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ORIGINAL ARTICLE

Psychological Impact in Covid-19 Positive Patients

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Abstract

Background: COVID-19 outbreaks that are widespread are linked to patients' showing signs of psychological distress. In addition to its physical and financial costs, this illness has had a profound psychological and emotional impact on patients, their careers, families, and healthcare professionals. **Aim**: To evaluate the Psychological Impact in COVID-19 Positive Patients. **Methods**: A total of 291 COVID19 positive patients were assessed with a self-made Socio demographic pro-forma, Depression, Anxiety, Stress scale (DASS21), Mood-5 (M5) and Peritraumatic Distress Inventory scale (PDI) for COVID-19. **Results:** A total of 83.5% of patients reported experiencing depressed symptoms, 81.8% reported experiencing anxiety, and 80% reported experiencing stress. Higher scores on PDI and M5 scales were obtained. Depression was significantly correlated with stress, anxiety, M5 and PDI. **Conclusion**: Recovered patients of COVID-19 infection had a higher prevalence of anxiety, depression, and stress.

Keywords: Depression, COVID19, M5, PDI

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Introduction

Infectious disease outbreaks on a large scale, like COVID-19 pandemic, acted as a traumatic event in an infected person's life which in turn led to development of emotional and psychological distress. Rarely has the modern era, where everyone has access to quick travel and communication, been made to accept the restrictions and social isolation that go along with irritation and uncertainty. The COVID-19 pandemic's psychological effects ranged from panicking or mass alarmism to pervasive despair and lack of hope, which were linked to detrimental consequences like suicidal ideation [1,2]. People's daily routines have been significantly altered by the lockdown procedures and the fear of contracting an infection.

Numerous psychological problems and serious detrimental impacts on mental health, including stress, worry, despair, frustration, and uncertainty, progressively emerged throughout the COVID-19 pandemic [3]. Fear and anxiety are common psychological reactions given by the public in response to the highly strict measures related to the widespread quarantine protocols. These reactions frequently increased by surge in cases, and fake news spread by social media [4]. Intensive efforts to maintain social distance have invariably resulted in social isolation; additionally, negative views and worries linked to the infection have increased the prevalence of psychiatric disorders [5,6].

In actuality, a number of studies have discovered a high correlation between outbreaks and mental health conditions such as PTSD, depression and anxiety [7-14]. It is important to emphasize that patients who have a past psychiatric history may exacerbate their overall condition after infection [15]. A meta-analysis found that a prior diagnosis of a psychiatric illness augmented the risk of COVID-19 death and potential

consequences for people who checked positive for COVID-19. It also found that mortality rates were higher for people with schizophrenia, schizotypal disorders, and delusional disorders than for people with mood disorders [16]. Additionally, it is widely recognized that cultural beliefs are associated with public health activities to stop the spread [17]; psychological symptoms typically have a relationship to poor levels of mental and social support as well as a high-risk perception [10].

A traumatic event like COVID-19 infection may have a major psychological and emotional effect on patients, caregivers, families, and healthcare professionals, in addition to the physical and financial costs [18,19]. A study done in China on psychological impact in COVID19 positive patients during the outbreak found out a high prevalence of anxiety (27.3 %), insomnia (57.7 %), depression (26.7 %) and suicidal ideation (16%) [20]. There has been a lot of studies done on impact of COVID-19 spread and lockdown on mental health of the general population as well as in health care professionals, but there is still paucity of data when it comes to psychological impact in infected and hospitalized patients. This study intends to explore the psychological impact of the disease on COVID 19 positive patients in India.

Material and Methods

The cross-sectional, observational study was done in the Dedicated COVID Hospital, a tertiary care facility connected to a medical school. The Institutional Ethical Committee reviewed and approved the protocol after it was presented to them.

Study participants

After obtaining informed consent, the study comprised 291 adult patients over the age of 18 with a confirmed diagnosis of COVID 19 using RT-PCR of oral/nasopharyngeal samples who attended fever clinic or were admitted in the Dedicated COVID ward.

