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RESEARCH ARTICLE

PREVALENCE AND FACTORS ASSOCIATED WITH MENTAL HEALTH CONDITIONS AND SOCIAL SUPPORT AMONG HOSPITALIZED COVID-19 PATIENTS

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ABSTRACT

Background: The 2019 coronavirus disease (COVID-19) epidemic has raised international concern. Apart from the evident physical symptoms in infected cases, it has caused serious damage to public mental health. Mental health is becoming an issue that cannot be ignored in our fight against it. Present study aimed to explore the prevalence and factors associated with mental health condition and social support among hospitalized COVID-19 patients. **Methods:** A total of 158 patients diagnosed with COVID-19 were included in this study. Current study assessed the depression, anxiety and stress symptoms using the DASS 21 and social support using the Perceived Social Support Scale among patients at admission. The multivariate linear regression analyses were performed to identify factors associated with symptoms of anxiety and depression. **Results:** Of 158 participants, majority of the patients had the symptoms of depression, anxiety and stress symptoms. Bivariate correlations analysis highlighted that significant low social support was correlated with anxiety ($r=-0.166, p<0.05$) and stress ($-0.238, p<0.01$) symptoms among COVID-19 patients. The multiple linear regression analysis highlighted that social support ($\beta = -1.524, p=0.044$) is associated with Depression. Further oxygen saturation ($\beta = 0.374, p=0.043$), and social support ($\beta = -1.714, p=0.044$) were associated with anxiety and oxygen saturation ($\beta = 0.363, p=0.043$), age ($\beta = 0.072, p=0.043$), and social support ($\beta = -2.259, p = 0.004$) were the factors associated with stress. **Conclusion:** The finding suggested that mental health symptoms are prevalent among hospitalized COVID 19 patients. Mental health concern and appropriate intervention is also required for patients along with the treatment regimen of COVID 19 during the epidemics.

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INTRODUCTION

The current pandemic situation of Coronavirus disease 2019 (COVID 19) has a major health crisis and significant distress around the globe. This widespread outbreak is associated with the adverse mental consequences. The increasing menace of COVID pandemic condition along with the public physical health emergency, COVID-19 threatens global mental health, as evidenced by panic-buying worldwide. It affects several nations and resulted in global atmosphere of depression, anxiety and stress due to interrupted travel plans, social distancing, social isolation, overloaded media information, panic of buying the necessary goods even for daily activities (1). It still remains undetected about changes in the levels of psychological impact such as depression, anxiety and stress in this current pandemic situation.

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In past few months Public health emergency of International concern (PHEIC) has been declared by World health Organization (WHO), which is the 6th PHEIC under International health regulation (2, 3). WHO officially declared COVID-19 as "pandemic" condition from global health emergency (4). The global emergency of COVID - 19 and its increasing rate of transmission and relatively high mortality, has gained the attention of scientific community to focus on the research treatment, vaccination and prevention methods (5 - 7). However, this sustained pandemic situation and prolonged social isolation and the effect of economy, many researchers and clinicians focused on the potential negative effect of COVID-19 on the mental health of general population (8), emerging studies producing evidence of supporting these concerns. Cao et al. (2020) showed that 21.3% of students were experiencing mild anxiety, 2.7% showed moderate anxiety, and 0.9% were suffering from severe anxiety (9). This showed that the pandemic has adverse effect on the population's mental health, thus there is a need to focus not

only on its scope but also on its origin. The increased level of anxiety and stress is the fear of COVID-19 and fear of being infected or infecting loved ones. Further the fear may exacerbate with pre-existing mental health disorder or elicit extreme anxiety reactions (10). Depression, anxiety and stress were the major indicators of increase in disability and represent a social and economic health burden on society. The grim pandemic situation has increased the public panic and mental health stress. The mental health issues cannot be ignored, when controlling the COVID-19 outbreak. Globally, as of August 2020, there have been 21 294 845 confirmed cases of COVID-19, which includes 761 779 deaths (WHO) (11). The current pandemic COVID-19 situation, has imposed an unprecedented threat to physical and mental health of health care providers and COVID-19 positive patients. Earlier studies showed that depression, Anxiety and stress are the common, however persistent mental illness in several chronic illness (12, 13), cancer (14) and other major illness. All these researches highlighted that the patients with mental illness, such as depression, Anxiety and stress might have difficulty in symptom control and impaired quality of life. The recent literatures on the psychological impact on COVID-19 are majorly concentrated on the health care workers (15,16) and general public (17), who were at risk of infection and requires protective measures, which leads to psychological distress. Few studies highlighted that the pandemic situation like this affects their mental health (18). A study conducted in china showed the prevalence of depression (50.4%) and Anxiety (44.6%) among the health care workers (19). There is a paucity of data in Indian literature, to fill this gap, present study was planned to explore the prevalence and factors associated with mental health condition (depression, anxiety and stress) and social support among hospitalized COVID-19 patients during the lockdown

