.3)
Somewhat supportive	76 (19.0)
Not supportive	11 (2.8)
Support from your own family during pregnancy and after childbirth	
Yes	340 (85.0)
Support from your spouse's family during pregnancy and after childbirth	
Yes	286 (71.5)

Table 3. Relationship between demographic characteristics and risk of PPD

	PPD risk		p
	No	Yes	
Age	29.79±5.46	30.22±5.76	0.500
Age group			
18–24	57 (80.3)	14 (19.7)	0.759[x]
25–30	130 (81.8)	29 (18.2)	
31–34	69 (80.2)	17 (19.8)	
35–40	55 (75.3)	18 (24.7)	
40 and above	10 (90.9)	1 (9.1)	
Education level			
Primary education	33 (10.2)	15 (10.0)	0.051[x]
Middle school	75 (23.4)	11 (13.9)	
High school	120 (37.4)	33 (41.8)	
University	93 (29)	20 (25.3)	
Working status			
Housewife	257 (80.1)	65 (82.3)	0.930[x]
Civil servant	31 (9.7)	6 (7.6)	
Private sector	33 (10.2)	8 (10.2)	
Health insurance coverage			
No	24 (7.5)	5 (6.3)	0.912[y]
Yes	297 (92.5)	74 (93.7)	
Monthly income			
≤8500 TL	66 (20.6)	22 (27.8)	0.440[x]
8500–20000 TL	145 (45.2)	36 (45.6)	
20000–30000 TL	80 (24.9)	13 (16.5)	
30000–40000 TL	14 (4.4)	4 (5.1)	
>40000 TL	16 (5)	4 (5.1)	
Do you rent the house you live in?			
Yes	159 (49.5)	40 (50.6)	0.861[z]
No	162 (50.5)	39 (49.4)	
Marital status			
Married	312 (97.2)	77 (97.5)	0.847[x]
Divorced. other	8 (2.8)	2 (2.5)	
Marriage age			
18 and under	35 (10.9)	16 (20.3)	0.135[x]
18–24	177 (55.1)	36 (45.6)	
25–29	85 (26.5)	19 (24.1)	
30 and over	24 (7.5)	8 (10.3)	
Form of marriage			
By agreement	263 (82.9)	67 (84.8)	0.526[x]
Traditional marriage	53 (16.5)	12 (15.2)	
Virtual world/Social media	5 (1.6)	0 (0)	
Number of marriages			
1	306 (95.3)	74 (93.7)	0.565[a]
2 and above	15 (4.7)	5 (6.3)	

Table 3. Relationship between demographic characteristics and risk of PPD (Cont.)

	PPD risk		p
	No	Yes	
Consanguinity status			
Yes	35 (10.9)	10 (12.7)	0.808[y]
No	286 (89.1)	69 (87.3)	
Number of people living in the household			
2	119 (37.1)	21 (26.6)	0.026[z]
3	85 (26.5)	25 (31.6)	
4	70 (21.8)	12 (15.2)	
5 and above	47 (14.6)b	21 (26.6)c	
Smoking status			
I currently smoke	40 (12.5)	13 (16.5)	0.827[z]
I used to smoke, but quit	42 (13.1)	10 (12.7)	
I have smoked a few times in my life	37 (11.5)	9 (11.4)	
I have never smoked	202 (62.9)	47 (59.5)	
Alcohol consumption			
I have consumed alcohol a few times in my life	30 (9.3)	6 (7.6)	0.710[x]
I have never consumed alcohol	291 (90.7)	73 (92.4)	

[x]Fisher-Freeman-Halton; [y]Yates correction; [z]Pearson Chi-square test; [a]Fisher's Exact test; PPD: Postpartum depression.