Inclusion Criteria

- Every adult patient who is older than 18 years
- All patients with a confirmed diagnosis of COVID 19 using RT-PCR of oral/ nasopharyngeal specimen.
- Patients willing to give informed consent

Exclusion Criteria

- Patients with co-morbid medical disorders.
- Patients with history of psychiatric disorders

Study Procedure

The nature and goal of the study were described to all participating patients and their family members, and each person gave their signed informed consent. The following resources were utilised to evaluate the participants:

A **self designed sociodemographic and clinical questionnaire** including age, sex, type of quarantine and total days spent in quarantine.

Depression Anxiety Stress Scale-21 (DASS-21)

To provide a self-report evaluation of anxiety, depression, and stress symptoms, the DASS-21 short version was developed. The DASS-21's reliability was proved by the depressed, anxiety, and stress subscales' respective Cronbach's alpha values of 0.81, 0.89 and 0.78 [21].

Mood-5 Screening Tool (M5)

The M5 is a quick, valid, and reliable mood scale that is suitable for in-person or online visits and is self-administered. It works well as a screening instrument for anxious or depressive symptoms and it may suggest the need for a formal mood assessment. This scale does not have questions pertaining to self-harm [22].

Peritraumatic Distress Inventory Scale (PDI)

The PDI was developed to more precisely capture people's mental and physical responses during and right after a traumatic incident. There are 13 items on the scale, and scores can range from 0 to 4. By analyzing the average total mean of all responses amongst all 13 items, the overall score is determined. Good stability & internal consistency, convergent & divergent validity was shown by the PDI [23, 24].

Statistical Analysis

The Statistical Package for Social Sciences (ver. 19) was utilized to analyze the collected data and perform a multiple regression (IBM, SPSS 19.0). The significance level for the analyses was set at 0.05, and the level of confidence was 95%.

Results

The total number of participants was 291 COVID-19 positive patients. Patients aged 18 to 30 made up 43.30% of the population. 52.23 % were men and 47.08% were women. 71.13 % patients were hospitalized and 28.87 % were home quarantined. The mean (±SD) of length of quarantine was 12.05 (±3.75) days. (Table 1)

Average mean (±SD) based on the total score of DASS-21 on depression was 19.52 (±10.61), anxiety was 18.43 (±10.22), stress was 19.11 (±10.05). Frequency distribution ofgrades of severity of depression, anxiety and stress symptoms are shown in Table 2, 3 and 4. The mean (±SD) of MOOD 5 total scores was 5.1 (±2.46). 81.19 % had a total score of more than 3 on MOOD5 which suggested the need for further mental health intervention. The mean (±SD) of PDI total scores was 10.72 (±5.72). 16.49 % had a total score of more than 23 on

Table 1: Frequency distribution comparing socio-demographic characteristics

Socio-demographics		N	%
Age distribution (in years)	18-30	126	43.30%
	31-40	57	19.59%
	41-50	38	13.06%
	51-60	37	12.71%
	>60	33	11.34%
Gender	Male	152	52.23%
	Female	137	47.08%
	Other	2	0.69%
Type of Quarantine	Home	84	28.87%
	Hospital	207	71.13%
Length of Quarantine	<7 days	10	3.44%
	7-14 days	237	81.44%
	>14 days	44	15.12%

Table 2: Frequency distribution of grades of severity of depression using DASS21

Subscales of DASS 21		N	N %
Depression severity levels	Normal	48	16.49%
	Mild	37	12.71%
	Moderate	72	24.74%
	Severe	47	16.15%
	Extremely Severe	87	29.90%
Anxiety severity levels	Normal	53	18.21%
	Mild	5	1.72%
	Moderate	44	15.12%
	Severe	40	13.75%
	Extremely Severe	149	51.20%
Stress severity levels	Normal	58	19.93%
	Mild	77	26.46%
	Moderate	86	29.55%
	Severe	57	19.59%
	Extremely Severe	13	4.47%

