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# Psychological Impact of COVID 19 On Patients and Their Family Members Giving Hospital Care In COVID-19 Ward of Tertiary Care Centre of Low And Middle Income Country Backgrounds In India. An Observational Study.

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## Abstract

**Objective:** This study aimed to assess the psychological impact of COVID 19 positive pregnant and postpartum women, their primary health care givers.

**Study Design:** This was a cross-sectional study aimed to assess the psychological impact of COVID 19 infection in 154 positive patients (101 pregnant and 53 post-partum women) and their primary health care givers. This was a cross sectional study conducted in COVID 19 ward in Obstetrics and Gynecology from May, 2020 to August 2020 of Lok Nayak Hospital, a dedicated COVID hospital and a tertiary care center in Delhi.

**Results:** The score of psychological stress was more in symptomatic patients. The insomnia and social dysfunction were found more in pregnant women group. The additional causes of psychological distress in pregnant women were fear of vertical transmission of COVID 19 and the risk of gross congenital anomaly and intrauterine growth retardation in the baby and concerns for other children, being away from family. The score of anxiety and somatic symptoms and depression were higher in post-partum women group. The psychological distress scores were almost same in primary care givers depicting the same amount of stress as that of patients.

**Conclusions:** As the pregnant women have greater anxiety and psychological impact because of additional foetus related stress, counselling and preventive strategies are needed to reduce psychological impact in this group. The family members who are giving care to the patients also needs to be counselled.

**Keywords:** COVID 19; Psychological Impact; Stress, Depression; Anxiety; Mental Health

## Introduction

The severe outbreak of novel corona virus disease (COVID 19) which was first reported in Wuhan, China and rapidly spread to other countries in short period of time [1]. This was declared as global health emergency [2]. This pandemic has challenged the various nations in several ways. One such very important and under addressed area is the mental health issues in patients undergoing treatment and their family members develop during the pandemic. There are various studies which highlights this area and need to have further studies to evaluate differential short-term impact of mental health issues in patients and their family members. One survey of heath care

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workers in hospitals treating patients with COVID-19 in Wuhan and other regions in China, doctors, nurses, women, and frontline health care workers directly engaged in the diagnosis, treatment, and care for patients with COVID-19 suffered depression, anxiety, insomnia and distress to the extent of 50.4%, 44.6%, 34.0%, and 71.5% respectively [3]. Studies conducted when there was sudden appearance of severe acute respiratory syndrome (SARS) have shown that psychological distress (anxiety and fear) among medical staff appeared immediately and decreased in the early stages of the epidemic, but depression, psychophysiological symptoms and posttraumatic stress symptoms appeared later and lasted for a long time [4]. During pregnancy, women may get stressed because of fear of adverse perinatal outcome like fear of transmission of virus to fetus, fetal distress or intrauterine death. Although many studies are done on psychological impact of COVID 19 among health care workers, but there are no studies on COVID 19 positive pregnant women admitted in hospital and their relatives giving primary health care to these patients. These studies are needed to know the psychological impact in vulnerable population so that communications and reassurance of the patients could be prioritized upon their routine ante-natal care to avoid increased levels of anxiety and even depression. This present study aimed to evaluate the psychological impact of COVID 19 infection in pregnant and nonpregnant women, their health care givers.

**Objective:** To assess the psychological impact of COVID 19 positive pregnant and nonpregnant women and their primary health care givers

## Materials and Methods

This was a cross-sectional study aimed to assess the psychological impact of COVID 19 positive pregnant and nonpregnant women and their primary health care givers. This was a cross sectional study conducted in COVID 19 ward in Obstetrics and Gynecology from May, 2020 to August 2020 of Lok Nayak Hospital, a dedicated COVID hospital and a tertiary care center in Delhi. All COVID 19 positive pregnant patients were referred from other centers for treatment in this hospital. All women (pregnant and postpartum) patients who had tested positive for COVID 19 by RT PCR and mild to moderate category were admitted in the maternity ward. The admitted patients were telephonically contacted and those who gave consent were enrolled in the study. The questionnaire was explained to them telephonically and audio clips were recorded. This study included 154 (103 Pregnant and 51 post-partum women), 154 primary health care givers.

