

## Psychological Impact in Covid Positive Pregnant Females

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### ABSTRACT

Apart from the physical effects of Covid-19, psychological effects are seen as well in the general population. In pregnant females, psychological impact leads to adverse pregnancy and neonatal outcomes. Due to limited data, the mental health of COVID-19 positive pregnant patients is not clear especially in relation to isolation in hospital, treatment, time and mode of delivery.

**Objective:** To determine and compare frequency of anxiety and depression in pregnant women with and without COVID-19.

**Material and Methods:** It was a comparative cross-sectional study that was conducted in the department of Obstetrics and Gynaecology, SGRH, Lahore. 60 pregnant females were enrolled and underwent nasopharyngeal swab for PCR and had HRCT to determine Covid-19 status. HADS was applied on all pregnant females to assess depression and anxiety and findings were subjected to statistical analysis.

**Results:** The mean age, gestational age, anxiety scores and depression scores were 29.93±4.15, 31.1±6.28, 10.56±3.29 and 10.02±2.72 respectively. There were 60% Covid positive pregnant females, depression was present in 31.7% and anxiety was present in 65% females. Comparison of pregnant females with or without Covid infection in terms of depression and anxiety using independent T-test revealed that anxiety was significantly associated with Covid positive status ( $p=0.032$ ), however, no significant association was seen between depression and covid status ( $p=0.641$ ) (table 3).

**Conclusion:** Covid-19 was frequently seen in pregnant females and was significantly associated with high frequency of anxiety. Depression was less commonly seen and was not significantly associated with Covid-19 infection.

**Keywords:** Covid-19, Pregnancy, Depression, Anxiety, HADS

### INTRODUCTION

A world pandemic caused by a virus (COVID-19), resulting in severe acute respiratory syndrome is going to increase day by day<sup>1</sup>. Previous data showed that a specific population like pregnant women are vulnerable to this pandemic resulting in poor outcome of both mother and babies as 35% death rate has been documented<sup>1,2</sup>. Other than death rate, it has been noted that COVID-19 also psychologically disturb the general population, resulting in widespread anxiety and depression<sup>3</sup>. The prevalence of anxiety and depression is high that is about 6 to 15 % in pregnant women<sup>4,5</sup>. Different previous studies showed that maternal psychological stress is associated with adverse pregnancy and neonatal outcome<sup>6,7</sup>. It also affects the mode of delivery<sup>8</sup>, increase chances of emergency caesarean section and instrumental delivery.

To get pregnant and having a baby is a happiest event of life. But the psychological changes during pregnancy disturb the immune status resulting in severe infections<sup>9</sup>. WHO (World Health Organization) narrated "Virtually all women can develop mental disorder during pregnancy". Any stressful condition for example COVID -19 infection resulted in increased chances of mental health disorders specifically anxiety and depression<sup>10</sup>. Due to limited data, the mental health of COVID-19 positive pregnant patients is not clear especially in relation to isolation in hospital, treatment, time and mode of delivery. New WHO guidelines for antenatal and intrapartum care show positive psychological pregnancy and childbirth experience resulted in psychological wellbeing of mother and baby<sup>12</sup>.

The Hospital Anxiety and Depression Scale (HADS) is a self-reporting two dimensional questionnaire to screen degree of anxiety and depression in hospital admitted patients<sup>13</sup>. HADS is simple and easier to use and access both anxiety and depression as already used in many research article<sup>14,15</sup>. It is one of the recommended tool by NICE (National Institute for Health and Care Excellence) to diagnose anxiety and depression 16 Stem confirm that HADS is appropriate for initial diagnosis and to see psychological progression in admitted patients<sup>17,18,19</sup>. HADS has been validated in many languages so easy to administer and access The Urdu translation of HADS showed linguistic, conceptual and scale equivalence with English version<sup>20</sup>.

**Rationale:** International studies and WHO showed that major life-threatening public health events such as COVID-19 outbreak may increase the risk of mental illness among pregnant patients<sup>10</sup>. As limited data is available in this field, so this study was conducted to assess anxiety and depression in pregnant women with or without COVID-19. The results of the study can be used for the provision of psychological first aid in pregnant females who have mental health related issues that may be particularly useful to prevent negative outcome for women or their fetuses.

