

## Psychological Effects of Covid-19 Quarantine Measures on Mothers in the Positive Period

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### ABSTRACT

**Goal:** to investigate whether hospital quarantine measures enhance psycho-emotional distress in the immediate postpartum period for women giving birth in the COVID-19 hot spot.

**Methods:** We designed a case-control study of mothers who gave birth during the COVID-19 quarantine period from April 3 to June 11, 2020 (COVID-19 study group), with a prior group of comparable postpartum women (control group) who gave birth on the same period in 2019. Participants completed the Edinburgh Postpartum Depression Scale (EPD) on the second day after delivery.

**Results:** The COVID-19 study group ( $n = 91$ ) had significantly higher mean ESRD scores compared to the control group ( $n = 101$ ) ( $8.5 \pm 4.6$  vs.  $6.34 \pm 4.1$ ;  $P < 0.001$ ). In addition, 28.6% of women in the COVID-19 group had an overall ESR score above 12. Analysis of the three ESRD subscales showed significantly higher scores in the COVID-19 group compared to the control group for anhedonia ( $0.60 \pm 0.61$  versus  $0.19 \pm 0.36$ ).  $P < 0.001$ ) and depression ( $0.58 \pm 0.54$  versus  $0.35 \pm 0.45$ ;  $P = 0.001$ ).

**Conclusions:** Concerns about the risk of COVID-19 infection, combined with quarantine measures taken during the COVID-19 pandemic, negatively affected the thoughts and emotions of young mothers, exacerbating depressive symptoms.

**KEYWORDS:** depression, coronavirus infection, quarantine, postpartum period

### INTRODUCTION

Birth is one of the most important events in nature. In the postpartum period, mothers experience physiological and mental changes, from minor changes to visible psychoses. Mental health disorders in the postpartum period in women include anxiety, depression, and psychosis.

Postpartum depression (postpartum depression) is a serious medical and social problem that affects the health of many mothers, complicates the health care system with costs and leads to family conflicts. Symptoms of maternal depression often negatively affect offspring when cognitive, emotional, and behavioral disorders are observed.

Several studies have documented the psycho-emotional vulnerability of the mother during catastrophic events [1, 2, 4]. Trauma, terrorist attacks, natural disasters, and man-made disasters (eg earthquakes, tsunamis and Chernobyl) were predictors of symptoms of postpartum depression in mothers in general [2, 6]. Following the outbreak of Severe Acute Respiratory Syndrome (SARS) in 2003, both healthcare professionals and individuals who are self-reliant, quarantined exhibited symptoms of PTSD [3, 7]. Therefore, the impact of stress caused by COVID cannot be ignored- 19, on pregnant women.

Pregnant women are considered a risk group for viral respiratory infections with possible consequences for the mother and fetus; however, there is currently little information on the

exposure of pregnant women to COVID-19 [8, 10]. People in quarantine can experience a wide range of feelings, including fear, anger, sadness, irritability, guilt, or confusion, which can make isolation difficult for the mother's health [9, 13].

Purpose of the study was to find out the impact of quarantine measures in hospitals for women giving birth in an area with a high risk of COVID-19 on psychoemotional distress in the immediate postpartum period.

## MATERIALS AND METHODS

The study was conducted in the near postpartum period in women who gave birth in the Bukhara region of the Kagan maternity complex (COVID -19). We also recruited a control group of women who lived in the same geographic area and gave birth in the hospital at the same time period as the study group, but in the previous year. (2019). This was possible because they had permission to access their obstetric records, which included basic personal information, education, medical history and contact information. The data collection was approved by the Bukhara Oblast Ministry of Health. All women were provided with information sheets and they were included in the study after signing a consent form.

Understanding the relationship between stress and maternal health is critical to developing a comprehensive support system in the face of a highly contagious pandemic. With this in mind, we tested for the presence of anhedonia, anxiety and depression using the Edinburgh Postpartum Depression Scale (ESAP) in the immediate postpartum period [10, 12]. Edinburgh Postnatal Depression Scale is a clinical screening technique in the form of a self-questionnaire, and consists of 10 items, assessed using a four point Likert scale (0-3), designed to detect depressive disorders in the prenatal and postpartum periods. It was developed in 1987 in Edinburgh and Livingston by JL Cox, JM Holden, R. Sagovsky [11].

