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Has The Covid-19 Pandemic Increased Postpartum Depression Risk?**Covid-19 Pandemisi Postpartum Depresyon Riskini Artırdı mı?**Engin TURKGELDI¹
Şule YILDIZ¹ Orcid ID:0000-0002-5008-3292 Orcid ID:0000-0002-4803-7043¹ Dept. of Obstetrics and Gynecology, Koç University School of Medicine, Istanbul, Turkish Republic.**ÖZ**

Amaç: İstanbul'daki bir üçüncü basamak hastanede, pandemi öncesi ve sonrası Edinburgh Postpartum Depresyon Skalası (EPDS) skorlarını kıyaslayarak Coronavirus Disease 2019 (Covid-19) pandemisinin postpartum depresyon riskini artırıp artırmadığını araştırmak.

Gereç ve Yöntemler: Doğumlarından 10-14 gün sonraki takip muayenelerine gelen ve EPDS formlarını tamamlayan tüm kadınlar çalışmaya dahil edildi. Formları pandemiden önce (14 Ocak 2020 – 11 Mart 2020) tamamlayan kadınlar pandemi-öncesi gruba, formları 12 Mart 2020 – 28 Haziran 2020 arası dolduran kadınlar pandemi-sonrası gruba dahil edildi. Hastaların bazal özellikleri kaydedildi. Pandemi öncesi ve sonrası EPDS skorları kıyaslandı.

Bulgular: Yetmiş-üçü pandemi öncesi, 91'i pandemi sonrası olmak üzere toplam 164 kadın çalışmaya dahil edildi. Gravida ve paritenin pandemi sonrası dönemdeki hastalarda daha yüksek olması dışında, bazal özellikler iki grup arasında benzerdi. Medyan (25-75 persentil) EPDS skoru pandemi-öncesi grupta 7(4-11), pandemi sonrası grupta 6(3-10) hesaplandı ve aradaki fark istatistiksel olarak anlamlı bulunmadı ($p=0.39$). Skorları <9 ile ≥ 9 ; ve <13 ile ≥ 13 olan kadınların bazal özellikleri benzer bulundu.

Sonuç: PPD riski stresli olaylar ve destek eksikliğinde artmaktadır. Covid-19 pandemisinin ve kısıtlamaların PPD riskine etkisini bildiren az sayıda çalışmanın sonuçları çelişkilidir. Çalışma popülasyonumuzda pandemi öncesi ve sonrası PPD riskini benzer bulduk. Farklı şehirlerde ve sosyoekonomik gruplarda yürütülecek çok-merkezli prospektif çalışmalar, riskli alt grupları bulmada rol oynayabilir.

Anahtar kelimeler: postpartum depresyon, Covid-19, pandemi, Edinburgh postpartum depression skalası, Türkiye

ABSTRACT

Aim: To observe if Coronavirus Disease 2019 (Covid-19) pandemic had an impact on postpartum depression (PPD) risk in women who delivered in a tertiary hospital in Istanbul, Turkey, by comparing Edinburgh Postnatal Depression Scale (EDPS) scores before and after the pandemic was declared.

Materials and Methods: All women who attended to the postpartum follow-up visit within 10-14 days of their delivery and completed the EPDS form were included. Women who completed forms before the declaration of pandemic (between January 14, 2020, and March 11, 2020) were labeled as the pre-pandemic group, whereas those between March 12, 2020 and June 28, 2020 were designated as the post-pandemic group. Baseline characteristics were recorded. Pre-pandemic and post-pandemic EPDS scores were compared.

Results: A total of 164 women, 73 in the pre-pandemic and 91 in the post-pandemic period, were included in the study. Baseline characteristics were similar except for gravidity and parity, which were higher in the post-pandemic group. Median(25th-75th percentile) EPDS scores were similar at 7(4-11) and 6(3-10) in the pre- and post-pandemic periods, respectively ($p=0.39$). When we compared the characteristics of women with scores <9 and ≥ 9 ; and <13 and ≥ 13 , all characteristics were similar.

