A Comparative Study of Mental Health Impact among the Patients of COVID-19 during First and Second Waves of Pandemic

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Abstract

Aims & Objectives: To find out the prevalence of mental health impact including depression, stress and anxiety in COVID patients during first and 2nd waves of COVID pandemic.

Methodology: 50 patients in first wave and other 50 patients in second wave COVID-19 positive patients who were admitted in COVID ward enrolled in the study. The first part consisted of basic socio-demographic details of the participants including name, age and sex along with DASS-21 questionnaire for depression, anxiety and stress in accordance with the approved ethical standards. Both parts also comprise questions regarding basic socio demographic details of participants.

Results: The mean age of second wave covid-19 patients was significantly lower (p < 0.05). No significant variation in sex was found. In the first wave, 66.0% patients were having comorbidity while 22.0% patients of the second wave were suffering from comorbidities. At the second wave of COVID-19, the stress score was significantly higher (p < 0.05). On the DASS-21 scale, a significantly higher score of Anxiety and depression was found in the second wave of pandemic than the first wave (p < 0.05).

Conclusion: Young patients of COVID-19 during the second wave of pandemic not only had higher prevalence of anxiety, depression and stress disorder, but also had statistically higher scores on DASS-21 scale when compared to patients of COVID-19 during the First wave .

INTRODUCTION

The dramatic outburst of Coronavirus disease (COVID-19) on the global stage has amazed many people and left us feeling vulnerable and helpless. The first case of COVID-19 in India, was reported on 27 January 2020.[1] Presently, India has the most significant number of COVID-19 cases in Asia.[2] As of 12 June 2021, in India 29.3 million cases testified of COVID-19 contagion which was the second-largest figure of definite COVID -19 cases in the world as also has the

third-highest number of COVID-19 related deaths at 367,081 deaths.[3,4] During this covid-pandemic Millions of people have lost their livelihood, and many others were compelled to alter their personal lives drastically; as for a long stretch of time people were compelled to stay indoors following repeated stretches of lockdowns during which people were restricted from any outside visits which leads to adverse psychological impact, No guidelines were framed and notified to protect people from psychological trauma, even for the most susceptible individuals. Researchers exploring the mental health consequences of COVID-19 support the view that the disease has been a psychological hazard.[5-8] These studies consistently stated that the levels of anxiety and depressive symptomatology were higher than pre-pandemic standards.

The COVID-19 pandemic has been a challenge for the covid-19 positive patients globally regarding their mental health, and the situation prevailing in India is no different. Unfortunately, there is a scarcity of data available regarding anxiety, mental health, and stress levels being faced by covid-19 positive patients in the country. This study aimed to comparatively assess the levels of anxiety, stress, and depression among first and second wave COVID-19 positive patients.

MATERIAL AND METHODS

This is a comparative observational study conducted on 100 participants comprising 50 patients in the first wave and another 50 in the second wave of covid-19 positive patients. All these patients were admitted in the COVID ward and the COVID ICU in order to ascertain the influence of COVID on their mental health. The study was performed in the department of Psychiatry L.LR.M Medical College, Meerut, and Uttar Pradesh.

Study Design: comparative observational study

Study Location: This was a tertiary care teaching hospital based study carried out in the department of Psychiatry L.LR.M Medical College, Meerut, and Uttar Pradesh.

Study Duration: April 2020 to April 2021.

Sample size: 100 patients.

Sample size calculation: The size of sample was estimated on the basis of a single proportion design. The target population from which samples were randomly drawn was considered 10,000. We assumed a confidence interval of 10% and confidence level of 95%. The sample size actually obtained for this study was 48 patients from each group. We planned to include a total 100 patients (50 from Group I- covid-19 patients of the first wave, and 50 others from Group II- covid-19 patients of second wave, 50 patients for each group) with 4% drop out rate.

Subjects & selection method: The study population was drawn from consecutive moderate to severe covid-19 patients of first and second waves admitted in covid wards and ICU in L.LR.M Medical College, Meerut, Uttar Pradesh, in between April 2020 to April 2021. Patients were divided into two groups (each group comprised of 50 patients) according to doses of wave. During intake, patients scored the DASS-21 as part of the standard intake procedure. After admission the patients were asked to participate in this study and sign a written informed consent. This consent included permission to use data from the DASS-21 at intake, as well as socio-demographic data from their electronic patient record.(which include their Age, gender, marital status, comorbid condition, covid severity level)

