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A study on the psychological status of postnatal mothers delivering at a tertiary care centre in Dakshina Kannada district during the COVID-19 pandemic

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Abstract
Background: Post partum period is an extremely exigent chapter requiring immense adaptations from a mothers' personal and familial circle. Post partum depression- a morbidity that could start soon after child birth has long term implications on the health of the mother and her new born. Its estimated prevalence in India according to the WHO bulletin 2017 has been 22%. The hassle caused by COVID 19 pandemic, has overturned the life of some, displaced few and affected most of us. The study strives to assess the impact of COVID 19 pandemic on the psychological status of postnatal mothers delivering at our hospital.
Methods: This is a hospital based cross-sectional study conducted on 80 post natal mothers who delivered during the COVID 19 pandemic. The participants were given a questionnaire consisting of 3 parts- I- sociodemographic and parturition details, II- to analyse the impact of the pandemic, III-Edinburg Postnatal Depression scale questionnaire. Data collected was compiled, and analysed using percentages, and Chi square test was used to test the significant difference in the possible risk factors for the different levels of depression.
Results: This study has shown that 28.75% of the mothers fell in the category of moderate depression and that women less than 25years were more prone to psychological distress. The burden of anxiety and PPD was more in women with lower educational and socioeconomic status. The pandemic adversely affected both the employed and unemployed women to an equal extent with nearly 65% of mothers claiming to have suffered significant monetary loss. Primigravidas and mothers who underwent operational delivery were more prone to PPD.
Conclusions: Our study shows that nearly 28.75% of the participants suffered from moderate depression and this higher percentage of PPD can be attributed to the ongoing stressor- the COVID 19 pandemic. Thus it becomes essential for the treating obstetrician to collobrate with a psychiatrist to reach out and offer routine screening and timely support to the affected mothers at these crucial times.

Keywords: Postnatal depression, COVID 19 pandemic, EDPS, risk factors

Introduction

Postpartum period is an exceedingly challenging phase characterised by overwhelming biological, physical, social and emotional changes [1]. Though it is coloured by the joyful arrival of the newborn, it requires significant personal and interpersonal adaptations. Unfortunately, women in the postpartum period become vulnerable to a category of psychiatric disorders-2020 ICD-10-CM Diagnosis code O90.6- Postpartum Mood disturbances- which ranges from postpartum blues to psychosis [2]. Postpartum blues- usually resolve in a few days to weeks, and can have a few negative sequels- requiring only reassurance. On the other hand postpartum psychosis is a severe disorder that begins within 4 weeks postpartum and requires hospitalisation. Inbetween these extremes is post partum depression (PPD)-a morbidity that can start soon after childbirth or as a continuation of antenatal depression and requires active treatment. If untreated it could lead to chronic/ recurrent depression and children of mothers with PPD have greater cognitive, behavioural and interpersonal problems compared to children of non depressed mothers [3].

The prevalence of Post-Partum depression is 10-15% in developed countries [4], and according to the bulletin of World Health Organisation the overall pooled estimate of the prevalence of PPD in India was 22% [5].

The hassle due to events such as pandemics, earthquakes, cyclones, droughts and famine may be allied to immediate and long lasting physical and psychological health consequences for a

mother and her newborn. In this context, studies dealing with the psychological effects of the SARS outbreak in 2003 on the experiences of pregnant women showed that, in addition to the physical health implications, they experienced high levels of anxiety and worries about being infected [6, 7].

The mental status of the mothers may also be severely affected, owing to the currently unsteady scenario of the global pandemic-COVID 19. The possible implications of COVID-19 for pregnancy, infectious power of the virus, nationwide lockdown, resource and financial constrains, uncertainty of the disease plateau, non availability of a vaccine etc, would inevitably cause anxiety, depression and other stress reactions.

Worldwide studies illustrated significant increase in self reported levels of depression and anxiety during the COVID 19 pandemic in pregnant and postnatal mothers [8, 9]. They highlighted the need of heightened assessment and treatment of mental health during this extremely stressful period [10, 11].

The aim of this study was to assess the impact of COVID 19 on the psychological status of mothers delivering during the pandemic at a tertiary care centre in Dakshina Kannada District.

This would be immensely helpful to provide appropriate standardized mental health care to ease the psychological disturbance due to post partum status and the psychological harm during this outbreak thus helping to combat it.

