



## The effects of quarantine on postpartum depression, sleep quality and breastfeeding: Comparison of two different intensity period

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### Abstract

The aim of this study is to investigate the effects of quarantine/social isolation on maternal depression, breastfeeding and sleep quality in mothers who have just given birth during the pandemic period that has affected the whole world. This cross-sectional study included women who gave birth during either in the first peak of the first wave (April, 2020) or the end of the first peak (July, 2020) of the Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) pandemic in a tertiary pandemic regional referral centre. A total of 210 patients were enrolled to the study. The research data were collected using specific questionnaires including the Pittsburgh Sleep Quality Index (PSQI), the Edinburgh Postpartum Depression Scale (EPDS) and the Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF). As a result, maternal postpartum depression and sleep quality scores did not differ significantly among postpartum women with different timelines according to the intensity of the SARS-CoV-2 pandemic ( $p=0.205$  and  $p=0.352$ , respectively). The Breastfeeding Self-Efficacy Scale was significantly better ( $p=0.000$ ) in the post-quarantine period than in the early stages of the pandemic when there were strict quarantine regulations. In conclusion, Sleep quality and postpartum depression remained unchanged with regard to the severity of the quarantine among women who gave birth during the SARS-CoV-2 pandemics. The breastfeeding self-efficacy of mothers was found as improved in the post-quarantine period.

**Keywords:** breastfeeding, postpartum depression, quarantine effects, sleep quality

### 1. Introduction

Coronavirus Diseases-19 (COVID-19) pandemic had devastating effect on public health, mental health and caused financial crisis at global level (15). Vulnerable populations including children, elder, disabled people and pregnant women were the most affected. The Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) pandemic condition creates an additional risk factor likely to increase the stress on pregnant women who are already prone to depression and anxiety (4, 12, 28). Besides that being pregnancy is already known as an important risk factor for having more severe disease during the pandemic, pregnancy may be a delicate state for possible social and mental consequences (28).

The mostly studied mental health issues including anxiety and depression were found to be impaired in pregnancy during the outbreak (4, 28). Quarantine has physiological and psychological impacts on individuals and social groups (9). Emotional and mental wellbeing of new mothers can seriously be affected from the possible long-term

consequences of quarantine.

Postpartum depression may negatively affect a woman's self-esteem, self-efficacy, children's care and development, and responsibilities and roles related to her family and spouse (22). Therefore, early diagnosis and treatment of postpartum depression is important. Unfortunately, despite its negative impact on maternal health, postpartum, postpartum depression is often under-diagnosed and under-treated (5). The period of postnatal mothers with poor mental or emotional health are less likely to breastfeed (26). In addition, breastfeeding has a positive psychological impact on the postpartum mother period, improving her well-being, increasing her self-efficacy and her interaction with the infant (19, 21). The relationship between breastfeeding and postpartum depression may be bidirectional in nature, suggesting that while postpartum depression may reduce rates of breastfeeding, not engaging in breastfeeding may increase the risk of postpartum depression (14). Sleep disturbances may affect mood or even precede or

develop as a result of mood disorder as the first symptom of new or recurrent depressive episodes (3). Breastfeeding of the baby in the postpartum period may protect against depression or help the symptoms improve faster (14). Impaired maternal sleep may disrupt the mother's mood and thus impair breastfeeding self-efficacy (22, 18).

Depression, breastfeeding and sleep are three important factors that can affect the emotional/mental wellbeing of mothers following birth. The detrimental mental impacts of quarantine and social isolation can be massive and long lasting (7). The aim of this study was to investigate the extent of quarantine/social isolation effect on maternal depression, breastfeeding and sleep quality in mothers recently gave birth during the pandemic.

## 2. Methods and Methods

This cross-sectional study included women who gave birth during either in the first peak of the first wave (April, 2020) or the end of the first peak (July, 2020) of the SARS-CoV-2 pandemic in a tertiary pandemic regional referral center. April and July of 2020 were the most and least intense of the first peak of the first wave of the pandemics in Turkey, respectively. Strict restrictions were in effect in April, 2020 while easing the restrictions and re-opening for tourism were in action in July, 2020 in Turkey (T.R. Ministry of Health Covid-19 Information Platform [web page]., 2020).