Conclusion: PPD risk increases with stressful events or lack of support. The handful of studies on the effect of Covid-19 pandemic and the restrictions related to it on PPD risk provide conflicting results. PPD risk was similar before and after pandemic in our population. Prospective, multi-centered studies from different cities and socio-economic backgrounds may identify subgroups at risk.

Keywords: postpartum depression, Covid-19, pandemic, Edinburgh postnatal depression scale, Turkey

INTRODUCTION

The novel Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2), causing the Coronavirus Disease 2019 (Covid-19), was first identified in Wuhan, China in December 2019 (1). In months, it spread to more than 100 countries worldwide and on March 11, 2020 World Health Organization (WHO)

officially declared Covid-19 as a pandemic (2).

Incidentally, this was the date the first case of Covid-19 was reported in Turkey(3). Globally, unprecedented precautions were taken, focusing mainly on limiting or slowing the spread of the virus(4). Most countries banned or limited traveling and social gatherings, promoted staying at home, limited commercial and

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production activities to essential ones only, and in harder-struck countries, implemented curfews, lockdowns, or quarantines. These major and rapid changes had significant impact on healthcare systems, economy, society, and daily life at local and global scale.

Due to the gravity and urgency of the Covid-19 disease itself, its repercussion on mental health is often overlooked. However, the pandemic, along with the restrictions and other social/economical implications, is expected to result in rise in mental health problems (5). This rise is expected to be more significant in some high-risk or vulnerable populations such as people with pre-existing mental conditions, healthcare workers, children, or pregnant women (6, 7). Pregnant and postpartum women are known to be at increased risk for mental problems such as anxiety and depression, and this risk increases with stressful events or lack of support (8).

The prevalence of postpartum depression varies greatly between age, race, country of residence, employment, socioeconomic and educational status (9). In a comprehensive meta-analysis, Woody et al. reviewed 96 studies reporting on the prevalence of perinatal and postnatal depression (10). Their adjusted pooled prevalence estimates showed postnatal depression prevalence to be 9.5% (95% CI 8.9–10.1) in countries with high-income, whereas it almost doubled in low-middle income countries to reach 18.7% (95% CI 17.8–19.7). In Turkey, the prevalence for postpartum depression is reported to be around 8-24% (11-13). Decreased social support, reduced physical activity, financial or employment problems increase the risk for postpartum depression (9). However, Covid-19 pandemic not only underscored these risk factors, but also introduced new stressors such as uncertainty about infection risk, maternal and fetal risks, possible short- and long-term complications or sequels, mortality risk, concerns about accessing proper healthcare if need be (14).

Postpartum depression and anxiety can have major, long lasting effects on the health of the woman and the child (15). Therefore, it is important to identify the possible effect of Covid-19 pandemic on the postpartum period on local and global basis. Despite some efforts, mental health of pregnant and postpartum women is a relatively neglected area of the Covid-19 research. Several studies, mostly cross-sectional and reporting only prevalence, have been performed at different corners of the world (16, 17). However, the results are conflicting. Moreover, prevalence and social structure, along with the severity of the pandemic and restrictions vary greatly between the countries, sometimes even between the regions of the same country.

Therefore, local studies play an important role in planning the care of patients in a given country or city and better serve its community.

In this study, we aimed to observe if Covid-19 pandemic had an impact on postpartum depression risk in women who delivered in a tertiary hospital in Istanbul, Turkey, by comparing Edinburgh Postnatal Depression Scale (EDPS) scores before and after the pandemic was declared.

MATERIALS AND METHODS

The protocol of this retrospective study was approved by the clinical research ethics committee of our university.

In our hospital, all women are invited for a follow-up visit between 10-14 days after delivery. Since January 14, 2020, we have implemented EPDS to our routine postpartum care. A trained nurse hands out the printed form to the woman and provides a calm and private environment for her to fill the form. All evaluations are done on the premises and in-person. The nurse scores the form and enters the score for each woman into the electronic patient follow-up form immediately, then informs the physician.

