Araştırma Makalesi / *Research Article*

RISK FACTORS AND PREVALANCE OF POSTPARTUM DEPRESSION DURING THE COVID-19 PANDEMIC IN A UNIVERSITY HOSPITAL IN WESTERN TURKEY: A CROSS-SECTIONAL STUDY

KOVİD-19 PANDEMİSİ SIRASINDA TÜRKİYE'NİN BATISINDA BİR ÜNİVERSİTE HASTANESİNDE DOĞUM SONRASI DEPRESYONUN RİSK FAKTÖRLERİ VE YAYGINLIĞI: KESİTSEL BİR ÇALIŞMA

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SUMMARY

Aim: This study aimed to examine the prevalence and risk factors of postpartum depression in a university hospital in Turkey during the COVID-19 pandemic.

Methods: A cross-sectional study was performed from November 2020 to December 2020. Totally 517 women, who are all in the first month of the postpartum period were evaluated by using the Edinburgh Postpartum Depression Scale (EPDS). A total score equal to or above 13 was accepted as PPD. Multivariant regression analysis was used to identify factors associated with PPD during the pandemic.

Results: The prevalence of PPD was 15.7%. Patients who were delivered by the vaginal route, who were at earlier gestational age at delivery, and who needed neonatal intensive care unit (NICU) care for their babies were significantly more likely to develop PPD. The risk of PPD during the COVID-19 pandemic was 5.5 times higher in patients who had a previous depressive episode. The PPD risk was 44% lower in women who properly attend regular antenatal care visits.

Conclusion: Identification of pregnant women who had a previous depressive episode in their first prenatal visit and ensuring regular attendance of pregnant women to antenatal care visits may help early detection of women who are at high-risk for PPD and taking timely preventive approaches.

ÖZ

Giriş: Bu çalışma, COVID-19 pandemisi sırasında Türkiye'de bir üniversite hastanesinde doğum sonrası depresyonun prevalansını ve risk faktörlerini incelemeyi amaçlamıştır.

Gereç ve Yöntem: Kasım 2020-Aralık 2020 tarihleri arasında kesitsel bir çalışma yapıldı. Tamamı doğum sonu dönemin ilk ayında olan toplam 517 kadın Edinburgh Doğum Sonrası Depresyon Ölçeği kullanılarak değerlendirildi. Toplam puan 13 ve üzeri doğum sonrası depresyon (DSD) olarak kabul edildi. Pandemi sırasında DSD ile ilişkili faktörleri belirlemek için multivariant regresyon analizi kullanıldı.

Bulgular: *Doğum sonrası depresyon prevalansı %15.7 idi. Vajinal yolla doğum yapan, doğumda daha erken gebelik haftasında olan ve bebekleri için yenidoğan yoğun bakım ünitesi bakımına ihtiyaç duyan kadınlarda DSD gelişme olasılığı anlamlı olarak daha yüksekti. COVID-19 pandemisi sırasında DSD riski, daha önce depresif epizod geçiren hastalarda 5.5 kat daha yüksekti. Doğum öncesi dönemde antenatal izleme düzenli katılım gösteren kadınlarda DSD riski %44 daha düşüktü.*

Sonuç: *İlk prenatal vizitte daha önce depresif epizod geçirmiş gebelerin saptanması ve gebelerin doğum öncesi bakım ziyaretlerine düzenli katılımının sağlanması, DSD için yüksek risk altındaki kadınların erken saptanmasına ve zamanında önleyici yaklaşımların alınmasına yardımcı olabilir.*

INTRODUCTION

After the outbreak of new the coronavirus disease in Wuhan China. In March 2020 World Health Organization (WHO) declared that COVID-19 can be characterized as a pandemic and stated messages that can be used in supporting mental and psychosocial well-being in different target groups during the outbreak (1). In the following days, several papers were published about mental health issues in the pandemic (2,3) regarding the examples of recent epidemics where the psychosocial consequences of social isolation and fake news were neglected (4). In 2021 Taquet et al. assessed the data from 69 million individuals, 62 354 of whom had a diagnosis of COVID-19, by using an electronic health record network. In their large population cohort, the authors reported that survivors of COVİD-19 have a significantly higher rate of psychiatric disorders, dementia, and insomnia (5).

One particularly vulnerable group during the COVİD-19 pandemic may be pregnant women who are in special need of preventive mental health strategies (6). Previously WHO reported that about 10% of pregnant women and 13% of postpartum women experience a mental disorder, primarily depression (7). In a previous large multinational study on perinatal mental health, it was reported that about 4% to 8% of women developed moderate-to-very severe depressive symptoms during pregnancy and in the postnatal period (8).

