Original Research Article

Psychological Impact and factors associated with COVID-19 inpatients at a tertiary care institute (Designated as COVID-19 Hospital).

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Abstract

Background: An important clinical consequence seen in a significant proportion of COVID-19 patients is psychological impairment. By analyzing the prevalence of stress, anxiety, depression and their socio-demographic correlates; the current research aimed to examine the psychological burden among COVID-19 patients.**Methodology:** This was a cross-sectional hospital-based study. An exit interview of COVID-19 patients was conducted at the time of discharge using a semi-structured proforma. For assessing psychological impact of COVID-19, Perceived Stress Scale (PSS) and Hospital Anxiety and Depression Scale (HADS) were used. Ethical clearance was taken from Institutional Ethics Committee. Appropriate statistical tests were applied to compare the means of various psychological scores (stress, anxiety, and depression) w.r.t. different socio-demographic variables.**Results:** A total of 114 COVID-19 patients were studied. 50% were native of other Indian states. 79% patients had symptoms of stress on PSS while 30.7% and 34.2% of patients had definite anxiety and depressive symptoms on HADS.Statistically significant difference in perceived stress scores was noted w.r.t. age (p=0.049), educational status (p=0.047), occupation (p=0.006) and COVID-19 infection in fellow family members (t=-3.351; p=0.001). Mean difference of HADS depression score was found to be statistically significant w.r.t occupation (p=0.021), native place of residence (p=0.007) and COVID-19 infection in fellow family members (t=-2.739; p=0.007).**Conclusion:** Age, education, occupation, native residential place and COVID-19 infection in family were factors associated with higher psychological burden in COVID-19 patients.

Keywords: COVID-19, Psychological impact, Stress, Anxiety, Depression.

Introduction

Corona viruses are a large family of viruses which may cause illness in animals or humans. In humans, several corona-viruses are known to cause respiratory infections ranging from common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). COVID-19 is the infectious disease caused by recently discovered coronavirus (SARS-CoV-2). This new virus and disease were unknown before the outbreak began in Wuhan, China in December 2019.[1]Since then, this pandemic has crossed regional and international borders causing marked morbidity and mortality around the world. India reported its first confirmed case of novel Coronavirus disease (COVID-19) on January 30, 2020 in Kerala. The affected individual had a travel history from Wuhan, China. The World Health Organization (WHO) declared COVID-19 a public health emergency of International concern on January 30, 2020. WHO notified the COVID-19 outbreak as a global Pandemic on March 11, 2020.[2]With 44,376 new coronavirus cases on November 25, 2020 India now has registered a total of 92,22,216 COVID-19 infections across the country including 1,34,699 deaths. India currently has a fatality rate of 1.47 percent due to coronavirus taking the total death tally to 1,34,218. Across the World, there have been a total of 5,92,04,902 confirmed coronavirus cases and 13,97,139 deaths as per latest WHO updates. [3]The grim epidemic has caused increasing public panic and mental health stress. Mental health is becoming an issue that cannot be ignored while trying to control the outbreak. Previous studies found anxiety and depression to significantly impair symptom control in patients

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suffering from various chronic diseases such as cancer, and other serious illness. This subsequently leads to impaired quality of life and subjective well-being.[4-6]With India being a densely populated country without a robust healthcare infrastructure, the spread of infection is a cause of worry. Since March 24, 2020 India has undergone four successive lockdowns restricting the movement of nearly 1.3 billion people as a preventive measure to contain the spread of COVID-19. Easing of restrictions began from June 8, 2020 and presently the country is in Unlock 5.0 phase.Department of Health, Government of Haryana on November 25, 2020 reported a total of 2,19,963 confirmed COVID-19 cases in Haryana state.Out of these, 1511 confirmed cases of COVID-19 and 28 deaths were reported from Nuh (Mewat), a district of Haryana state. Shaheed Hasan Khan Mewati Government Medical college & Hospital (SHKM GMCH),a designated COVID-19 hospital handled most of these cases.[3]To contain the spread of the virus in Haryana, the state Government in concordance with the national government has implemented various steps to strengthen the surveillance and control measures against the disease. The governments, media, doctors, researchers, celebrities, police and other stakeholders of the society appealed to the public to avoid public gatherings including sports, religious ceremonies, family functionsas well as classes in school, to prevent the spread of coronavirus infection.[7]Most published research on the psychological impact of COVID-19 mainly focused on healthcare workers and the general public, who were worried about the risk of infection and protective measures, resulting in psychological distress. [8-10]However, the mental health of hospitalized patients with COVID-19 during the epidemic remains largely unknown. Considering that patients after diagnosis of COVID-19 are more likely to have psychological concerns such as fear of progression of their illness, disability, or premature death, it is vital to investigate the prevalence and psychological impact of stress, anxiety, and depression in patients infected with COVID-19.