### METHODOLOGY

It was a comparative cross-sectional study, which was carried out in the Department of Obstetrics and Gynaecology, Sir Ganga Ram Hospital, Lahore. The study was carried out within a duration of 3 months after taking approval from Ethical Review Committee. Written informed consent was taken from all patients. A total of 60 pregnant females of age 18 to 49 years, of any gestational age were enrolled in the study. The sampling technique used was non-probability consecutive sampling. Patients with previous history of any mental illness, comorbid diabetes, hypertension, ischemic heart disease, hepatitis and pregnant females who were critically ill were excluded from the study. Pregnant females were labeled as Covid positive, if the PCR was positive for Covid-19 or HRCT showed Covid-19 pulmonary manifestations or both were present. Depression and anxiety were assessed using Hospital Anxiety and Depression Scale (HADS). HADS consisted of a total 14 items, out of which 7 items were related to anxiety and 7 were related to depression. The score of the scale ranged from 0 to 21 for each subscale. A score of 0-7 for each subscale revealed no anxiety/depression, a score of 8 to 10 showed borderline abnormality and a score of 11 or above was labeled as possible depression/anxiety.

Demographical details, clinical history and physical examination of all patients was carried out. Nasopharyngeal swab was taken of all patients and PCR was carried out. All patients then underwent HRCT. Findings of both PCR and HRCT were noted down on a predesigned performa and Covid status was assessed. HADS was applied on all patients and the scores were noted down. Depression and anxiety was assessed as per

operational definition and all findings were then subjected to statistical analysis.

Data was analyzed using SPSS version 25.0. Quantitative data such as age, gestational age, depression and anxiety scores were presented as mean and standard deviation. Qualitative data such as trimester, socioeconomic status, age group, covid status, depression and anxiety were presented as frequency and percentages. Data was stratified for age, socioeconomic status and trimester of pregnancy. Post-stratification chi square test was applied and a p value of  $\leq 0.05$  was considered as significant. Comparison of Covid positive and negative patients for presence of depression and anxiety was done by Independent T-test and a p value of  $\leq 0.05$  was considered as significant.

**RESULTS**

A total of 60 pregnant females were enrolled. The mean age, gestational age, anxiety scores and depression scores were  $29.93 \pm 4.15$ ,  $31.1 \pm 6.28$ ,  $10.56 \pm 3.29$  and  $10.02 \pm 2.72$  respectively (table 1). There were 60% Covid positive pregnant females, depression was present in 31.7% and anxiety was present in 65% females (table 2).

Table 1: Showing Mean Of Quantitative Variables

VARIABLES	N=60 MEAN±SD
Age (in years)	29.93±4.15
Gestational Age (in weeks)	31.1±6.28
Anxiety scores	10.56±3.29
Depression scores	10.02±2.72

SD=standard deviation

Table 2: Frequency Distribution Of Qualitative Variables

VARIABLES	N=60 (100%) FREQUENCY (PERCENTAGE)	P VALUE
<b>AGE GROUPS</b>		
Young Age (18 to 30 years)	38 (63.3%)	0.120
Middle Age (31 to 49 years)	22 (36.7%)	0.094
<b>TRIMESTER</b>		
First Trimester (1 to 12 weeks)	22 (36.7%)	0.606
Second Trimester (13 to 26 weeks)	35 (58.3%)	0.162
Third trimester (27 to 40 weeks)	3 (5%)	0.106
<b>COVID STATUS</b>		
Yes	36 (60%)	-
No	24 (40%)	-
<b>SOCIOECONOMIC STATUS</b>		
Low	12 (20%)	0.186
Middle	34 (56.7%)	0.856
High	14 (23.3%)	0.597
<b>DEPRESSION</b>		
Yes	19 (31.7%)	-
No	41 (68.3%)	-
<b>ANXIETY</b>		
Yes	39 (65%)	-
No	21 (35%)	-

P value  $\leq 0.05$  was considered as significant

Table 3: Independent T-Test Comparing Covid Postive And Covid Negative Patients In Terms Of Depression And Anxiety

VARIABLES	COVID STATUS N=60 (100%)		T-TEST VALUE	P VALUE
	YES	NO		
<b>DEPRESSION</b>				
Yes	13 (21.7%)	6 (10%)	0.220	0.641
No	23 (38.3%)	18 (30%)		
<b>ANXIETY</b>				
YES	25 (41.7%)	14 (23.3%)	4.836	0.032*
NO	11 (18.3%)	10 (16.7%)		

P value of  $\leq 0.05$  was considered as significant

The results showed that age, pregnancy trimester and socioeconomic status were not associated with the presence of

depression and anxiety in patients who were Covid positive ( $p > 0.05$ ) (table 2). Comparison of pregnant females with or without Covid infection in terms of depression and anxiety using independent T-test revealed that anxiety was significantly associated with Covid positive status ( $p = 0.032$ ), however, no significant association was seen between depression and covid status ( $p = 0.641$ ) (table 3).

