



## RESEARCH ARTICLE

## Phase wise assessment of COVID-19 related depression, anxiety, and stress level among patients in Herat city, Afghanistan - A descriptive study

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## ARTICLE INFO

## ABSTRACT

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**Background:** COVID-19 affected not only people's physical health but also their mental health too. The purpose of this study was to measure the level of depression, anxiety, and stress among COVID-19 patients before, during, and after being infected by the virus, living in Herat city of Afghanistan.

**Methods:** This descriptive study was conducted among COVID-19 patients between April 22th 2020 and August 20th, 2020 living in Herat Province of Afghanistan. Our sample size was 100. To measure the level of depression, anxiety, and stress, among the COVID-19 patients, the developed version of the Depression, Anxiety and Stress Scale 42 (DASS-42) standard questionnaire was used.

**Results:** About 67% of participants were male and 14% of them were illiterate. Of all the participants in this study 12% of them used to smoke and 30% of them had a chronic disease accompanied. The result of this study shows that at the Start stage, 52.0% of the participants had a level of depression from mild to extremely severe. In the After stage only 10.0% of the participants had a level of depression from mild to severe. At the Start stage, 82.0% of the participants had a level of anxiety. At the End stage, 29.0% of the participants suffered a level of stress from mild to extremely severe.

**Conclusion:** Generally, the COVID-19 patients' mental health was affected negatively due to the disease. After passing the COVID-19 disease and knowing the facts about the disease, the anxiety, stress, and depression level of patients caused by the disease were decreased.

### Introduction

The Coronavirus is a large family of viruses that causes different scopes of the diseases, from a single

common cold to severe illnesses such as Severe Acute Syndrome (1-2).

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In December 2019, a series of acute respiratory diseases was identified in Wuhan, the capital city of Hubei Province in China and the source of the diseases was attributed to a novel corona virus named Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). The disease caused by SARS-CoV-2 is called Coronavirus Disease 2019 (COVID-19) (3-6).

Symptoms of COVID-19 appear differently in different people. Three most common symptoms that can be seen in most of the patients with COVID-19 are fever, dry cough, and tiredness (7). After being infected with SARS-CoV-2, the symptoms of the disease may appear in 2-14 days (8).

The main ways SARS-COV-2 can transmit from one infected person to another are aerosol transmission, respiratory transmission and contact transmission. However public awareness can be highly effective to prevent the spread of the virus. Enhanced Traffic Control Bundling (eTCB) can interrupt the community-hospital-community transmission cycle. Wearing mask in public places, washing hands, and avoiding physical contact are other ways to prevent the spread of the SARS-CoV-2 (9-12).

On February 11<sup>th</sup>, the World Health Organization declared the COVID-19 outbreak as Public Health Emergency of International Concern (PHEIC) (13). The World Health Organization stated that there have been 162,704,139 confirmed cases of COVID-19 including 3,374,052 deaths on 17<sup>th</sup> May 2021 globally (14).

With the increase in the number of infected patients and their deaths, the fear of mortality rate due to the COVID-19 and social distancing, lockdown, isolation, and quarantine established by governments to prevent the spread of SARS-CoV-2 across the cities has affected people's life in many aspects including socially and psychologically (15-17).

Following the implementation of lockdown amid COVID-19 situation in the country the level of disinterest in daily activities increase which causes depression (18-22).

Health anxiety is an important matter that should be balanced. Any change in the health anxiety

balance either increase or decrease can have bad impacts. The combination of fear of the consequences of a deadly disease and severe anxiety can have unfavorable condition for patients which must be taken seriously (23-28).

In Afghanistan, the first case of COVID-19 was reported on 24<sup>th</sup> February 2020 However, the number of positive cases was exceptionally low comparing to the neighbor countries, and the main reason for this was the limitation of PCR testing equipment to test people for COVID-19 (29).

The purpose of this study was to measure the level of depression, anxiety and stress among COVID-19 patients in three stages in Herat, Afghanistan.

## Materials and Methods

This descriptive study was conducted among COVID-19 patients during the period from April 22<sup>th</sup> 2020 to August 20<sup>th</sup> 2020 living in Herat city of Afghanistan. Participants in this study were aged between 15 years old to 80 years' old who were based on the data provided by the Department of Public Health were diagnosed with COVID-19 and were clinically stable and willing to participate in the research project. If for any reason the participant did not wanted to continue, he/she would be excluded from the study. For this study 100 participants did complete all the three stages of data collection procedure.