Methods

Methodology

- This a cross-sectional survey carried out in the Department of Obstetrics and Gynaecology at A.J Institute of Medical Sciences and Research Institute among mothers in postnatal ward for a period of 3 months.
- An informed written consent was taken from each of the participants after obtaining Institutional Ethical clearance.
- A total of 80 postnatal mothers fulfilling the selection criteria were included in the study.

1. **Questionnaire-**The questionnaire consisted of 3 parts

Part 1: solicited data on demographic and socioeconomic characteristics of the mother. The type of delivery, implication and outcome were collected from the patients' file.

Part 2: contained eight items tapping the mother's COVID-19-related anxiety, as reflected in their perception of several aspects of the situation. The women were asked how much anxiety they felt about:

(1) Economic crisis that they and their family may have undergone;
(2) Chances of being infected by COVID-19;
(3) A close relative/friend being infected by COVID-19;
(4) Being in public places and using public transportation;
(5) Visiting hospitals for pregnancy check-ups;
(6) Health of their foetus;
(7) Delivery and
(8) Further stay at hospital post delivery

The responses were obtained on a 5-point Likert scale- on basis of the extent that the pandemic has affected the individual- from 1 (*very little*) to 5 (*very much*) and results were finally sorted into affected/neutral/unaffected.

Part 3: consisted of the English and Kannada version of Edinburgh Postnatal Depression Scale (EPDS) to assess the psychological status of mothers by their frequency of symptoms over the past few days. There were ten questions in the scale each scoring from 0 to 3 with a maximum score of 30. A score of 10–12 indicates moderate depressive symptoms and 13 or more a clinically relevant depression.

Collected data was entered into Microsoft Excel. The baseline characteristics were expressed by percentages. Chi square test was used to test the significant difference in the possible risk factors for the different levels of depression.

Selection Criteria

Inclusion Criteria

All literate COVID Negative mothers admitted to postnatal ward-post-delivery, willing to participate in the study, and can read and understand English/Kannada.

Exclusion Criteria

(1) Aged less that 18 years or greater than 40yrs
(2) Tested to be COVID Positive
(3) Known case or family history of any psychiatric disorder/ on any psychiatric medication
(4) Known serious medical condition or pregnancy complications
(5) Mothers of infants with bad prognosis/anomalies/ NICU admission/ neonatal death
(6) Incomplete/non logical responses

Results

The study was done in a total of 80 postnatal mothers. The results were analysed according to the following parameters.

Part 1-solicited data about Socio-demographic and baseline characteristics, Intrapartum and postpartum events.

1. Socio-demographic details of the mother

The age of the study group mothers ranged between 20 and 35 years. The fractions of the different religions of the mothers were comparable to their distribution within D.K district. While only few of the mothers had received some or the other form of informal education, 93.75 % had been educated beyond high school. Most of the women were homemakers, whilst 27.5% were employed in light – moderate works. According to modified BG Prasad classification it was noticed that majority of the mothers belonged to class 2 or 3- lower middle and middle class respectively. Nutritional status was assessed by pre-pregnancy weights of mothers and it was noted that 47.5% had normal BMI. 45% of the mothers in the study were primiparas and 87.5% of them had their regular antenatal checkups at our hospital (Table 1-Sociodemographic and baseline characteristics of the participants).

Table 1: Sociodemographic and baseline characteristics of the participants

Socio-demographic details		Number of cases	Percentage
Age Range			
	20-25 years	36	45
	26-30 years	42	52.5
	>30 years	2	2.5
Religion			
	Hindu	46	57.5
	Muslim	30	37.5

	Christian	3	3.75
	Others	1	1.25
Educational status			
	Informal education	5	6.25
	Primary school	0	0
	Middle school	0	0
	High school	37	46.25
	Intermediate/diploma	22	25
	Graduate	15	18.75
	Post graduate	1	1.25
Employment status			
	Unemployed	58	72.5
	Employed	22	27.5
Socioeconomic status			
	Class 1	6	7.5
	Class 2	26	32.5
	Class 3	29	36.25
	Class 4	12	15
	Class 5	7	8.15
BMI- nutritional status			
	Under weight	12	15
	Normal	38	47.5
	Overweight	28	35
	Obese	2	2.5
	Extremely obese	0	0
Parity index			
	Primigravida	36	45
	Multigravida	44	55
Antenatal Checkups			
	Booked	70	87.5
	Unbooked	10	12.5

2. Intrapartum Period

Mode of delivery: It was noted that 82.5% mothers had vaginal delivery and 17.5% underwent a caesarean section (Table 2- Mode of Delivery of participants)

Indication for C-Section: The most common indication for emergency LSCS was fetal distress, followed by elective LSCS for CPD and Previous sections with unfavourable cervix.

