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Research Article

Biopsychosocial Profile of COVID-19 Patients Cared for in Public and Private Health Facilities in Kandahar Province, Afghanistan

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Background. Over the past two years, the ongoing COVID-19 pandemic has resulted in a staggering number of biopsychosocial deficits in the general population that have impacted the physical, psychological, and social aspects of their health and well-being. *Objectives*. This paper highlights the biopsychosocial characteristics of COVID-19 patients cared for in public and private health facilities in Kandahar, Afghanistan. *Methods*. A cross-sectional study was performed using telephone interviews of patients tested positive for COVID-19 between March 2020 and March 2021. The Pashto version of Depression, Anxiety, and Stress Scale-21 (DASS-21) was administrated to all patients. Independent *t*-test and ANOVA analyses were used to assess the effects of sociodemographic and clinical characteristics on DASS-21 total scores and on each subscale separately. *Results*. Of all 477 participants, the vast majority (95%) had characteristic symptoms of COVID-19, such as fever, sore throat, cough, and headache. Of all participants, 472 (99%) had symptoms of anxiety, 462 (96.9%) had depression, and 463 (97.1%) had stress. Patients who scored significantly higher on the DASS-21 scale were more likely to have female sex, old age, low level of education, spouse separation, comorbid medical conditions, and being admitted to intensive care units. *Conclusion*. This study confirmed the previously described epidemiological and clinical characteristics of patients with severe COVID-19. The results indicated a high burden of mental health problems in severe COVID-19 patients. Hence, we recommend that policymakers in Afghanistan take proper measures for the timely provision of efficient and quality mental health services during every disaster and postdisaster era.

1. Introduction

Over the past two years, the ongoing COVID-19 pandemic has led to unparalleled suffering on the social and individual levels in developing and developed countries [1, 2]. On the individual level, the disaster has resulted in a staggering number of biopsychosocial deficits in the general population that have impacted the physical, psychological, and social aspects of their health and well-being [3].

In terms of biological impact, the pandemic caused an incalculable number of cases, millions of deaths, and multiple comorbidities that compromised the normal functioning of survivors [4, 5]. According to the World Health Organization (WHO), the mortality rate of COVID-19-positive patients was 2% [6, 7]. Subsequently, this rate was updated to 3.4% [7]. In Afghanistan, the first cases were documented between February and March 2020 [6]. In February 2022, the number of cases approached 173000, and the number of those who lost their lives reached 7578 [6]. However, needless to mention that the magnitude of the impact of COVID-19 in the developing world, particularly in Afghanistan, is underreported.

As per the psychological impact of the pandemic on the public, especially COVID-19 patients, a multitude of emotional disturbances have been well documented [8]. Its circulation on a global scale in a short period has frightened more people than those experiencing physical illness [3, 9]. Furthermore, obligatory restrictions on business activities,

transportation, closures of educational and recreational facilities, and subsequent unprecedented unemployment rates have resulted in psychological damage of unknown magnitude [10, 11].

Moreover, the pandemic has had massive social consequences [12, 13]. Self- and authority-imposed measures to decrease disease dissemination, for instance, social isolation and forced quarantine at such a perplexing time, have led to feelings of loneliness, anxiety, paranoia, and depression [14, 15]. These negative feelings and the associated stress are at least elements of the mental ill health of most COVID-19 patients and the general society.

Globally, research conducted on COVID-19 patients has reported a wide range of psychological problems such as anxiety and depression [3, 11]. The addition of mental health problems to the physical problems of the patients would have substantially worsened their health condition [8, 10]. A number of researchers, for example, Holmes et al. [16], Guo et al. [17], and van Agteren et al. [18], have argued that the emotional and socioeconomic impacts of COVID-19 somehow outweigh the biological impacts of the pandemic.

In the light of the aforementioned global data mainly collected in peaceful and resourceful countries, the extent and magnitude of the impact of this disaster in Afghanistan, a country torn by nearly half a century-long war that continues to this day, is simply beyond comprehension. This paper highlights the biopsychosocial characteristics of COVID-19 patients cared for in public and private health sectors in Kandahar Province, located in the south of Afghanistan.