EPDS is a validated self-report tool to screen for mood disorders associated with postpartum depression (18). It is one of the standardized, validated screening tools for postpartum depression that American College of Obstetricians and Gynecologists recommends, with a sensitivity between 59-100% and specificity 49-100% (19). It has been translated to 50 languages, including a validated Turkish translation, which we currently use in our clinic (20). There are 10 questions in EPDS with scores ranging from 0 to 3 for each. The total score ranges from 0 to 30. A score of ≥ 13 is accepted as high risk for postpartum depression.

After the declaration of the pandemic on March 11, 2020, Turkish government implemented strict restrictions (21). All social gatherings were postponed. Most businesses such as restaurants, cafes, non-essential shops, shopping malls, gyms, movie theatres were closed. Traveling was restricted. Most companies switched to working from home, and education was continued online. Weekend lockdowns were imposed between March 11, 2020 – June 28, 2020. As for hospitals, non-essential services were either stopped or reduced working hours, non-essential surgeries were cancelled, visitors were not allowed in the hospital wards, and every patient could have only one person to accompany them during their stay to help them with their chores.

For the study, electronic records of Koc University Hospital Obstetrics and Gynecology Department Outpatient Clinic was screened to identify women who presented within 2 weeks of their delivery between January 14, 2021, and June 28, 2021. All women who attended to the postpartum follow-up visit within 10-14 days of their delivery and completed the EPDS form during this period were included in the study.

Women who completed their EPDS forms before the declaration of pandemic (between January 14, 2021, and March 11, 2020) were labeled as the pre-pandemic group, whereas those that filled the forms between March 12, 2020 and June 28, 2020 were designated as the post-pandemic group.

Baseline characteristics such as age, gravidity, parity, body mass index, method of conception, weight gained during pregnancy, smoking status, gestational week at delivery, method of delivery, fetal sex and weight, neonatal intensive care unit admission were recorded.

Primary outcome was the EPDS score before and after the pandemic. Secondary analysis included comparison of women with scores <9 and ≥9; and <13 and ≥13. The more widely accepted cut-off score for increased score of ≥13 provides a sensitivity between 62-96% and a specificity of 70-98% for mood disturbance and increased risk for postpartum depression, however, in some studies and screening programmes, a cut off score of 9 is used, providing a minimal false-positive rate with sensitivity of 89% and specificity of 51-93% for mood disturbance(22).

Histograms were used to evaluate distributions of the variables. Continuous variables with a nonparametric distribution were defined with median (25th–75th percentiles) and compared between the groups with Mann–Whitney U Test. Categorical variables were defined with numbers and percentages and compared with chi-squared test or its derivatives as appropriate. Two-sided P < 0.05 was considered statistically significant. Statistical Package for the Social Sciences (SPSS) version 26 was used for calculations.

RESULTS

A total of 164 women, 73 in the pre-pandemic and 91 in the post-pandemic period, were included in the study. Baseline characteristics were similar except for gravidity and parity, which were higher in the post-pandemic group. As for the primary outcome of our study, median (25th–75th percentile) EPDS scores were similar at 7 (4–11) and 6 (3–10) in the pre- and post-pandemic periods, respectively (p=0.39). These are pre-

sented in Table 1.

Table 1. Comparison of baseline characteristics and Edinburgh Postpartum Depression Scale scores of women evaluated in the pre-pandemic and post-pandemic periods.