Although the etiology of postpartum depression is not fully understood, changes in hormonal and social status, the feeling of inadequacy, and concerns about the future may cause this situation (9). It is reasonable to think that during the COVİD-19 pandemic the restrictions regarding reducing the virus spread, such as "stay at home" orders and social isolation may increase the anxiety of pregnant women and can trigger depression. Besides, fears regarding the maternal COVİD-19 infection and associated perinatal morbidity and mortality may also increase the concerns of the pregnant woman about health issues for both herself and her baby (10,11). Although it was reported that the COVID-19 outbreak had a moderate to severe psychological impact on pregnant women (12), the PPD rate varies between countries depending on socioeconomic and cultural characteristics (13). In previous studies from Italy and Spain, the authors reported increased postpartum depression rates during the pandemic (14,15). Whereas Silverman et al. reported decreased PPD rates during the lockdown in New York City (16).

Our study aimed to investigate the prevalence of PPD in patients delivered in a university hospital on the western coast of Turkey and to reveal the risk factors related to PPD during the pandemic.

MATERIAL AND METHOD

A cross-sectional study was conducted from November 2020 to December 2020. during the "second-weekend lockdown" within the scope of COVİD-19 measures of the government. Edinburgh Postnatal Depression Scale (EPDS) was applied to each participant to identify the prevalence and risk factors related to postpartum depression and women's mental health status. Izmir province is one of the largest cities located on the western coast of Turkey, where about eight million people live. The study population was recruited from postpartum women who delivered in the obstetrics unit in an affiliated university hospital where approximately 5000 delivery occurs annually. The study was designed according to the Declaration of Helsinki and ethics approval was obtained from the Non-Invasive Research Ethics Committee of Health Science University Tepecik Education and Research Hospital (Approval Date: July 23, 2020; Approval Number: 2020/9-12). Informed consent was obtained from the individuals who participated in this study.

A meta-analysis of 13 studies investigating the mental health of pregnant and postpartum women showed that the prevalence of postpartum depression during the COVID-19 pandemic was 22% (17). By using Openepi, a web-based epidemiologic and statistical calculator (OpenEpi: OpenSource Epidemiologic Statistics for Public Health, Version.), a total sample size of 456 was calculated with a 99% confidence interval and a 5% margin of error to obtain reasonable estimates (18). Considering that there would be patients who do not want to participate in the study, the sample size was increased by 50% and determined as 684.

Totally 884 pregnant women were asked to complete the EPDS questionnaire during their first prenatal visit. One hundred two pregnant women refused to complete the questionnaire.

Sixty-five women who had high-risk pregnancy (preterm delivery, fetal growth restriction, multiple pregnancies), comorbidities (hypertension, diabetes, cardiac, endocrine disease), fetal demise, fetal anomaly, or who had COVID-19 disease during pregnancy were excluded from the study. A total of 517 patients were included in our study (Figure 1).

The Edinburgh Postpartum Depression Scale (EPDS) is a self-report 10-item scale used for screening PPD (19). Each question is rated on a four-point Likert scale ranging from 0 to 3. The scale rates the intensity of depressive symptoms over the last 7 days. The lowest total score that can be obtained is 0 and the highest is 30. Major depressive symptoms were defined as having a total EDS score equal to or above 13 (19,20). The scale has been translated into many languages. Similar to the original version, in the Turkish version of the scale women having a total EDS score of ≥13 were considered to have major depressive symptoms. In a recent study, where the cutoff value was accepted as 13, the sensitivity and specificity of the Turkish version of the scale were found to be 75.5 % and 71.5 %, respectively (21). During the present study, women who had a score equal to or above 13 were considered PPD and referred to a psychologist. Information on sociodemographic characteristics was collected through the survey, including maternal age, gravidity, parity, body mass index (BMI), smoking in pregnancy, literacy status, and insurance status. Independent risk factors, including characteristics of the patients, delivery route, pregnancy outcomes, previous depression episode history, lack of family support, relevant loss due to COVID-19, and attendance to antenatal care visits, were compared between the women with and without PPD. All data were obtained through face-to-face interviews with the participants.

Statistical analysis

Data were analyzed by using SPSS version 27 (IBM Corp.; Armonk, NY, USA). The chi-square test for qualitative data and Student's t-test for quantitative data were performed to assess the differences in demographic characteristics, obstetric data, social profiles, and COVID-19-related factors between women who had PPD and those who did not. Univariable and multivariable logistic regression analyses were used to expose potential factors that may help to predict PPD during the COVID-19 pandemic. The independent variables significantly associated ($P < 0.05$) with PPD were considered contributing factors and entered into a multivariate logistic regression model. The model controlled for a previous depressive episode, gestational age, need for NICU admission, refugee status, and attendance of antenatal care visits. Odds ratios (OR) with 95% confidence intervals (95% CI) were calculated to measure the strength of association. A *P*-value <0.05 was considered significant in the analysis.