Table 3 : Multiple regression analysis for predicors of depression: Model Summary[e]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
4	0.911[d]	0.831	0.828	2.24263	1.948

[d]Predictors: (Constant), PDI, MOOD5, Anxiety, stress; [e]Dependent Variable : Depression

Table 4: Multiple regression analysis for predictors of depression: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig
4	Regression	7062.76	4	1765.69	351.08	0.000[e]
	Residual	1438.40	286	5.03		
	Total	8501.16	290			

[a]Dependent Variable : Depression; [e]Predictors: (Constant), PDI, MOOD5, Anxiety, stress

Table 5: Multiple regression analysis for predictors of depression: Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	Sig
4	(Constant)	-0.443	0.306		0.149
	PDI	0.472	0.056	0.500	0.000
	MOOD5	0.950	0.102	0.432	0.000
	Anxiety	-0.208	0.061	-0.197	0.001
	stress	0.233	0.069	0.216	0.001

[a]Dependent Variable : Depression

PDI which suggested that the event of COVID 19 infection was a very traumatic experience for them with severe emotional consequences similar to symptoms of PTSD [23].

Data was further analyzed and a multiple regression analysis was done for depression and a model summary was made. (Table 5) The current study's R-value is 0.911, which denotes a high degree of prediction. The current study's R-square (coefficient of determination) is 0.831, which suggests that independent variables account for 83.1% of the variation in our dependent variable, depression. There is no first order linear auto-correlation in the data. (The Durbin-Watson d= 1.948) Adjusted R-square value is 0.828, which is not far off from the R-square value of 0.831, which is good. According to the ANOVA (Table 6) results, F (4, 286) = 351.076, p 0.000, the independent variables statistically substantially predict the dependent variable which further suggests the fitness of regression model. The strength of the link, or the importance of the variable in the model and the extent to which it affects the dependent variable, is displayed in the coefficient table (Table 7). The hypothesis testing for a study is aided by this analysis. In this instance, take into account the impact of PDI. B1, the unstandardized coefficient, is equal to 0. 472 for PDI. Accordingly, there is a 0.472 percent increase in depression for every unit higher PDI score. We can examine the regression model for multi-collinearity using the collinearity statistics. For all variables, tolerance should be > 0.1 or VIF 10, which it is. All independent variable coefficients are statistically distinct from zero, as can be seen in the "Sig." column (zero).

The results of multiple regression analysis can be summarized as:

PDI, MOOD5, Anxiety, and Stress were all used in a multiple regression to predict depression. These variables statistically significantly predicted depression, $F(4, 286) = 351.076$, $p < 0.000$. $R2 = 0.831$. All four variables statistically significantly increased the prediction, $p < 0.05$.

Discussion

This unusual COVID-19 condition is proving that people are generally and emotionally unprepared for the negative repercussions of biological calamities, which is directly illustrating how everyone may be feeble and defenseless. Quarantined individuals are more likely to experience psychological symptoms, emotional dysregulation, sadness, stress, mood swings and irritability, sleeping issues, post-traumatic stress symptoms, anger, and emotional tiredness, according to studies. Higher rates of anxiety and depression were found in females, students, people with COVID-19 symptoms, and people who felt their overall health was poor. On the other hand, having access to accurate information and taking specific preventive steps, like washing your hands, seemed to counteract these effects [25]. To lessen the detrimental psychosocial influence on general mental health, psychological crisis interventions should be developed that target high risk populations with high levels of psychological stress.

In our study, 47.08 % were females, rest were males. This suggests a male preponderance in our study. Another study done on anxiety and depression levels in hospitalized patients found similar results where 49.1% were females and 50.9 % were males [26]. In our study, symptoms of depression, anxiety and stress were seen more in women compared to men which was in agreement to earlier studies. It seems that female gender is associated with higher rates of anxiety and depression [25,26]. Around 71 % were hospitalized after getting infected which contributed to their poor mental health. A study found that 4 in 10 COVID-19 patients had depressive symptoms during their hospital stay, and 3 in 10 had symptoms of anxiety [26,27]. The average length of quarantine was around 12 days which seemed to cause greater anxiety than patients who had lesser days of quarantine. A study reported that longer quarantine periods led to greater psychological burden [28-30].