**GROUP I:** Pregnant women and their primary health care giver.

**GROUP II:** Post-partum women and their primary health care giver.

**Inclusion criteria:** COVID positive patients with mild to moderate disease who gave consent for the study.

**Exclusion criteria**: a. Patients in active labor. b. Patients with h/o postpartum depression and any psychiatric illness.

Ethical clearance was taken and informed consent was taken telephonically and audio clips were recorded. Assessment of psychological status was done on patients and their health care givers through self-administered General Health Questionnaire 28 (GHQ) and Visual Analogue Score (VAS). The GHQ 28 is a 28-item self-administered questionnaire with 4 subscales to measure somatic symptoms, anxiety and insomnia, social-dysfunction and depression. Total score ranges from 28 to 112, with higher scores representing higher psychological impact [5]. As insomnia is most common complaint in such patients and the studies show that insomnia may not be predicted accurately by GHQ, therefore it was separately evaluated by Visual analogue score (VAS). The values of VAS questionnaire vary from 0 to 4 with higher scores representing higher insomnia [6].

### Statistical Analysis

The data was statistically analysed using statistical package for social sciences (SPSS) version 25. Results were analysed using SPSS (version 25) software which is available in the college. For qualitative data, Chi-square test was used to observe the difference between two proportion for the paired values. For quantitative data, Student t –test was used, and data was expressed by the Mean & SD of the difference between two means for paired observations. Type I error below 1 in 20 was considered significant.

## Results

During the study, a total of 154 women with COVID 19 (103 pregnant and 51 post-partum women) and 154 primary health care givers of these patients were enrolled in the study. In pregnant women group 20, 20, and 63 women were in the first, second, and third trimester of pregnancies respectively. In pregnant women group, 50% were asymptomatic while 24% were asymptomatic in post-partum women (Table 1). All asymptomatic women were diagnosed as COVID positive as they were asked to get their RT PCR testing at the time of delivery or during their antenatal visits. Sociodemographic characteristics: Sociodemographic information of the participants included age (in years), education, per capita income and the categorization was done according to upper, middle, lower class according to modified kuppuswamy scale. About the sources of information on COVID-19, 54% of participants were self-documented by television and newspaper, 25% by Internet and other social media and only 3% by family doctors. The psychological impact was evaluated and was not significantly different in upper, middle or lower class. Pregnant women: In this group, the patients had higher scores of anxieties and insomnia than other subscales. Insomnia was also evaluated by VAS score and the severity was more in this group (Table 2).

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**Table 1:** Symptoms In Pregnant And Post-Partum Women

| VARIABLES | | GROUP I (pregnant) N=103 | | GROUP II (Post-partum) N=51 | | CHI-SQUARE TEST P VALUE |
|---|---|---|---|---|---|---|
| | | NO | % | NO | % | |
| CLINICAL FINDING | ASYMPTOMATIC | 50 | 48% | 12 | 23.50% | <0.001 |
| | SYMPTOMATIC | 53 | 51.20% | 39 | 76.50% | |
| FEVER | | 20 | 19.40% | 31 | 60.80% | <0.001 |
| COUGH/COLD | | 17 | 16.50% | 18 | 35.30% | 0.009 |
| DYSPNOEA | | 6 | 5.80% | 12 | 23.50% | 0.001 |
| SORETHROAT | | 5 | 4.90% | 4 | 7.80% | 0.457 |
| DIARRHOEA | | 3 | 2.90% | 6 | 11.80% | 0.028 |
| MYALGIA | | 7 | 6.80% | 9 | 17.60% | 0.038 |
| NAUSEA/VOMITING | | 7 | 6.80% | 6 | 11.80% | 0.297 |
| HEADACHE | | 4 | 3.90% | 7 | 13.70% | 0.026 |
| ANOREXIA | | 4 | 3.90% | 5 | 9.80% | 0.14 |
| ANOSMIA | | 0 | 0.00% | 1 | 2.00% | 0.154 |
| CHEST PAIN | | 1 | 1.00% | 1 | 2.00% | 0.61 |

