Original Article

Assessment of depression, anxiety and stress in COVID-19 infected individuals and their families

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A B S T R A C T

Background: Pandemics have been associated with widespread psychological distress in the normal population due to quarantine and lockdown, however there are only few studies on psychiatric symptoms in COVID infected patients and their families. This study was planned to assess the depressive, anxiety and stress symptoms in individuals and their families infected with COVID19, during current pandemic.

Methods: A cross-sectional, observational study was conducted on hospitalised, COVID infected patients and their immediate family members. Ninety-three, COVID patients and fifty-four family members were studied through Google forms which contained socio-demographic proforma and Depression Anxiety Stress Scale-21 (DASS21). Collected data was tabulated to assess depression, anxiety and stress symptoms in the given population and study their relation with various sociodemographic variables.

Results: Almost one-third of the sample showed increased score on depression and anxiety subscales and one-fifth on stress subscales. 30–45% of the family members studied had higher score on either of the subset. There was also a high correlation between the scores of depression, anxiety and stress subset in the study sample.

Conclusion: This study, reflects high magnitude of depression, anxiety and stress symptoms in these patients and their families which alert us to the need for definitive interventions in these affected individuals.

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Introduction

Coronavirus disease 2019 (COVID-19), was first reported in China in the later part of 2019. Since then it has affected more than 100 million people worldwide. By Feb 2021, the infection has led to more than two and a half million deaths worldwide. India with a count of over 11 million on 07 Mar 2021, had the second highest number of cases in the world. Due to such high count, unprecedented restrictions and uncertainties prevailing...
Pandemic and quarantine have significant adverse effects on mental health of general population and the persons infected with the disease. When an individual or his/her family member gets infected; the uncertainty, threat to well-being and fear that recovery might be difficult is expected to take a toll on the mental health. The most common psychiatric diagnosis after COVID-19 diagnosis is an anxiety disorder, followed by mood disorders. A Chinese study found the prevalence of anxiety and depression in patients to be 18.57% and 13.36% respectively. Even after recovery from this infectious disease, the psychopathological symptoms might prevail. Self-reported anxiety and depressive symptoms were found to be around 40% and 30% respectively in patients a month post-treatment. A review on psychological symptoms in recovery from this infectious also had revealed similar distress related to survival, fear that they might infect others, related stigma and a general psychological distress.

During consultation liaison psychiatry, in our hospital, the symptoms of stress, depression or anxiety were overtly visible in the patients suffering with the infection, and also in their relatives. As the literature on the psychosocial issues in COVID infected population is still scarce and the disease is still novel and evolving, it was felt prudent to conduct a research to understand the true magnitude of common psychiatric problems. Thus a study was planned to screen COVID-19 patients and their family member for symptoms of depression, anxiety and levels of stress.

**Material and methods**

This was a cross-sectional, questionnaire based observational study. The study population consisted of all COVID-19 patients or their relatives reporting to a tertiary care, COVID hospital between Sep 2020 to Feb 2021. After ethical committee clearance, patients suffering from COVID infection and their immediate family members were contacted. Keeping in mind high infectivity of the virus and safety of the researchers, Google forms were sent through social media to the admitted patients or their family members. The questionnaire informed about the voluntary individual participation and consent was obtained.

Individuals with previous history of any mental disorder, lack of mobile or internet access, those unable to complete online survey and those not willing to provide consent were excluded from the study. Study group completed the socio-demographic proforma and depression anxiety stress scale-21 (DASS21). This scale consists of total 21 questions, seven in each domain. It is based on tripartite model of psychopathology. Cronbach’s alphas were found to be 0.85 for stress subscale, 0.75 for anxiety and 0.80 for depression subscales.

The information from the two questionnaires was used to assess prevalence of stress, anxiety and depression symptoms in the study group and its relation to various socio-demographic variables. The variables were recorded in Microsoft excel and statistical software (SPSS version 22) was used for the analyses. Categorical variables were summarized as frequencies and percentages, while continuous variables as medians and inter-quartile range (IQR, 25th to 75th percentiles). The main outcome of the study (DASS score) was not normally distributed; Mann-Whitney U test was applied for the continuous variables analysis, for consistency. The categorical variables were analyzed using Chi-square statistic or Fischer exact test. The correlation between two continuous variables was analyzed using Spearson’s correlation along with its 95% CI. p < 0.05 was considered statistically significant. All patients who scored above cut off on the DASS 21 were offered quality care as per extant medical guidelines.