17% of participating mothers had previously been diagnosed with psychiatric problems. Regarding premenstrual syndrome symptoms, 28.2% of mothers reported depression, 68% reported irritability and tension, and 52.5% reported sensitivity, irritability, and crying spells during the premenstrual period. The risk of PPD and the relationship between individuals' psychiatric history and emotional symptoms experienced during the premenstrual period were examined in detail. A statistically significant relationship was found between PPD risk and having previously experienced any psychiatric disorder or postpartum psychiatric disorder. Furthermore, a significant relationship was found between PPD and emotional symptoms experienced during the premenstrual period. A significant relationship was also found between PPD and sensitivity, irritability, and crying spells. Findings suggesting that an individual's psychiatric history and emotional state during the premenstrual period may play an important role in PPD risk are summarized in Table 4.

Analysis of participants' spouses' educational characteristics revealed that the largest proportion were high school graduates and that the average age of spouses was 32.6±5.86. Most participants described their communication with their spouses as good or very good, and more than half reported being very satisfied with their marriage. Approximately half of the mothers stated that having a baby had a positive effect on their marital relationship. A statistically significant relationship was found between PPD risk and marital satisfaction. Similarly, mothers who believed that the birth of their baby had a positive effect on their marriage had a significantly lower risk of PPD. Support received from the spouse was also significantly associated with a lower risk of PPD. No other marital or family variable showed a statistically significant relationship with PPD risk. These findings suggest that the quality of marital relationships and perceived emotional and practical support from close family members play a protective role against postpartum depressive symptoms. Detailed results are presented in Table 5.

DISCUSSION

This study, conducted in a tertiary hospital in Samsun Province, aimed to evaluate PPD risk and associated factors in 400 mothers of infants aged 2 weeks to 12 months. Using the EPDS, the PPD risk rate was found to be 19.8%. This rate is similar to, yet different from, national and international literature. A large-scale analysis by Hahn-Holbrook et al.[4] including 291 studies found a global prevalence of 17.7%. In Turkey, the prevalence was 28%,[12,13] and in a study by Shorey et al.,[2] the prevalence was 17%. It was 26% in a Middle Eastern study[14] and up to 74% in Norhayati et al.'s[15] review of developing countries. These discrepancies

Table 4. Relationship between psychiatric illness and premenstrual symptoms and the risk of PPD

	PPD risk		p
	No	Yes	
Previous history of any psychiatric problems			
Yes	39 (12.1)	29 (36.7)	<0.001[b]
No	282 (87.9)	50 (63.3)	
History of psychiatric problems after previous births*			
Yes	13 (7.0)	15 (30.0)	<0.001[b]
No	173 (93.0)	35 (70.0)	
A history of psychiatric illness in the family			
Yes	54 (16.8)	18 (22.8)	0.284[b]
No	267 (83.2)	61 (77.2)	
The presence of postpartum psychiatric problems in the family			
Yes	10 (3.1)	4 (5.1)	0.490[b]
No	311 (96.9)	75 (94.9)	
A condition of experiencing emotional distress during the premenstrual period			
Yes	74 (23.1)	39 (49.4)	<0.001[b]
No	247 (76.9)	40 (50.6)	
Feeling irritable and tense before menstruation			
Yes	205 (63.9)	67 (84.8)	0.001[b]
No	116 (36.1)	12 (15.2)	
Premenstrual sensitivity, excessive emotionality, and crying spells			
Yes	148 (46.1)	62 (78.5)	<0.001[c]
No	173 (53.9)	17 (21.5)	

*Those who have given birth before have answered. [a]Fisher's Exact test; [b]Yates correction; [c]Pearson Chi-square test; PPD: Postpartum depression.

may be attributed to the use of different cutoff points and targeted postpartum periods.

This study carefully analyzed the relationships between PPD risk and sociodemographic variables. No statistically significant association was found between PPD and maternal age, education level, employment status, income level, health insurance, or marital status. These findings are consistent with several studies reporting that sociodemographic characteristics alone may not be strong predictors of PPD.[16-18] However, other studies have identified certain demographic factors – particularly low educational attainment and younger maternal age at first pregnancy – as potential risk enhancers for PPD.[15,19,20] The differences between the present findings and those of previous research may be explained by variations in sample characteristics, cultural context, and social support structures. In the present study, most participants reported adequate family and spousal support, as well as moderate-to-high socioeconomic stability, which may have mitigated the potential influence of demographic risk factors. Moreover, the relatively homogeneous sample in terms of educational and economic background could have limited the detection of significant associations. These contextual factors should be considered when interpreting the results, as they may partly explain the divergence from studies conducted in populations with greater social or economic disparities.