Group I - Pregnant Group II – Post-partum women

**Table 2:** Comparison of Psychological Impact (Ghq Score And Vas Score) In Pregnant And Post-Partum Patients

| GHQ SCORES | GROUP I N= 103 | | GROUP II N= 51 | | UNPAIRED T TEST P VALUE |
|---|---|---|---|---|---|
| | MEAN | SD | MEAN | SD | |
| SOMATIC SYMPTOMS(A) | 16.3 | 2.97 | **17.8** | 3.66 | **0.007** |
| ANXIETY & INSOMNIA (B) | **17.18** | 3.6 | **17.75** | 3.45 | 0.358 |
| SOCIAL DYSFUNCTION (C) | 16.3 | 2.93 | 15.04 | 2.2 | **0.007** |
| DEPRESSION (D) | 13.22 | 3.2 | 13.67 | 2.73 | 0.398 |
| TOTAL SCORE | 62.85 | 9.97 | **64.25** | 8.87 | 0.397 |
| INSOMNIA VAS | **2.44** | 1.12 | 1.98 | 1.16 | 0.02 |

Post-partum women: In this group, the scores of somatic symptoms and anxiety were higher in nonpregnant women group. The values of GHQ questionnaire were compared between two groups (Table 2). Anxiety scores were found to be higher in postpartum women group. The score of social dysfunctions was higher significantly in pregnant women group as compared to postpartum women group. The score of depression was almost same in both groups. Insomnia score was found to be higher in pregnant women group (Table 2). To evaluate the psychological impact of disease, the GHQ score and VAS score was compared in symptomatic and asymptomatic patients in pregnant and post-partum women groups. The patients who were symptomatic for COVID 19 had higher scores as compared to those without symptoms in both groups. (Table 3,4). Somatic symptoms were significantly higher in asymptomatic post-partum group as compared to pregnant women group. Anxiety scores were almost same in asymptomatic women of both groups (Table 4). Insomnia evaluated by VAS score was higher in asymptomatic as well as symptomatic pregnant women group.In our study, we found that 20% pregnant women were having anxiety because of fear getting infected during antenatal visits, 19% having stress of vertical transmission and 28% anxious because of risk of gross congenital anomaly and 18 % were due to risk of intrauterine growth retardation in baby. In postpartum women, the other cause of stress in women was concerns for their other children at home. GHQ score was calculated in primary health care givers of the patients (Table 5). The score was not found significantly different in caregiver of pregnant and post-partum women. The psychological stress determinants such as total score and its sub scales were found to be almost same as that of patients. The causes of stress in them were risk of getting infected (23%), the risk of infection to other children at home (19%), uncertainty in the treatment of COVID 19 (34%), the disease prognosis not known (11%), high mortality due to the disease (5%). The loss of earning during this period as they were involved in patient care and could not attend to their work is also one of the major causes of stress in primary care givers. The results showed that patients with lower per capita income had higher scores of anxieties, insomnia and social dysfunction. Insomnia scores showed positive correlation with GHQ scores. The patients with sleep disturbances also had higher GHQ scores.

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**Table 3:** Comparison of Psychological Impact (Ghq And Vas Score) In Asymptomatic Patients

| GHQ SCORES | GROUP I | | GROUP II | | UNPAIRED T TEST |
|---|---|---|---|---|---|
| | N = 50 | | N = 12 | | P VALUE |
| | MEAN | SD | MEAN | SD | |
| SOMATIC SYMPTOMS (A) | 16.2 | 2.73 | **18.33** | 3.2 | **0.007** |
| ANXIETY & INSOMNIA (B) | 17.01 | 3.39 | 17 | 1.81 | 0.989 |
| SOCIAL DYSFUNCTION (C) | **16.24** | 2.9 | 14.58 | 1.83 | 0.059 |
| DEPRESSION (D) | 12.99 | 3.04 | 13.42 | 2.02 | 0.638 |
| TOTAL SCORE | 62.23 | 9.57 | 63.33 | 6.01 | 0.7 |
| INSOMNIA VAS | **2.41** | 1.07 | 1.58 | 1.38 | **0.02** |