**Results**

After excluding the participants with incomplete forms and those who did not give consent, total of 147 patients/relatives participated in the study. The socio-demographic profile (Table 1) shows that about 70% of the respondents were male. Ninety-three (63%) participants were patients infected with COVID-19, while fifty-four (37%) patients were family members of those infected. The age of the study participants ranged from 18 to 74 years, with a median of 34 years (IQR: 27–41 years). Thus, the study sample mainly consisted of young adult age-group. Twenty-nine people (19.7%) of the study population had one or more chronic medical condition (diabetes/hypertension/chronic respiratory disease/malignancy). Sixty-seven of the subjects (45.6%) had family members who were more than 65 yrs of age.

Table 2 shows distribution of subjects based on various categories in DASS-21 i.e. normal, mild, moderate, severe and extremely severe categories in subsets of depression, anxiety and stress. Out of the total 147 participants, 49 (33.33%) had higher scores on depression-subset, 55 participants (37.4%) on anxiety and 29 (19.72%) on stress-subset. Thus two-third of the study population had a normal score on depression and anxiety subscale, and four-fifth had normal score on stress subscale. Table 3 shows the scores in each subset in COVID infected patients and family members of the infected patients. The table shows, 40% of the total family members (n = 54), had elevated scores on depression, 46% on anxiety and 30% on stress. Many participants had higher scores on more than one subset. Table 5 shows the median and inter quartile range of these scores and association with each of the variables studied. Table 6 shows the number of participants with elevated scores distributed according to the socio-demographic variables. Table 7 shows the correlation between the scores in each subset. It showed high correlation among the subsets, meaning people scoring higher on one subset also have higher scores on the other two subsets.
This study is among the very few to study psychological issues in COVID infected patients and their close contacts. There were high levels of depression, anxiety and stress in the study sample. Anxiety symptoms were most prevalent among the three subsets and were present in 37% of the study population. Depression was present in 33% of the study sample and around 20% scored higher on the Stress subscale. Interesting to note is that almost half of the subjects, who had high scores on anxiety subscale, were in extremely-severe category. As anxiety can cause physiological stress-response in the body which can decrease immunity leading to increased severity of infection\(^\text{17}\); the need of intervention cannot be overemphasized. Study on similar population showed that in patients suffering from COVID infection, the prevalence of anxiety and depression ranged from 24% to 42% and 22%–30% respectively.\(^\text{10,18}\) In another study, done on admitted COVID patients in Iran, which used DASS scale, almost all the patients had scores above normal on all subsets. However, in that study about one-third had a past history of psychiatry disorder, which was excluded in our study and medical co-morbidity was high, as compared to ours. Both of these can
Table 5 — Association of DASS-21 scores with different variables.

| Variables          | N    | Depression | Anxiety | Stress |
|--------------------|------|------------|---------|--------|
|                    | Median (IQR) | p value   | Median (IQR) | p value | Median (IQR) | p value |
| Gender             |      |            |          |        |            |         |
| F                  | 43   | 3 (0–7)    | 0.292   | 3 (1–7) | 0.08      | 5 (1–8) | 0.081 |
| M                  | 104  | 2 (0–6)    | 0.61    | 2 (0–5) | 0.946     | 3 (0–6) | 0.682 |
| Any member >65 years in family | No 80 | 2 (0–6) | 0.61 | 2 (0–5) | 0.946 | 3 (0–6) | 0.682 |
|                    | Yes 67 | 2 (0–7) |          | 2 (0–6) | 0.946     | 3 (0–7) |        |
| Chronic disease    | No 118 | 2 (0–6) | 0.323   | 2 (0–5) | 0.188     | 3 (0–12.5) | 0.098 |
|                    | Yes 29 | 4 (0–9.5) |         | 3 (0–12.5) | 0.123 | 5 (1–12) |        |
| Prophylaxis        | No 93  | 2 (0–6)    | 0.291   | 2 (0–5) | 0.123     | 3 (0.5–7) | 0.577 |
|                    | Yes 54 | 2 (0–8.5) |          | 2.5 (1–7) |        | 3.5 (1–7) |         |

Mann–Whitney U test.