Materials and methods

Diagnosis of COVID-19

Nasal and throat swab samples of suspected patients were subject to Reverse transcriptase polymerase chain reaction (RT PCR) to confirm infection with COVID-19. All confirmed cases were interviewed at the time of discharge after ensuring adequate physical distance to identify the psychological issues faced by them. Data was collected using a semi-structured proforma which included socio-demographic details and psychological rating scale items.Prior to the start of the study, written informed consent was taken from all participants.

Study Participants

A total of 114 COVID-19 patients admitted to SHKM Government Medical College, Nuh (Mewat), Haryana, India who were discharged after successful treatment between 2nd week of April and 2nd week of May were assessed for psychological morbidity due to COVID-19 in this descriptive, hospital based, cross sectional study.

Inclusion criteria

RT PCR confirmed COVID 19 patients who gave written informed consent.

Exclusion criteria

a) COVID 19 patient not willing to give informed consent.

b)Patient unable to give informed consent (seriously ill/on ventilator support).

Ethical Clearance

Ethical clearance from the Institutional Ethics Committee (IEC) of SHKM GMCH was taken to conduct this study vide approval number SHKM/IEC/2020/41.

Conduct of interview

COVID-19 patients started getting admitted to hospital in the 1st week of April and they were discharged when their 02 consecutive samples become negative 3 days apart as per the standard guidelines. After discharge patients were sent for quarantine of 14 days in a designated quarantine facility provided by district health authorities. At the time of discharge, an 'exit interview' was conducted to identify the psychological issues faced by the patients.

Instruments of the study

The Perceived Stress Scale (PSS),[11]is the most widely used psychological instrument for measuring the perception of stress. It is a measure of the degree to which situations in one's life are appraised as stressful. PSS scores are obtained by reversing responses (e.g., 0 = 4, 1 = 3, 2 = 2, 3 = 1 & 4 = 0) to the four positively stated items (items 4, 5, 7, & 8) and then summing across all scale items. The score range is 0-13: low stress, 14-26: moderate stress and 27-40: high perceived stress. The Hospital anxiety and depression Scale (HADS): HADS,[12] is a self-assessment questionnaire designed to detect anxiety and depression symptoms in general hospital patients. It has two subscales with scoring separate scoring for each scale. The scores 0-7: indicating no anxiety or depression (Normal score); score 8-10: indicating some symptoms of anxiety or depression (Borderline scores); scores 11 and above indicates definite symptoms of anxiety and depression (Abnormal scores).

Statistical analysis

Statistical analysis was done using Statistical Package for Social Sciences(IBM Corp. Released 2017. IBM SPSS Statistics for Windows, Version 25.0. Armonk, NY: IBM Corp). Mean, standard deviation and proportions were calculated to analyze the socio-demographic profile of COVID-19 patients. Independent sample t-test and ANOVA was applied to compare the mean difference between rating scale scores and socio-demographic parameters. *p* value less than 0.05 were considered significant.

Results

Table 1: Socio-Demographic Profile of COVID-19 Patients

Demographic Groups		N	Frequency (n%)
Age	Less than 30	52	(45.6)
	31-60	45	(39.5)
	Above 60	17	(14.9)
	Mean ± S.D.	38.32 ±17.089	
Gender	Male	74	(64.9)
	Female	40	(35.1)
Marital Status	Unmarried	21	(18.4)
	Married	93	(81.6)
Native Place of Residence	Haryana State	46	(40.4)
	Other Indian States	57	(50.0)
	Abroad	11	(9.6)
Education	Nil	18	(15.8)
	Up to Std 8th	23	(20.2)
	Std 8th to 12th	35	(30.7)
	Std 12th and Above	38	(33.3)

