Research Article

The Prevalence of Post-traumatic Stress Disorder (PTSD) Symptoms in Women Hospitalized Due to COVID-19 Infection during Pregnancy in Indonesia and Its Association with Employment Status and Delivery Method: A Single Centre Study

Widyastuti Sarkoen[1], Amanda Safira Dea Hertika[1], Irfan Deliandra[1], Dian Pitawati[2], Neza Puspita[1], Reza Tigor Manurung[1]

[1]Department of Obstetrics and Gynecology, Fatmawati Central General Hospital
[2]Department of Psychiatry, Fatmawati Central General Hospital
Jakarta

Abstract

Objective: To analyze the prevalence of post-traumatic stress disorder (PTSD) symptoms in pregnant women infected with COVID-19 in one of the Indonesian tertiary referral centers for COVID-19 cases and its association with maternal employment status and delivery method.

Method: Data from medical records and an online questionnaire were collected for a cross-sectional study. The study included pregnant women treated in the COVID-19 non-intensive isolation wards throughout 2021. The occurrence of PTSD symptoms was assessed using the PTSD Checklist for DSM-5 (PCL-5). Prevalence of PTSD symptoms was described and its correlation with employment status and delivery method were analyzed.

Results: The analysis involved data from 75 patients, with a mean PCL-5 total score of 17 ± 13.85. Among them, 16% met the PTSD symptoms criteria (PCL-5 total score ≥32). Of the total, 72% were women who had undergone caesarean section (CS), and the same percentage were unemployed. Comparisons revealed no significant difference in PTSD symptoms occurrence based on employment status (19% in employed women vs. 14.8% in unemployed women, p=0.729, 95% CI) and delivery method (14.8% in CS vs. 16.7% in spontaneous delivery, p=1, 95% CI).

Conclusion: This study revealed a significant prevalence of PTSD among pregnant women during the COVID-19 pandemic. Despite the fact that is no association found between the prevalence of PTSD symptoms and employment status or delivery method in this study, further research is needed to understand the psychological effects, clinical implications, and relevant factors impacting pregnant women in the acute-event settings.

Keywords: COVID-19, pandemics, pregnancy, post-traumatic stress disorders.

Correspondence author. Amanda S S Hertika. Department of Obstetrics and Gynecology Fatmawati Central General Hospital. Jakarta. Email; amandasfira@gmail.com

INTRODUCTION

The World Health Organization (WHO) has declared the Coronavirus Disease 2019 (COVID-19) a new pandemic.[1] This global health crisis has had a profound effect on various aspects of healthcare, including maternity care.[2] In addition to the immediate impact on patients and healthcare systems, the pandemic has the potential to influence the mental health of a large population including pregnant women, whose emotional status is more susceptible to acute events.[3] Triggered by the COVID-19 outbreak as one of the major stressors, post-traumatic stress disorder (PTSD) can emerge in those populations. PTSD can manifest after an individual experiences a shocking, terrifying, or dangerous event, such as an emergency crisis or catastrophic disaster. However, despite the immediate focus on treating and controlling the spread of COVID-19, the mental health implications of this condition during the pandemic may be overlooked.[4]

A study reported an increased likelihood of PTSD in pregnant women.[5] A meta-analysis

involving 24,267 women reported a mean prevalence of 3.3% for PTSD during pregnancy, with a higher risk observed in 18.95% of women in the high-risk group.[6] A study conducted in Turkey during the COVID-19 pandemic revealed that obstetric, psychiatric, and social factors contribute to the risk of PTSD in pregnant women. Concerns regarding childbirth complications due to the pandemic, COVID-19 infections among close contacts, and the ongoing monitoring of the COVID-19 situation significantly affected PTSD symptoms in pregnant women[7].

