

Evaluation of Depression, Anxiety and Stress Scores in Patients with Covid-19: A Cross-Sectional Study

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ABSTRACT

Background: The COVID-19 pandemic is a traumatic event with a global impact, predicted to increase depression, anxiety, substance use, sadness, and loneliness. This study was conducted to evaluate the scale of depression, anxiety, and stress among patients infected with the COVID-19 virus.

Methods: This cross-sectional study was conducted between April 2019 and April 2022. According to the conditions of the study space, available sampling was selected. In addition to demographic characteristics, a questionnaire related to stress, anxiety, and depression (DASS-21) was used to collect data. Then, the collected data were entered into SPSS software for analysis, and Pearson's correlation was used to check the relationship between the variables, with the significance level (P-value) reported.

Results: Out of a total of 714 participants, 26.1% had higher scores in depression, 37.5% in anxiety, and 15.7% in stress. In this way, two-thirds of the studied population on the depression and anxiety scale and almost half of the studied population on the stress scale experienced degrees of these disorders from mild to very severe during the period of COVID-19 infection. The scores of each subcategory of depression, anxiety, and stress are significantly correlated with each other, which shows that people who have a higher score in one subcategory also have a higher score in two subcategories.

Conclusion: It seems that COVID-19 has an obvious effect on the mental health of people. Thus, more policies and attention are needed in this field to manage the disease.

The authors declare no conflicts of interest.

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Introduction

The COVID-19 pandemic has triggered a global crisis, particularly regarding the coronavirus pneumonia epidemic [1]. Governments worldwide have implemented various measures, such as travel restrictions, quarantines, and stay-at-home orders, to contain the spread of the virus. Consequently, businesses and educational institutions have been forced to shut down, while group gatherings have been canceled. Additionally, non-essential employees have been instructed to work remotely. While these unprecedented actions have proven effective in curbing the transmission of the virus, they have also given rise to new concerns, including mental health issues [2].

Given the traumatic nature of the COVID-19 pandemic and its far-reaching consequences, it is expected that there will be a significant increase in depression, anxiety, substance abuse, feelings of sadness, and loneliness. These conditions can be attributed, in part, to the lingering effects of fear, social isolation, and economic hardship resulting from the disease. The pandemic has had a global impact, with the World Health Organization defining COVID-19 as a condition that exhibits persistent symptoms in individuals who have recovered from the virus over time [3]. Research conducted in China, which was the initial epicenter of the COVID-19 outbreak, has revealed high levels of stress, anxiety, and depression among the population [4-5]. Similar alarming rates of mental health crises have been observed in studies conducted in other countries such as Italy, Spain, and Iran [6-8].

With the COVID-19 pandemic, a plethora of mental, physical, and social issues related to this virus have emerged in individuals across the globe. If these issues are not addressed, the psychological consequences may persist in the general population for an extended period and evolve into a global medical crisis [9]. Patients with the virus, as well as individuals suspected of having it, often experience anxiety and fear regarding the repercussions of the disease. Those undergoing quarantine may also face loneliness, fatigue, and anger [10]. The heightened levels of fatigue and anxiety resulting from quarantine intensify the need for extreme self-care. However, due to the unknown nature of the virus, individuals may neglect this need despite their best efforts, consequently worsening their stress, anxiety, and depression [11]. Consequently, there is a pressing need to address these disorders and develop interventions that can break this cycle, creating more favorable conditions for individuals to experience fewer complications during treatment, enabling them to reintegrate into their normal lives. In light of this, the present study was conducted to evaluate the levels of depression, anxiety, and stress among patients infected with the COVID-19 virus at

Amir Alam Hospital in Tehran between April 2019 and April 2022.

Methods

This study is a cross-sectional study targeting patients with COVID-19 infection who were admitted to the Amir Alam Hospital Complex after a confirmed diagnosis of the virus. The study was conducted from April 2019 to April 2022. A convenience sampling method was employed, including all eligible patients who were hospitalized in the center during this period and who met the inclusion criteria.