Occupation	Business	14	(12.3)
	Salaried	20	(17.5)
	Student	16	(14.0)
	Labourer	22	(19.3)
	Farmer	31	(27.2)
	Unemployed	7	(6.1)
	Housewife	4	(3.5)
COVID-19 Infection in Family Members	Yes	27	(23.7)
	No	87	(76.3)

Table 1:A total of 114 participants, 74 (64.9 %) males and 40 (35.1 %) females were included in thisstudy. The age of participants ranged from 18to 80 years. Mean age of participants was38.3 (17) years. Among the participants 93 (81.6%) were married.None of the participants were divorced or widowed. Although 40.4% patients hailed from Haryana, yet the demographic trend was quite cosmopolitan with majority patients (50%) being domicile of other states and 9.6% being foreigners. Most participants (33.3%) were educated up to senior secondary level and only 15.8 % were illiterate. Occupation wise, most participants were engaged in farming (27.2%) or labour work (19.3%) and only 6.1% were employed. COVID-19 infection in fellow family members was reported by 23.7% participants.

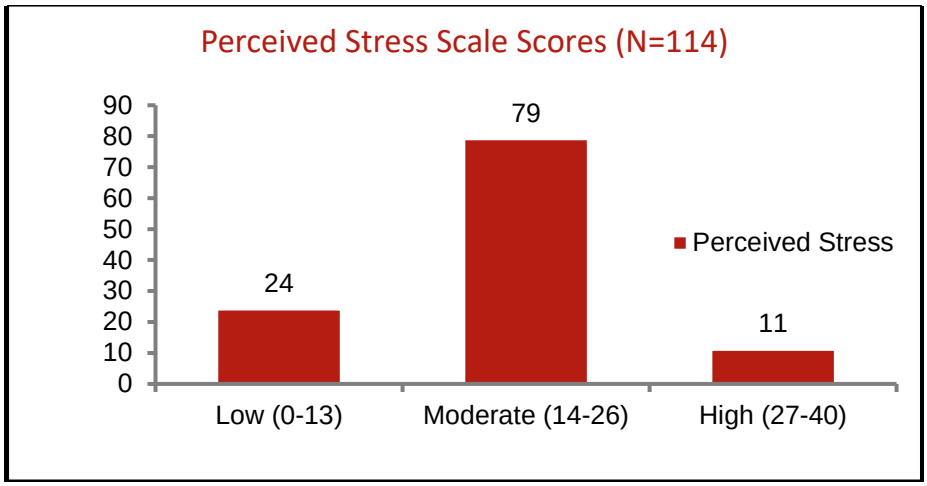


Fig 1:Severity of Perceived Stress in COVID-19 Patients

Figure 1: Majority (69.3%) COVID-19 patients had moderate stress on the Perceived Stress Scale (PSS) and only 10% participants reported higher stress levels. Mean Stress Score was found to be 19.28 ± 5.93 (Mean ± SD).

