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PREVALENCE AND THE RISK FACTORS OF POSTPARTUM DEPRESSION IN ANKARA CITY HOSPITAL

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Abstract

Objectives: Pregnancy and postpartum are processes that open to complications, not only gynecological & obstetric but also psychiatric complications are quite risky during the first months. Untreated Postpartum Depression (PPD) is a condition that may lead to mortality. Our aim with this study was to detect the relationship between sociodemographic information, and hemoglobin levels of postpartum women, with PPD levels.

Materials and Methods: This cross-sectional study was conducted with 250 women who were in their postpartum period and admitted to the Ankara City Hospital for 2 months. Volunteers were subjected to a sociodemographic characteristics survey, the Edinburgh Postnatal Depression Scale (EPDS), and their hemoglobin values were recorded.

Results: The prevalence of PPD was found to be 22.8%. The risk of depression is higher in younger mothers ($p=0.042$). There was a significant relationship between a low educational level and depression scores ($p=0.020$). The depression risk groups exhibited statistically significant relationships concerning spousal support during ($p=0.007$) and after ($p=0.009$) pregnancy. The risk of PPD is lower in women who receive spousal support. The EPDS score increased as hemoglobin levels decreased ($p<0.001$, $r=-0.266$). Mothers without depression risk had higher average breastfeeding numbers than others ($p<0.01$).

Conclusion: Young age, early marriage, lack of education associated with high EPDS scores, spousal support during pregnancy and postpartum, breastfeeding practices and frequency, and high hemoglobin levels were found to have significant relationships with low EPDS scores.

Keywords: Postpartum depression, family medicine, anemia.

Introduction

The World Health Organization (WHO) defines Postpartum Depression (PPD) as non-psychotic depressive episodes beginning from the 6th week up to the first year after birth.[1] According to the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-4), PPD symptoms start within the first 4 weeks postpartum. The DSM-5 notes that one-third of patients experience symptoms during pregnancy, termed peripartum-onset major depressive disorder. [2-3] PPD is a leading public health issue, and when left undiagnosed or diagnosed late, it's associated with increased risks of maternal mortality and morbidity. Projections suggest that without preventive measures, depression could become one of the top three causes of death by 2030.[4] As a frequent postnatal complication, the American College of Obstetrics and Gynecology recommends at least one screening for postpartum women. Diagnostic tools include the Edinburgh Postnatal Depression Scale (EPDS) and Beck Depression Inventory.[5] Symptoms include low mood, anhedonia, forgetfulness, irritability, anxiety, sleep disturbance, dysfunctionality, and feelings of worthlessness, with some patients potentially posing harm to themselves or their infants.[6] Stress-related factors predominantly contribute to PPD risk.[7] A history of depression, anxiety during or before pregnancy, a failure to bond with the baby due to hospitalization, insufficient environmental support, marital problems, and challenging living conditions can all trigger PPD.[8-9] Research indicates that low socioeconomic status, minority ethnic groups, and young motherhood further increase the PPD risk.[10-11] This study aimed to inspect the relationship between sociodemographic factors and hemoglobin levels in postpartum women with PPD.

Materials and Methods

This cross-sectional study at the Ankara City Hospital involved 250 postpartum women, excluding those with high-risk pregnancy histories. Approval for the study was obtained from the Ankara City Hospital Clinical Research and Ethics Committee (E2-21-794.), and all participants provided oral informed consent before their inclusion. This study was administered following the 1964 Declaration of Helsinki and its later amendments. Participants were selected successively and screened using the EPDS, a 10-item self-rating scale developed by Cox et al. to detect postpartum depression.[13] Turkish validity and reliability were confirmed by Engindeniz et al., with a Cronbach's alpha of 0.87.[12] Each question has four response options, scored from 0 to 3, with a cutoff score of 13 indicating a risk of depression.[13] Anemia status, defined as hemoglobin levels below 12 mg/dl according to WHO, was also evaluated. [14] Hemoglobin measurements were performed by fluorescence flow cytometry method with the XN-100 model of the Sysmex brand device. Data were analyzed using IBM SPSS.23, with normality and variance homogeneity checked using Kolmogorov-Smirnov and Levene's tests. Descriptive statistics included means and standard deviations for continuous variables, and frequencies and percentages

for categorical variables. The Mann-Whitney U test and Wilcoxon signed-rank test were used to analyze non-normally distributed independent and dependent samples, respectively. Chi-square tests were used to examine the relationships between categorical variables, and Spearman's rho was used for continuous variable correlations. A significance level of $p<0.05$ was adopted, and the questionnaire's Cronbach's alpha was 0.860. This value is consistent with the previously validated Turkish version. The slight difference may be due to variations in sample characteristics, cultural adaptation of the scale, or minor procedural differences. Nevertheless, both values indicate a high level of internal consistency, validating the reliability of the instrument.