RESULTS

The mean maternal age of the 517 postpartum women who completed the survey was 28.24±6.56 (14-45). The average gestational age at delivery and newborn birth weight were 37.88±2.17 weeks and 3080.13±595.33 grams respectively. Eighty-one out of the 517 postpartum women (15,7%) had a score of ≥13 from the EPDS and were considered to have PPD.

The demographic characteristics were not significantly different between the groups with and without PPD (Table 1).

Women who had a vaginal delivery, who were at earlier gestational age at delivery and needed NICU admission for their babies were significantly more likely to develop PPD. A previous depressive

episode and poor attendance at routine antenatal care visits were statistically significantly higher in the PPD group (Table 2).

According to the multivariable logistic regression model, having a previous depressive episode (OR 5.558, 95% CI 3.217–9.605, P < 0.001) and poor attendance to antenatal care visits (OR 0.569, 95% CI 0.341–0.948, P = 030) were independent variables that significantly predicted PPD during the COVID-19 pandemic (Table 3). The Hosmer–Lemeshow statistic for the model was X^2= 3.220, df = 8, P = 0.920.
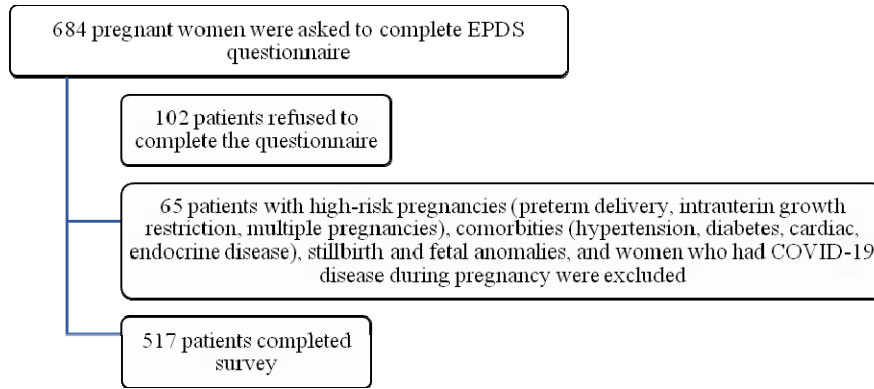

Figure 1. Flowchart of patients attending the survey.

Table 1. Demographic characteristics of women with and without PPD

	EPDS≥13 N=81	EPDS<13 N=436	P-Value
Age	28.75±6.23	28.15±6.63	0.449
Gravida	2.7±1.5	2.5±1.5	0.519
Parity	2.3±1.1	2.2±1.2	0.656
BMI (kg/m²)	28.67±5.21	27.83±4.88	0.161
Smoking	13/81 (16.0%)	55/436 (12.6%)	0.509
Illiteracy	7/81 (16.0%)	59/436 (12.6%)	0.303
No insurance	3/81 (3.7%)	28/436 (6.4%)	0.489

Data are expressed as the mean ± standard deviations or numbers (percentages)
Abbreviations: Postpartum Depression (PPD), Edinburgh Postnatal Depression Scale (EPDS), Body Mass Index (BMI)

Table 2. Obstetric data and social profiles of patients with and without PPD

	EPDS≥13 N=81	EPDS<13 N=436	P-Value
Cesarean section	20/81 (24.7%)	163/436 (37.4%)	0.039*
Gestational age	37.4±2.4	37.9±2.1	0.035*
Birth weight (g)	2948.45±679.70	3104.59±575.87	0.055
APGAR score	6.9±0.8	7.0±0.6	0.515
Need for NICU admission	25 (30.9%)	88 (20.2%)	0.047*
Attendance to antenatal care visits	41 (50.6%)	282 (674.7%)	0.023*
Previous depressive episode	35 (43.2%)	48 (11%)	<0.001*
Lack of family support	13 (16%)	46 (10.6%)	0.215
Relevant loss due to COVID-19	23 (28.4%)	116 (26.6%)	0.844

The values are expressed as the medians ± standard deviations or numbers (percentages)
Abbreviations: Postpartum Depression (PPD), Edinburgh Postpartum Depression Scale (EPDS), Neonatal Intensive Care Unit (NICU), Statistically significant P-Value (*)

Table 3. Multivariant logistic regression analysis of factors affecting PPD during the COVID-19 pandemic

	Odds ratio	95%CI	P-Value
Previous depressive episode	5.558	3.217-9.605	<0.001*
Attendace to antenatal care visits	0.569	0.341-0.948	0.030

Abbreviations: Postpartum Depression (PPD), Statistically significant P-Value (*)
Previous depressive episode (reference group: no), attendance to antenatal care visits (reference group: no)

DISCUSSION

The present study aimed to assess the mental health status of the postpartum women faced with an unprecedented pandemic and to identify factors associated with postpartum depression. Our study revealed that having a previous depressive episode and poor attendance to antenatal care visits were independent variables that significantly predicted PPD during the COVID-19 pandemic.