Prenatal anxiety, depression, and stress have been linked to hyperemesis gravidarum, ectopic pregnancy, miscarriage, preterm birth, low birth weight, intrauterine growth retardation (IUGR) and fetal death.[8,9] A study from Indonesia reported that during COVID-19 pandemic, pregnant women who were anxious had a 3.761-fold risk of premature rupture of mambrane (PROM) compared to those who were not anxious.[10] Moreover, extensive evidence suggests that maternal depression, anxiety, and stress during pregnancy can have detrimental effects on the neurodevelopment of the child, leading to an increased risk of emotional, behavioral, and cognitive problems compared to children whose mothers did not experience these mental health challenges.[11]

Medical associations worldwide, including Indonesia, have issued clinical guidelines for the care of pregnant women and newborns during the pandemic. However, there has been limited empirical evidence and guidance regarding maternal mental health, particularly regarding PTSD.[12,13]This study aimed to fill this gap by providing data on the impact of the pandemic on maternal mental health, specifically PTSD, in the Indonesian population. The findings of this study will contribute to a better understanding of the mental health challenges faced by mothers during the pandemic and help inform future interventions and support strategies.

METHODS

A retrospective study was conducted at Fatmawati Hospital, involving pregnant patients who received treatment in the COVID-19 isolation room throughout 2021 and who were discarded in 3 months or more, prior to the study. Purposive total sampling to all the population with desired characteristics was conducted and data was collected from medical records and an online questionnaire. Prior informed consent was obtained from all participants before their inclusion in the study. The inclusion criteria for research subjects were as follows; obstetric patients with confirmed COVID-19, no previous history of mental health problems, and ability to participate in the study and complete the questionnaire. Exclusion criteria were; incomplete online questionnaire submission, and participants who have received treatment in high or intensive care units will be excluded. Patients receiving intensive treatment were excluded due to the complexity of severe COVID-19 cases involving more complex confounding factors outside of our scope of this study. We gathered data encompassing patient age, employment status, gestational status, obstetrical history, delivery method, newborn birthweight, Apgar score, and questionnaire responses.

The outcomes measured in this study were; the prevalence of PTSD symptoms, the association of PTSD symptoms and employment status, and the association of PTSD symptoms and delivery method. We consider analysis of employment status as a related factor to PTSD symptoms based on the findings that employment status has significant influence on a person's response to current critical events.[14] Method of delivery has also been reported to influence maternal psychological state.[15–18]

This study utilized The PTSD Checklist for DSM-5 (PCL-5), a 20-item questionnaire aligning with the DSM-5 symptom criteria for PTSD. The questionnaire employed a rating scale ranging from 0 to 4, with descriptors of "Not at all," "A little bit," "Moderately," "Quite a bit," and "Extremely" corresponding to scores of 0, 1, 2, 3, and 4, respectively. The PCL-5 provides a provisional diagnosis through two approaches: 1) summing all 20 items and using a cutoff point score of 31-33, or 2) considering any item rated as 2 or higher (equivalent to "Moderately" or above) as a symptom endorsed based on the DSM-5 diagnostic rule as follows: at least one item from Cluster B (re-experiencing symptoms, questions 1-5), one item from Cluster C (avoidance symptoms, questions 6-7), two items from Cluster D (negative alterations symptoms, questions 8-14), and two items from Cluster E (hyperarousal symptoms, questions 15-20). Generally, the use of a cutoff score tends to yield more reliable results compared to the DSM-5 diagnostic rule.[19] In this study, women who scored 32 or above on the PCL-5 were identified as having PTSD.[19,20]

Statistical analysis was conducted using IBM SPSS version 24.0 (IBM Corp., Armonk, NY). Descriptive statistics, including numbers (n), percentages (%), means, and standard deviations (Mean ± SD), were presented. The occurrence of PTSD was compared between employed and unemployed women, as well as between those who underwent cesarean section (CS) and those who had spontaneous delivery, using the chi-squared test. Statistical significance was defined as a p-value of < 0.05. The Cronbach's Alpha was computed to assess internal validity of PCL-5 questionnaire. In this study, the high Cronbach's Alpha value (0.93) indicates that the questionnaire items measuring the same underlying construct consistently, reinforcing the validity of our findings.

RESULTS

Out of 214 eligible subjects, 72 did not want to take part in the study, 67 could not be reached, and only 75 agreed to participate and complete the questionnaire. There is no incomplete questionnaire submission. The mean maternal age was 31 years old, and all participants were in their third trimester of pregnancy. Among them, 54 women (72%) had CS delivery, while three women were still pregnant at the end of data collection period. Fifty-five women (72%) were unemployed. Further details on the characteristics of the subjects are described in Table 1.