Coronavirus 2 (SARS-CoV-2)-infection was identified by real time reverse transcriptase-polymerase chain reaction (RTPCR). Severity of COVID-19 was graded as follows: (1) mild; as mild clinical symptoms, no pneumonia on lung CT; (2) common: as fever, cough and lung CT with pneumonia; (3) severe: as respiratory distress (respiratory rate > 30 min^{-1}, oxygen saturation (O2Sat) ≤ 93 percent at rest and/or ratio of arterial oxygen partial pressure to fractional inspired oxygen ≤300 mmHg (PaO2/FIO2); and (4) critical: afore mentioned criteria of respiratory failure receiving mechanical ventilation, shock, and/or organ failure other than lung and/or intensive care unit (ICU) hospitalization.[9,10]

Inclusion criteria: Age >18 years of either sex covid-19 patients admitted in ward and ICU during the currency of first and second COVID-19 pandemic waves.

Exclusion criteria: Patients who had not given their consent for study, were pediatric patients, severe

COVID-19 cases needed Intubation or ventilator support and patient who already diagnosed with Major psychiatric illness before covid infection & or cognitive impairment (because they may not fully understand the questionnaire) were excluded from study.

Procedure Methodology

The DASS-21 scale is a self-reported questionnaire which consist of 21 items, 7 items per subscale include depression, anxiety and stress. and for every item on a scale, patients were asked to score from 0 (did not apply to me at all) to 3 (applied to me very much). Because the DASS-21 is a short form version (and less time consuming) of the DASS original, the long form has 42 items, the sum scores were computed by adding up the scores of the items as per (sub) scale and multiplying them by a factor 2. The scoring system is Likert type and that for each of the subscales may range from 0 to 42. Table 1 shows the final score of DASS Categorization, studies have shown that the DASS-21 score have validity in the measurement of degree of depression. Anxiety & stress in patients, it also has high reliability in term of usage in clinical & non clinical settings.[11]

Table 1: Manual for Depression, Anxiety and Stress Scale

	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely Severe	28+	20+	34+

The responses of the study participants were then compared for the first and second waves of covid-19 positive patients. Descriptive analysis was performed by calculating the frequency and percentages of the categorical variables and mean and standard deviation (SD) for continuous variables. The Chi-square test and fisher exact test were used to establish the association between categorical independent variables and the categorical dependent variables. A P-value $p < 0.05$ was considered significant for all the tests.

Observation

This is a comparative observational study conducted on 100 participants including 50 patients in first wave and other 50 patients were from second wave covid-19 positive patients who were admitted in COVID ward. The study was performed in the department of Psychiatry L.LR.M Medical College, Meerut, and Uttar Pradesh.

The mean age of the 50 patients included in first wave was 41.70 ± 13.16 and the mean age of the other 50 patients of second wave was 36.00 ± 10.91which was significantly lower ($p < 0.05$). Male, female patients ratio was equal in the first wave but in the second wave' male percentage (54.0%) was higher than the females (46.0%). In the first wave (66.0%) patients were having comorbidities while 22.0% of second wave patients were suffering from comorbidities. [Table 2]

Among the first wave patients of COVID-19 the mean stress score was 16.44 ± 13.02 and the score in the second wave of COVID-19 was 23.50 ± 11.76; which was significantly higher ($p < 0.05$). Anxiety score was

Table 2: Demographic Details in both group patients

		Group		P value
		First wave (n=50)	Second wave (n=50)	
Sex	Male	25 (50.0%)	27 (54.0%)	0.689*
	Female	25 (50.0%)	23 (46.0%)	
Age Group (Years)	≤35	13 (26.0%)	24 (48.0%)	0.063*
	36-50	26 (52.0%)	20 (40.0%)	
	>50	11 (22.0%)	6 (12.0%)	
Men Age (Years)		41.70 ± 13.16	36.00 ± 10.91	0.020#
Comorbidity presents (diabetic mellitus, hypertension, chronic kidney disease, severe anemia, asthma etc.)		33 (66.0%)	11 (22.0%)	<0.001*

*Chi-Square test; # Independent Samples t test

Table 3: Psychological score (stress, anxiety and depression) variation in groups

| | Group | | P value# |
	First wave (n = 50)	Second wave (n = 50)	
Stress score	16.44 ± 13.02	23.50 ± 11.76	0.005
Anxiety score	11.98 ± 9.55	14.90 ± 8.38	0.107
Depression score	11.56 ± 12.83	15.28 ± 12.09	0.139