METHODS

This descriptive quantitative cross-sectional, observational study was carried out among COVID-19 positive patients in Chennai. The study included 158 COVID 19 positive confirmed patients who were admitted from June - August 2020 in Chennai Nation Hospital. All patients were diagnosed with COVID-19 according to World Health Organization interim guidance. Informed consent was provided by subjects before study commencement. All participants completed the questionnaires during admission in the hospital. The questionnaire consist of three sections: the first section includes demographic details which included age, gender, marital status, educational qualification, oxygen saturation percentage, and comorbidities of COVID positive patients. The second section includes DASS-21 which is a self-assessment questionnaire based on three sub scales of depression, anxiety and stress, each sub-scale consist of 7 questions each and rated as normal, mild, moderate, and extremely severe (20). Each item is scored in a self-rated Likert scale from 0 (didn't apply to me at all) to 3 (much or mostly applied to me) in the past 1 week. Third section, includes 12-item Perceived Social Support Scale (PSSS) and has been widely adopted to measures perceived support from family, friends and other ways in general population (21). Total scores range from 0 to 84, with higher scores implying greater level of perceived social support. Means and proportions of the given data for each variable were calculated. For the comparison between groups *t*-test was used for continuous variables and Chi-square tests were used for

categorical variables or one-way analysis of variance (ANOVA). Multivariate regression was used to identify the factors associated with psychological distress and social support. Statistical significant was determined at $p < 0.05$. SPSS software version 20 (IBM corp.) was used to assess the data

RESULTS

Demographic characteristics: Of 158 patients enrolled in the study, 102 were male and 56 were females. The study participants had a mean age of 49.08 (± 14.33) years and ranged from 21 to 88 years. About 53.79 % of the patients were greater than 50 years of age. Majority of the study patients were married (93.04%), and were well educated (38.61 % graduate). Oxygen saturation is a key clinical index for evaluation the severity of patients with COVID-19. In the present study about 28.48 % of the patients had oxygen saturation point less than or equal to 93% at rest and were severe disease. Further majority of the patients had Type 2 Diabetes Mellitus (T2DM) with Hypertension (32.91%), followed by, T2DM alone (21.52), coexistence of T2DM with HTN, with or without CAD or CKD (17.72 %) and Hypertension alone (17.72). The demographic characteristics of the study patients was presented in Table 1.

Psychosocial characteristics: Depression anxiety and stress sub scale of Covid 19 patients was 25.16 \pm 5.35, 23.69 \pm 4.70 and 22.98 \pm 5.13 respectively. The mean Total score of DASS scale was 71.84. With reference to DASS scale, nearly all patients show the symptoms of Depression, anxiety and stress. Majority of the patients were in severe level (41.77%) of depression and extremely severe level (88.60) of anxiety condition. When considering the Stress level 13.29 % were in mildly stressed, 54.43 % and 27.21 % was in moderate, severe level of stress. (Table 2).

Correlations among depression, anxiety, stress and social support in COVID-19 patients: There is a growing evidence that social support plays a major role in mental health (11). The low social support (2.54 \pm 0.46) was observed for all patients, further average score of sub scales family (2.51 \pm 0.51), friends (3.01 \pm 0.62) and other supports (2.11 \pm 0.47) showed low to moderate social support. The bivariate correlation analysis highlighted that low social support was significantly correlated with anxiety ($r = -0.166$, $p < 0.05$) stress ($r = -0.238$, $p < 0.01$), perhaps it is not correlated with depression ($r = 0.011$). Further Family ($r = -0.050$, $p < 0.05$) was negatively correlated with Depression. Whereas Family ($r = -0.213$, $p < 0.01$) and Friends ($r = -0.094$, $p < 0.05$) support are negatively correlated with anxiety. Likewise, Family ($r = -0.242$, $p < 0.01$), Friends ($r = -0.178$, $p < 0.05$) and other ($r = -0.199$, $p < 0.05$) support were significantly negatively correlation was with stress (Table 3).

