

# Psychological Distress and Post-COVID Sequelae in Postpartum Females after Clinically Stable COVID-19 Infections: A Single-Center Observational Study from India

## Abstract

**Objective:** The objective of this study was to identify the presence of any post-COVID physical and stress sequelae up to 3 months postpartum. **Materials and Methods:** This prospective cross-sectional study was carried out in a tertiary center from India wherein all clinically stable COVID-positive pregnant women delivering between May 2020 to January 2021 were included. These women were evaluated at 3 months postpartum using Standard Posttraumatic Stress Disorder (PTSD)-Civilian Checklist, Depression, Anxiety, and Stress Scale-21 (DASS-21), and Fatigue Severity Scale (FSS). **Results:** Among 42 women evaluated, most of the women felt that they had returned to their pre-COVID health (76.19%, 32 women). Three women (7.14%) had some persistent symptoms, and another seven women (16.66%) were not sure whether they felt the same as pre-COVID health status. Self-reported symptoms such as fatigue, myalgia, and nightmare were reported in 21.43%, 14.28%, and 2.38%, respectively. The frequency of stress and anxiety as seen with the DASS was seen in one (2.38%) and three (7.14%) women, respectively. Although none of the women had PTSD, 9.52% were potential candidates for PTSD. The mean score in FSS was  $12.57 \pm 4.14$  and through Visual Analog Fatigue Scale score was  $4.76 \pm 1.28$ . **Conclusion:** Postpartum women are at risk of post-COVID physical and stress sequelae.

**Keywords:** COVID-19, fatigue, postpartum women

## Introduction

The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic resulted in a massive transformation in the health-care system and world economy. The virus attacks the respiratory system causing multi-organ dysfunction. Patients present with acute symptoms characterized by high-grade fever, cough, and shortness of breath. Symptoms usually subside completely within 2 weeks, but recovery takes longer in severe cases.<sup>[1]</sup> There is a growing concern now that the COVID-19 symptoms may persist or recur after the initial recovery phase. Although fatigue, joint pain, cough, and dyspnea are the most reported symptoms in patients with post-COVID syndrome, sequelae can be seen in various organ systems.<sup>[2-4]</sup>

Various nomenclatures such as postacute sequelae of SARS-CoV-2 infection, postacute COVID-19 syndrome, and

long COVID-19 have been used to describe these post-COVID recovery features.<sup>[2,3,5]</sup> As per CDC, the disease is divided into three phases: acute COVID-19 (initial 2 weeks from symptom onset), postacute hyperinflammatory illness (2–4 weeks from symptom onset), and late sequela phase (>4 weeks from symptom onset).<sup>[6]</sup> The NICE guideline recommends using the term long COVID and post-COVID syndrome.<sup>[7]</sup> Signs and symptoms lasting more than 4 weeks, not explained by an alternative diagnosis, are considered long COVID-19 syndrome while post-COVID constitutes those symptoms that last beyond 12 weeks after acquiring the infection. Whatever be the nomenclature, this new entity is a matter of growing concern. Literature has shown a decline in health-related quality of life (QoL) in patients after COVID-19 disease with studies mostly focusing on hospitalized patients 1–3 months after the

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illness.<sup>[8-10]</sup> None of the studies to date have focused on the presence of these post-COVID sequelae in postpartum women. Pregnancy itself is a vulnerable period wherein a woman experiences various physiologic and immunologic changes in her body affecting her physical and mental health status. Studies have shown that 10%–30% of women suffer from postpartum depression<sup>[11,12]</sup> and the frequency of postpartum anxiety ranges from 13% to 40%.<sup>[11,13]</sup> Social isolation, fear of disease transmission to *in utero* child, perceived danger, and uncertainties of a pregnant female who is COVID-19 positive may increase the psychological distress in these vulnerable populations and may act as traumatic events in her life with subsequent posttraumatic stress sequelae. It is, therefore, important to consider that as these women are already at risk of postnatal depression and anxiety, the added wrath of this deadly pandemic may further aggravate their physical and mental health status. With this aim in mind, the study was planned to identify the presence of any post-COVID physical and stress sequelae up to 3 months postpartum.

## Materials and Methods

### Patients

This was a prospective cross-sectional study conducted in postpartum women who were admitted to a tertiary care center designated as one of the COVID hospitals during the pandemic. All clinically stable COVID-positive pregnant women who were either asymptomatic or had mild symptoms and were admitted for delivery between May 2020 and January 2021 were recruited. Women requiring intensive care unit admission with severe symptoms were excluded from the study.

### Data collection method and tools

A standard pro forma was used to gather information from patients in terms of maternal age, parity, education, gestational age on admission while being COVID positive, duration of hospital stay, clinical features (asymptomatic or symptomatic), and postpartum follow-up. After 3 months, these women were contacted telephonically and were inquired about their general health condition or any specific complaint. Verbal informed consent was taken from each woman before data collection.