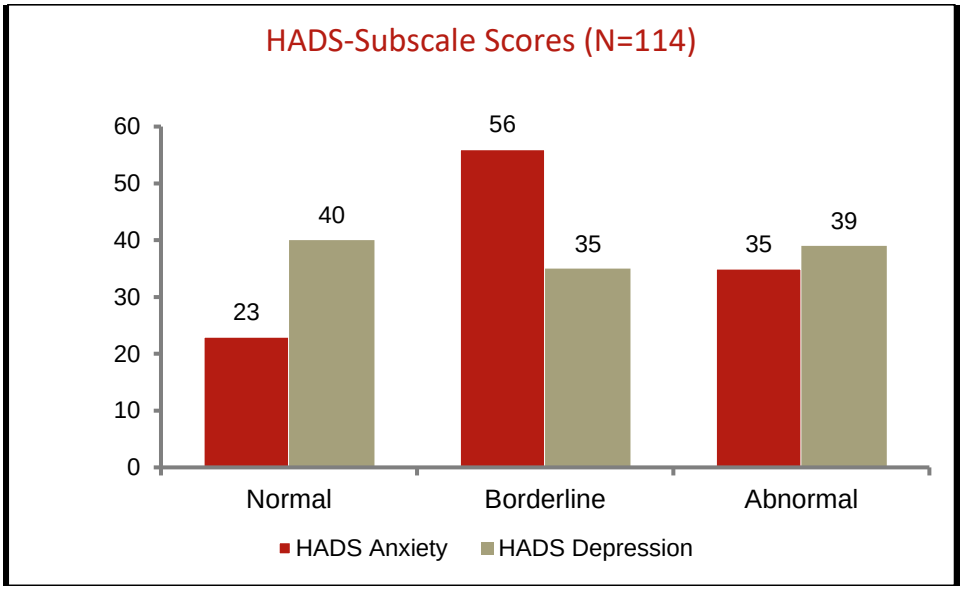


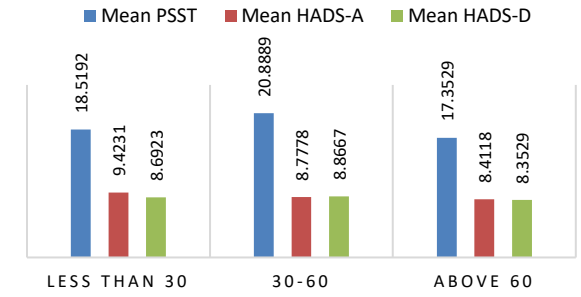
Fig 2: Hospital Anxiety and Depression Scale (HADS) subscale scores

Figure 2: Hospital Anxiety and Depression Scale (HADS) was used to assess severity of anxiety and depression symptoms. Nearly 80% participants reported to have some anxiety symptoms (Borderline and Abnormal cases). 34.2% patients had confirmed depressive symptoms (Abnormal cases) while 30.7% had some depressive symptomatology (Borderline cases). Mean Anxiety and depression scores were 9.02 ±3.09 and 8.71 ±3.37, respectively.

Table 2: Comparison of Mean Scale Scores of COVID-19 patients as per Gender, Marital Status and COVID-19 Infection in family members

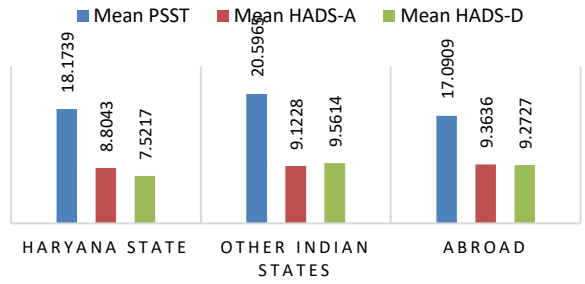
Variables	Gender			Marital Status			COVID-19 Infection in Family Members		
	Male (n=74)	Female (n=40)	*p*	Unmarried (n=21)	Married (n=93)	*p*	No (n=87)	Yes (n=27)	*p*
Mean PSST Scores	19.7 ± 6.0	18.5 ± 5.8	0.319	18.8 ± 5.9	19.4 ± 5.9	0.689	18.3 ± 6.1	22.5 ± 4.2	**0.001**
Mean HADS-A Scores	9.3 ± 2.7	8.5 ±3.6	0.238	9.1 ±2.7	9.0 ±3.1	0.889	8.7 ± 3.2	9.9 ± 2.3	0.094
Mean HADS-D Scores	9.0 ± 3.1	8.1 ±3.7	0.140	8.4 ±3.1	8.9 ±3.4	0.622	8.2 ± 3.3	10.2 ± 3.2	**0.007**

Table 2: An independent sample t-test was applied on various psychological scores as per Gender, Marital status, and presence of COVID-19 infection in family members. Statistically significant difference in Perceived stress score (t=-3.351; p=0.001) and HADS Depression score (t=-2.739; p=0.007) was noted w.r.t. COVID-19 infectivity of fellow family members.



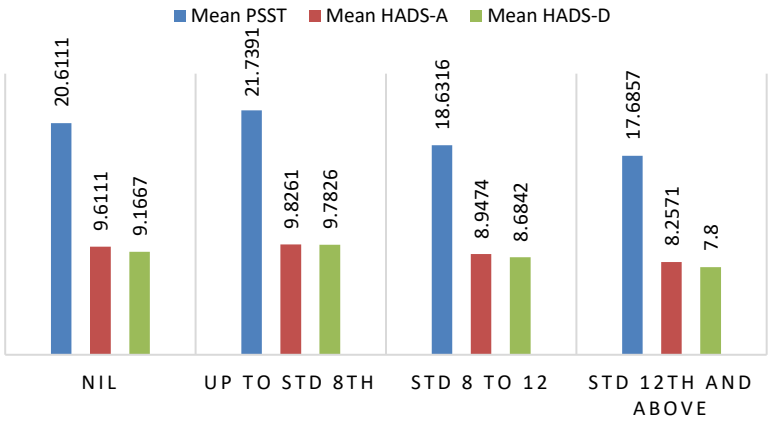
	Mean PSST	Mean HADS-A	Mean HADS-D
F	3.089	0.904	0.142
Sig.	0.049	0.408	0.868