In our study, 83.5% patients ranged from mild to extremely severe depressive symptoms with a majority of 29% having extremely severe depressive symptoms. 81.8% patients ranged from mild to extremely severe anxiety symptoms with a majority of 51.2% having extremely severe anxiety symptoms. 80% patients ranged from mild to extremely severe stress symptoms with a majority of 29.5% having moderate stress symptoms. According to this study, patients with COVID-19 exhibited increased rates of depression, anxiety, and stress, which was consistent with past research [27,31]. Another comparable cross-sectional study employed the DASS 21 to assess the prevalence of stress, depression, and anxiety among COVID patients who were hospitalized. They discovered that 97.2% of COVID-19 patients displayed some signs of depression.100% patients had severe to very severe anxiety and 97.1% had symptoms of stress [29]. A cross country wide scale study which used DASS 21 found the rates of depression, stress and anxiety to be 54.5 %, 59.5 % and 44.7 % respectively during the pandemic in general population [7].

Higher scores on M5 were obtained in our study, indicating a need for further mental health intervention. This was in agreement to an earlier study which investigated the reliability and validity of M5 as a new screening tool to identify the psychological burden in COVID-19 survivors [22]. The most obvious conclusion of the study is that widespread application of the M5 in settings may in fact assist in identifying patients or physicians who are more susceptible to psychological stress associated to COVID-19 and allow quick intervention.

Our study found out a low percentage (16.5%) of patients had emotional and psychological consequences similar to what one sees in post-traumatic stress disorder. On the contrary, studies have found high degrees of PTSD symptoms in COVID-19 survivors [31-33]. Additionally, research revealed that roughly 1 in 10 COVID-19 hospital patients had symptoms of PTSD or met the requirements fulfilling a PTSD diagnosis [33]. However, our study was done in acute states which further calls for re-evaluation of such symptoms in a 3 to 4 month follow up period because this is the time period when patients are highly vulnerable to develop PTSD symptoms [32].

Interestingly in our study, we found that high levels of depression correlated with high levels of anxiety and stress in COVID-19 patients. Another study reported similar findings [34]. Also, a greater score on M5 and PDI scales was significantly correlated with high levels of depression in COVID-19 survivors. Earlier studies [23] have found PDI in correlation to stress and depression but to our knowledge, ours in one of the first studies to predict correlations of M5 and PDI scores to depression in those impacted with psychological effects of COVID-19 infection. These call for more research and study in this particular area.

Strengths & Limitations

Standardized scales were used for the study. A large sample size was taken in this study. In the absence of suitable control group, the study could not compare COVID positive cases with healthy people. Lack of follow-up with each patient for further intervention was another limitation.

Conclusion

In COVID19 patients who were hospitalized and placed in isolation, depression, anxiety, and stress were quite prevalent. A high propensity to develop symptoms of PTSD was found in COVID19 survivors which calls for the need of regular screening, evaluation and timely intervention of mental health in them. Female gender, hospitalization, length of quarantine has seen to be associated with greater psychological burden. The need of regularly monitoring these patients' mental health is underscored by the high prevalence and severity of depression, stress, and anxiety among COVID-19 hospitalized patients.

Conflict of Interest:	All authors declare no COI
Ethics:	There is no ethical violation as it is based on voluntary anonymous interviews
Funding:	No external funding
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References