**DISCUSSION**

The present study revealed that 60% of the pregnant females suffered from Covid-19. Out of these 60% who had a positive Covid status, depression was found in 21.7% patients and anxiety was found in 41.7% patients. Anxiety was significantly associated with Covid positive status. This high rates of both anxiety and depression in pregnant females who had Covid positive status was unrelated to age, trimester of pregnancy and socioeconomic status.

In pregnant females, depression and anxiety are commonly encountered. The rate of detection of these mental health issues vary in different regions and countries<sup>1,12,23</sup>. Generally, depression is seen in 4% to 15% of pregnant females, 5% to 13% have anxiety and 0.9% to 3.8% have both. In China, it was found that during the epidemic of Covid-19, 8.3% of the pregnant females had anxiety and 50.6% had depression<sup>21</sup>. However, our study reported high rates of anxiety i.e. 41.7% and less rate of depression i.e. 21.7%. This difference may be denoted to different geographical location, health delivery system and other measures being followed to control the situational crisis. In another study conducted in Turkey, it was found that anxiety was present in 64.5% pregnant females and depression was seen in 56.3%<sup>22</sup>. Similarly, high rates were seen in current study in terms of anxiety i.e. 65% and the rates of depression were high too i.e. 31.7%.

Generally, it is often thought that both anxiety as well as depression are interlinked and the causal factors are often related<sup>8,14,23</sup>. The mental health of pregnant females is affected by complex and multiple factors such as age, level of education, profession, gestational age, socioeconomic status, presence of medical comorbidity and other psychosocial factors<sup>9,15,17</sup>. In the current study the effect of age, gestational age and socioeconomic status was assessed and it was found that they were unrelated to depression and anxiety. Similar findings were yielded by another study which also revealed that demographical and psychosocial factors did not affect the outcomes in terms of presence of anxiety and depression in pregnant females who had Covid<sup>18</sup>.

With regards to psychosocial factors, social support and stress have been found to have highest impact on females who are pregnant<sup>22</sup>. Presence of depression or anxiety is significantly related to stress and those females who have a low social support have been found to have more chances of having an anxiety or depression while being pregnant<sup>22</sup>. The current study did not evaluate these factors, however, the current study did assess the role of age, trimester and socioeconomic status on depression and anxiety and found out that these variables were not associated with the presence of anxiety or depression in females who had Covid positive status.

The current study had certain limitations. Firstly, it was carried out at a single center and the sample size was small so the results cannot be generalized. Secondly, other than demographical factors and trimester of pregnancy other factors such as presence of stress, social support and isolation were not assessed in the current study that may have played part in causing increased rates of depression and anxiety in pregnant females.

**CONCLUSION**

Covid-19 infection rates were high in pregnant females and was associated with high rates of anxiety and depression. However, significant association was seen between covid positive status and anxiety. Age, gestational age and socioeconomic status were unrelated to the outcome measures. Future studies must be

carried out on larger sample size and must incorporate other factors that may play part in causing anxiety and depression, thus can help in establishing the factors that can lead to such mental health issues and can help in providing adequate psychological measures to overcome these issues and thus improve overall maternal health and both pregnancy and neonatal outcomes.