Results

A total of 250 postpartum women, with an average age of 28.7 years, participated in this study. The sociodemographic information is provided in Table 1. The participants' mean hemoglobin level was 11.37 g/dl, and the average EPDS score was 7.40. Depression risk was high in 22.8% of the participants. A weak but statistically significant negative correlation was detected between EPDS and hemoglobin levels ($p<0.001$, $r=-0.266$). The mean hemoglobin level of those at high risk of PPD was 10.84 g/dl, compared with 11.5 g/dl in those at low risk. There was a significant difference in the risk of PPD in those receiving breastfeeding education ($p=0.017$), with lower depression risk observed in mothers who received breastfeeding education. The depression risk groups showed statistically significant relationships in terms of spousal support during ($p=0.007$) and after ($p=0.009$) pregnancy. The risk of PPD was found to be lower in women who receive spousal support. Sociodemographic characteristics related to PPD are presented in Table 2. Mothers with anemia breastfed an average of 11.36 times/day, while those without anemia breastfed 12.48 times/day, indicating a significant effect of anemia on breastfeeding frequency ($p=0.011$). Mothers without anemia breastfed more frequently than those with anemia did.

Table 1. Sociodemographic characteristics of participants

	Total n (%)
Age	28.37 ± 4.95
Height	161.66 ± 8.55 cm
Weight	68.59 ± 10.86 kg
BMI	25.96 ± 4.43 kg/m2
Marital status	
Married/Marriage age	249 (99.6%)/23.6 ± 3.53
Single	1 (0.4%)
Working status	
Working	2 (0.8%)
Unemployed	176 (70.4)
Maternity leave	72 (28.8%)
Income status	
Income more than expenses	72 (28.8%)
Income equals expenses	129 (51.6%)
Income less than expenses	49 (19.6%)
Birth status	
Vaginal birth	187 (74.8%)
Cesarean section	63 (25.2%)
Planned pregnancy status	
Planned pregnancy	205 (82.0%)
Planned pregnancy	205 (82.0%)
Unplanned pregnancy	45 (18.0%)
Spouse status	
Spouses who wanted the baby	236 (94.4%)
Spouses who did not want the baby	14 (5.6%)
Spouses who supported their partners during pregnancy	200 (80.0%)
Spouses who partially supported their partners during pregnancy	41 (16.4%)
Spouses who did not support their partners during pregnancy	9 (3.6%)
Spouses who supported their partners after birth	197 (78.8%)
Spouses who partially supported their partners after birth	43 (17.2%)
Spouses who did not support their partners after birth	10 (4.0%)
Pregnancy school status	
Attended pregnancy school	13 (5.2%)
Did not attend pregnancy school	237 (94.8%)
Breastfeeding status	
Received breastfeeding training	53 (21.2%)
Did not receive breastfeeding training	197 (78.8%)
Sufficiently breastfeeding	176 (70.4%)

Table 2. The Relationship of Sociodemographic Characteristics with Postpartum Depression

	High risk of depression n (%)	**Low risk of depression n (%)**	**p**
Hemoglobin	10.84 ± 1.52 g/dl	11.50 ± 1.51 mg/dl	**0.011***
Age	27.42 ± 5,86	28.60 ± 4.69	**0.042***
Marriage age	22.77 ± 4.44	23.80 ± 3.26	**0.020***
Educational background			**0.020***
Primary school	12 (25.0)	20 (10.1)	
High school	21 (43.8)	97 (48.7)	
University	15 (31.3)	82 (41.2)	
Spouse who supported during pregnancy			**0.007***
Yes	31 (64.6)	169 (83.7)	
Partially	12 (25.0)	29 (14.4)	
No	5 (10.4)	4 (2.0)	
Spouse who supported after birth			**0.009***
Yes	31 (64.6)	166 (82.2)	
Partially	12 (25.0)	31 (15.3)	
No	5 (10.4)	5 (2.5)	
Breastfeeding Education			**0.017***
Received breastfeeding education	4 (8.3)	49 (24.3)	
Did not receive breastfeeding education	44 (91.7)	153 (75.7)	
Adequately breastfeeding			**<0.001***
Yes	16 (33.3)	160 (79.2)	
No	32 (66.7)	42 (20.8)	
Number of breastfeeding n/day	8.81 ± 3.79	12.57 ± 3.32	**<0.001***