Table 1. Characteristics Description of Study Subjects

Variables	N	%	Mean ± SD
Age (years old) (Min-Max= 21-44)	75		31.47 ± 5.78
Gestational age (weeks)	75		37.4 ± 2.13
Gravidity			
1	18	25.0	2.49 ± 1.19
2	21	29.2	
3	17	23.6	
4	12	16.7	
5	4	5.6	
Parity			
0	22	30.6	1.24 ± 1.03
1	20	27.8	
2	21	29.2	
3	9	12.5	
History of abortion			
0	59	81.9	-
1	8	11.1	
2	4	5.6	
3	1	1.4	

The mean PCL-5 total score of the subjects was 17 (17.64 ± 13.85), ranging from 0 to 56. Twelve women (16%) met the criteria for PTSD with a PCL-5 score of ≥ 32. When classified based on the symptom clusters, the average score for cluster B (re-experiencing) was 4.5 (4.52 ± 3.5, 0-15), cluster C (avoidance) was 1.8 (1.85 ± 2, 0-6), cluster D (negative mood cognition) was 5 (5.09 ± 5.38, 0-18), and cluster E (hyperarousal) was 6 (6.17 ± 4.77, ranging from 0-19) (Table 2).

Table 2. Result from PCL-5 self-assessment questionnaire

PCL-5 scores	N (%)	Min-Max	Mean ± SD
Cluster B (reexperiencing)	65 (86.7)	0-15	4.52 ± 3.512
Cluster C (avoidance)	45 (60)	0-6	1.85 ± 2.005
Cluster D (negative mood cognition)	53 (70.7)	0-18	5.09 ± 5.376
Cluster E (hyperarousal)	67 (89.3)	0-19	6.17 ± 4.769
		0-56	17.64 ± 13.849
Total score of ≥32	12 (16)		42.75 ± 5.75

Among the three women who continued their pregnancy, one of them (33.3%) had PTSD. The prevalence of PTSD did not differ significantly between employed and unemployed women (19% vs. 14.8%, p=0.729) or between those who had a cesarean section (CS) delivery and those who had a spontaneous delivery (14.8% vs. 16.7%, p=1) (Table 3).

Table 3. PTSD Symptoms based on Delivery Method and Employment Status

Maternal Condition	N	PTSD		*P-value* (95% CI)
		No	Yes	
Pregnancy outcome		%	%	
Still Pregnant	3 (4)	2 (66.7)	1 (33.3)	
CS delivery	54 (72)	46 (85.2)	8 (14.8)	1.0
Spontaneous delivery	18 (24)	15 (83.3)	3 (16.7)	
Status				
Employed	21 (28)	17 (81)	4 (19)	0.73
Unemployed	54 (72)	46 (85.2)	8 (14.8)	
Total			12 (16)	

DISCUSSION

Pregnant women are particularly vulnerable to mental health issues, including PTSD, which can have significant impacts on both the mothers and their infants. Various factors contribute to the development of PTSD in pregnant women, such as obstetric complications, a history of perinatal and antenatal psychiatric conditions, exposure to traumatic life events, fear of childbirth, and lack of social support during the antenatal period.[7,21] While our study showed 12 (16%) COVID-19 positive pregnant women had PTSD, the prevalence of PTSD among pregnant women during the COVID-19 pandemic has varied in other studies, ranging from 0.9% to 43.2% (16-19). A meta-analysis involving 24,267 women indicated a mean prevalence of 3.3% (95% CI=2.44-4.54) for PTSD during pregnancy, with the high-risk group showing a higher risk of PTSD, estimated at 18.95% (95% CI=10.62-31.43).[6]

The COVID-19 pandemic has introduced significant stress and challenges for pregnant women, making pregnancy and childbirth more daunting. Nearly half of pregnant women infected with COVID-19 experienced clinically significant acute stress symptoms during delivery.[22] Studies by Berthelot et al. (2020) have reported a higher prevalence and more symptoms of PTSD in pregnant women during the COVID-19 pandemic compared to the pre-pandemic period.[12,23] However, a cross-sectional study involving 859 participants found that the frequency of PTSD was lower in pregnant women compared to non-pregnant women during the COVID-19 pandemic (0.9% vs. 5.7%, $p<0.05$). Possible explanations for this difference include the better mental and financial conditions of pregnant women due to their pre-pregnancy preparations and support from their families and healthcare providers.[24] These variations in findings may stem from differences in sample populations, diagnostic tools, and the timing of the studies conducted during the pandemic.