## REFERENCES

1. Wong SF, Chow KM, Leung TN, Ng WF, Ng TK, Shek CC, Ng PC, Lam PW, Ho LC, To WW, Lai ST. Pregnancy and perinatal outcomes of women with severe acute respiratory syndrome. *American journal of obstetrics and gynecology*. 2004 Jul 1;191(1):292-7.
2. Pavli A, Tsiodras S, Maltezou HC. Middle East respiratory syndrome coronavirus (MERS-CoV): prevention in travelers. *Travel medicine and infectious disease*. 2014 Nov 1;12(6):602-8.
3. Wang C, Pan R, Wan X, Tan Y, Xu L, McIntyre RS, Choo FN, Tran B, Ho R, Sharma VK, Ho C. A longitudinal study on the mental health of general population during the COVID-19 epidemic in China. *Brain, behavior, and immunity*. 2020 Jul 1;87:40-8.
4. Duko B, Wolka S, Seyoum M, Tantu T. Prevalence of depression among women with obstetric fistula in low-income African countries: a systematic review and meta-analysis. *Archives of women's mental health*. 2020 Mar 27:1-9.
5. Woody CA, Ferrari AJ, Siskind DJ, Whiteford HA, Harris MG. A systematic review and meta-regression of the prevalence and incidence of perinatal depression. *J Affect Disord*. 2017;219:86-92.
6. Grigoriadis S, VonderPorten EH, Mamisashvili L, Tomlinson G, Dennis C, Koren G, et al. The impact of maternal depression during pregnancy on perinatal outcomes. *J Clin Psychiatry*. 2013;74(04):e321-e341.
7. Qiao Y, Wang J, Li J, Wang J. Effects of depressive and anxiety symptoms during pregnancy on pregnant, obstetric and neonatal outcomes: A follow-up study. *J Obstet Gynaecol*. 2012;32(3):237-40.
8. Bayrampour H, Salmon C, Vinturache A, Tough S. Effect of depressive and anxiety symptoms during pregnancy on risk of obstetric interventions. *J Obstet Gynaecol Res*. 2015;41 1040-8.
9. Zigmond AS, Snaith RP. The hospital anxiety and depression scale. *Acta psychiatrica scandinavica*. 1983 Jun;67(6):361-70.
10. Mumford DB, Tareen IA, Bajwa MA, Bhatti MR, Karim R. The translation and evaluation of an Urdu version of the hospital anxiety and depression scale. *Acta Psychiatrica Scandinavica*. 1991; 83(2): 81-5.
11. Ali NS, Azam IS, Ali BS, Tabbusum G, Moin SS. Frequency and associated factors for anxiety and depression in pregnant women: a hospital-based cross-sectional study. *ScientificWorldJournal*. 2012; 2012:653098.
12. Patabendige M, Gamage MM, Weerasinghe M, Jayawardane A. Psychological impact of the COVID-19 pandemic among pregnant women in Sri Lanka. *International Journal of Gynecology & Obstetrics*. 2020 Oct;151(1):150-3.
13. Saccone G, Florio A, Aiello F, Venturella R, De Angelis MC, Locci M, Bifulco G, Zullo F, Sardo AD. Psychological impact of coronavirus disease 2019 in pregnant women. *American Journal of Obstetrics & Gynecology*. 2020 Aug 1;223(2):293-5.
14. Zhang Y, Ma ZF. Psychological responses and lifestyle changes among pregnant women with respect to the early stages of COVID-19 pandemic. *International Journal of Social Psychiatry*. 2020 Aug 20:0020764020952116.
15. Durankuş F, Aksu E. Effects of the COVID-19 pandemic on anxiety and depressive symptoms in pregnant women: a preliminary study. *The Journal of Maternal-Fetal & Neonatal Medicine*. 2020 May 15:1-7.
16. Parra-Saavedra M, Villa-Villa I, Pérez-Olivo J, Guzman-Polania L, Galvis-Centurion P, Cumplido-Romero Á, et al. Attitudes and collateral psychological effects of COVID-19 in pregnant women in Colombia. *International Journal of Gynecology & Obstetrics*. 2020 Nov;151(2):203-8.
17. Milne SJ, Corbett GA, Hehir MP, Lindow SW, Mohan S, Reagu S, et al. Effects of isolation on mood and relationships in pregnant women during the covid-19 pandemic. *European Journal of Obstetrics and Gynecology and Reproductive Biology*. 2020 Sep 1;252:610-1.
18. Corbett GA, Milne SJ, Hehir MP, Lindow SW, O'connell MP. Health anxiety and behavioural changes of pregnant women during the COVID-19 pandemic. *European journal of obstetrics, gynecology, and reproductive biology*. 2020 Jun;249:96.
19. Shahid A, Javed A, Rehman S, Tariq R, Ikram M, Suhail M. Evaluation of psychological impact, depression, and anxiety among pregnant women during the COVID-19 pandemic in Lahore, Pakistan. *International Journal of Gynecology & Obstetrics*. 2020 Dec;151(3):462-5.
20. Mappa I, Distefano FA, Rizzo G. Effects of coronavirus 19 pandemic on maternal anxiety during pregnancy: a prospective observational study. *Journal of Perinatal Medicine*. 2020 Jul 1;48(6):545-50.
21. Dong H, Hu R, Lu C, Huang D, Cui D, Huang G, Zhang M. Investigation on the mental health status of pregnant women in China during the Pandemic of COVID-19. *Archives of gynecology and obstetrics*. 2021 Feb;303(2):463-9.
22. Sut HK, Kucukkaya B. Anxiety, depression, and related factors in pregnant women during the COVID-19 pandemic in Turkey: A web-based cross-sectional study. *Perspectives in Psychiatric Care*. 2020.
23. Ng QJ, Koh KM, Tagore S, Mathur M. Perception and feelings of antenatal women during Covid-19 pandemic: A cross-sectional survey. *Ann Acad Med Singap*. 2020 Aug 1;49(8):543-52.
24. Ceulemans M, Hompes T, Foulon V. Mental health status of pregnant and breastfeeding women during the COVID-19 pandemic: A call for action. *International Journal of Gynecology & Obstetrics*. 2020 Oct;151(1):146-7.