**Table 1.** Patient characteristics and demographics

	Overall				April & June
	Mean	SD	Median	IQR	P*
Age	28.15	5.753	27.00	8	0.226 <sup>a</sup>
Parity	2.28	1.131	2.00	2	0.919 <sup>b</sup>
	April	June	April	June	
	15 (20%)	15 (20%)	15 (20%)	15 (20%)	0.319 <sup>c</sup>
Education level	2.18	.998	2.00	2	0.068 <sup>c</sup>
Profession	.07	.357	.00	0	0.211 <sup>c</sup>
Education of partner	2.53	.999	3.00	1	0.579 <sup>c</sup>
Profession of partner	.96	.218	1.00	0	0.412 <sup>c</sup>
Health insurance	.95	.247	1.00	0	0.485 <sup>c</sup>
Support of mother	.22	.416	.00	0	0.065 <sup>c</sup>
Covid-19	.08	.270	.00	0	0.299 <sup>c</sup>
Delivery method	1.37	.485	1.00	1	0.562 <sup>c</sup>
Newborn incubator	.11	.317	.00	0	0.120 <sup>c</sup>
Planned pregnancy	.83	.378	1.00	0	0.094 <sup>c</sup>

\*Sub-groups comparison between patients evaluated in April (n= 98) and in June (n=106). <sup>a</sup>Independent Samples T test, <sup>b</sup>Mann Whitney U test, <sup>c</sup>Chi-Square tests

Mothers aged between 18 and 44 years, who gave birth to healthy babies following a low-risk pregnancy. Women with active SARS-CoV-2 infection, an ongoing or a history of neuropsychiatric or psychological disease, any chronic health problems that may affect breastfeeding and sleep quality, newborns with anomalies, those with a birth weight below 2500 g, those who gave birth before <37 weeks and those who had perinatal problems were excluded. Syrian refugees

who were not able to make phone calls were also excluded.

Primary outcome was to capture the emotional/mental wellbeing related to the motherhood of women during the SARS-CoV-2 pandemic including the postpartum depression status, sleep quality, breastfeeding confidence/self-efficacy and infant feeding practices. Our null hypothesis was that emotional wellbeing of new mothers did not change by the intensity of the SARS-CoV-2 pandemic. To test the null hypothesis, Edinburgh Postpartum Depression Scale (EDPS), Pittsburgh Sleep Quality Index (PSQI) and the Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF) were performed by phone interview. Women were asked to complete the questionnaires at 6-8 weeks after birth in order to avoid misleading results due to the motherhood sadness. The infant feeding practices were categorized as exclusive breast milk, breast milk and formula, or exclusive formula, according to the WHO criteria (29). Social, demographic and obstetric data were noted. All patients gave written informed consent and approved for publication before data collection. All procedures were in accordance with the 1964 Helsinki Declaration and its later amendments. This study followed the principles of the Declaration of Helsinki and was approved by the Ethics Committee University of Health Sciences Turkey, Sehit Prof. Dr. Ilhan Varank Sancaktepe Training and Research Hospital (registry no: 20/22), Scientific Board of the Health Ministry and the local institutional administration board approved the study.

### 2.1. Measures

#### 2.1.1. Edinburgh Postnatal Depression Scale (EPDS)

This scale, which aims to determine the risk of depression in women in the postpartum period, was prepared for screening purposes and is not intended to diagnose depression. EPDS is a self-report scale in 4-point Likert format, consisting of 10 items. Answers consisting of four options are scored between 0 and 3, the lowest score that can be obtained from the scale is 0 and the highest score is 30. In the evaluation, items 1, 2, and 4 were scored as 0,1,2,3, while items 3, 5, 6, 7, 8, 9, and 10 were scored as 3,2,1,0. The cut-off point of EPDS was previously calculated as 13, and women with a scale score of 13 or more were considered as in the risk group (16).

#### 2.1.2. Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF)

The BSES-SF is a 14-item self-administered instrument derived from the original 33-item BSES that measures breastfeeding confidence (11). All items are in positive direction and are preceded by the phrase "I can always" and rated on a 5-point Likert scale, ranging from 1 (not at all confident) to 5 (always confident). Total scores range from 14 to 70, with higher scores reflecting more significant levels of breastfeeding self-efficacy.

#### 2.1.3. Infant Feeding Practices

The questionnaire asked for current infant feeding (exclusive breast milk, breast milk and formula, or exclusive formula).