The eligibility criteria for inclusion in the study are adult males and females aged 18 years and above who have visited the respiratory emergency room of this institution and have received a confirmed diagnosis of COVID-19 through a positive diagnostic test or a lung CT scan indicating lung involvement. Patients who willingly provided their cooperation and consent to participate in the study were also included.

Demographic information, including age, sex, occupation, education, as well as background diseases such as cardiovascular diseases, blood pressure, obesity, respiratory diseases, diabetes, cancer, kidney diseases, liver diseases, neurological diseases, history of chemotherapy, autoimmune diseases, and thyroid disease, was recorded. Anthropometric information, such as weight, height, and body fat mass, was also recorded. Weight was measured using a digital scale (808 Seca, Germany) with an accuracy of 0.1 kg, and height was measured using a wall-mounted height meter with an accuracy of 0.1 cm (Seca, Germany). Body fat mass was calculated using a specific formula.

Patients were also required to complete the stress, anxiety, and depression questionnaire (DASS-21). The DASS-21 questionnaire consists of 21 questions, with 7 questions relating to stress, 7 relating to anxiety, and 7 relating to depression. The questions are answered using four options that require self-assessment. The response options range from "never" to "always". Scoring is done on a scale of 0 to 3, where zero represents the "never" option, one represents the "little" option, two represents the "sometimes" option, and three represents the "always" option. The intensity of anxiety is categorized as normal (score 0-7), mild (8-9), moderate (10-14), severe (15-19), and very severe (above 20). The severity of depression is categorized as normal (score 0-9), mild (10-13), moderate (14-20), severe (21-27), and very severe (above 28). The intensity of stress is categorized as normal (score 0-14), mild (15-18), moderate (19-25), severe (26-33), and very severe (above 33).

Before commencing the study, written consent was obtained from all patients to participate. The present study was approved by the ethics committee of the Tehran University of Medical Sciences with the reference number IR.TUMS.VCR.REC.1399.441.

After collecting the data, it was entered into SPSS-22. Descriptive statistics and statistical tests, including

Pearson's correlation, were used to examine the relationship between the variables. The resulting significance level (P-value) was reported.

Results

The analysis of the study data shows that, in general, 714 patients with COVID participated in this study. Of these participants, 65.5% were men with COVID, while 31.9% were women with COVID. The demographic information of the participants is summarized in detail in (Table 1).

Figures show the distribution of subjects according to different categories in DASS-21, namely normal, mild, moderate, severe, and very severe categories in depression, anxiety, and stress subsets. Out of a total of 714 participants, 186 (26.1%) had higher scores in depression, 266 (37.5%) in anxiety, and 112 (15.7%) in stress. In this way, one-third of the studied population had a normal score on the depression and anxiety scale, and almost half of the studied population had a normal score on the stress scale. Also, the DASS-21 score information in the studied sample is shown schematically in Figures 1 to 3. Figures 4 and 5 also show the prevalence of depression, anxiety, and stress in the studied sample in severe and very severe degrees (Figures 1-5).