Independent Samples t test

Table 4: Distribution of studied patients on the psychological disorder in both groups

| | | Group | | P value* |
		First wave (n = 50)	Second wave (n = 50)	
Stress	Normal	22 (44.0%)	10 (20.0%)	<0.001
	Mild	10 (20.0%)	2 (4.0%)	
	Moderate	3 (6.0%)	11 (22.0%)	
	Severe	5 (10.0%)	14 (28.0%)	
	Extreme Severe	10 (20.0%)	13 (26.0%)	
Anxiety	Normal	16 (32.0%)	9 (18.0%)	0.428
	Mild	6 (12.0%)	4 (8.0%)	
	Moderate	8 (16.0%)	9 (18.0%)	
	Severe	8 (16.0%)	10 (20.0%)	
	Extreme Severe	12 (24.0%)	18 (36.0%)	
Depression	Normal	31 (62.0%)	18 (36.0%)	0.030
	Mild	3 (6.0%)	8 (16.0%)	
	Moderate	0 (0.0%)	3 (6.0%)	
	Severe	4 (8.0%)	6 (12.0%)	
	Extreme Severe	12 (24.0%)	15 (30.0%)	

*Chi-Square test

11.98 ± 9.55in first wave and that in the second wave of COVID-19 was 14.90 ± 8.38 and depression score was 11.56 ± 12.83 in first wave and in the second wave of COVID-19 depression was 15.28 ± 12.09 which is also higher than the first wave of COVID-19 but differences is insignificant (p > 0.05). [Table 3]

As for the association level of stress, anxiety and depression among the first and second COVID-19 waves patients it was observed that the patients with moderate, severe and extremely severe levels of stress and depression were significantly higher among the COVID-19 patients of second wave than the first wave (p < 0.05). Talking about anxiety level it was found that the number of patients feeling moderate, severe and extremely severe anxiety were more during the second wave group but the difference was statistically insignificant between the patients of the two waves (p > 0.05). [Table 4]

Discussion

In the situation of the COVID-19 pandemic, this timely study is both relevant and urgent. It is very imperative for those persons working at the front-line with the infected patients and in affected regions to have necessary strategies and the resources to bear various challenges. There is the lack of published studies particularly on mental health implications faced by the COVID-19 patients during the first and 2nd wave of COVID-19 epidemic. There is also the paucity of data around how to prevent psychological distress, and which steps are required to mitigate

harm to COVID-19 patient's comfort. The reason for this study is the mental health impact of the first and second wave of COVID -19 pandemic.

Early evidence has shown that the patients with COVID-19 are at the risk of developing the mental health symptoms. Similar psychological reactions were depicted among COVID-19 patients in the previous studies during the 2003 Severe Acute Respiratory Syndrome (SARS) outbreak.[12,13] The increasing no of the confirmed cases, burden, of work and deaths, lack of sufficient personal protective equipment (PPE), lack of the specific treatment, media coverage, susceptibility to infection and to stay in quarantine, in addition to feelings of being insufficiently supported in workplace, can contribute to mental burden of the COVID-19 patients.[14]

This comparative observational study was conducted on 100 participants, including 50 patients from the first wave and 50 patients from the second wave covid-19 positive patients admitted in the COVID ward and COVID ICU to know the influence of COVID on their mental health. During intake, patients scored the DASS-21 as part of the standard intake procedure. After admission the patients were requested to participate in this study and sign a written informed consent. The agreement included permission to use information used in DASS-21-scale, as well as socio-demographic details from their electronic patient record.

In this study, the mean age of first wave patients was 41.70 ± 13.16 years. In the second wave, male patients' (54.0%) percentage was higher than females (46.0%), and mean age of second wave patients was 36.00 ± 10.91 years, which was significantly lower (p < 0.05) in the second wave. Venugopal VC et al[15] (2020) reported the mean age was 36.52 years old of participants, and half of these individuals were males. In first wave patients, 66.0% were having comorbidity, while 22.0% of second wave patients were suffering from comorbidity due to younger patients in second wave Covid-19. Vahedian-Azimi et al[16] (2020), in their study on comparison of the severity of psychological distress, found that out of 217 medical staff, 111 (51.2%) were male, and 106 (48.8%) were females, which was in accordance with the present study.

COVID second wave and mental health: NIMHANS helpline sees 40% increase in calls. The devastating second wave of pandemic in India, feelings of fear, guilt, uncertainty and sadness abound. Many people are suffering mental health complications like depression and anxiety. Evidence to this, the NIMHANS 24/7 mental health helpline has documented a 40% spike in the number of calls collected on a daily basis subsequently the second wave penniless out. 80% callers are in the age group of 18-45 years.[17]

In contrast, a study done by Al- Hanawi MK et al.[18] (2020), reported that gender was the significant factor associated with a psychological disorder and females were affected significantly higher (p < 0.05). This may be because of the higher sample size and geographical changes.