Table 6 — Number of subjects with elevated DASS 21 score in each Variable group.

| Variables          | Elevated Score | Normal Score | p value |
|--------------------|----------------|--------------|---------|
| Depression         | Male (n = 104) | 33 (31.73%) | 71 (68.3%) | 0.522 |
|                    | Female (n = 43) | 16 (37.2%) | 27 (66.8%) |        |
| Any member >65 years in family | No (n = 80) | 28 (35%) | 52 (65%) | 0.639 |
|                    | Yes (n = 67) | 21 (42.9%) | 46 (69.7%) |        |
| Chronic disease    | No (n = 118) | 38 (31.3%) | 80 (68.7%) | 0.558 |
|                    | Yes (n = 29) | 11 (38%) | 18 (62%) |        |
| Prophylaxis        | No (n = 93) | 27 (29%) | 66 (71%) | 0.147 |
|                    | Yes (n = 54) | 22 (40.7%) | 32 (59.3%) |        |

Chi-square test or Fisher exact test.
The significant values i.e. p<0.05 is bold.

Table 7 — Correlation between depression, anxiety and stress scores of DASS 21 in the study sample.

| Variables | Anxiety | Stress |
|-----------|---------|--------|
| Depression | Correlation Coefficient = 0.79806 | Correlation Coefficient = 0.80082 |
|           | The P-Value is significant at <0.0001. | The P-Value is significant at <0.0001. |
| Anxiety   | —       | —      |
|           | —       | —      |

Spearson's correlation test.

possibly explain the difference. The observation shows that the proportion of subjects with elevated scores is higher in a group if a family member is also infected, when compared to self alone.

Increased number of family members being infected is distressing and affects with the multiple preoccupations, like, care required for the ill, arrangements of day to day living, management of children in the house etc. There is also a compulsion to follow social restriction and restraining oneself for safety of the unaffected family members. All of these create a psychological burden. In this study it was also found that if another family member apart from self is affected the median score of the said subject (Table 3) in all the three subsets increases, although not significant. No other studies came to our notice which had analysed this factor.

Both depression and anxiety are known to be more prevalent in females. In this study, higher proportion of females had elevated scores on anxiety and stress and also a higher median in the three subsets, although these were not statistically significant. Other studies have found higher frequency of anxiety and depression in the female population. However similar studies for stress levels in COVID, could not be found.

Having a chronic medical condition is a known factor which increases the severity of COVID infection. This was evident here too, with significant number of people with a chronic disorder having higher score on the stress subscale (Table 6). Similarly, a study on hospitalised COVID patients with high comorbidity status, showed much higher proportion of psychological distress. COVID infection affects the prevalence of symptoms is relatively greater when a family member is affected. Since there was no study describing these symptoms in family member of COVID patients we could not compare our results. We also divided the sample into three groups to see the prevalence when both self and family member are infected (Table 4). The observation shows that the proportion of subjects with elevated scores is higher in a group if a family member is also infected, when compared to self alone.

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multiple organ system and thus the severity of the primary disease might increase, with presence of comorbidities.\textsuperscript{22} which affects the physical and mental health status of an individual. Thus not only the frequency of this group to have a higher score is more, also the medians in each of the subset is likely to be higher than the sample not having chronic disorder. These findings have implication in Consultation Liaison Psychiatry practice, where more psychological burden to be expected in COVID patients with medical comorbidities.

Many candidate drugs like Hydroxychloroquine, Ivermectin etc were projected as prophylactic medication for COVID and included in various guidelines. Since there are certain studies which refuted the prophylactic claim, no conclusive statement has still been made.\textsuperscript{23–26} One-third of our study population (54 of 147) took prophylactic medication, which included Hydroxychloroquine, or NSAIDs or their combination, the source of their prescription or requirement was not enquired in the questionnaire. Higher overall score was found in this sample compared to those who did not take prophylaxis (Table 6). More than 40% of these subjects had higher scores on depression or anxiety scales. We could not find any other study which had studied this aspect. This needs to be researched in future studies and could probably be due to the feeling of failure or perceiving loss of faith in further medication etc as their initial attempt to avoid infection had failed.

The scores in each of the subset of depression, anxiety and stress correlated significantly with each other (Table 7) showing that individuals who scored higher in one subset also had higher score on other two. Thus there is a significant overlap of symptoms in the same individual. This highlights the tripartite model of psychopathology that these symptoms arise in unison and management needs an expert consultation. Generally the anxiety symptoms might be more evident due to autonomic involvement or a certain depressive symptom might take a forefront, but analysing the presence of other underlying psychopathology and level of stress perception in the individual requires a thorough psychiatry review.

There could be varied reasons for the increased psychopathology in our study sample. A case report from Korea stated disease related isolation and media showing people pathology in our study sample. A case report from Korea requires a thorough psychiatry review.

There is increased prevalence of anxiety, depression and stress in COVID affected patients and their family members. Female gender, presence of chronic illness, number of family members affected and use of prophylactic medication affected the severity of psychiatric morbidity adversely. Adequate screening, early diagnosis and timely management of these symptoms may reduce the burden of these symptoms and their impact on COVID disease. Sensitisation of clinicians towards this possibility and the need for expert psychiatry care for these patients will prove beneficial in reducing these symptoms.