1) Srivastava K, Chaudhry S, Sowmya AV, Prakash J. Mental health aspects of pandemics with special reference to COVID-19. Ind Psychiatry J 2020;29:1-8.
2) Davis S, Samudra M, Dhamija S, Chaudhury S, Saldanha D. Quarantine: Psychological aspects. Ind Psychiatry J 2021; 30 (Suppl.1): S277 –S281
3) Priyamvada R, Ranjan R, Chaudhury S. Efficacy of psychological intervention in patients with postCOVID19 anxiety Ind Psychiatry J 2021; 30 (Suppl.1): S41-S45
4) Maunder R, Hunter J, Vicent L, Bennett J, Peladeau N, Leszcz M, et al. The immediate psychological and occupational impact of the 2003 SARS outbreak in a teaching hospital. CMAJ 2003; 168:1245–51.
5) Chaudhury S, Samudra M. Covid 19 Lockdown: Psychological aspects. Medical Journal DY Patil Vidyapeeth 2020; 13: 580-4
6) Shuja, K.H., Aqeel, M., Jaffar, A., Ahmed, A. COVID-19 Pandemic and Impending Global Mental Health Implications. Psychiatr Danub 2020; 32 (1): 32–35.
7) Passavanti M, Argentieri A, Barbieri DM, Lou B, Wijayaratna K, Foroutan Mirhosseini AS, Wang F, Naseri S, Qamhia I, Tangerås M, Pelliciari M, Ho CH. The psychological impact of COVID-19 and restrictive measures in the world. J Affect Disord. 2021;283:36-51.
8) Sim, K., Chua, H.C. The psychological impact of SARS: a matter of heart and mind. CMAJ 2004 ; 170 (5) : 811–812.
9) Sprang, G., Silman, M. Posttraumatic stress disorder in parents and youth after health-related disasters. Disaster Med Public Health Prep, 2013; 7(1): 105–110.
10) Wu, K.K., Chan, S.K., Ma, T.M. Posttraumatic stress, anxiety, and depression in survivors of severe acute respiratory syndrome (SARS). J Trauma Stress 2005;18 (1): 39–42.
11) Mak, I.W., Chu, C.M., Pan, P.C., Yiu, M.G., Chan, V.L. Long-term psychiatric morbidities among SARS survivors. Gen Hosp Psychiatry 2009; 31 (4): 318–326.
12) Liu, X., Kakade, M., Fuller, C.J., Fan, B., Fang, Y., Kong, J., Guan, Z., Wu, P. Depression after exposure to stressful events: lessons learned from the severe acute respiratory syndrome epidemic. Compr Psychiatry 2012; 53 (1): 15–23.
13) Kar, N., Bastia, B.K. Post-traumatic stress disorder, depression and generalised anxiety disorder in adolescents after a natural disaster: a study of comorbidity. Clin Pract Epidemiol Ment Health 2006; 2: 17.
14) Brooks, S.K., Webster, R.K., Smith, L.E., Woodland, L., Wessely, S., Greenberg, N., Rubin, G.J., 2020. The psychological impact of quarantine and how to reduce it: rapid review of the evidence. Lancet 395 (10227), 912–920
15) Bystritsky A, Vapnik T, Maidment K, Pynoos RS, Steinberg AM. Acute responses of anxiety disorder patients after a natural disaster. Depress Anxiety. 2000;11(1):43-4.
16) Toubasi AA, AbuAnzeh RB, Tawileh HBA, Aldebei RH, Alryalat SAS. A meta-analysis: the mortality and severity of COVID-19 among patients with mental disorders. Psychiatry Res. 2021;299:113856.
17) Leung, G.M., Lam, T.H., Ho, L.M., Ho, S.Y., Chan, B.H., Wong, I.O., Hedley, A.J. The impact of community psychological responses on outbreak control for severe acute respiratory syndrome in Hong Kong. J Epidemiol Community Health 2003; 57 (11), 857–863.
18) Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, Zhang L, Fan G, Xu J, Gu X, Cheng Z, Yu T, Xia J, Wei Y, Wu W, Xie X, Yin W, Li H, Liu M, Xiao Y, Gao H, Guo L, Xie J, Wang G, Jiang R, Gao Z, Jin Q, Wang J, Cao B. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. Lancet. 2020;395(10223):497-506..
19) Dong, L., Bouey, J., 2020. Public mental health crisis during COVID-19 pandemic, China Emerg. Infect. Dis. 2020; 26 (7): 1616-1618.
20) Lu X, Xie Y, Feng H, Liu Z, Ouyang K, Hou B, Wang M, Kong Z, Zhu Z, Dao W, Zhou Y, Cao J, Long J, Xu Y, Liu Y, Yin X. Psychological impact on COVID-19 patients during the outbreak in China: A case-control study. Psychiatry Res. 2021;305:114180.
21) Lovibond SH, Lovibond PF: Manual for the depression anxiety stress scales. 2 edition. Sydney: Psychology Foundation; 1995.
22) Mansbach WE, Mace RA, Tanner MA. A New Tool for Detecting COVID-19 Psychological Burden Among Postacute and Long-term Care Residents (Mood-5 Scale): Observational Study. JMIR Aging. 2021;4(1):e26340. doi: 10.2196/26340. PMID: 33640866; PMCID: PMC8081160.
23) Bunnell BE, Davidson TM, Ruggiero KJ. The Peritraumatic Distress Inventory: Factor structure and predictive validity in traumatically injured patients admitted through a Level I trauma center. J Anxiety Disord. 2018;55:8-13.
24) Brunet A, Weiss DS, Metzler TJ, Best SR, Neylan TC, Rogers C, Fagan J, Marmar CR. The Peritraumatic Distress Inventory: a proposed measure of PTSD criterion A2. Am J Psychiatry. 2001;158(9):1480-5.
25) Wang C, Pan R, Wan X, Tan Y, Xu L, Ho CS, Ho RC. Immediate Psychological Responses and Associated Factors during the Initial Stage of the 2019 Coronavirus Disease (COVID-19) Epidemic among the General Population in China. Int J Environ Res Public Health. 2020;17(5):1729.
26) ªahan E, Ünal SM, Kýrpýnar Ý. Can we predict who will be more anxious and