2. Materials and Methods

2.1. Study Setting and Study Design. This study took place in Kandahar Province, located in the southwest of Afghanistan, with nearly half a million population. We conducted the study in two phases. In the first phase, which had a cross-sectional design, sociodemographic and clinical data were extracted from the files of patients who tested positive for COVID-19 using polymerase chain reaction (PCR) in the Routine Respiratory Disease Surveillance System (RRDSS) laboratory in Kandahar between March 2020 and March 2021. The RRDSS was to collect routine sociodemographic and clinical information of all COVID-19-positive patients cared for in public and private health facilities. Patients with COVID-19 were discharged with improved clinical manifestations and overall recovery. In the second phase of this cross-sectional study, patients who agreed to participate were interviewed through a telephone call in April 2021. During this interview, patients were asked about their mental health and social support during the disease.

2.2. Study Participants and Procedures. A total of 1597 male and female participants aged 18–80, PCR-positive for COVID-19, were recruited for our study. At the initial screening, patients were excluded if their telephone number was not available ($n = 390$), if they passed away at the hospital ($n = 101$), and if they were hospitalized at our inclusion time ($n = 54$). At the subsequent screening, patients were excluded if they did not respond to our three attempts of telephone call ($n = 366$) and if they refused to participate due to personal excuses such as family restrictions, security issues, and dissatisfaction with the received healthcare ($n = 209$). In the postdischarge history of the patients, we do not have any confirmed death reports. Finally, the sample size was established based on the completion of the data set (Figure 1).

2.3. Study Instruments

2.3.1. WHO SARS-CoV-2 Questionnaire. A modified version of the widely used WHO SARS-CoV-2 questionnaire with a section on sociodemographic information and others sections on clinical presentation, hospitalization, and treatment history was developed [19].

2.3.2. Depression, Anxiety, and Stress Scale-21 (DASS-21). DASS-21 is an abbreviated version of DASS-42 [20]. It contains three indicators, which are depression, anxiety, and stress. Each indicator consists of 7 items, with a total of 21 items. Each item within the indicator was designed to measure the extent to which individuals have been bothered over the past week [21, 22]. The questionnaire is a globally credible instrument with good psychometric properties for assessing depression, anxiety, and stress on the basis of DSM-IV criteria [20, 23]. The Pashto version of DASS-21 was administrated to assess the mental health of the subjects. The internal consistency (Cronbach's alpha) value for the Pashto version in the current study, respectively, was 0.75, 0.77, 0.70, and 0.88 for depression, anxiety, stress, and DAS-21 total scales. The Pashto version of DASS-21 has been used previously in Afghanistan and demonstrated good psychometric properties [24].

During the COVID-19 outbreak, face-to-face interview of the patients was not feasible and the patients did not have a secure communication system. Our recruiters were unable to collect their pertinent data at that time and immediately after their discharge from the health facility until their final test results turned COVID-free/COVID-negative. Therefore, we employed the questionnaire a couple of weeks later.

2.4. Data Collection. The questionnaire, which consisted of sections on subjects' sociodemographics, clinical presentation, hospitalization, treatment history, and DASS-21 checklist, was originally drafted in English and then translated to the local language (Pashto) to facilitate and enhance comprehension of the subjects. The Pashto questionnaire was retranslated to English language to ensure its meaning is not lost.

The data was collected through interviews conducted by two teams, each composed of ten interviewers (five males and five females). The process was supervised by two supervisors (one male and one female). They were provided with a five-day training session on extensive pilot testing of the questionnaire, interviewing techniques, interview quality control, data recording, and how to address potential ethical concerns that may emerge during the study.