Immediate Neonatal outcome: 87.5% of the newborns were healthy and given to the mother soon after birth, 10% of the babies had low APGAR scores at birth and needed observation at the SNCU. 2.5 % of the babies needed phototherapy

Table 2: Mode of Delivery of participants

Mode of delivery	Number of cases	Percentage
Vaginal delivery	66	82.5
Caesarean section	14	17.5

3. Postpartum Period

The postpartum period was uneventful in most of the mothers with respect to the wellbeing of both the mother and her newborn. Minor lactation difficulties, breast discomfort, and wound indurations were managed actively.

4. Analysis of the impact of COVID situation

Part 2 of the questionnaire showed that the pandemic had caused significant impact on the life of our patients with respect to finances-65 % of them said they have faced significant economic losses. While 75% of our mothers feared that they would contract the infection, 25% of our participants had their closed relative/friend already affected by it.

The pandemic has raised apprehension about staying in densely populated areas- 68.75 % claimed their fears about visiting public places- and 60% of them were hesitant to visit hospitals for regular antenatal check-up.

72.5% were apprehensive about admission for safe confinement, and 75 % were worried about the health of their newborn during the pandemic times.

80% felt uneasy about further stay in the hospital post delivery owing to the COVID scenario.

(Table 3- Analysis of the impact of COVID on the life our respondents)

Table 3: Analysis of the impact of COVID on the life our respondents

Impact	Affected	Neutral	Unaffected
(1) Has the pandemic caused any Financial crisis to you or your family;	65%	10%	25%
(2) Have you felt anxious about being infected by COVID-19;	75%	12.5%	12.5%
(3) Has any of your close relative/friend been infected by COVID-19?	25%	-	75%
(4) Have felt unsafe at public places or in public transportation after the pandemic?	68.75%	31.25%	-
(5) Does Visiting hospitals for pregnancy check-ups arise any fears of contracting infection?	60%	25%	15%
(6)Are you apprehensive about the Health of your baby?	75%	18.75%	6.25
(7)How hesitant were you during admission to our hospital for safe confinement?	72.5%	25%	2.5%
(8)Does Further stay at hospital post delivery- create any worries during these pandemic times?	80%	15%	5%

5. Assessment of the psychological status of postnatal mothers by the EPDS questionnaire

Part 3 consisted of the EPDS questionnaire – to analyse the psychological status of our respondents. A score of 10-12 was obtained by 28.75% of our participants indicating moderate depression, 71.25% had scores equating to no depression and none of our participants fell in the category of severe depression. (Table 4-EPDS scores of participants)

Table 5 shows impact of the possible risk factors for psychological distress experienced by postnatal mothers. It was found that the mothers of 20-25yrs age group were more prone to higher scores of EPDS compared to the elder age group. 40% of the mothers who had received only informal education were found to have moderate depression, in comparison to 37.84% and 22.7% of those who had completed high school and intermediate/diploma. Mothers belonging to the lower socioeconomic status were found to be vulnerable to develop moderate depression (statistically significant p value <0.00001). Pearsons correlation showed that primigravidas were more at risk compared to multigravidas in developing depression (p value-0.000016). Also, a statistical significance was noticed, showing more psychological distress among mothers who delivered by Caesarean section compared to vaginal route (p value-0.000176).

It was noticed that the employment status did not seem to have any statistical correlation with PPD.