**Conclusion**

There is increased prevalence of anxiety, depression and stress in COVID affected patients and their family members. Female gender, presence of chronic illness, number of family members affected and use of prophylactic medication affected the severity of psychiatric morbidity adversely. Adequate screening, early diagnosis and timely management of these symptoms may reduce the burden of these symptoms and their impact on COVID disease. Sensitisation of clinicians towards this possibility and the need for expert psychiatry care for these patients will prove beneficial in reducing these symptoms.

**Disclosure of competing interest**

The authors have none to declare.

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REFERENCES

1. WHO website on COVID data; https://covid19.who.int/; last accessed on 07 Mar 2021.
2. https://covid19.who.int/region/searo/country/in. Accessed March 7, 2021.
3. Roy Deblina, Tripathy Sarvodaya, Kar Sujita Kumar, Sharma Nivedita, Verma Sudhir Kumar, Kaushal Vikas. Study of knowledge, attitude, anxiety & perceived mental healthcare need in Indian population during COVID-19 pandemic. Asian J Psychiatr. 2020;51:102083. https://doi.org/10.1016/j.ajp.2020.102083.
4. Brooks Samantha K, Webster Rebecca K, Smith Louise E, et al. The psychological impact of quarantine and how to reduce it: rapid review of the evidence. Lancet. march 14, 2020;395(10277):912−920.
5. Mak IW, Chu CM, Pan PC, Chung Yiui Michael Gar, Chan Veronica Lee. Long-term psychiatric morbidity among SARS survivors. Gen Hosp Psychiatr. 2009;31:318−326.
6. WHO WEBSITE: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/question-and-answers-hub/q-a-detail/coronavirus-disease-covid-19.
7. Ping-Hsing Tsai, Wei-Yi Lai, Yi-Ying Lin, et al. Clinical manifestation and disease progression in COVID-19 infection. J Chin Med Assoc. January 2021;84(1):3−8. https://doi.org/10.1097/JCMA.0000000000000463.
8. Taquet Maxime, Luciano Sierra, Geddes John R, Harrison Paul. J. Bidirectional associations between COVID-19 and psychiatric disorder: retrospective cohort studies of 62 354 COVID-19 cases in the USA. Lancet Psychiatry. 2021 Feb;8(2):130−140. https://doi.org/10.1016/S2215-0366(20)30462-4. Published online Nov 9.
9. Dai L-L, Wang X, Jiang T-C, et al. Anxiety and depressive symptoms among COVID-19 patients in Jianghan Fangcang shelter hospital in Wuhan, China. PloS One. 2020;15(8), e0238416. https://doi.org/10.1371/journal.pone.0238416.
10. Gennaro Mazza M, de Lorenzo R, Conte C, Sara Poletti, Benedetta Vai, Irene Bollettini et al. Anxiety and depression in COVID-19 survivors: role of inflammatory and clinical predictors. Brain Behav Immun. 2020;89:594−600.
11. Gardner Pj, Moal1f P. Psychological impact on SARS survivors: critical review of the English language literature. Canad Psychol/Psychologie canadienne. 2015;56(1):123−135. https://doi.org/10.1007/s1037973.
12. Osman A, Wong Ji, Bagge Cil, Freedenthal S, Gutierrez PM, Lozano G. The Depression Anxiety Stress Scales-21 (DASS-21): further examination of dimensions, scale reliability, and correlates. J Clin Psychol. 2012 Dec;68(12):1322−1338. https://doi.org/10.1002/jclp.21908.
13. McAlonan GM, Lee AM, Cheung V, et al. Immediate and sustained psychological impact of an emerging infectious disease outbreak on health care workers. Canad J Psychiatr/Clin Psych. 2007;52(4):241−247. https://doi.org/10.1177/070674370705200406.
14. Wang C, Pan R, Wan X, et al. A longitudinal study on the mental health of general population during the COVID-19 Epidemic in China. Brain Behav Immun. 2020. https://doi.org/10.1016/j.bbi.2020.04.028.
15. Lovibond SH, Lovibond PF. Manual for the Depression Anxiety Stress Scales. 2nd ed. Sydney: DASS Publications; 1995.