Our study revealed a similar unemployment rate among women (72%) to a descriptive study from Indonesia which found that 29 out of 41 (70.7%) pregnant women with COVID-19 were unemployed. The study also demonstrated a higher ratio for asphyxia babies born of unemployed women compared to those employed, although there is no available data concerning the psychological aspect of the mothers.[25] Our results indicate that COVID-19 positive pregnant women can experience PTSD symptoms regardless of their employment status and delivery method. Although we observed a higher number of PTSD cases among unemployed pregnant women compared to employed women, the difference was not statistically significant ($p>0.05$). This finding is consistent with previous studies.[7,26,27] One study reported that marital status, socioeconomic status, previous COVID-19 diagnosis, and pregnancy trimester were not associated with a PTSD diagnosis, while maternal age, education level, and obstetric condition showed significant differences between pregnant women with PCL-5 total scores <33 and ≥33.7 Other studies found that obstetric conditions, maternal age ≥35, presence of COVID-19-related symptoms were associated with a higher risk of PTSD.[28]

Although the number of PTSD cases was higher in women who had a cesarean section (CS) delivery, the difference was not statistically significant in our study. This finding is consistent with another study that reported no association between delivery method and PTSD.[27] A prospective study in Iran involving 240 women also found no significant correlation between the type of delivery and the incidence of PTSD, despite higher rates of PTSD in the CS group compared to normal vaginal delivery (7.3% vs.

5.1%, p=0.48).[17]

In a literature review, it has been suggested that vaginal delivery is associated with more positive experiences, while emergency cesarean section and instrumental vaginal delivery are associated with more negative experiences.15 A meta-analysis study further supported these findings, showing that cesarean section delivery was more closely associated with PTSD compared to vaginal delivery (P=0.005).16 Additionally, some studies have found that PTSD is more prevalent among women who had emergency CS compared to those who had elective CS.[17,18]

The prevalence of acute stress symptoms related to COVID-19 positivity suggests an increased risk of subsequent maternal psychopathology and potential impairments in mother-infant bonding, emphasizing the need for heightened attention to mental health concerns in this vulnerable population.22 Several factors contribute to the traumatic stress reaction experienced by COVID-19 positive mothers during delivery, including concerns about health risks and viral transmission to the baby. Additionally, the COVID-19 pandemic has resulted in social isolation for women during labor. Research indicates that around 40% of COVID-positive pregnant women had no visitors during their hospital stay, and the majority had no visitors during delivery due to hospital restrictions on visitation. Prior to the pandemic, the presence of a support person was recognized as a factor that enhanced obstetric and neonatal outcomes while reducing negative perceptions of birth experiences.[29,30]

COVID-19 positive pregnant women were more likely to experience physical separation from their newborns, as indicated by the lack of initial skin-to-skin contact and limited rooming-in. Partial breastfeeding was also less common in this group. Physical touch and closeness in the early hours of life have been shown to provide health benefits for both the mother and the child. It promotes mother-infant bonding, facilitates nursing, and reduces the risk of maternal psychological distress, all of which may contribute to increased acute stress experienced by COVID-positive women during childbirth.[22]

Our study on the impact of PTSD on peripartum women during the COVID-19 pandemic in Indonesia provides preliminary findings. However, it is important to acknowledge the limitations of our study. First, the sample size was limited, and data were collected from a single center, which may limit the generalizability of the findings. Additionally, as a cross-sectional study, we were unable to follow up with participants over time to assess the long-term effects of PTSD. Furthermore, we did not conduct a comprehensive analysis of the potential risk factors associated with PTSD or explore the broader impacts on both the mothers and babies.

CONCLUSIONS

The acute events experienced by pregnant women as a vulnerable population, including COVID-19 infection and receiving treatments at the hospital during pandemic, can have a profound impact on the well-being of both the mothers and the infants. Our findings showed that 16% of pregnant women with COVID-19 infection had PTSD symptoms. This study serves as a foundation for further exploration of related topics in future research. It is recommended that future studies analyze potential factors associated with the development of PTSD in this population and explore treatment options. Future research should aim conduct more extensive analyses to better understand the complexities and implications of PTSD in pregnant and peripartum women during the COVID-19 pandemic.

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