A significant relationship was found between the number of people living in the same household and the risk of PPD. Some studies have similarly suggested that larger household size or extended family living arrangements may increase the risk of PPD by contributing to higher caregiving demands, reduced personal space, and potential interpersonal conflicts.[18,21] However, the nature of this relationship may vary across cultural contexts. In societies where family cohesion and intergenerational support are strong, living with a larger number of household members can serve as an important source of emotional and practical support for new mothers. In contrast, in settings where traditional gender roles or familial expectations are dominant, cohabitation with extended family members may lead to increased

Table 5. Relationship between marital status and PPD risk

	PPD risk		p
	No	Yes	
Marriage age			
18 and under	35 (10.9)	16 (20.3)	0.135[c]
18–24	177 (55.1)	36 (45.6)	
25–29	85 (26.5)	19 (24.1)	
30 and over	24 (7.5)	8 (10.1)	
Form of marriage			
By agreement	263 (82.9)	67 (84.8)	0.526[c]
Traditional marriage	53 (16.5)	12 (15.2)	
Virtual world/Social media	5 (1.6)	0 (0)	
Number of marriages			
1	306 (95.3)	74 (93.7)	0.565[a]
2 and above	15 (4.7)	5 (6.3)	
Consanguinity status			
Yes	35 (10.9)	10 (12.7)	0.808[b]
No	286 (89.1)	69 (87.3)	
Your spouse's education status			
Elementary school	31 (9.6)	7 (8.8)	0.052[c]
Middle school	72 (22.4)	27 (34.2)	
High school	117 (36.4)	29 (36.7)	
University	101 (31.5)	16 (20.3)	
Your spouse's age			
18–24	19 (5.9)	3 (3.8)	0.962[c]
25–30	111 (34.6)	28 (35.4)	
31–34	83 (25.9)	22 (27.8)	
35–40	70 (21.8)	16 (20.3)	
40 and above	38 (11.8)	10 (12.7)	
How would you describe your communication with your spouse?			
Very good	192 (59.8)	42 (53.2)	0.087[c]
Good	103 (32.1)	25 (31.6)	
Average	19 (5.9)	12 (15.2)	
Poor	5 (1.6)	0 (0)	
Very poor	2 (0.6)	0 (0)	
How is your relationship with your spouse's parents?			
Good	290 (90.3)	70 (88.6)	0.388[c]
Average	24 (7.5)	5 (6.3)	
Poor	7 (2.2)	4 (5.1)	
Do you live in the same city as your parents?			
Yes	213 (66.4)	54 (68.4)	0.735[y]
No	108 (33.6)	25 (31.6)	
Marital satisfaction			
Very satisfied	188 (58.6)[y]	34 (43.0)[z]	0.023[c]
Satisfied	126 (39.3)[y]	41 (51.9)[z]	
Not satisfied	7 (2.2)	4 (5.1)	

Table 5. Relationship between marital status and PPD risk (Cont.)

	PPD risk		p
	No	Yes	
Do you think your baby has affected your marriage?			
No	142 (44.2)[y]	45 (57.0)[z]	<0.001[c]
Yes (positive)	174 (54.2)[y]	26 (32.9)[z]	
Yes (negative)	5 (1.6)[y]	8 (10.1)[b]	
Is there anyone who can help with the baby?			
Yes	155 (48.3)	40 (50.6)	0.709[y]
No	166 (51.7)	39 (49.4)	
Did your partner support you during and after pregnancy?			
It was helpful	259 (80.7)[y]	54 (68.4)[z]	0.006[c]
Moderately helpful	57 (17.8)	19 (24.1)	
Not helpful	5 (1.6)[y]	6 (7.6)[z]	

PPD: Postpartum depression.

stress or perceived loss of autonomy, thereby heightening vulnerability to depressive symptoms. In the present study, the observed association may reflect the latter dynamic, as mothers living in crowded households could have experienced greater environmental stress or limited privacy during the postpartum period. These findings underscore the importance of considering both the quantitative and qualitative aspects of family structure when evaluating the social determinants of PPD.