**Table 4:** Comparison of Psychological Impact (Ghq And Vas Score) In Symptomatic Patients

| GHQ SCORES | GROUP I | | GROUP II | | UNPAIRED T TEST |
|---|---|---|---|---|---|
| | N= 53 | | N= 39 | | P VALUE |
| | MEAN | SD | MEAN | SD | |
| SOMATIC SYMPTOMS(A) | 16.55 | 3.53 | **17.64** | 3.81 | 0.233 |
| ANXIETY & INSOMNIA ( B) | 17.62 | 4.11 | **17.97** | 3.8 | 0.715 |
| SOCIAL DYSFUNCTION( C) | **16.45** | 3.05 | 15.18 | 2.3 | 0.055 |
| DEPRESSION (D) | 13.83 | 3.58 | 13.74 | 2.93 | 0.916 |
| TOTAL SCORE | 64.45 | 10.93 | 64.54 | 9.63 | 0.971 |
| INSOMNIA VAS | **2.52** | 1.24 | 2.1 | 1.07 | 0.145 |

**Table 5**: Psychological Impact (Ghq And Vas Score) of Primary Care Givers

| GHQ SCORES | GROUP I | | GROUP II | | UNPAIRED T TEST |
|---|---|---|---|---|---|
| | N=103 | | N= 51 | | P VALUE |
| | MEAN | SD | MEAN | SD | |
| SOMATIC SYMPTOMS (A) | 16.14 | 2.44 | **17.51** | 3.6 | **0.006** |
| ANXIETY & INSOMNIA (B) | 17.37 | 3.16 | **17.96** | 3.89 | 0.313 |
| SOCIAL DYSFUNCTION (C) | **16.54** | 3.16 | 15.43 | 2.82 | 0.035 |
| DEPRESSION (D) | 13.12 | 2.76 | 13.22 | 2.39 | 0.827 |
| TOTAL SCORE | 63.17 | 7.83 | 64.12 | 9.57 | 0.511 |
| INSOMNIA VAS | **2.25** | 1.05 | 2.04 | 1.17 | 0.253 |

## Discussion

This cross- sectional study aimed to evaluate the impact of COVID-19 outbreak in pregnant women, post-partum women and their health care givers through validated questionnaire. In this study we found 50% COVID positive pregnant women were asymptomatic while only 24% were asymptomatic in post-partum women. The psychological stress was more in symptomatic patients. The insomnia was found more in pregnant women group. The causes of psychological distress in pregnant women were fear of getting infected during antenatal visits, risk of vertical transmission of COVID 19 and the risk of gross congenital anomaly and intrauterine growth retardation in the baby, concerns for other children. A cross sectional study done on pregnant women showed that around 21% of pregnant women suffer from pregnancy related anxiety during the COVID-19 pandemic and the significant predictors of the anxiety include number of pregnancies, practice regarding COVID-19, depression, and social support [7]. A study in China also showed 28% prevalence of moderate to severe pregnancy related anxiety in patients [8]. A survey done on COVID positive pregnant women by Gillian A et al found that 83% of the pregnant women were concerned for their unborn baby while 45% were in stress because of their other children staying away from them and concern for older members of family. A study done on 297 pregnant women showed the cause of anxiety and depression were the inability to reach to obstetrician and risk of infection of fetus during delivery [9]. Another survey on pregnant women revealed that 77% women having anxiety and the cause of anxiety were fear that COVID-19 could induce foetal structural anomalies was present in 47% while in our study fear of congenital anomaly was found in 28%. In the study anxiety due to risk of fetal growth restriction was found in 65% [10] as compared to our study it was 21%. The studies done in COVID 19 positive women observed that prognosis of COVID 19 infection during pregnancy has been good and prevalence of vertical