Discussion

Our study identified factors related to PPD, with a prevalence of 22.8%. Hahn Holbrook et al reported a global PPD prevalence of 17.7%.[15] Ahmad et al reviewed 15 Middle Eastern studies (2006-2020) and found a 27% incidence.[16] A 2015 United States study with 4022 women reported a PPD rate of 10.1 %.[17] In China, a study with 2462 women found a 22.2% prevalence.[18] Sociocultural diversity and socioeconomic status likely explain these differences.

Our study found that higher educational levels were correlated with lower depression risk (p=0.020). A Middle Eastern meta-analysis, including Türkiye, Iran, Israel, and the United Arab Emirates, linked low educational levels with PPD.[16] Education may enhance awareness and ease motherhood adjustment, thereby reducing anxiety and depression. Therefore, educating women reduces the risk of depression and ensures the formation of conscious and healthy societies.

There was a significant decrease in the risk of developing depression with spousal support both during pregnancy (p = 0.007) and after pregnancy (p = 0.009). Eslahi et al found similar results in Iran, suggesting spousal support lowers workload and boosts self-efficacy.[19] Desta et al's Ethiopian meta-analysis indicated domestic violence increases PPD risk by 5.46 times, highlighting the impact of an unsettled home environment.[20] Insufficient social support stands out as an environmental factor in the emergence of disorders such as depression and anxiety. The postpartum period is a very challenging process. To prevent depression, spouses need to support women during stressful periods.

Our study showed a weak negative correlation between EPDS and hemoglobin levels, with low hemoglobin linked to higher PPD risk (p=0.011). A Canadian review found that anemia increased PPD risk in 8 out of 10 studies.[21] Each 1 g/dL decrease in hemoglobin increased PPD risk by 10%.[22] As in depression, behavioral symptoms associated with anemia in adults include changes in cognition, emotions, apathy, hypoactivity, fatigue, and irritability. Because anemia may produce these symptoms during pregnancy or the postpartum period has been identified as a possible physiological risk factor for PPD. The mechanisms by which anemia causes depressive symptoms may be explained by changes in myelination and neurotransmitter metabolism.[23]

In our study, breastfeeding education was correlated with a lower risk of depression (p=0.017). Education improves breastfeeding quality and provides the feeling of adequate breastfeeding. Postpartum depression harms the hormones that affect breastfeeding, causing disruption in mothers' performance and reducing their self-efficacy in breastfeeding.[24] Hammond et al. found reduced PPD symptoms in women who were confident about their breastfeeding.[25] Prolonged breastfeeding causes oxytocin levels in the blood to remain high. High oxytocin levels from breastfeeding are known to help prevent PPD.[26] Supporting breastfeeding in mothers and providing adequate training on breastfeeding both reduce the risk of depression and ensure the healthy development of the baby.

Limitations

One limitation of our study is the varying postpartum periods of the participating women. Additionally, we used the EPDS, which only indicates the risk of depression rather than providing a diagnosis. However, one strength of our research is the lack of comparative studies on PPD and anemia in Türkiye, and our results align with the existing literature.

Conclusion

The postpartum period critically influences both the mother and baby's neuropsychosocial development, with untreated PPD potentially resulting in severe outcomes, such as suicide. Factors such as young age, early marriage, lack of education, spousal support, breastfeeding practices, and hemoglobin levels were significantly correlated with EPDS scores. These factors can be detected in clinical practice, identifying mothers at risk through screening. Postpartum mood changes require close monitoring. Every woman should be screened for depression during this period. Spousal support during and after pregnancy can help prevent PPD while encouraging and educating mothers about breastfeeding is crucial for maternal and child health. The treatment of postpartum anemia may also protect against PPD onset. Family physicians play a crucial role in identifying PPD risk factors by monitoring pregnancy and the postpartum period, ensuring early diagnosis, and appropriate treatment.

Ethical Considerations: Approval for the study was obtained from the Ankara City Hospital Clinical Research and Ethics Committee (E E2-21-794)

Conflict of Interest: The authors declare no conflict of interest.

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