	Prepandemic group (n=73)	Postpandemic group (n=91)	p
Age in years			
Median (25th-75th percentile)	32 (29-35)	32 (29-35)	0.71
Body mass index in kg/m²			
Mean (standard deviation)	27.86 (± 3.67)	28.52 (± 3.78)	0.27
Gravidity			
Median (25th-75th percentile)	1 (1-2)	1 (1-2)	<0.01
Parity			
Median (25th-75th percentile)	0 (0-0)	0 (0-1)	0.01
Smoking			
No	67 (91.8%)	86 (94.5%)	0.49
Yes	6 (8.2%)	5 (5.5%)	
Method of conception			
Spontaneous	63 (86.3%)	84 (92.3%)	0.21
Assisted Reproduction	10 (13.7%)	7 (7.7%)	
Weight gained during pregnancy in kg			
Mean (standard deviation)	13.9 (± 4.7)	14.8 (± 4.4)	0.22
Gestational week+day at delivery			
Median (25th-75th percentile)	39+0 (38+2.5 - 39+6)	38+4 (37+3 - 39+2)	0.13
Fetal birthweight in grams			
Median (25th-75th percentile)	3330 (3070-3545)	3270 (3080-3540)	0.93
Fetal Gender			
Girl	42 (57.5%)	42 (46.2%)	0.15
Boy	31 (42.5%)	49 (53.8%)	
Method of delivery			
Vaginal n (%)	26 (35.6%)	21 (23.1%)	0.08
Cesarean section n (%)	47 (64.4%)	70 (76.9%)	
NICU admission			
No n (%)	68 (93.2%)	86 (94.5%)	0.72
Yes n (%)	5 (6.8%)	5 (5.5%)	
EPDS Score			
Median (25th-75th percentile)	7 (4-11)	6 (3-10)	0.39

NICU: Neonatal Intensive Care Unit

EPDS: Edinburgh Postpartum Depression Scale

Continuous variables with a nonparametric distribution were defined with median (25th–75th percentiles) and compared between the groups with Mann–Whitney U Test. Categorical variables were defined with numbers and percentages and compared with chi-squared test or its derivatives as appropriate.

In another analysis, we compared if women with scores 9 or more had different characteristics than those with <9. All baseline characteristics and women's distribution in the pre- and post-pandemic periods were similar. These results are shown in Table 2. Likewise, another comparison with a cut-off value of 13 for EPDS score showed similar characteristics and period distribution. These are summarized in Table 2.

Table 2. Comparison of characteristics women with Edinburgh Postpartum Depression Scale scores of <9 and ≥9, and scores of <13 and ≥13.

	EPDS Score <9 (n=110)	EPDS Score ≥9 (n=54)	p	EPDS Score <13 (n=148)	EPDS Score ≥13 (n=16)	p
Time of evaluation						
Prepandemic n (%)	44 (40%)	29 (53.7%)	0.10	65 (43.9%)	8 (50%)	0.64
Postpandemic n (%)	66 (60%)	25 (46.3%)		83 (56.1%)	8 (50%)	
Age in years						
Median (25th-75th percentile)	32 (29-35.25)	31 (29-33)	0.39	32 (29-35)	30.5 (29.25-32)	0.17
Body mass index in kg/m²						
Median (25th-75th percentile)	27.98 (25.82-30.03)	27.81 (25.70-31.60)	0.54	27.93 (25.68-30.32)	28.23 (26.35-31.48)	0.35
Gravidity			0.44			0.90
Median (25th-75th percentile)	1 (1-2)	1 (1-2)		1 (1-2)	1 (1-2)	
Parity			0.47			0.85
Median (25th-75th percentile)	0 (0-1)	0 (0-0)		0 (0-0)	0 (0-1)	
Smoking						
No n (%)	102 (92.7%)	51 (94.4%)	0.68	139 (93.9%)	14 (87.5%)	0.33
Yes n (%)	8 (7.3%)	3 (5.6%)		9 (6.1%)	2 (12.5%)	
Method of conception						
Spontaneous n (%)	98 (89.1%)	49 (90.7%)	0.75	131 (88.5%)	16 (100%)	0.15
Assisted Reproduction n (%)	12 (10.9%)	5 (9.3%)		17 (11.5%)	0 (0%)	
Weight gained during pregnancy in kg						
Median (25th-75th percentile)	14 (12-18)	14 (11-16)	0.73	14 (12-17)	14 (10.25-17.5)	0.60
Gestational week+day at delivery			0.22			0.49
Median (25th-75th percentile)	38+6 (37+6 - 39+2)	38+4 (38+6.5 - 39+5.5)		38+6 (37+6 - 39+3)	39+0 (37+5 - 39+6.25)	
Fetal birthweight in grams						
Median (25th-75th percentile)	3265 (3090-3517)	3390 (3068-3573)	0.42	3330 (3100-3535)	3100 (3022-3593)	0.34
Fetal Gender						
Girl	51 (46.4%)	33 (61.1%)	0.07	77 (52%)	7 (43.8%)	0.53
Boy	59 (53.6%)	21 (38.9%)		71 (48%)	9 (56.3%)	
Method of delivery						
Vaginal n (%)	29 (26.4%)	18 (33.3%)	0.35	40 (27%)	7 (43.8%)	0.16
Cesarean section n (%)	81 (73.6%)	36 (66.7%)		108 (73%)	9 (56.3%)	
NICU admission						
No n (%)	104 (94.5%)	50 (92.6%)	0.62	139 (93.9%)	15 (93.8%)	0.98
Yes n (%)	6 (5.5%)	4 (7.4%)		9 (6.1%)	1 (6.3%)	
EPDS Score						
Median (25th-75th percentile)	5 (2-7)	12 (10-13)	<0.001	6 (3.25-9)	14.5 (13-17)	<0.001