### Tools used

#### *Posttraumatic Stress Disorder-Civilian Checklist*

This was developed for use in the military population and later adapted for civilian use.<sup>[14]</sup> Herein, participants rate the frequency of 17 symptoms (1 = not at all to 5 = extreme). The total score ranges from 17 to 85, with a higher score indicating a higher risk for posttraumatic stress disorder (PTSD). A score of 17–37 suggests the participant as “without PTSD symptoms,” 38–49 score indicates “potential risk of PTSD,” and 50–85 scores as “full PTSD diagnosis.”

#### *Depression, Anxiety, Stress Scale 21 Scale*

It was used to assess depression, anxiety, and stress. Each of the three subscales has seven items with each item comprising a statement with four options to reflect the severity and is assigned a score of 0 (did not apply to me at all) to 3 (applied to me very much, or most of the time).<sup>[15]</sup>

#### *Fatigue Severity Scale*

It comprises nine items with each item having 7 options ranging from strongly disagree to strongly agree. Scores were added to give a global score with higher scores indicating greater fatigue.<sup>[16]</sup>

### Ethical approval

This study was approved by the institutional ethics committee vide letter number AIIMS/IEC/21/403.

### Statistical analysis

Descriptive statistics were used to calculate simple frequency, percentage, and proportion.

## Results

During the specified period, we had 57 COVID-19-positive mothers. After excluding 15 such cases, we had a final cohort of 42 COVID-19-positive mothers.

Table 1 shows the baseline characteristics of the study population. The mean age of the women was  $28.7 \pm 5.36$  years. Almost 93% of the study sample were educated and only 7% were illiterate. All women presented

**Table 1: Baseline characteristics of recruited patients (n=42)**

Maternal characteristics	Total, n (%)
Age (years) (mean±SD)	28.7±5.36
Range (years)	20-42
Education	
Illiterate	3 (7.14)
Class 1-5	0
Class 6-10	11 (26.19)
Graduate and above	28 (66.66)
Mean gestational age at which COVID-19 positive	36.7±5.4
Spouse/partner also positive at same time	18 (42.85)
Duration of hospital stay (mean±SD)	6.83±3.51
Condition at admission	
Mild symptoms (fever/cold/headache)	9 (21.43)
Asymptomatic	33 (78.57)
Mode of delivery	
Vaginal delivery	22 (52.38)
Cesarean section	20 (47.62)
First time seen baby (hours after delivery)	25.46±56.68
Range (h)	2–336
Postnatal checkup done	
Yes	0
No	42 (100)

SD: Standard deviation

in the third trimester of pregnancy with mean gestational age as COVID positive was  $36.7 \pm 5.4$  years. Around 42.85% (18 women) reported that their spouse/partner was also COVID positive. The mean duration of hospital stay was  $6.83 \pm 3.51$  h. The majority were asymptomatic (78.57%, 33 women) and only nine women (21.43%) were symptomatic. None of the women presented for postnatal follow-up. Ours is a tertiary center in Uttarakhand and also caters to a hilly population. During COVID pandemic, our hospital offered telemedicine facilities and many women availed this facility to avoid transportation amid fear of getting infected.

Table 2 shows that most of the women felt that they had returned to their pre-COVID health (76.19%, 32 women). Three women had some persistent or new symptoms, and another seven women were not sure whether they felt the same as pre-COVID health status. Self-reported symptoms such as fatigue, myalgia, and nightmare were reported in 21.43%, 14.28%, and 2.38%, respectively.

The mean score of PTSD was  $18.75 \pm 4.63$ . Around 90% of the study sample were without PTSD, but four (9.52%) women were at potential risk of PTSD. The frequency of stress and anxiety as seen with the Depression, Anxiety, and Stress Scale (DASS) was seen in one (2.38%) and three (7.14%) women, respectively. The mean score in Fatigue Severity Scale was  $12.57 \pm 4.14$  and through Visual Analogue Fatigue Scale score was  $4.76 \pm 1.28$  [Table 3].

**Table 2: Postrecovery persistent symptoms/new-onset symptoms at 3 months after COVID-19-positive status**

	n (%)
Do you feel you have returned to your pre-COVID health status?	
Yes	32 (76.19)
No	3 (7.14)
Not sure	7 (16.66)
Any symptoms	
Fatigue	9 (21.43)
Myalgia	6 (14.28)
Nightmare	1 (2.38)

**Table 3: Condition at 3 months postpartum**

Variable	n (%)
PTSD (mean±SD)	18.75±4.63
Without PTSD	38 (90.48)
Potential risk of PTSD	4 (9.52)
Full PTSD	0
DASS	
Stress	1 (2.38)
Anxiety	3 (7.14)
Depression	0
FSS (mean±SD)	12.57±4.14
Visual Analogue Fatigue Scale score (mean±SD)	4.76±1.28

SD: Standard deviation, PTSD: Posttraumatic stress disorder, FSS: Fatigue Severity Scale, DASS: Depression, Anxiety, Stress Scale

## Discussion

In this observational study, we tried to assess the presence of any post-COVID physical and stress sequelae up to 3 months postpartum. Although studies have already focused on the physical health risks of COVID-19 on mothers, there remains a paucity of data regarding the postpartum physical and mental well-being. Pregnancy itself is a risk factor for perinatal depression and anxiety; the added wrath of this recently emerged pandemic can contribute further to their psychological distress levels.