Factors associated with depression, anxiety and stress among patients with COVID-19: The major factors contributes towards depression, anxiety and stress among COVID 19 patients were compared between different groups as shown in. Depression, anxiety and stress scores were significantly higher among patients with older age group (> 50). Anxiety and Stress score was significantly higher among females, further patients with low oxygen saturation had higher anxiety scores and getting less social support had higher depression, anxiety and stress score.

Table 1: Demographic and clinical characteristic of the study subjects

Variables		n = 158	%
Gender	Male	102	64.55
	Female	56	35.44
Age	≤ 50	85	53.79
	>50	73	46.20
Marital status	Single	5	3.16
	Married	147	93.04
	Divorced	1	0.63
	widowed	5	3.16
Educational status	High school	45	28.48
	Graduate	61	38.61
	Post Graduate	52	32.91
Oxygen saturation at rest	≤ 93%	45	28.48
	>93%	113	71.51
Occupation	Student	4	2.53
	Business	64	40.55
	employed	30	18.98
	Home maker	44	27.84
	Retired	16	10.13
Comorbidities	HTN only	28	17.72
	T2DM only	34	21.52
	HTN + T2DM	52	32.91
	T2DM + HTN with CAD/ CKD	28	17.72
	None	16	10.12

Table 2. Severity of depression, anxiety, and stress symptoms among the study subjects

Variables	Normal n (%)	Mild n (%)	Moderate n (%)	Severe n (%)	Extremely Severe n (%)
Depression	0 (0)	2 (1.26)	31 (19.62)	66 (41.77)	59 (37.34)
Anxiety	1 (0.63)	0 (0)	5 (3.16)	12 (7.59)	140 (88.60)
Stress	6 (3.79)	21 (13.29)	86 (54.43)	43 (27.21)	2 (1.26)

Table 3. Association between depression, anxiety, Stress and social support

Variables	Depression	Anxiety	Stress	Social support	Family Support	Friends Support	Others Support
Depression	1	0.601**	0.377**	0.011	-0.050*	.023	.058
Anxiety		1	0.413**	-0.166*	-0.213**	-0.094*	-0.129
Stress			1	-0.238**	-0.242**	-0.178*	-0.199*
Social support				1	.881**	0.897**	0.787**
Family Support					1	.711**	.549**
Friends Support						1	.535**
Others Support							1

*p<0.05; **p<0.01

Table 4. Comparison of anxiety and depression scores on different variable

		Depression Score (mean ± SD)	P	Anxiety Score (mean ± SD)	P	Stress Score (mean ± SD)	P
Gender	Male	24.98±5.51	0.48	21.59±4.03	0.01*	22.00±4.49	0.000**
	Female	25.65±5.08		23.45±4.23		25.41±3.80	
Age	≤ 50	25.47±4.84	0.000**	24.82±3.38	0.002*	25.47±5.88	0.013*
	>50	20.92±5.77		22.49±4.99		22.30±4.29	
Marital status	Single	25.23±5.42	0.40	23.71±4.78	0.80	23.02±5.20	0.60
	Married	23.20±2.28		23.20±1.10		22.00±1.41	
Educational status	High school	24.96±5.47	0.90	23.55±4.42	0.08	23.27±5.44	0.05
	Graduate	25.65±5.08		24.04±5.37		22.30±4.23	
	Post Graduate	24.89±5.77		23.72±4.99		22.31±4.29	
Oxygen saturation at rest	≤ 93%	25.34±5.64	0.420	24.39±4.82	0.002*	22.34±4.40	0.331
	>93%	23.69±5.34		22.40±4.75		23.27±5.46	
Social Support	Low	24.71±5.16	0.004**	23.86± 4.54	0.001**	23.31±6.02	0.004**
	Moderate - High	22.20 ± 5.59		21.52±4.20		20.87±4.47	

*p<0.05; **p<0.01

Table 5. Multivariate regression analysis of factors associated with depression, anxiety and stress

Variables	β	SE	t	p
Depression				
Social support	-1.524	0.045	-1.028	0.044*
Anxiety				
Oxygen Saturation at Rest	0.374	0.152	2.018	0.043*
Social Support	-1.714	0.845	-2.028	0.044*
Stress				
Oxygen	0.363	0.178	2.038	0.043*
Age	0.072	0.035	2.044	0.043*
Social Support	-2.589	0.890	-2.908	0.004**

*p<0.05; **p<0.01

The multiple linear regression analysis (Table 5) showed that social support ($\beta = -1.524$, $p = 0.044$) is associated with Depression for COVID-19 patients. Oxygen saturation ($\beta = 0.374$, $p = 0.043$), and social support ($\beta = -1.714$, $p = 0.044$) were associated with anxiety for COVID-19 patients. This shows that patients with less social support and lower oxygen saturation presents more anxiety symptoms. Moreover, oxygen saturation ($\beta = 0.363$, $p = 0.043$), age ($\beta = 0.072$, $p = 0.043$), and social support ($\beta = -2.259$, $p = 0.004$) were the factors associated with stress. The finding highlighted that patients with older age, lower oxygen saturation and less social support were more likely to be stressed (Table 5).