Table 4: EPDS scores of participants

EPDS Score 1-9- No Depression		EDPS Score 10-12 Moderate Depression		EDPS Score >/= 13 Severe Depression
57/80	71.25%	23/80	28.75%	0

Table 5: Impact of the possible risk factors for psychological distress among postnatal mothers

Parameter	No depression	Moderate depression
Age Range	Chi square-35.375;P<0.00001	
Age: 20-25 years	*66.67%*	*33.33%*
26-30 years	*73.81%*	*26.19%*
>30 years	*100%*	*0*
Educational status	Chi square-56.2451;P<0.00001	
Informal education	*60%*	*40%*
Primary school	*0*	*0*
Middle school	*0*	*0*
High school	*62.16%*	*37.84%*
Intermediate/diploma	*77.27%*	*22.7%*
Graduate	*86.67%*	*13.3%*
Post graduate	*100%*	*0*
Employment status	Chi square-1.6235;p-0.2025	
Unemployed	*68.97%*	*31.03%*
Employed	*77.27%*	*22.73%*
Socioeconomic status	Chi square-49.5614;P<0.00001	
Class 1	*66.67%*	*33.33%*
Class 2	*61.54%*	*38.46%*
Class 3	*68.97%*	*31.03%*
Class 4	*83.33%*	*16.67%*
Class 5	*100%*	*0*
Parity index	Chi square-18.6667;p-0.000016	
Primigravida	*55.56%*	*44.44%*
Multigravida	*84.09%*	*15.9%*
Mode of delivery	Chi square-14.0747;p-0.000176	
Vaginal	*74.24%*	*25.76%*
LSCS	*57.14%*	*42.86%*

Discussion

Conducted after the Unlock 3.0 of the nationwide COVID-19 lockdown, this study examined the anxiety and psychological distress generated in postnatal women of Dakshina Kannada district by the pandemic.

This study conducted on 80 women satisfying the selection criteria has shown that 28.75% of the mothers fell in the category of moderate depression. This is 7% higher compared to the WHO estimates in Indian mothers which quote a 22% prevalence of PPD [5].

The study showed that women less than 25yrs were more prone to psychological distress, compared to the elderly women. This was consistent to the study conducted by Mayberry *et al*. [12]

The burden of anxiety and PPD was more in women with lower educational and socioeconomic status. This may be ascribed to the limited availability of information and financial looses endured during the lockdown. The pandemic seemed to upset both the employed and unemployed women to an equal extent with nearly 65% of mothers claiming to have suffered significant monetary loss.

The strong association demonstrated in our study between operational delivery and increased incidence of anxiety is consistent with studies by Boyce *et al*. [13] and Hannah *et al*. [14]

While not many studies show any relationship between parity and occurrence of PPD, 44% of our primiparous mothers seemed to have moderate depression in comparison to 15.9% of multiparas.

While the effect of family-type, husband-wife relationship, persistent low mood antenatally, sex of the newborn, non comprehension of the questionnaire etc can be validated, the possibility of the increase in distress among our mothers due to the COVID 19 pandemic cannot be nullified. In a recent study in the US conducted on the general population, it was found that depressive symptoms were 3 times higher during the COVID 19

lockdown than before the pandemic- up from 8.5% to 27.8% during it [15]. A similar consequence of the pandemic could be the cause for increased anxiety among our mothers who otherwise had uneventful past, antepartum, intrapartum and postpartum periods.

Conclusion

India is experiencing a balanced decline in maternal mortality, which implies that the spotlight of concern will now shift towards reducing maternal morbidity- including mental health disorders. Mental health is a significant influential factor for the wellbeing of any community and postnatal depression is a disease that can cause serious impairment to the welfare of the mother, child and their bonding.

Our study shows that nearly 28.75% of our study group suffered from moderate depression, with women of younger age group, lower educational and socioeconomic status, first child birth and operational delivery being more susceptible to it. The higher percentage of PPD can be attributed to the ongoing stressor- the COVID 19 pandemic, but studies with larger sample size would be indispensable to demonstrate it.

This study suggests that like the COVID19, the anxiety experienced by mothers is a virus that needs to diagnosed and addressed. As obstetricians, the challenge of treating postpartum mood disturbances has amplified due to the pandemic setting.

It recommends that the treating obstetrician must build a network along with a psychiatrist to reach out and offer routine screening and timely support to the affected mothers. Home visits by trained midwives, telephone-based peer support and interpersonal psychotherapy could be initiated to help mothers combat the anxiety related with the pandemic.

Declarations

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Conflict of interest: None

Ethical approval: Obtained Institutional Ethical Committee Clearance

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