NICU: Neonatal Intensive Care Unit

EPDS: Edinburgh Postpartum Depression Scale

Continuous variables with a nonparametric distribution were defined with median (25th-75th percentiles) and compared between the groups with Mann-Whitney U Test. Categorical variables were defined with numbers and percentages and compared with chi-squared test or its derivatives as appropriate.

DISCUSSION

In our study, we found similar EPDS scores in the pre- and post-pandemic periods, implying that the pandemic and the restrictions implemented did not significantly increase risk for postpartum depression in our patient population. Secondly, when we compared the characteristics of women with scores <9 and ≥ 9 ; and <13 and ≥ 13 , all characteristics were similar. This shows that none of the factors or characteristics we have accounted for are likely to have an impact on increased risk for postpartum depression.

Initially, we hypothesized that risk of postpartum depression could increase with the Covid-19 pandemic and restrictions, since a variety of stressors have aroused. First, direct concerns about the risk of being infected by the virus, hospitalization, death of themselves or their loved ones were present for postpartum women. It should be noted that when these questionnaires were filled, transmission methods, treatment, effects, risks of Covid-19 were mostly unknown. Data was especially scarce on pregnant women and fetuses/newborns. These women were faced with uncertainty about their risks and prospects, which could have contributed to their risk for mental health problems. Next, routine healthcare services were disrupted occasionally during the study period due to the strain on the healthcare systems. Moreover, even when regular services were provided, some people were reluctant to leave their house and go to a medical center due to worry of infection. Besides these issues directly related to the Covid-19, most women were isolated in a time they are especially in need of social support, both physically and mentally, due to restrictions. In addition to these, potential risk of shortages of basic supplies, occupational and financial concerns, and uncertainty about the duration and effect of the pandemic may have increased the risk for postpartum depression for some populations.

So far, there have been some effort to measure the impact of Covid-19 on postpartum depression. However, the results were conflicting. In a case-control study from the heavily stricken Northern Italy, 91 women who delivered during the pandemic showed significantly higher EPDS scores compared to controls (8.5 ± 4.6 vs 6.34 ± 4.1 ; $p < 0.001$). Another Italian study showed an increased prevalence of 44% for postpartum depression during the pandemic(23). In a cross-sectional study from China involving 864 women reported an increased prevalence of 30% for postpartum depression during the pandemic. Other studies from Spain and Poland also reported significantly higher pre-

valence for postpartum depression after the pandemic(24, 25).