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transmission is not proven [11,12]. Therefore, these COVID 19 positive pregnant women should be counselled to allay anxiety and psychological distress among them. This study also highlights the psychological stress level in primary care givers of patients. On analysis, it was found that score of psychological impact in care givers were almost same as that of patients inferring that primary care givers also having the same psychological impact due to COVID 19. The lack of definitive treatment (60%), higher rates of mortality (20%) and uncertainty in the course of disease (8%), fear of transmission of infection to them (10%) were main causes of stress in care givers. Another survey done on 3000 people during acute pandemic outbreak, participants reported significantly more subjective stress about others (~50% worried about family member getting COVID-19) than about getting COVID-19 themselves (~20%) [13]. The findings were similar and consistent across genders and also almost same in healthcare providers compared to non-healthcare providers [14,15]. To set out immediate priorities and formulate long term strategies for all aspects of health including mental and physical health during COVID 19 pandemic, the psychological, social, and neuroscientific effects of COVID-19 were evaluated for mental health science research. On regression analysis, it was found that most common psychological disturbance was insomnia or sleep disturbances in patients and health care givers (Table 7,8,9). In a review, it was highlighted that a successful intervention should take into account the various therapeutic tools and the causes of the psychological distress in health care givers. The strategies which could be implemented during and after the emergency to support health care givers of COVID-19 patients include individual or group psychological support programs as it was done for health care professionals [16,17]. A study evaluated a digital learning package included, evidence-based guidance from experts, support and signposting relating to psychological wellbeing for all UK healthcare employees [18]. A Study done to evaluate mental health of family care givers of COVID 19 patients found out that 75.4% of the family members of COVID-19 patients suffered from mental health issues. On comparison, the scores of all three scales i.e. stress, anxiety, and sleep disturbance levels were higher in caregivers from the USA than in India [19].

## Strengths and Limitations

The strength of our study was cross sectional design of the study, unique timing of data collection, in which vast majority of the sample were in lockdown, with closures of school and nonessential businesses, and use of validated questionnaire. The questionnaire was filled telephonically explaining the details about each question. The study was done in a largest government dedicated COVID hospital of India reflecting the real pregnant population of the country. Limitation of our study was the small number of women under study and taking mild COVID 19 positive cases and half were asymptomatic pregnant women. The design of the study did not allow us to take acute maternal and fetal complications as a cause of anxiety

## Conclusion

The pregnant women have greater anxiety and psychological impact because of additional foetus related stress. Counselling and preventive strategies needed to reduce psychological impact on this group infected with COVID-19 infections. The outcome of pregnant patient infected with COVID 19 so far reported has been generally good and also it is still not clear about the occurrence and a prevalence of a vertical transmission to the fetus by the studies done so far. Therefore, awareness about the transmission of disease and precautions to be observed in antenatal, postnatal and during breastfeeding should be provided through counselling sessions with the help of psychologist at the time of antenatal visits and in wards to combat stress in these patients. The psychological stress due to COVID 19 is not less in family members who are giving care to the patients. Mental health of family members giving care to COVID 19 patients is equally affected. The quality of sleep among health care givers is also poor. Stress, anxiety and sleep disturbances were influenced by severity of disease. The care givers of patients with severe disease had higher anxiety and stress and poor quality of sleep. The patient being hospitalized means that the severity of the disease is more is also the cause of exaggeration of anxiety and stress in family caregivers. The impact of COVID 19 infection affecting mental health of patients and their care givers cannot be overstated. Implementation of Health policies, supporting infrastructure, public health education through mass media, online counselling sessions are the strategies to be adopted to combat stress among public in this pandemic.

**Consent:** Verbal consent was obtained telephonically and audio-clips were recorded.

**Ethical approval:** This study was approved by the Institutional Ethical Committee of Maulana Azad Medical College, New Delhi, India.

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