Fatigue and myalgia are seen in 37%–62% of patients recovered from COVID-19.<sup>[17,18]</sup> In our cohort, 76.19% of postpartum women felt that they had attained their post-COVID-19 health status whereas the rest were either not sure or had not recovered fully. Fatigue and myalgia were seen in 21.43% and 14.28% of women, respectively. Naik *et al.*<sup>[19]</sup> in their study of post-COVID-19 sequelae reported that myalgia (134, 10.9%) and fatigue (67, 5.5%) were the commonly seen symptoms, but they had recruited all COVID-positive patients unlike ours. One of the women in our sample had repeated episodes of a nightmare. Staven *et al.*<sup>[20]</sup> in their sample of 458 subjects reported that nearly 46% had fatigue at a median of 117.5 days after COVID-19 onset. Kayaaslan *et al.*<sup>[21]</sup> in their prospective study on 1007 participants recovered from COVID-19 reported that fatigue, myalgia, and weight loss were the commonly reported symptoms (overall 29.3%) followed by respiratory symptoms (25.4%)

About 90.48% of our study sample had no evidence of posttraumatic stress disorder, but 9.52% were potential candidates for PTSD. Wang *et al.*<sup>[22]</sup> followed up their sample of 72 pregnant patients with COVID-19 until 3 months after giving birth (57 cases) or having an abortion (15 cases) to identify the long-term effects of this new viral infection on mother's psychological status and reported that nearly 22.2% of pregnant patients were suffering from posttraumatic stress disorder or depression at 3 months after delivery or induced abortion. Contradictory to theirs, none of the women in our sample were suffering from PTSD or depression. About 7.14% (3 women) and 2.38% (one woman) had anxiety and stress as seen in DASS. The cause for this psychological distress cannot be attributed to a single factor and depends on factors such as hospitalization with isolation, quarantine, and inadequate social and emotional support owing to the COVID-positive status of the spouse at the same time as hers. Pregnancy with new responsibilities toward the newborn child itself adds to her growing concerns. Liu *et al.*<sup>[23]</sup> in their cross-sectional survey of 429 postpartum women tried to explore the associations between maternal mental health status with psychological experiences and reported that postpartum depression was related to lower mother–infant bonding. It is, therefore, important to screen this vulnerable group for any evidence of postpartum stress and depression

to ensure a healthy outcome for the entire family. Not only screening them for psychological distress but also focusing on their postviral physical sequelae can result in a better health-related QoL.

Certain limitations must be addressed within this study. First, this study had a small sample size with no control group. Second, the study was done through telephonic conversation wherein the participant's compliance is not the same as face-to-face surveys. A major strength of this study was that we recruited asymptomatic and mildly symptomatic women with COVID-19 infections, thus assessing them for post-COVID physical and stress sequelae can give us a real picture. Moreover, presently, there is a paucity of data on screening postpartum women for postviral sequelae and this group requires further evaluation to fill up research gaps.

### Conclusion

We see that the burden of postviral fatigue and myalgia was high in postpartum women (21.43% and 14.28%, respectively) and needs further research. Although none of the women in our cohort suffered from PTSD or depression, 7.14% (three women) and 2.38% (one woman) had anxiety and stress. We suggest enhanced long-term follow-ups in this vulnerable population who are at risk of experiencing postpartum physical and stress sequelae even though being asymptomatic or mildly symptomatic under the added influence of the COVID-19 pandemic.

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Nil.

### Conflicts of interest

There are no conflicts of interest.