DISCUSSION

Number of studies have showed the depression, anxiety and stress of the patients with various diseases. The current study reported the prevalence of depression, anxiety and stress in patients with COVID-19 during this pandemic situation. The finding of the present study showed that nearly all patients with COVID-19 had symptoms of depression, anxiety and stress. Social support is one of the major factor for depression, anxiety, and stress of COVID patients (Table 5). When the patient lacks social support or less support, symptoms of depression, anxiety and stress symptoms are increased (Table 3). When the patient is in diseased condition, patient expects more social support in the form of physical and psychological assistance from family and friends to overcome the situation (22). Further evidences showed that social isolation and loneliness are the factors which is linked with worsening of mental health outcomes (23). In this COVID pandemic situation, patients were advised to quarantine themselves in house in some cases and quarantined in hospitals, in such situations they were left helpless and lonely due to lack of accompany ship of their family and friends. In above said circumstances medical workers plays a major role and provide peer support to overcome the situation. In clinical setup, health care workers should keep a tract of the patients and provide psychological support to help quarantined patients to rebuilt confidence. In China they encouraged Tai chi practice (24), singing and dancing as physical relaxation, in supervision and guided by health care staffs. This kind of doctor-patient interaction might encourage patients to stay positive mindset.

Moreover, factors such as increased age and lower oxygen saturation might also be considered for anxiety of the patient. As earlier studies showed that elderly patients are at high risk with severe COVID-19 symptoms leads to death (25). Further, oxygen saturation is a major index to assess the severity of patients with COVID-19. According to WHO interim guidance for COVID-19 (26), patients whose oxygen saturation was $\leq 93\%$ at rest was defined as severe type patients. In the current study, 28.48% of participants were with low oxygen saturation. The study findings emphasized that the patients with severe illness are likely to be anxious. Further psychological care and health attention should be provided to these critically ill patients. Present study finding is in line with the earlier reports, which focused on the psychological responses in general population during the COVID-19 pandemic (27), females tend to develop high level of anxiety and stress as shown in the current study. Education status is also associated with the mental distress in COVID patients. In several diseases, depression, anxiety and stress, are related with prolonged hospital stay and non-adherence of the treatment (28-30).

It is of prime important that early attention is required to prevent mental health problems and provide good clinical outcome and improved quality of life. As the epidemic situation continues, study findings helps to develop a psychological support strategy for hospitalized patients with COVID-19 in India and other areas affected by the epidemic. The current study has several implications, the studies conducted throughout the pandemic situation would benefit if COVID-19 related fear assessment has been included, not only as an outcome measures, perhaps potential explanatory factor related to potential vulnerability or, alternatively, resilience. Further, by recognizing the level of specific fear among different population and its association with the demographic characteristic such as gender, socioeconomic status, pre-existing conditions, etc., could assist in locating potential risk groups. These findings might help in the decision makers, health care workers and clinicians to screen patients who are prone to fear during Covid-19 pandemic and foster the development of educational interventions, while targeting the relevant groups.

Study Limitation

Even though the study has several strengths, like sample size, relatively heterogeneous samples of general population, several limitation should also be noted. As the present study was a single-centered, the findings cannot be generalized for all population, thus further multi-centered study is required to generalize the study finding. The study data was collected during the hospital stay of the patients, hence the findings doesn't allow to derive the conclusion as the findings may tend to change over the time. As present study is a cross sectional study which is not robust enough to determine the casual relationship between mental health and socio-demographic and clinical variables.

Conclusion

Patients with COVID 19 experienced depression, anxiety and stress. The timely psychological intervention is also required for patients along with the treatment regimen of COVID 19 during the epidemics. There is a need for more research data from other vulnerable population. As the COVID-19 pandemic situation continues, the present study finding helps in planning a comprehensive support psychological strategy in the health care sector. To conclude, the study findings shows that long term study should be encouraged along with the specific screening strategies for the psychological care for COVID patients. An inclusive psychological support strategy can be planned and developed based on the study finding during this epidemic situation in developing country like India.

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