The overall prevalence of PPD in our study was 15.7%. In a previous meta-analysis conducted by Shorey et al. before the COVİD-19 pandemic, it was reported that the prevalence of PPD was approximately 17% among all mothers. In the meta-analysis the prevalence varied from 8% to 26% in different countries and cultures; the highest prevalence was reported in the Middle East and Asia, and the lowest prevalence was in Western countries (22). In a previous rapid review, Brooks et al. assessed the psychological impact of quarantine measures during previous outbreaks including severe acute respiratory syndrome, Ebola, the 2009 and 2010 H1N1 influenza pandemic, Middle East respiratory syndrome, and equine influenza. The authors reported that the lockdown measures during the COVID-19 pandemic would increase the prevalence of PPD (23).

In a recent study performed in a tertiary hospital in Turkey's capital city during the COVID-19 pandemic, the authors reported that the prevalence of PPD was 14.7%. Similar to our study, the authors used the Turkish version of the same EPDS questionnaires, and the rates of PPD prevalence were quite close to our study (24).

A recent meta-analysis showed that the prevalence of PPD during the COVID-19 pandemic was 22% (25). A preliminary study from Turkey was included in this meta-analysis. In the study, 35.4% of the respondents obtained scores higher than 13 on the EPDS. However, the survey was administered online. The authors stated this situation as a limitation of their study (26). In contrast, our study was performed by face-to-face interviews with the participants, similar to the study conducted in Turkey by Oskovi-Kaplan et al. (24) which have similar PPD rates to our study. We thought that conducting the survey face to face gave more accurate results.

A meta-analysis performed in Turkey before the COVID-19 pandemic showed that the consolidated prevalence of postpartum depression was 24% and ranged between 9% and 51%. The authors reported that the wide range depends on the geographical region in which the study was performed and the period that elapsed after childbirth (27). The results of our study revealed that during the COVİD-19 pandemic, the prevalence of PPD in Turkey did not increase as much as was reported in studies conducted in other countries (28,29). However, a study from Israel recently reported that delivery during the COVID-19 pandemic was associated with a lower risk of PPD (30).

According to the results of our study, the rate of vaginal delivery was significantly higher in women with PPD. Many studies in the literature have reported that emergency cesarian section, traumatic vaginal delivery, painful prepartum, and postpartum periods are risk factors for PPD (31-33). However, since cesarean section might be safer during the pandemic, it may have led to the opposite result.

According to a recent study, preterm birth and related low birth weight and the need for NICU admission negatively affect maternal mood (34). The results of our study were in line with the data in the literature.

During pregnancy, evaluation of individual and social risk factors is critical to prevent PPD. A

previous systemic review identified a history of depression and poor social support as risk factors for PPD (35). Although most studies on PPD during the pandemic have excluded patients with a history of depression from the survey, our data confirmed that patients with a history of a previous depressive episode were associated with a 5.5-fold increased risk for PPD during the pandemic. We thought it is essential to question whether patients have had a previous depressive episode and closely monitor those who need support during the pandemic.

Pregnancy is considered a stressful situation for women. The COVID-19 pandemic has also increased concerns regarding the possible effect of infection on fetal growth and the potential risk of vertical transmission from mother to fetus (36). Optimal attendance at antenatal care visits can help mothers to prevent having negative thoughts about themselves and their babies. Our data showed that regular attendance to antenatal care visits during the pandemic decreased PPD risk by 44%. Roumieh et al. showed that antenatal care had a protective effect on PPD (37). A recent study by Singh et al. reported that mental health education and proper counseling for pregnant women during routine antenatal care visits could help prevent postpartum depression (38). Healthcare professionals should give extra effort to checking the mental status of pregnant/postpartum women during the scheduled routine appointments. It would be wise to perform these examinations in less crowded units by following the hygiene rules of the pandemic period. It is essential to increase the number of healthcare professionals who can implement these measures not to interrupt mental status examinations.

Limitations

The optimal time to screen for PPD is between 2 weeks and 6 months after delivery, but it must be remembered that PPD peaks at the 2nd and 6th months after delivery (39). In our study, we surveyed women within one month of delivery. We thought that the lower prevalence of PPD in our study compared to other studies might be related to the fact that we conducted the questionnaire in the first postpartum month.

CONCLUSION

We thought that ensuring the optimal attendance of pregnant women to antenatal care visits and determining the risk factors for PPD, may help early detection of women at high risk for PPD. Prevention of possible adverse conditions for the mother and her baby by this approach may help to improve the harmful effects of the pandemic on maternal mental health.

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