On the other hand, a study in Israel with 223 women who delivered during the pandemic showed significantly decreased postpartum depression rates after the pandemic (26). The authors hypothesized that support from and bonding with family had increased in the pandemic restrictions, since partners and family worked from home and spent more time together. Interestingly, in a large study of 516 women postpartum in New York City, USA, women with high socioeconomic status showed no change in postpartum depression risk, however, improved mood was reported for women with low socioeconomic status (22).

Hessami et al. performed a meta-analysis of the studies on postpartum depression risk during the pandemic and pooled six studies calculating an overall mean EPDS score of 9.84 (95% CI 8.36 to 11.33) (16). When they pooled the results from the three studies comparing pre-pandemic and post-pandemic EPDS scores, despite the trend for higher scores in the post-pandemic period, the mean difference was similar between the two periods (SMD = 0.40, 95% CI: -0.05 to 0.86, $p = 0.083$; $I^2 = 98.0\%$).

The conflicts between the different studies are not surprising since the studies are heterogeneous and hard to compare for several reasons:

- i) Studies were conducted at different stages of the pandemic,
- ii) Studies took place in different countries with very different social norms, socioeconomic standards, healthcare system and facilities, and severity of the pandemic and restrictions,
- iii) Evaluation was performed at different days after delivery,
- iv) Basal incidence of postpartum depression differs considerably between countries, cities within the same country, or even hospitals within the same city,
- v) Some were cross-sectional and lacked a proper control group,
- vi) Differences in the methods of assessment (some used additional or alternative methods to measure anxiety and depression).

To the best of our knowledge, three studies have been performed in Turkey to assess the prevalence of postpartum depression risk during the Covid-19 pandemic. In the first study, an online survey was sent to 318 patients attending to a private medical center whose location was not specified, and 260 have

responded (27). In this cross-sectional study, the prevalence for increased postpartum depression risk was reported as 35.4%. Similarly, a cross-sectional study from Ankara used an online survey to evaluate 212 postpartum women and reported an increased prevalence of 34% (28). Most recently, in another cross-sectional study from Ankara, face-to-face interviews using EPDS were performed within 48 hours of delivery in a tertiary maternal hospital. Two-hundred twenty-three women were enrolled and median EPDS score was 7, with a postpartum depression risk prevalence of 14.7% (29).

This is the first report from a hospital in Istanbul, the most populated city in Turkey. We differ from the previous national studies by our cohort design, which allowed us to compare the same population before and during the pandemic. Cross-sectional studies by design can only report prevalence during the study period and are unable to assess the true change between the two periods in that specific population. They may compare it with previous reports of prevalence, but this is indirect and prone to be misleading. Another advantage of our study is that all evaluations were done in-person, unlike the two previous studies.

Besides these advantages over the national studies, our study has other strengths as well. We included all postpartum women who filled EPDS in our study, regardless of their medical history or characteristics. Moreover, unlike most other studies on the subject, we did not collect data from social media or online forms. These methods are prone to selection bias (women who are concerned about their health or have means/time/interest to access these media may be represented more; or women who are depressed may be less willing to participate in or complete the survey in the first place and may be underrepresented). These properties reduce selection bias in our study. Another strength of our study is the fact that it is a cohort study. Most international studies on the subject were cross-sectional and lacked a control group as well. Our design allowed us to compare the pre-pandemic and post-pandemic scores of women in the same population, allowing us to measure the impact of the pandemic on postpartum depression. Last of all, EPDS is a validated method to assess postpartum depression. However, some researchers warn that EPDS may be misleading if done in the first 10 days of delivery, since baby blues can be a confounding factor (10). All our evaluations were done between 10th and 14th day following postpartum, avoiding this.