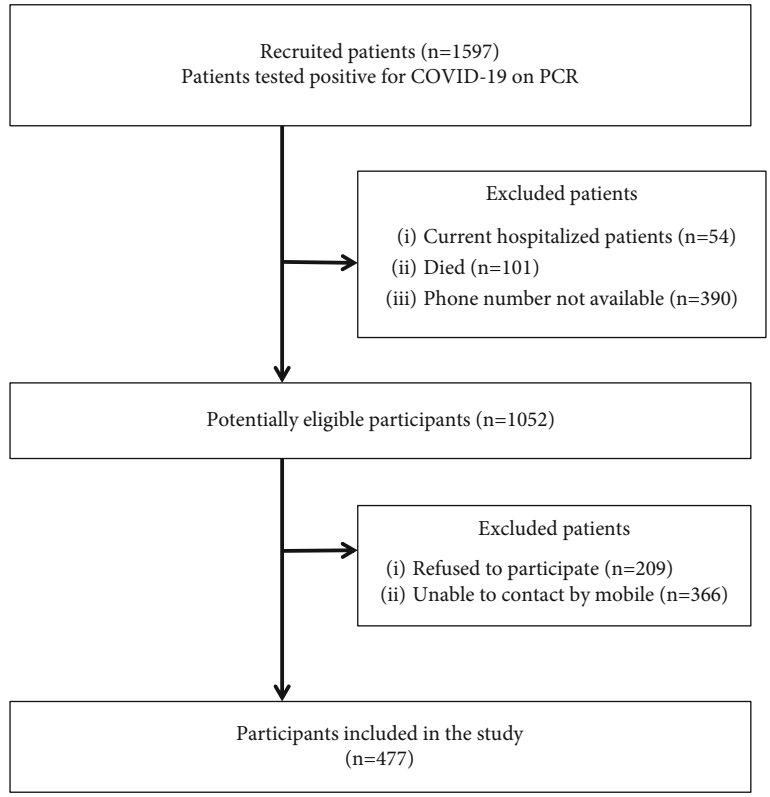

Figure 1: Flowchart of participants' recruitment.

The principal investigators screened all data of the patients registered in the RRDSS laboratory in Kandahar Province between March 2020 and March 2021. Patients with complete data on sociodemographic and clinical information were communicated through a telephone call (Figure 1). If the patients would like to participate, they could willfully provide verbal consent and schedule the interview at their convenient time. Only then, the interviewer collected participants' psychological data. All female participants were interviewed by female interviewers. Each interview took approximately 15 minutes to complete. The data collection process was supervised by a trained health professional and the principal investigator. Within 24 hours of each interview, the questionnaires were checked for completion.

2.5. Statistical Analysis. The data were analyzed using the Statistical Package for Social Sciences (SPSS), version 21 [25]. Descriptive statistics were employed for sociodemographic characteristics, clinical symptoms, and health service utilization variables. The scores of the DASS-21 subscales were expressed as mean and standard deviation. Independent t-test and ANOVA analyses were carried out to assess the effects of sociodemographic characteristics and clinical symptoms on DASS-21 total scores and on each subscale separately. The model accounts for the required assumptions for independent t-test and ANOVA. The statistical significance level was set at $p < 0.05$.

2.6. Ethical Consideration. Ethical clearance was obtained from the Research and Ethics Committee of Kandahar University (Letter No. 20, Dated 15/01/2020). Administrative approval was obtained from Kandahar Public Health Directorate and from the authorities of RRDSS. The participants provided their verbal informed consent to participate in the interview.

3. Results

3.1. Sociodemographic Profile of the Participants. To enroll potential participants for the follow-up period, the metric of having a complete data set of background and clinical characteristics of every participant in their medical records was used. The mean and standard deviation value for the ages of the participants was 47.38 ± 15.17 years, with 43.8% of them being 31-50 years old. Almost half of the respondents were female (235; 49.3%), and a vast majority (78%) of the participants were currently married. Nearly two-thirds (301; 63.1%) of the participants were metropolitan residents. A preponderant portion of the sample asserted having no formal education (358; 75.1%). A tiny minority of the participants were currently unemployed (78; 16.4%). Nearly half of the participants who declared their monthly income was earning >10000 Afghanis (~USD 100)/month. Of the female participants ($n = 234$), only 17 (7.3%) were pregnant (Table 1).

Table 1: Sociodemographic profile of the participants.

Variables	Categories	Frequency (%)
Age (in years)	18-30	72 (15.1)
	31-50	209 (43.8)
	51-80	196 (41.1)
Sex	Male	242 (50.7)
	Female	235 (49.3)
Marital status	Single	15 (3.1)
	Married	375 (78.6)
	Divorced	3 (0.60)
	Widow	84 (17.6)
Residence	Urban	301 (63.1)
	Rural	176 (36.9)
Educational status	No formal education	358 (75.1)
	Basic	47 (9.9)
	Secondary	19 (4.0)
	High school graduate	23 (4.8)
	Higher education	22 (4.6)
	Professional/religious	8 (1.7)
Employment	Government	17 (3.6)
	Private	121 (25.4)
	Both	10 (2.1)
	Housewife	128 (26.8)
	Self-employed	123 (25.8)
	Unemployed	78 (16.4)
Pregnancy ($n = 235$)	Yes	18 (7.3)
	No	217 (92.7)
Monthly income (Afghanis, $n = 244$)	5000-10000	120 (49.2)
	>10000	124 (50.8)

3.2. Epidemiological Characteristics of the Study Participants. Among the participants, 48 (10.1%) had a recent history of travel, 354 (74.2%) had a contact history with known COVID-19 cases, and 135 (38.8%) had comorbidities before the diagnosis of COVID-19. Only 7 (1.5%) participants were active smokers. Table 2 portrays the detailed epidemiological characteristics of the participants.