Figure 3 (a): Age



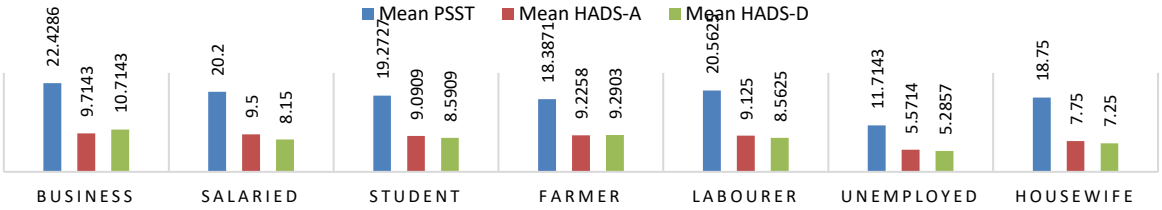
	Mean PSST	Mean HADS-A	Mean HADS-D
F	3.059	0.208	5.172
Sig.	0.051	0.813	0.007

Figure 3 (b): Native place of Residence



	Mean PSST	Mean HADS-A	Mean HADS-D
F	2.734	1.471	1.768
Sig.	0.047	0.226	0.157

Figure 3(c):Level of Education



	Mean PSST	Mean HADS-A	Mean HADS-D
F	3.222	1.866	2.607
Sig.	0.006	0.093	0.021

Figure 3(d):Occupational status

Figure3 (a-d): Comparison of Mean Scale Scores ofCOVID-19 patients as per age, native place of residence, education and occupation

Figure 3 (a-d): A one-way ANOVA was applied to compare the means of various psychological scores w.r.t. age, education, occupation and native place of residence of study subjects. Statistically significant difference in Perceived stress scores was noted w.r.t. age (p=0.049), level of education (p=0.047) and occupation (p=0.006). Mean difference of HADS Anxiety and Depression score was found to be statistically significant w.r.t occupation (p=0.021) and native place of residence (p=0.007).