16. Antony MM, Bieling PJ, Cox BJ, Enns MW, Swinson RP. Psychometric properties of the 42-item and 21-item versions of the depression anxiety stress scales in clinical groups and a community sample. Psychol Assess. 1998;10:176.
17. Koh KB. Stress, emotion, and immunity. In: Stress and Somatic Symptoms. Cham: Springer; 2018. https://doi.org/10.1007/978-3-030-02783-4_4.
18. Paz C, Mascialino G, Adana-Díaz L. Anxiety and depression in patients with confirmed and suspected COVID-19 in Ecuador. Psychiatr Clin Neurosci. 2020;74:554−555.
19. Zandifar A, Badrhamr, Yazdani S, et al. Prevalence and severity of depression, anxiety, stress and perceived stress in hospitalized patients with COVID-19. J Diabetes Metab Disord. 2020;19:1431−1438. https://doi.org/10.1007/s40200-020-00667-1.
20. Ozdin Seçuk. Şükriye Bayrak Ozdin Levels and predictors of anxiety, depression and health anxiety during COVID-19 pandemic in Turkish society: the importance of gender. Int J Soc Psychiatr. 2020;66(5):504−511.
21. Vindegaard N, Benros ME. COVID-19 pandemic and mental health consequences: Systematic review of the current evidence. Brain Behav Immun. 2020 Oct;89:531−542. https://doi.org/10.1016/j.bbi.2020.05.048.
22. Bilbil Melanie, Paparone Patricia, Kim Anna M, Mutalik Shruti, Ernst Carrie L. Psychopharmacology of COVID-19. Psychosomatics. 2020;61(5):411−427. https://doi.org/10.1016/j.psym.2020.05.006. ISSN 0033-3182.
23. Hellwig MD, Maia A. A COVID-19 prophylaxis? Lower incidence associated with prophylactic administration of ivermectin. Int J Antimicrob Agents. 2021;57(1):106248. https://doi.org/10.1016/j.ijantimicag.2020.106248.
24. Revised advisory on the use of Hydroxychloroquine (HCQ) as prophylaxis for SARS-CoV-2 infection (in supersession of previous advisory dated 23rd March, 2020)- ICMR advisory dated 22 May 2020.
25. Smit M, Marinosi Annalisa, Agoritsas Thomas, Calmy Alexandra. Prophylaxis for COVID-19: a systematic review. Clin Microbiol Infect. 2021. https://doi.org/10.1016/j.cmi.2021.01.013.
26. Fiolet Thibault, Guihur Anthony, Edouard Rebeaud Mathieu, Mulot Matthieu, Peifer-Smadja Nathan, Mahamat-Saleh Yahya. Effect of hydroxychloroquine with or without azithromycin on the mortality of coronavirus disease 2019 (COVID-19) patients: a systematic review and meta-analysis. Clin Microbiol Infect. JANUARY 01, 2021;27(1):P19−27.
27. Lim J, Jeon S, Shin HY, et al. Case of the index patient who caused tertiary transmission of COVID-19 infection in Korea: the application of lopinavir/ritonavir for the treatment of COVID-19 infected pneumonia monitored by quantitative RT-PCR. J Kor Med Sci. 2020;35(6):e79.
28. Dubey S, Biswas P, Ghosh R, et al. Psychosocial impact of COVID-19. Diabetes Metab Syndr. 2020;14:779−788.
29. Wohleb ES, Franklin T, Iwata M, Duman RS. Integrating evidence. Can J Psychiatr/Rev Psychiatr Clin Neurosci. 2020;66(5):504−511.
30. Huang Y, Zhao N. Generalized anxiety disorder, depressive symptoms and sleep quality during COVID-19 outbreak in China: a web-based cross-sectional survey. Psychiatr Res. 2020;288:112954. https://doi.org/10.1016/j.psychres.2020.112954.
31. Rosselli M, Salimbeni MV, Bessi C, et al. Screening of distress among hospitalized patients in a department of internal medicine. Asian J Psychiatr. 2015;18:91−96.
32. IShak WW, Collison K, Danovitch I, et al. Screening for depression in hospitalized medical patients. J Hosp Med. 2017;12(2):118−125.
33. Lee AM, Wong JG, Mc Alonan GM, et al. Stress and psychological distress among SARS survivors 1 year after the outbreak. Can J Psychiatr. 2007;52(4):233−240.
34. Liu Kai, Chen Ying, Wu Duozhi, Lin Ruzheng, Wang Zaisheng, Pan Liqiong. Effects of progressive muscle relaxation on anxiety and sleep quality in patients with COVID-19. Complement Ther Clin Pract. 2020;39:101132. https://doi.org/10.1016/j.ctcp.2020.101132. ISSN 1744-3881.