3.3. Clinical Characteristics of the Study Participants. More than half (55.9%) of the participants received care in governmental and private health sectors, a third (32.9%) received care only in governmental health facilities, and the remaining 11% were cared for in private health facilities. A vast majority (95%) of the participants had characteristic symptoms of COVID-19, like fever, sore throat, cough, and headache. We noted records of complications, such as pneumonia (92%) and acute respiratory distress syndrome (ARDS) (6.1%), and intensive care unit (ICU) admission history in 35 (7.3%) participants. Painkillers (99.6%), antibiotics (96.4%), and steroids (32.7%) were the most commonly prescribed drugs for symptom control (Table 3).

3.4. Psychosocial Profile of the Participants. Table 4 portrays the mean and standard deviation values for the DASS-21 total and subscale scores. Of all participants, 472 (99%) had symptoms of anxiety, 462 (96.9%) had depression, and 463 (97.1%) had stress. Symptoms of extreme anxiety were more prevalent (93.3%), followed by symptoms of depression (82.2%) and stress (43.8%). In addition, the majority (96.6%, 461) of the participants rated their social support as being high (Table 4).

3.5. t-Test or ANOVA Results of Independent Variables on Psychiatric Symptoms. Supplementary Table 1 depicts the independent t-tests and ANOVA results of independent variables on the DASS-21 total and subscale scores. Attributes such as female sex ($t = -4.7$, $p < 0.0001$), low level of education ($t = -5.02$, $p < 0.0001$), having a comorbid medical disease ($t = 3.5$, $p < 0.0001$), and ICU admission ($t = 3.9$, $p < 0.0001$) were significantly associated with higher scores (total and subscales) of the DASS-21. Age ($f = 9.3$, $p < 0.0001$) and marital status ($f = 3.7$, $p < 0.025$) of the participants were also associated with a

Table 2: Epidemiological characteristics of the study participants.

Variables	Categories	Frequency (%)
Travel history	Yes	48 (10.1)
	No	429 (89.9)
Contact with known COVID-19 case	Yes	354 (74.2)
	No	20 (4.2)
	Do not know	103 (21.6)
Any comorbidity	Yes	185 (38.8)
	No	292 (61.2)
Smoking	Yes	7 (1.5)
	No	470 (98.5)

Table 3: Clinical profile of the study participants.

Variables	Categories	Frequency (%)
Cared for in	Private	53 (11.1)
	Public	157 (32.9)
	Both	267 (55.9)
Symptoms	Fever	473 (99.2)
	Sore throat	458 (96)
	Cough	467 (97.9)
	Dyspnea	448 (93.9)
	Headache	469 (98.3)
	Chills	437 (91.6)
	Myalgia	469 (98.3)
	Anosmia	354 (74.2)
	Diarrhea	59 (12.4)
	Ageusia	357 (74.8)
Complications	Pneumonia	439 (92)
	ARDS	29 (6.1)
ICU admission	Yes	35 (7.3)
	No	442 (92.7)
Medications	Painkiller	475 (99.6)
	Antibiotics	460 (96.4)
	Steroids	156 (32.7)

Abbreviations: ICU: intensive care unit.

higher score in the DASS-21 total. Post hoc analysis revealed that senior participants (age group 51-80) scored higher than younger and adult participants (age groups 18-30 and 31-50) and that the scores were lower for currently married and unmarried participants than those separated from their spouses. Briefly, the Cramér's V-statistic ranged from 0.34 to 0.73.

4. Discussion

To the best of our knowledge, this study is the first to assess the biopsychosocial profile of COVID-19 patients cared for in public and private health facilities in Kandahar, Afghanistan. Higher rates of mental health symptoms were reported in this study. Patients who reported higher rates of mental health symptoms were more likely to have female sex, old age, low level of education, spouse separation, comorbid medical conditions, and being admitted to intensive care units.

Table 4: Psychosocial profile of the participants.