Discussion

Varied Psychological response to an infective outbreak has been noted in infected persons, healthcare personnel and quarantined individuals often leading to a wide range of mental health problems.[13] To the best of authors' knowledge prevalence of stress, anxiety and depression in COVID-19 patients during the initial phase of the pandemic in India has not been investigated upon in previous studies, which primarily focused on healthcare workers. The present study provides a comprehensive description of prevalence and predictors of stress, anxiety and depression in patients with COVID-19 admitted to a designated COVID-19 hospital located in Northern India.The mean age of COVID-19 patients in our study was 38± 17 years (Mean +/- SD) with majority participants (45.6%) aged 30 years or less. Males (64.9%) outnumbered females (35.1%) in terms of gender distribution. Nearly 80% patients were married, and none reported being divorced or separated. Most study subjects completed education up to Higher Secondary level and 15.8% were illiterate. All but 7 patients were gainfully employed and were involved in one occupation or the other. Pandey et al while estimating prevalence of anxiety disorder in COVID-19 patients reported mean age of study participants as 39 ± 23 years with male predominance (61.9%). Illiterates comprised 6.8% of study subjects while 16.1% were graduate or above in their study.[14]Fifty percent of study participants were native of other Indian states and 9.6% were from abroad. It could be due to the proximity of this medical college hospital to the Delhi-National Capital Region (NCR) as many patients from NCR were referred to this institute in the initial phase of the pandemic. COVID-19 infection amongst family members was reported by less than 25% study participants. This could be attributed to patient enrollment during the first phase of lockdown wherein all sorts of restrictions were strictly imposed by the Government to control the transmission of infection. It was not surprising that a significant proportion of studied patients, experienced stress (79%), anxiety (34.2%) and depressive symptoms (30.7%). High prevalence of stress, anxiety and depression noted in this study might be attributed to study being done in initial phase of the pandemic when lots of uncertainties prevailed about course and outcome of COVID-19. Kong X et al in their study done in initial phase of COVID-19 outbreak in Wuhan, Chinareported 34.72% patients having symptoms of anxiety.[15] In another study done in later part of Pandemic by Pandey et al wherein anxiety was reported by 21.2% of COVID-19 participants.[14] This suggests that even with greater awareness COVID-19 still holds potential for causing marked psychological distress in affected patients.To the best of our knowledge, till now only few studies focused on COVID 19 infected patients, while most studied psychological impact on health care worker. In mainland China, a study reported nearly 44.6% and 71.5 % health care workers respectively having anxiety or other psychological distress.In this study nearly 70% participants were found to have moderate stress levels with mean stress score of 19.28 ± 5.93 (Mean ±SD)on Perceived Stress Scale (PSS). High prevalence of anxiety and depressive symptoms was also noted amongst study subjects with mean Anxiety and depression scores being 9.02 ± 3.09 and 8.71 ± 3.37, respectively.Age of the patients significantly affected the stress level of COVID-19 patients in the present study. Higher stress levels were noted amongst young and middle age group (for age up to 30 years mean 18.52 ± 5.71; 95% confidence interval [CI], 16.93 to 20.11, and for age 31-60 years mean 20.89 ± 5.78; 95% confidence interval [CI], 19.15 to 22.63), in comparison to elder years (for age >61 years mean 17·35 ± 6·28; 95% confidence interval [CI], 14.12 to 20.58). This might be because a person having more productive years is likely to be more cognizant about the vague prognosis of this illness.In our study location of native residence of patients had no role in stress & anxiety scores; however, it had a significant impact on depression scores. This point towards an increased likelihood of patients developing depressive symptoms if they are far from their native place of residence. There is paucity of literature regarding psychological impact of infectious diseases w.r.t a person's occupation. Occupational status of study participants was found to significantly affect stress and depression scores in COVID-19 patients. Uncertainty regarding employers retaining them in the same jobs, significant business loss and difficulty in restarting their respective professions seem potential factors influencing this statistically significant association.Presence of COVID-19 infection in fellow family members was one of the important factors found statistically significant in present study making patients stressed, anxious and even depressed. Long hospitalization associated with COVID-19 is often concerning for the patientbecause of inability tolook after the health status of their infected family members. Multiple studies have correlated stress anxiety & depression in patients with different diseases,[4-6] including infectious diseases. [17,18] Our study reports a high prevalence of anxiety and depressive symptoms which is in concordance with recent systematic

review and meta-analysis by Rogers JP and colleagues,which showed a similar prevalence of 35·7% and 32·6% in anxiety and depression respectively. Chua et al reported similar findings.[16].Reasons of high psychological stress scores could be attributed to individuals having contracted a novel and highly infectious illness, vagueness about treatment, no reliable information about chances of re-infection, quarantine for at least 14 days in a designated quarantine center after getting negative COVID-19 report; fear of transmitting the infection to family members and variable mortality rates[17].The present research suggests that COVID-19 patients are at increased risk of developing mental health issues.The ability to cope with stress and manage anxiety is influenced by greater levels of awareness, educational achievement and reasoning ability.Therefore, psycho-logical care and health attention to address psychiatric illnesses becomes imperative especially in setting of pandemics of large scale such as COVID-19.

Conclusion

This research, first in India, postulates that patients with COVID-19 infection have high-stress levels along with anxiety and depressive symptoms. Age, education, occupation, native place of residence and the presence of COVID-19 infection in family members had a significant impact on mental health of COVID-19 patients. These findings provide valuable information about psychological impact of an infectious outbreak which can help health care workers to identify at-risk patients and plan effective responses to address mental health challenges during possible future infectious disease outbreaks through timely intervention by deliverance of required psychiatric services.

Limitations

Our study being cross-sectional by design could not establish a causal relationship between psychological determinants and socio-demographic variables. Being a single centered study with limited study sample size, the present study could not be representative of the whole of India.Follow up of these patients to see persistence of these symptoms in later life could not be done with the pandemic still ongoing. Other factors that could have a significant impact on the psychological scores like family support and financial status of patients were not included.

List of abbreviations

w.r.t: with respect to
COVID-19: Corona Virus disease 2019
HADS: Hospital anxiety and depression scale
PSS: Perceived Stress Scale
SHKM GMCH: Shaheed Hasan Khan Mewati Government Medical College& Hospital
SD: Standard deviation

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