It was found that the stress score, Anxiety score and depression score were significantly higher in the second wave of COVID-19 than the first wave of pandemic (P < 0.05). A chinese study reported moderate to severe levels of depression, stress, and anxiety (16.5%, 8.1%, and 28.8%, respectively) among the respondents.[19] The data obtained from India show a risk of mental disorders in nearly 42.16% of respondents Venugopal VC et al (2020).[20] Another study done by Grover S et al[20] (2018) in North India reported that 30.1% of participants found to have depression, and 13% of participants found to have a high level of stress. A Meta-analyses done assessing the impact of the COVID-19 pandemic on mental health clearly shows that it has an association with population health i.e an increase in level of social anxiety, severity of symptoms, of depression and risk of developing PTSD. The main influencing factors include female sex, a low level of education, and the coexistence of chronic diseases.[21] A study conducted in 2017 and 2020 in the Czech Republic, showed an increase in mental disorder control from 20.02% to 29.63%, showing the impact of the COVID-19 pandemic and the numerous restrictions associated with it.[22]

In the present study, it was observed that moderate to extreme severe levels of stress (36% Vs.76%), anxiety (56% Vs. 74%) and depression (32% Vs. 48%) between first wave and second wave of COVID-19 pandemic. It indicates that the stress was

significantly more in the second wave than the first wave of COVID-19 patients. Numerous studies have been done on mental disorders during Covid-19 pandemic using different-2 scale. No study was done on comparison of mental health impact in COVID patients during the first and 2nd wave of COVID pandemic with DASS-21 scale. Recently, an 8-wave longitudinal study to investigate the changes in the psychological distress among Croatian students using DASS-21 scale found that the levels of depression, anxiety and stress were normal in more than 60% of cases during the pandemic. Moderate- to severe levels of depression, anxiety and stress were found in 19.48%, 28.8% and 22.08% of the participants, respectively.[23]

The results of the other studies in which the same psychological instrument (DASS-21) was used, we can observe variations in the range of distress in different countries: among the participants in Spain, in the study done by Ozamiz-Etxebarria et al[24] (2020), more than a quarter of the general population sample had symptoms of depression (27.5%), anxiety (26.9%) and stress (26.5%), and depending on the circumstances, the authors interpret these results as optimistic; in the general adult population in Spain Rodriguez-Rey R et al[25] (2020), 41% of participants reported depressive symptoms, 25% showed mild to severe anxiety, and 41% felt stressed; Verma S and Mishra A[26] (2020) found that about a quarter of their sample in the general population in India had high levels of distress: depression (25%), anxiety (28%) and stress (11%). Mazza C et al[27] (2020) reported prevalence of depression (32.4%), anxiety symptoms (18.7%) and stress score (27.2%) in the general population in Italy. Because of the very significant differences in the methods used by countries to cope with the pandemic, it is crucial to identify a range of emotional responses specific to environmental stressors in different contexts to organize appropriate interventions for the specific needs of the people affected.

It was observed that in the second wave of COVID-19 the stress level and depression level were significantly higher ($p < 0.05$) while anxiety level was insignificantly higher ($p > 0.05$) than the first wave of COVID-19. Comparing the results of our study between two waves of pandemic, it can be supposed that COVID-19 pandemic has had

a significant impact on the mental condition of our population due to more exposure of the most traumatic aspects of the pandemic (such as their infection, the infection of their family/friends or the death of relatives due to COVID-19), which is a risk factor for increasing stress, depression and anxiety in second wave.

The limitation of the study was owing to the small sample; there is a further need to conduct this study on a larger sample size that is representative of the entire population. We do not have a baseline (pre-pandemic) measure, so our assumptions are limited, and the subscales of mental health evaluation and their outcome were not studied. Our study design was a comparative observational study that does not allow us to discern the fluctuations in depression, anxiety, and stress levels of the COVID-19 patients; hence, prospective longitudinal studies are required for this matter.

The study's strength was that the findings offer valuable insight into the psychological impact of COVID-19 on our COVID-19 patients.

Conclusion

Though only a few studies exist in this field, it is evident that the COVID-19 epidemic has led to a vigorous and multi-faceted response from various researchers across the world. Adverse psychological stress, anxiety and depression was not only more common among the younger people but also stress, anxiety and depression scores were found to be higher in people in the second wave as compared to the first.

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