Variable	Categories	Frequency (%)
Total DASS (M = 47.4, SD = ± 9.6)		
Anxiety (M = 16.08, SD = ±3.5)	No	5 (1.0)
	Mild	7 (1.5)
	Moderate	5 (1.0)
	Severe	12 (2.5)
	Extremely severe	448 (93.9)
Depression (M = 15.7, SD = ± 3.7)	No	15 (3.1)
	Mild	6 (1.3)
	Moderate	25 (5.2)
	Severe	39 (8.2)
	Extremely severe	392 (82.2)
Stress (M = 15.6, SD = ±3.2)	No	14 (2.9)
	Mild	11 (2.3)
	Moderate	42 (8.8)
	Severe	201 (42.1)
	Extremely severe	209 (43.8)
Social support	Low	16 (3.4)
	High	461 (96.6)

Additionally, our findings confirm the claims of pertinent literature on the epidemiological and clinical attributes associated with the severity of COVID-19 disease [26]. At baseline, chronic health conditions such as diabetes, chronic lung disease, and cardiac conditions were common in our subjects. It somehow explains the higher prevalence of severe clinical presentation in our hospitalized sample [27]. However, the existing credible literature from the developing world reports that inadequate drug supply, poor-functioning equipment, fragile infrastructure, and low biopsychosocial support may have contributed to such a severe clinical presentation in COVID-19 hospital admissions [28, 29]. Besides, in our sample, pneumonia coinfection (92%) and acute respiratory distress syndrome (ARDS, 6.1%) were the most common complications during hospitalization.

Studies have shown that COVID-19 patients had profound psychological problems compared to the general population [2, 3]. Studies show that the prevalence of anxiety, stress, and depression in the general population is 31.9%, 29.6%, and 33.7%, respectively [21]. The present study suggests that our patients had staggering rates of symptoms of

anxiety, stress, and depression in comparison to the results of analogous studies [8, 21]. Some of the factors that may have led to such significantly higher rates of mental health problems are the fear of adverse health outcomes due to COVID-19, misinformation and false rumors about COVID-19, social distancing measures and quarantine policies, poverty, unemployment, and illiteracy in this setting. In addition, the exceptional severity and length of the ongoing conflict in Afghanistan may have substantially contributed to the deterioration of mental health status among COVID-19 Afghan patients [22, 30]. Hence, we recommend that Afghan healthcare policymakers take proper measures for the timely provision of efficient and quality mental health services during every disaster and in postdisaster era.

Our data indicate that patients aged 50 years and older had significantly higher rates of psychological symptoms than their younger counterparts. This finding is in accord with the pertinent literature, which reports higher rates of psychological symptoms among senior patients [8]. The culpable factors may include but are not limited to the concern about COVID-19 severe clinical trajectory in old age patients, its impact on patient household responsibility, financial constraints, and a preexisting medical condition. Therefore, the Afghan health sector (public and private) and its pivotal stakeholders have to be mindful of and promptly address the unique needs of such senior citizens making a minority of consumers.

Another prominent finding was that female subjects scored significantly higher on all three domains (anxiety, stress, and depression) than their counterparts. Existing studies show a high prevalence of anxiety and depression among women with a COVID-19 diagnosis [8, 31]. This female susceptibility to psychiatric symptoms may be due to the interaction among biological, psychological, and social factors [8]. In the Afghan context, strengthening the health system capacity to care for the mental health of COVID-19 patients, with an additional emphasis on that of Afghan women, is highly recommended.

We found that being uneducated was associated with higher (total and subscale) scores on the DASS-21 scale. Illiteracy is a well-known barrier to credible COVID-19-related information and seeking appropriate healthcare [8]. Promoting and implementing communication strategies to enhance psychosocial support and providing accurate information during any disaster are highly recommended, considering that such measures might be crucial for those with low or no education [15].

Consistent with the previous studies, our data showed that psychological symptoms were more prevalent in patients with comorbid medical disease and those admitted to ICU. Extensive literature indicates that preexisting medical illness and ICU admission made individuals highly susceptible to mental health problems during the COVID-19 pandemic [8, 10]. Hence, early identification of such disaster-hitting patients and addressing their mental health problems are highly warranted to reduce, at least, the psychological impact of any given disaster.