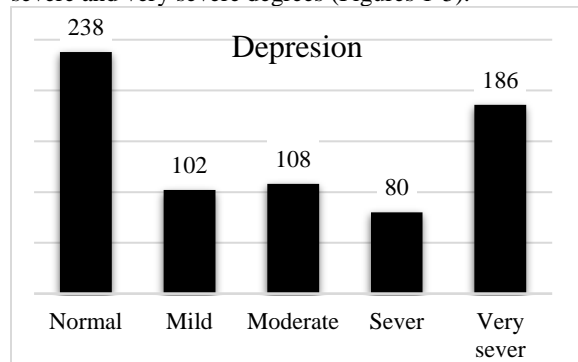


Figure 1- Prevalence of depression in patients with COVID-19

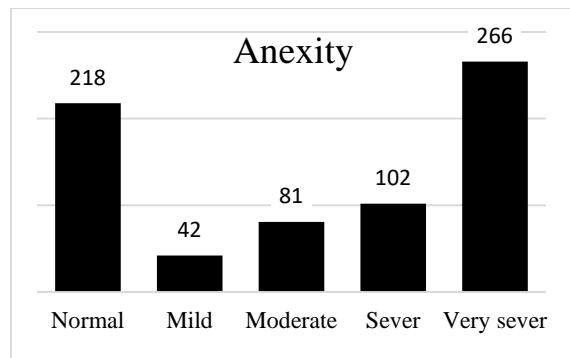


Figure 2- Prevalence of anxiety in patients with COVID-19

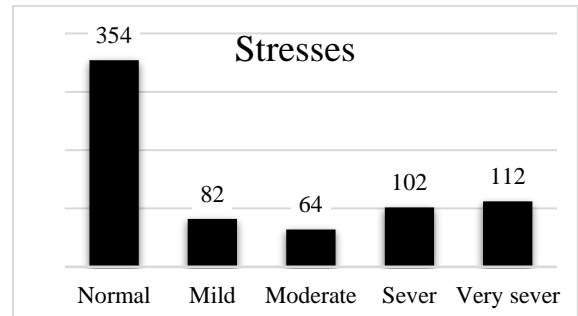


Figure 3- Prevalence of stresses in patients with COVID-19

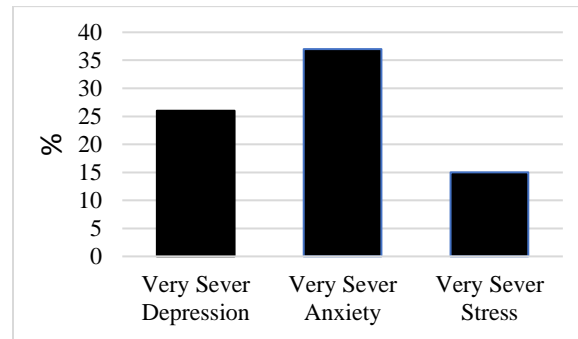


Figure 4- Prevalence of very severe depression, anxiety and stress in patients with COVID-19

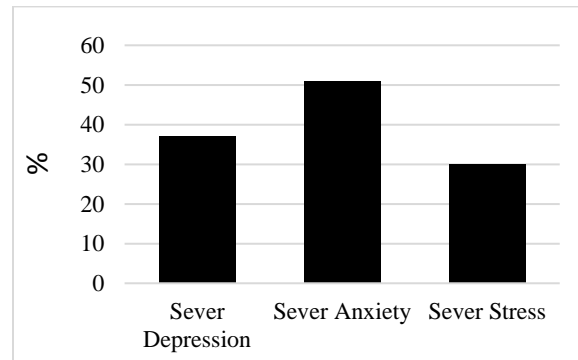


Figure 5- Prevalence of severe depression, anxiety and stress in hospitalized patients with COVID-19

(Table 2) shows the correlation between DASS-21 scales and demographic information (age, gender, education, employment status) and smell, taste, appetite, and lethargy variables in hospitalized patients with COVID-19. Pearson's correlation coefficient was used to investigate the correlation between the variables. The findings showed a correlation with the gender variable in all three scales, and their changes are not aligned with each other. This result was confirmed with a 99% confidence coefficient. There is a non-aligned correlation between the depression and anxiety scale with marital status. This result was confirmed with a 95% confidence factor. A consistent correlation relationship was also observed between educational status and the anxiety

scale, which was confirmed with a 99% confidence factor.

The comparison of the sense of smell with the depression scale also showed a non-parallel correlation with a confidence coefficient of 95%. The two scales of anxiety and stress also correlated with appetite, with a 95% confidence coefficient. This correlation was consistent in the anxiety scale and non-collinear in the

stress scale. A non-collinear correlation was also observed between the stress scale and the taste state with a 95% confidence coefficient (Table 2).

In addition, the scores of each subcategory of depression, anxiety, and stress are significantly highly correlated with each other. This shows that people who have a higher score in one subcategory also have a higher score in two subcategories.