### References

- World Health Organization. Clinical Management of Severe Acute Respiratory Infection When COVID-19 Is Suspected. Geneva, Switzerland: WHO; 2020. p. 1-82. Available from: [https://www.who.int/publications-detail/clinical-management-of-severeacute-respiratory-infection-when-novel-coronavirus-\(ncov\)-infection-is-suspected](https://www.who.int/publications-detail/clinical-management-of-severeacute-respiratory-infection-when-novel-coronavirus-(ncov)-infection-is-suspected). [Last accessed on 2020 Jan 12].
- Nalbandian A, Sehgal K, Gupta A, Madhavan MV, McGroder C, Stevens JS, *et al.* Post-acute COVID-19 syndrome. *Nat Med* 2021;27:601-15.
- Amenta EM, Spallone A, Rodriguez-Barradas MC, El Sahly HM, Atmar RL, Kulkarni PA. Postacute COVID-19: An overview and approach to classification. *Open Forum Infect Dis* 2020;7:ofaa509.
- Logue JK, Franko NM, McCulloch DJ, McDonald D, Magedson A, Wolf CR, *et al.* Sequelae in adults at 6 months after COVID-19 infection. *JAMA Netw Open* 2021;4:e210830.
- Kaiter L. Fauci Introduces New Acronym for Long COVID; 2021. Available from: <https://www.medscape.com/viewarticle/946419>. [Last accessed on 2021 May 02].
- Greenhalgh T, Knight M, A'Court C, Buxton M, Husain L. Management of post-acute covid-19 in primary care. *BMJ* 2020;370:m3026.
- National Institute for Health and Care Excellence. COVID-19 Rapid Guideline: Managing the Long-Term Effects of COVID-19. (NG188). Evidence Reviews 2 and 3: Prevalence; 2020. Available from: <https://www.nice.org.uk/guidance/ng188>. [Published: 2020 Dec 18; Last updated: 2021 Nov 11].
- Del Rio C, Collins LF, Malani P. Long-term health consequences of COVID-19. *JAMA* 2020;324:1723-4.
- Carfi A, Bernabei R, Landi F, Gemelli Against COVID-19 Post-Acute Care Study Group. Persistent symptoms in patients after acute COVID-19. *JAMA* 2020;324:603-5.
- Garrigues E, Janvier P, Kherabi Y, Le Bot A, Hamon A, Gouze H, *et al.* Post-discharge persistent symptoms and health-related quality of life after hospitalization for COVID-19. *J Infect* 2020;81:e4-6.
- Falah-Hassani K, Shiri R, Dennis CL. Prevalence and risk factors for comorbid postpartum depressive symptomatology and anxiety. *J Affect Disord* 2016;198:142-7.
- Shorey S, Chee CY, Ng ED, Chan YH, Tam WW, Chong YS. Prevalence and incidence of postpartum depression among healthy mothers: A systematic review and meta-analysis. *J Psychiatr Res* 2018;104:235-48.
- Field T. Postnatal anxiety prevalence, predictors and effects on development: A narrative review. *Infant Behav Dev* 2018;51:24-32.
- Weathers F, Litz B, Herman D, Huska JA, Keane T. The PTSD Checklist (PCL): Reliability, Validity, and Diagnostic Utility. San Antonio: Paper Presented at: Annual Meeting of International Society for Traumatic Stress Studies; 1993.
- Singh B, Prabhupappa KP, Singh AR. Depression, anxiety and stress scale: Reliability and validity of Hindi adaptation. *Int J Educ Manage Stud* 2013;3:446-9.
- Krupp LB, LaRocca NG, Muir-Nash J, Steinberg AD. The fatigue severity scale. Application to patients with multiple sclerosis and systemic lupus erythematosus. *Arch Neurol* 1989;46:1121-3.
- Nasserie T, Hittle M, Goodman SN. Assessment of the frequency and variety of persistent symptoms among patients with COVID-19: A systematic review. *JAMA Netw Open* 2021;4:e2111417.
- Cares-Marambio K, Montenegro-Jiménez Y, Torres-Castro R, Vera-Urbe R, Torralba Y, Alsina-Restoy X, *et al.* Prevalence of potential respiratory symptoms in survivors of hospital admission after coronavirus disease 2019 (COVID-19): A systematic review and meta-analysis. *Chron Respir Dis* 2021;18:14799731211002240.
- Naik S, Haldar SN, Soneja M, Mundadan NG, Garg P, Mittal A, *et al.* Post COVID-19 sequelae: A prospective observational study from Northern India. *Drug Discov Ther* 2021;15:254-60.
- Stavem K, Ghanima W, Olsen MK, Gilboe HM, Einvik G. Prevalence and determinants of fatigue after COVID-19 in non-hospitalized subjects: A population-based study. *Int J Environ Res Public Health* 2021;18:2030.
- Kayaaslan B, Eser F, Kalem AK, Kaya G, Kaplan B, Kacar D, *et al.* Post-COVID syndrome: A single-center questionnaire study on 1007 participants recovered from COVID-19. *J Med Virol* 2021;93:6566-74.
- Wang Y, Chen L, Wu T, Shi H, Li Q, Jiang H, *et al.* Impact of Covid-19 in pregnancy on mother's psychological status and infant's neurobehavioral development: A longitudinal cohort study in China. *BMC Med* 2020;18:347.
- Liu CH, Hyun S, Mittal L, Erdei C. Psychological risks to mother-infant bonding during the COVID-19 pandemic. *Pediatr Res* 2022;91:853-61.