Spouse separation, another attribute of our subjects, was also significantly associated with higher (total and subscale) scores on the DASS-21 scale. Globally, particularly in Afghan culture, spouse separation is considered a stressful social stigma and a defaming sign of moral weakness [8]. Besides, losing such an intimate social tie at this exceptional moment of paramount need may bring about immeasurable stress [8].

Pertinent studies argue that higher social support is a protective factor for mental health [8, 20]. In this study, however, an overwhelming majority of the patients reported their social support as being higher, but we found no significant association with psychological symptoms. The following points may have played a potential role in this dissociation [8, 22]. Firstly, social networks and social support are considered different entities in Afghan society. A person may have a social network with low or no social support. Secondly, at the moment of the pandemic, even an actively assisting social network was paralyzed on at least two levels. On the individual level, every person was obliged to stay at home and restrain themselves from social interactions. The enforced lockdown and quarantine have impeded social interaction on the societal level. Thirdly, it is not uncommon to find three or even four generations living under one roof in Afghan society. Therefore, the inability of the patients to offer help to their loved ones superadded by the distressing observation of their suffering may have been quite stressful. Finally, sociodemographic differences among the subjects of different studies and the retrospective design of this study limit us from making conclusions on this finding.

Telemedicine has emerged as an essential tool in addressing mental health needs during the COVID-19 pandemic [32]. The increasing availability and accessibility of telehealth services have allowed individuals to seek mental health support remotely, overcoming the limitations imposed by social distancing measures. The use of telemedicine for mental health during the COVID-19 pandemic has not only allowed individuals to receive necessary support remotely but has also highlighted the potential for telemedicine to play a crucial role in addressing mental health concerns in the future, even beyond the pandemic [32]. However, logistical challenges, funding shortages, or other systemic issues may prevent health system from carrying out such eventual therapeutic interventions in Afghanistan [33].

Crucially, while this study did not provide data concerning the impact of COVID-19 on substance use in our subjects, we must highlight the profound implications of COVID-19 on mental health and substance use for the Afghan population. Globally, there is well-established evidence that COVID-19 has potentially contributed to a heightened risk of substance use [34]. This emphasizes the need for further exploration into the potential impact of COVID-19 on substance use within the Afghan population.

4.1. Limitations. Despite the strengths of this study, the following limitations are worthwhile while interpreting its findings. Firstly, during the pandemic, we did not collect our data due to the strict rules of patient isolation. After the end of the active phase, we collected the data over three

months. This lag may have predisposed our findings to the recall error. Secondly, the nearly four-decade-long and still unfinished war in Afghanistan and its inevitable multitude of consequences may have contributed immensely to the uniqueness of our study setting and the subjects that may have, in turn, reduced the generalizability of our results. Thirdly, despite the exceptional severity of the psychological symptoms in our participants, we could not employ the diagnostic tools to diagnose stress-related disorders, depression, and anxiety. Hence, we did not recommend mental health consultation to any patient in our subjects. However, the facilities we collected the data from had regularly scheduled visits from mental health authorities. Finally, we could not access the clinical and laboratory data to determine the severity of every individual case and their subsequent association with the reported psychological symptoms.

5. Conclusion

This study confirms the previously described epidemiological and clinical characteristics of severe COVID-19 patients. The results inform a high burden of mental health problems (i.e., depression, anxiety, and stress) in COVID-19 patients. Our findings assert that respondent-related factors such as old age, female sex, low level of education, spouse separation, medical comorbidities, and ICU admission are significantly associated with higher susceptibility to mental health problems.

Abbreviations

ANOVA: Analysis of variance
ARDS: Acute respiratory distress syndrome
COVID-19: Coronavirus disease
DASS-21: Depression, Anxiety, and Stress Scale-21
ICU: Intensive care unit
PCR: Polymerase chain reaction
RRDSS: Routine Respiratory Disease Surveillance System
SARS: Severe acute respiratory syndrome
WHO: World Health Organization.

Data Availability

The primary data used to support the findings of this study are available with the corresponding author upon request.

Conflicts of Interest

The authors have no conflict of interest.

Authors' Contributions

MHW, NF, and MHS were responsible for the conceptualization and design. MHS was responsible for the analysis. MHS wrote the original draft. MHS, NF, and MHW wrote, reviewed, and edited the manuscript. All authors have read and approved the final manuscript.

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Supplementary Materials

Supplementary Table 1 depicts the independent *t*-tests and ANOVA results of independent variables on the DASS-21 total and subscale scores. *(Supplementary Materials)*

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