depressed in the COVID-19 ward? J Psychosom Res. 2021;140:110302.

27) Zandifar A, Badrfam R, Yazdani S, Arzaghi SM, Rahimi F, Ghasemi S, Khamisabadi S, MohammadianKhonsari N, Qorbani M. Prevalence and severity of depression, anxiety, stress and perceived stress in hospitalized patients with COVID-19. J Diabetes MetabDisord. 2020;19(2):1431-1438.

28) Mukaetova-Ladinska EB, Kronenberg G. Psychological and neuropsychiatric implications of COVID-19. Eur Arch Psychiatry ClinNeurosci. 2021;271(2):235-248.

29) Hawryluck L, Gold WL, Robinson S, Pogorski S, Galea S, Styra R. SARS control and psychological effects of quarantine, Toronto, Canada. Emerg Infect Dis 2004; 10(7):1206–1212.

30) Serafini G, Parmigiani B, Amerio A, Aguglia A, Sher L, Amore M. The psychological impact of COVID-19 on the mental health in the general population. QJM. 2020;113(8):531–7.

31) Veazie S, Lafavor B, Vela K, Young S, Sayer NA, Carlson KF, O'Neil ME. Mental health outcomes of adults hospitalized for COVID-19: A systematic review. J Affect Disord Rep. 2022;8:100312.

32) Tarsitani L, Vassalini P, Koukopoulos A, Borrazzo C, Alessi F, Di Nicolantonio C, Serra R, Alessandri F, Ceccarelli G, Mastroianni CM, d'Ettorre G. Post-traumatic Stress Disorder Among COVID-19 Survivors at 3-Month Follow-up After Hospital Discharge. J Gen Intern Med. 2021 ;36(6):1702-1707.

33) Einvik, G., Dammen, T., Ghanima, W., Heir, T., Stavem, K. Prevalence and risk factors for post-traumatic stress in hospitalized and non-hospitalized COVID-19 patients. Int. J. Environ. Res. Public Health 2021; 18: 20.

34) Prakash J, Dangi A, Chaterjee K, Yadav P, Srivastava K, Chauhan VS. Assessment of depression, anxiety and stress in COVID-19 infected individuals and their families. Med J Armed Forces India. 2021;77(Suppl 2):S424-S429.