However, our study has limitations as well. The foremost li-

mitation is its retrospective nature. We could not assess the socioeconomic or education status of the women, as this was not a part of our routine follow-up evaluation. This information could provide us with more insight into subgroups. A second limitation is that our population is a selected population, mostly with a middle- and high-income background, and may not be representative at a global or national scale. However, this is an issue with almost all maternal mental health studies since socioeconomic status, education, environmental and social factors play an important role in this area. Another drawback could be that we could not account for the seasonal change, because we did not have EPDS scores for the same months in the previous year. Last of all, some women, who had strong anxiety about the pandemic or were severely depressed after, may have not attended to the follow-up examination at all, and may be under-represented.

CONCLUSION

Toll of the Covid-19 pandemic on mental health should not be overlooked, especially in high-risk populations such as pregnant and postpartum women. Its prevalence can vary in different geographic and socioeconomic levels. Moreover, in these days of rapid changes in pandemic and its management by the governing bodies, prevalence of postpartum depression may fluctuate even in the same population. Therefore, constant screening would allow timely intervention and benefit the women and their children. We found similar risk for postpartum depression in the pre- and post-pandemic periods in our study population. Prospective, multi-centered studies from different cities and socioeconomic backgrounds may help identify specific subgroups at risk on a national level and assistance can be provided to them to reduce the morbidity of postpartum depression for the mother and the child.

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REFERENCES

1. Chen N, Zhou M, Dong X, Qu J, Gong F, Han Y, et al. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. *Lancet*. 2020;395(10223):507-13.
2. Mahase E. Covid-19: WHO declares pandemic because of "alarming levels" of spread, severity, and inaction. *Bmj*. 2020;368:m1036.
3. Ministry of Health TR. 2020 [Available from: <https://covid19.saglik.gov.tr/TR-66935/genel-koronavirus-tablosu.html>].
4. Anderson RM, Heesterbeek H, Klinkenberg D, Hollingsworth TD. How will country-based mitigation measures influence the course of the COVID-19 epidemic? *Lancet*. 2020;395(10228):931-4.
5. Organization WH. Mental health and psychosocial considerations during the COVID-19 outbreak 2020 [updated 18 March 2020. Available from: <https://apps.who.int/iris/bitstream/handle/10665/331490/WHO-2019-nCoV-MentalHealth-2020.1-eng.pdf>].
6. Cullen W, Gulati G, Kelly BD. Mental health in the COVID-19 pandemic. *Qjm*. 2020;113(5):311-2.
7. Duan L, Zhu G. Psychological interventions for people affected by the COVID-19 epidemic. *Lancet Psychiatry*. 2020;7(4):300-2.
8. Ford E, Ayers S. Stressful events and support during birth: the effect on anxiety, mood and perceived control. *J Anxiety Disord*. 2009;23(2):260-8.
9. Siu AL, Bibbins-Domingo K, Grossman DC, Baumann LC, Davidson KW, Ebell M, et al. Screening for Depression in Adults: US Preventive Services Task Force Recommendation Statement. *Jama*. 2016;315(4):380-7.
10. Woody CA, Ferrari AJ, Siskind DJ, Whiteford HA, Harris MG. A systematic review and meta-regression of the prevalence and incidence of perinatal depression. *J Affect Disord*. 2017;219:86-92.
11. Kokanalı D, Ayhan S, Devran A, Kokanalı MK, Taşçı Y. Sezaryen doğumun postpartum depresyona ve maternal bağlanmaya etkisi. *J Contemp Med* 2018;0(0):148-152.
12. Özcan NK, Boyacıoğlu NE, Dinç H. Postpartum Depression Prevalence and Risk Factors in Turkey: A Systematic Review and Meta-Analysis. *Arch Psychiatr Nurs*. 2017;31(4):420-8.
13. Oztora S, Arslan A, Caylan A, Dagdeviren HN. Postpartum depression and affecting factors in primary care. *Niger J Clin Pract*. 2019;22(1):85-91.
14. Liang P, Wang Y, Shi S, Liu Y, Xiong R. Prevalence and factors associated with postpartum depression during the COVID-19 pandemic among women in Guangzhou, China: a cross-sectional study. *BMC Psychiatry*. 2020;20(1):557.
15. Surkan PJ, Ettinger AK, Ahmed S, Minkovitz CS, Strobino D. Impact of maternal depressive symptoms on growth of preschool- and school-aged children. *Pediatrics*. 2012;130(4):e847-55.
16. Hessami K, Romanelli C, Chiurazzi M, Cozzolino M. COVID-19 pandemic and maternal mental health: a systematic review and meta-analysis. *J Matern Fetal Neonatal Med*. 2020 Nov 1:1-8.
17. Yan H, Ding Y, Guo W. Mental Health of Pregnant and Postpartum Women During the Coronavirus Disease 2019 Pandemic: A Systematic Review and Meta-Analysis. *Front Psychol*. 2020;11:617001.
18. Cox JL, Holden JM, Sagovsky R. Detection of postnatal depression. Development of the 10-item Edinburgh Postnatal Depression Scale. *Br J Psychiatry*. 1987;150:782-6.
19. ACOG Committee Opinion No. 757: Screening for Perinatal Depression. *Obstetrics & Gynecology*. 2018;132(5):e208-e12.
20. Aydin N, Inandi T, Yigit A, Hodoglugil NN. Validation of the Turkish version of the Edinburgh Postnatal Depression Scale among women within their first postpartum year. *Soc Psychiatry Psychiatr Epidemiol*. 2004;39(6):483-6.
21. Guerin O. Coronavirus: How Turkey took control of Covid-19 emergency 2020 [Available from: <https://www.bbc.com/news/world-europe-52831017>].
22. Silverman ME, Burgos L, Rodriguez ZI, Afzal O, Kalishman A, Callipari F, et al. Postpartum mood among universally screened high and low socioeconomic status patients during COVID-19 social restrictions in New York City. *Sci Rep*. 2020;10(1):22380.
23. Spinola O, Liotti M, Speranza AM, Tambelli R. Effects of COVID-19 Epidemic Lockdown on Postpartum Depressive Symptoms in a Sample of Italian Mothers. *Front Psychiatry*. 2020;11:589916.
24. Mariño-Narvaez C, Puertas-Gonzalez JA, Rome-