Table 1- Demographic information of hospitalized patients with COVID-19 (N =714)

Variables		Frequency	Percent
Sex	Male	468	65.5
	Female	228	31.9
Marriage	Single	88	12.3
	Married	626	87.7
Education	Illiterate	136	19
	Under Diploma	352	49
	Academic education	226	31.6
	Unemployed	14	2
Job	Employee	214	30
	Free lance	178	24.9
	Teacher	18	2.5
	Other	290	40.6
Asthma History	No	670	93.8
	Yes	44	6.2

Table 2- Correlation between scales of DASS-21 and demographic data of hospitalized patients with COVID-19

		Depression	Anxiety	Stress
Sex	Pearson correlation coefficient	-0.13	-0.1	-0.18
	P-value	<0.001	0.004	<0.001
Marriage	Pearson correlation coefficient	-0.09	-0.17	-0.06
	P-value	0.01	<0.001	0.09
Education	Pearson correlation coefficient	0.05	0.12	0.04
	P-value	0.12	0.001	0.18
Job	Pearson correlation coefficient	0.03	0.02	0.02
	P-value	0.38	0.59	0.53
Anosmia	Pearson correlation coefficient	-0.079	-0.04	-0.11
	P-value	0.03	0.27	0.003
Ageusia	Pearson correlation coefficient	-0.04	-0.002	-0.07
	P-value	0.21	0.95	0.03
Anorexia	Pearson correlation coefficient	-0.02	0.07	-0.09
	P-value	0.56	0.03	0.01
Lethargic	Pearson correlation coefficient	-0.01	0.05	-0.03
	P-value	0.79	0.12	0.35

Discussion

This study was conducted to assess depression, anxiety, and stress scores among patients with COVID-19. The findings revealed that out of a total of 714 participants, 26.1% experienced higher levels of depression, 37.5% experienced higher levels of anxiety, and 15.7% experienced higher levels of stress. Thus, a significant portion of the study population experienced varying degrees of these disorders, ranging from mild to very severe, during the COVID-19 period. It is worth noting that anxiety can trigger a physiological stress response in

the body, which can weaken the immune system and potentially exacerbate the infection [12].

The study findings demonstrated a correlation with the gender variable across all three scales, and the changes observed were not consistent with each other. This result was statistically confirmed with a confidence level of 99%. A study by Yadav et al. [13] also indicated that depression and anxiety are more prevalent among women. In our study, a larger proportion of women exhibited higher scores in anxiety and stress, as well as higher median scores in all three subscales, although these differences were not statistically significant. Other

studies have also shown a higher frequency of anxiety and depression in females [14-15].

Analysis of the correlations between the scales revealed that the scores for each subset of depression, anxiety, and stress were significantly correlated with each other. This suggests that individuals who scored higher in one subset also tended to score higher in the other subsets, which aligns with the findings of Yadav et al.'s study [13]. Therefore, there is a substantial overlap of symptoms within the same individual. This tripartite model of psychopathology emphasizes that these symptoms manifest in a coordinated manner, and effective management requires expert guidance to control and improve the patient's mental well-being. Psychological trauma may arise from social isolation and inadequate contact with loved ones during hospitalization or quarantine. In addition to psychological and social factors, biological factors such as excessive inflammation during infection or immunological responses may also contribute to the development of depression or anxiety [16-17].

In general, the current study demonstrates that the COVID-19 pandemic significantly impacts individuals' mental health. Given the strong correlation between depression, anxiety, and stress, it is imperative to address these disorders. Failure to take effective measures to combat this widespread epidemic at the societal level and implement interventions to enhance the mental well-being of the population may lead to a new surge of social consequences across various aspects of people's lives and societal norms. This study was conducted under emergency conditions and with a limited sample, reflecting the prevailing atmosphere in the community. Generalizing the findings would have been more feasible if the investigation had been carried out in additional centres. Despite this limitation, the study researchers' focus on psychological trauma and drawing attention to the existing service gap in this area are notable strengths. These findings lay the groundwork for future initiatives aimed at addressing the psychological aftermath of this epidemic.

Conclusion

The COVID-19 pandemic has had a significant impact on individuals' mental well-being. Given the strong association between depression, anxiety, and stress, it is imperative to prioritize the management of mood disorders and mental health. Further research is required to validate these findings.

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