Feeding practices were then categorized as exclusive breastfeeding (EBF) (exclusive feeding on mother's own milk) or mixed breastfeeding (MBF) (infant who had received predominantly formula along with breast milk or other milk, without complementary foods) according to World Health Organization criteria (29).

#### 2.1.4. Pittsburgh Sleep Quality Index (PSQI)

Sleep was assessed using the 19-item PSQI, which is a self-report questionnaire that assesses sleep quality and disturbances during the previous month (8). The seven component subscales include subjective sleep quality (i.e., subjective self-rating of sleep quality), sleep latency (i.e., how long it takes to fall asleep at night), sleep duration (i.e., amount of nighttime sleep), habitual sleep efficiency (i.e., percentage of time asleep when in bed), sleep disturbances (i.e., number of awakenings during the night), use of sleep medication, and daytime dysfunction (i.e., difficulty staying awake during the day). This scale has good internal consistency, test-retest reliability, and validity. Poorer sleep quality is indicated by higher PSQI global and subscale scores, with a global score of > 5 indicating poor sleep in the general population. The diagnostic sensitivity and specificity were 89.6% and 86.5% respectively in one study among adults with and without sleep disorders (2). Several studies have used the PSQI with postpartum women (17).

#### 2.2. Statistics

The collected data were analyzed with SPSS version 22.0 (IBM Corp., Armonk, NY, USA). The normality of the demographic data was assessed with the Shapiro-Wilk test. Demographic data were summarised as the median and interquartile range for non-normally distributed data and as the mean and standard deviation for normally distributed data. Specific statistical tests were stated in each tables. A p-value of less than 0.05 was considered significant.

### 3. Results

A total of 210 patients were enrolled to the study. Five of those were excluded due to psychiatric disorders (n=2), low data quality (n=3) and not giving consent (n=1). A total of 204 women were included to the final analysis.

Ninety-eight women (48%) gave birth during the strict quarantine regulations in April and 106 (52%) gave birth while controlled social life regulations were in effect following the end of the first wave of the pandemic. Out of all women, 7.8% (n=16) previously had SARS-CoV-2 infection. Social and demographic features of women were found as similar in both different timelines (Table 1).

Maternal PSQI and EPDS did not significantly differ between postpartum women in different timeline according to the intensity of the SARS-CoV-2 pandemic (Table 2). BFES-SF were found decreased in women who gave birth during the strict quarantine when compared to women in post-quarantine period with a mean difference of 4.5 points (95% CI: 6.28-2.66,  $p < 0.001$ , Table 2). Out of all women, 70.59% (n=144) reported that they solely breastfed, 27.94% (n=57) required additional formula and 1.47% (n=3) used formula exclusively. The use of additional formula did not affect the PSQI and EPDS test scores with a mean difference of 0.105 and 0.614, respectively. (Independent Samples T test;  $p = 0.804$  and  $p = 0.411$ , respectively).

In the postpartum period, depressive symptoms are observed in approximately 80% of mothers in the first two weeks and these symptoms regress spontaneously after two weeks. The depressive mood seen in this period is defined as "motherhood sadness-baby blues" and is considered as an entity separate from postpartum depression (24). Considering this situation, mothers with 2 weeks-18 months old babies were included in the study, considering that the application of EPDS to mothers who did not complete two weeks after birth would cause misleading results.

**Table 2.** Comparison of maternal depression, breastfeeding and sleep quality between postpartum women in different timeline according to the intensity of the SARS-CoV-2 pandemic

	Overall		April <sup>a</sup>	July <sup>b</sup>	95% CI	Mean Difference	P
	Mean±SD	Min-Max	Mean±SD	Mean±SD			
EPDS (n=204)	3.93±4.85	0-19	4.38±5.21	3.51±4.48	-0.48 to 2.21	0.87	0.205
BSES-SF (n=201)*	64.54±6.72	29-70	63.2±7.83	66.68±4.61	-6.28 to -2.66	-4.47	0.000
PSQI (n=204)	7.04±2.79	1-20	6.85±3.26	7.22±2.27	-1.15 to 0.41	-0.37	0.352

Independent Samples T Test. <sup>a</sup> Denotes the strict quarantine regulations, <sup>b</sup> controlled social life without restrictions. \* Three patients were excluded due to inability to breastfeeding BSES-SF: Breastfeeding Self-Efficacy Scale-Short Form, EPDS: Edinburgh Postnatal Depression Scale, PSQI: Pittsburgh Sleep Quality Index.