Postpartum depression represents the end of the symptom severity continuum. The present study used a cut-off point for the risk of depressive symptoms higher than 12. Several authors examined the structure of ESRD and found that, along with the risk of postpartum depressive symptoms, it also measures anxiety and anhedonia [12, 14]. We have extracted three subscales from the ESHP: anhedonia subscale (items 1 and 2); anxiety subscale (items 3–6); and the depression subscale (items 7-10). In accordance with standard delivery procedures, in the absence of obstetric or neonatal complications, the length of hospital stay was 48 hours for both vaginal delivery and caesarean section. During the study period (from April 3 to June 11 during the quarantine period for COVID-19), the ESR was distributed before discharge to 61 women (main group) on the second day after giving birth. For the corresponding period of 2019, ESPD was distributed to 71 women (control group).

The global ESRD score and the values of the three subscales of anhedonia, anxiety and depression were determined for the study and control groups. Continuous variables were analyzed using an independent sample t-test, while Fisher's exact test was used to analyze qualitative variables.  $P < 0.05$  was considered statistically significant.

## RESULTS

Age of women in the study groups was from 18 to 39 years old, the average age was  $32.73 \pm 4.11$  and  $33.18 \pm 4.17$ , respectively, which had no significant differences. There were also no significant differences in gestational age.

As presented in Table 1, there were no significant differences between groups across all

data, with the exception of neonatal weight at birth, which was significantly lower in children born during the COVID-19 pandemic compared to the previous year ( $3354.51 \pm 374.2$  versus  $3478.60 \pm 409.8$  g;  $P = 0.031$ ).

**Table 1. Clinical features of parturient women among the surveyed groups**

| Specifications             | Main Group          | Control group       | P value |
|----------------------------|---------------------|---------------------|---------|
| Nulliparous                | 33 (54.1)           | 38 (53.5)           | 0.774   |
| Re-pregnant                | 28 (45.9)           | 33 (46.5)           | 0.774   |
| Natural childbirth         | 53 (86.9)           | 62 (87.3)           | 0.830   |
| Cesarean section           | 8 (13.1)            | 9 (12.7)            | 0.830   |
| Newborn weight at birth, g | $3254.51 \pm 374.2$ | $3578.60 \pm 419.8$ | 0.031   |

The pre-discharge ESR, anhedonia, anxiety and depression subscale scores collected on the second day after childbirth for the COVID-19 study group and the control group are shown in the table 2. The mean ESRD scores were significantly higher in the COVID-19 study group compared to the control group ( $8.5 \pm 4.6$  vs.  $6.34 \pm 4.1$ ;  $P < 0.001$ ). The percentage of high-risk women with an overall ESRD score above 12 was also significantly higher in the COVID-19 group compared to the control group (28.6% vs. 11.9%;  $P = 0.006$ ).

**Table. 2. Edinburgh Postpartum Depression Scale, points on the subscales of anhedonia, anxiety and depression among the surveyed groups**

| Scale                            | Main group      | Control group   | P value  |
|----------------------------------|-----------------|-----------------|----------|
| Total score for ESHPD            | $8.5 \pm 4.6$   | $6.34 \pm 4.1$  | $<0.001$ |
| <b>Subscale analysis of ESRD</b> |                 |                 |          |
| Anhedonia                        | $0.60 \pm 0.61$ | $0.19 \pm 0.36$ | $<0.001$ |
| Anxiety                          | $1.28 \pm 0.61$ | $1.14 \pm 0.73$ | 0.141    |
| Depression                       | $0.58 \pm 0.54$ | $0.35 \pm 0.45$ | 0.001    |
| Global ESHPD rating > 12         | 26 (28.6)       | 12 (11.9)       | 0.006    |

Analysis of the ESRD subscale showed that the mean scores for anhedonia, anxiety and depression were higher in the main group compared to the control group, although the differences were significant only for anhedonia ( $0.60 \pm 0.61$  vs.  $0.19 \pm 0.36$ ;  $P < 0.001$ ) and depression ( $0.58 \pm 0.54$  versus  $0.35 \pm 0.45$ ;  $P = 0.001$ ).