ro-Gonzalez B, Peralta-Ramirez MI. Giving birth during the COVID-19 pandemic: The impact on birth satisfaction and postpartum depression. *Int J Gynecol Obstet*, 2021;153(1):83-8.

25. Stepowicz A, Wencka B, Bienkiewicz J, Horzelski W, Grzesiak M. Stress and Anxiety Levels in Pregnant and Post-Partum Women during the COVID-19 Pandemic. *Int J Environ Res Public Health*. 2020 Dec 17;17(24):9450.

26. Pariente G, Wissotzky Broder O, Sheiner E, Lanxner Battat T, Mazor E, Yaniv Salem S, et al. Risk for probable post-partum depression among women during the COVID-19 pandemic. *Arch Womens Ment Health*. 2020;23(6):767-73.

27. Durankuş F, Aksu E. Effects of the COVID-19 pandemic on anxiety and depressive symptoms in pregnant women: a preliminary study. *J Matern Fetal Neonatal Med*. 2020 May 18:1-7.

28. Guvenc G, Yesilcinar İ, Ozkececi F, Öksüz E, Ozkececi CF, Konukbay D, et al. Anxiety, depression, and knowledge level in postpartum women during the COVID-19 pandemic. *Perspect Psychiatr Care*. 2020 Dec 18:1–10.

29. Oskovi-Kaplan ZA, Buyuk GN, Ozgu-Erdinc AS, Keskin HL, Ozbas A, Moraloglu Tekin O. The Effect of COVID-19 Pandemic and Social Restrictions on Depression Rates and Maternal Attachment in Immediate Postpartum Women: a Preliminary Study. *Psychiatr Q*. 2020;92:675–682.