In our study, a history of psychiatric illness was identified as a strong risk factor for PPD, both at the individual level and in relation to previous pregnancies. This finding aligns with the results of Sünter et al.,[13] who also emphasized the significant influence of psychiatric history on postpartum depressive symptoms. Similarly, Gülnar et al.[17] and Kolukırık et al.[21] reported that a previous psychiatric diagnosis or history of depressive episodes was a strong predictor of PPD development. The consistency of these findings across studies reinforces the well-established understanding that underlying vulnerability to mood disorders substantially increases the likelihood of PPD. However, minor differences in the magnitude of association reported in the literature may be attributed to variations in the assessment of psychiatric history, diagnostic criteria, and the timing of postpartum evaluation. In the present study, psychiatric history was self-reported, which may have led to underreporting of mild or undiagnosed conditions, potentially moderating the observed strength of association. Nonetheless, the overall pattern supports the view that early identification and proactive management of women with a prior psychiatric history are crucial for effective prevention and early intervention in PPD.

Mood changes associated with premenstrual syndrome were found to be strongly related to PPD risk, which is consistent with evidence suggesting a shared hormonal and emotional regulation vulnerability between the two conditions. Moreover, the negative association between marital satisfaction and PPD risk, as well as the higher PPD rates among women who perceived that having a baby negatively affected their marriage, align with prior research highlighting the importance of relational dynamics in the postpartum period.[16,18,21] The similarity of these findings may reflect the universal psychological impact of marital stress on maternal mental health. However, subtle differences across studies could be attributed to variations in social support systems, gender roles, and cultural expectations regarding parenting and spousal responsibilities. These factors may influence how marital satisfaction and the transition to parenthood interact to affect the risk of PPD.

Examining social support factors revealed that women who did not receive support from their spouse, family, or in-laws were found to have a significantly higher risk of PPD. These results are consistent with those of Durukan et al.,[18] Aydın et al.,[11] and Kolukırık et al.[21] Interestingly, no significant association was found between having a helper with infant care and PPD. This may be related to the quality of the relationship with the support provider or the source of stress.[17]

Our study found no significant relationship between smoking, alcohol use, and PPD. However, some international studies have indicated that smoking and alcohol use may

trigger depressive symptoms.[22-24] This difference may be due to sociocultural differences.

The internal consistency of the EPDS used in this study was quite high (α = 0.833). This result supports the reliability of the Turkish version of the scale for use with postpartum mothers.[14]

One strength of this study is its large sample size and the fact that data were collected through face-to-face interviews. The study was conducted in Samsun, one of Turkey's major cities, which enabled meaningful conclusions to be drawn about women living in urban centers. However, the cross-sectional design of the study prevents causal inferences from being made. Furthermore, since the study was conducted in a tertiary healthcare facility, the results only apply to individuals who use healthcare services frequently, limiting the study's generalizability. Another limitation is recall bias, as participants' past psychiatric histories and emotional states were based on their own reports.

In conclusion, this study demonstrates that PPD is influenced by numerous social, psychological, and relational factors, particularly psychiatric history, marital satisfaction, and social support. Identifying these risk factors in primary care settings is critical for early intervention and referral.

CONCLUSION

This study revealed that PPD is related not only to individual and socioeconomic variables, but also to psychosocial factors, such as psychiatric history, marital relationships, and social support.

These findings highlight the importance of family physicians using a comprehensive approach to assess women's mental health during the postpartum period. In this context, identifying at-risk mothers early on in primary healthcare settings and providing them with the necessary psychological support or referrals is a critical public health intervention.

Disclosures

Peer-review: Externally peer-reviewed.

Conflict of Interest: None declared.

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