The type of the autonomic nervous system among the examined women after the birth period, depending on the history of covid-19: the eitonic variant of the autonomic tone was significantly more frequent in the control group in relation to the main group (60.0% versus 5.7%;  $P < 0.01$ ), the vagotonic variant occurred with almost the same frequency both in the control group and in the main group (11.3% versus 10.0%, respectively;  $P > 0.05$ ), while the sympathicotonic type of ANS was significantly more frequent in the main group (29.0 versus 84.3%, respectively;  $P < 0.05$ ).

The value of the average indicators of EEG rhythms in women after childbirth (in% to the level of women without Covidin history): The results of the study suggest that during pregnancy, progesterone, including with the participation of the endogenous sensitizer beta-adrenergic

receptors, increases the activity of neurons in the suprasegmental and segmental divisions of the sympathetic division of the ANS. This is evidenced by an increase in the power of the theta rhythm, index and amplitude of the beta1 rhythm, as well as the index, amplitude and power of the beta2 rhythm. For women after childbirth who underwent covid-19, an increase in slow-wave EEG activity, a decrease in EEG coherence is characteristic.

## DISCUSSION

This study found that women giving birth during the COVID-19 quarantine period between April 3 and June 11, 2020, showed higher ESR scores compared to a control group of mothers who gave birth during the same period of the previous year. ... In addition, nearly 30% of women in labor in the COVID-19 group had an overall ESR score above 12, which could lead to a higher risk of postpartum depression. An analysis of the three ESRD subscales revealed significantly higher anhedonia and depression scores in the core group, highlighting additional useful ESRD criteria that could provide a better understanding of the range of various negative psychological problems that the COVID-19 pandemic can cause. among pregnant women and women in labor.

The results of the study indicate that postpartum psychological responses during the COVID-19 pandemic may be mediated by ESRD symptoms that are severe enough to predict a higher risk of postpartum depression. Consequently, during the COVID-19 pandemic, pregnant women and women in labor are a vulnerable high-risk group that must be closely monitored to minimize postpartum mental dysfunction. To prevent the deterioration of the psychological health of women in labor, which is exacerbated by social deterrence, medical and psychiatric interventions must be performed immediately [9, 11, 12].

These findings may have some clinical implications. Pregnancy can be a difficult time for many expectant mothers [14, 15]; however, the COVID crisis-19 adds a new level of concern about how the pandemic will affect their baby's birth. Research has shown pretty strong evidence that exposure to various stressors during pregnancy is associated with an increased risk of symptoms of postpartum depression and emotional problems. Women in the COVID-19 group reported a variety of negative psychological emotions, such as anhedonia and depression, and had a higher risk of postpartum depression, as evidenced by an ESRD score above 12 in one in three mothers [10, 12, 13]. Postpartum depression is the result of a dynamic interaction of biological, psychological and social risk factors, all of which may increase during the current COVID pandemic-19 [12, 16]. The COVID-19 pandemic is yet another example of a catastrophic event that can trigger symptoms of postpartum depression [1, 5].

## CONCLUSION

Given the small sample size, this study may not be powerful enough to demonstrate the significant impact of the COVID-19 pandemic on newborn birth weight, which is necessary for further research. Thus, the present study makes an important contribution to understanding the impact of natural infectious disease on pregnant women. The results of the study also show that quarantine and hospitalization measures taken in the COVID-19 zone had a strong psycho-emotional impact on women giving birth during this period, as evidenced by increased ESRD and depression subscale scores in the immediate postpartum period. Concerns about the risk of COVID-19 infection, combined with quarantine measures, can exacerbate symptoms of depression and negatively affect the thoughts, emotions and functioning of women in labor.

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## CONFLICT OF INTEREST

The authors declare that they have no competing interests.

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