#### 4. Discussion

This study showed that women who gave birth during the COVID-19 pandemic had poor sleep quality and relatively low risk for postpartum depression. A vast majority of women (98.5%) breastfed with or without formula support. The postpartum depression risk and the sleep quality of mothers were found similar when compared within two distinct period of the pandemic including the peak of first wave with strict quarantine regulations and after the end of the first wave where pro-active regulatory measures were softened. The

breastfeeding self-efficacy was found as improved in post-quarantine period.

Postpartum women tend to experience more psychological disturbances due to additional concerns about their babies when facing a major public health event (12). Postpartum depression and poor sleep quality are important health problems that seriously affects the quality of life of postpartum women and, care and nutrition of their babies (10, 23). Women after giving birth may be more susceptible to depression and deterioration in sleep quality during the quarantine measures when compared to the general

population due to safety concerns for their babies, fear of getting SARS-CoV-2 infection, increased need for social support and postpartum care and their physiological and psychosocial adaptive conditions (9).

In the current study, the postpartum depression risk scores of postpartum women were found lower than the generally accepted cut-off scores. Moreover, this low-risk trend did not change in between the quarantine and post-quarantine periods. We speculate that this finding can be explained by the feeling of mothers that quarantine is helping to keep themselves and newborns safe (7). Therefore, comply with isolation and protection rules may have been unchanged during the transition from strict quarantine regulations to post-quarantine period. Adequate public information with the visual and printed media during the study setting may have increased the level of knowledge on COVID-19 in the society including pregnant and postpartum women, and therefore, may have helped to prevent from postpartum depression and its related effects (28) It is known that inadequate information about the SARS-CoV-2 infection plays an important role in increasing the levels of fear, anxiety, depression, and other symptoms (7). The quarantine precautions may disturb the sleep patterns and quality (9). Physical inactivity during the quarantine period, and the breastfeeding of mothers may cause the sleep quality to deteriorate (1). During the early phases of the COVID-19 pandemic, many people reported not being able to fall asleep early or maintain an adequate amount of sleep (13). Postpartum women are already more likely to experience sleep deprivation and chronic sleep disturbances compared to non-pregnant women (23). In this study the sleep quality scores of women in their postpartum period were found to be poor in two different periods of the quarantine. However, it was not possible to distinguish whether this effect was either due to the naturally poor sleep quality of women in the postpartum period or the quarantine effect. Despite all these findings, the decrease in the physical activity of postpartum women, particularly during the quarantine period, breastfeeding at night and the time spent by mothers for the care of their babies, and the anxiety caused by the fear of catching the disease may have a negative effect on sleep quality.

BSES-SF is a strong predictor of breastfeeding duration and level. Maternal BSES-SF is a modifiable factor that reflects the confidence of postpartum women in breastfeeding (6). Therefore, it is important to have a better BSES-SF score for the breastfeeding continuity as well as high breastfeeding rates. In this study, the rate of pure breastfeeding and breastfeeding plus formula were found to be quite high in both quarantine periods. Early in the pandemic, there was no consensus on guidelines recommending women with COVID-19 infection to breastfeed. Those uncertainties and limited data have raised concerns about breastfeeding in women infected with SARS-CoV-2 (20). As time progress, the Royal College of Obstetrics and Gynaecology has begun to

recommend the promotion and support of breastfeeding for mothers with suspected or low COVID-19 infection (<https://www.rcog.org.uk/globalassets/documents/guidelines/2021-02-19-coronavirus-covid-19-infection-in-pregnancy-v13.pdf>, Accessed on 25.05.2021). Supporting this information may lead to an increase in breastfeeding self-efficacy, especially in the post-quarantine period, as in our study.

However, the stress caused by strict quarantine measures in April, 2020 had deleterious psychological effects on society and breastfeeding postpartum women may have caused their self-efficacy scores to decline (27). In our study, we found impaired BSE scores during the strict quarantine period, while we observed an increase in breastfeeding self-efficacy scores in the post-quarantine period.

In conclusion, sleep quality and postpartum depression were found to be remained unchanged with regard to the severity of the quarantine among women who gave birth during the SARS-CoV-2 pandemics. The breastfeeding self-efficacy of mothers was found as improved in post-quarantine period.

#### Conflict of interest

None to declare.

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None to declare.

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