To measure the level of depression, anxiety, and stress, among the COVID-19 patients, the developed version of Depression, Anxiety and Stress Scale 42 (DASS-42) standard questionnaire was used. The DASS-42 is a self-report scale with 42 items. It is used to measure the level of depression, anxiety, and stress by assessing the severity of the main symptoms of depression, anxiety, and stress. It has three domains, the depression, anxiety, and stress and every domain have 14 items (30). For validity purpose we have omitted some of the question resulted in having 10 items for depression domain, 7 items for anxiety domain, and 10 items for stress domain.

After getting the contact information of COVID-19 patients provided by the Public Health department of Herat province, the medical students used to call the patients who were bedded at home and for patients who were bedded at hospitals, nurses used to complete the data collection process. All the data collection volunteers have been trained on how to fill the questionnaire up in two days each three hours' sessions.

The data used in this study was collected in three stages. First round was at the same day, the patient's COVID-19 test result was reported positive. In this stage the socio-demographic data and the DASS-42 questionnaire was used to collect the Starting Stage data. Every patient's data was recorded with a unique ID. Second round was at the same day, the patient's COVID-19 test result was reported negative, meaning the patient passed the COVID-19 and was healthy. In this stage only the DASS-42 questionnaire was used to collect the Ending Stage data and was recorded within their IDs. The third round was one month after the patient passed the COVID-19 and was clear. In the stage only the DASS-42 questionnaire was used to collect the After Stage data and was recorded within their IDs.

The recorded data was entered into the IBM SPSS version 25.0. Descriptive statistics analysis was performed to explore the socio-demographic features of the participants. Multivariable logistic regression analyses were employed to identify the independent factors associated with mental health outcomes. The associations between factors and outcomes were presented as odds ratios (ORs) and 95% confidence intervals (CIs). A P-value of <0.001 was considered statistically significant.

The Ethics Committee of Ghalib University – Herat, Afghanistan, has approved this research on April 15<sup>th</sup> 2020.

## Results

In this study 100 participants from Herat, Afghanistan participated. Median age of the participants was 38.19±13.40 and their socio-demographic characteristics are shown in the table below.

Table 1: Characteristics of participants in Heart city (2020)

Characteristic	Category	N	(%)
Gender	Male	67	67.0
	Female	33	33.0
Marital Status	Single	14	14.0
	Marrried	86	86.0
Educational level	Illiterate	14	14.0
	Primary school	14	14.0
	Secondary school	9	9.0
	High school	21	21.0
Economic status	University	42	42.0
	Good	25	25.0
	Average	50	50.0
Smoking	Poor	25	25.0
	Yes	12	12.0
Chronic disease	No	88	88.0
	Yes	30	30.0
	No	70	70.0

As shown in the **Table 1**, 67% of participants are male, 86% are married and 14% are illiterate. Of all the participants in this study 12% of them used to smoke and 30% of them had a chronic disease accompanied.

Table 2: The severity of depression, anxiety and stress among participants

Variable	Category	Severity	N	(%)
Depression	Start <sup>a</sup>	Normal	48	48.0
		Mild	18	18.0
		Moderate	16	16.0
		Severe	12	12.0
		Extremely severe	6	6.0
	End <sup>b</sup>	Normal	76	76.0
		Mild	9	9.0
		Moderate	12	12.0
		Severe	2	2.0
		Extremely severe	1	1.0
	After <sup>c</sup>	Normal	90	90.0
		Mild	6	6.0
Moderate		3	3.0	
Severe		1	1.0	
Anxiety	Start <sup>a</sup>	Normal	18	18.0
		Mild	6	6.0
		Moderate	16	16.0
		Severe	13	13.0
		Extremely severe	47	47.0
	End <sup>b</sup>	Normal	71	71.0
		Mild	6	6.0
		Moderate	13	13.0
		Severe	4	4.0
		Extremely severe	6	6.0

Table 2 (continued)

Variable	Category	Severity	N	(%)
Anxiety	After <sup>γ</sup>	Normal	80	80.0
		Mild	7	7.0
		Moderate	10	10.0
		Severe	2	2.0
		Extremely severe	1	1.0
Stress	Start <sup>α</sup>	Normal	48	48.0
		Mild	11	11.0
		Moderate	20	20.0
		Severe	17	17.0
		Extremely severe	4	4.0
	End <sup>β</sup>	Normal	76	76.0
		Mild	10	10.0
		Moderate	10	10.0
		Severe	4	4.0
		After <sup>γ</sup>	Normal	92
Mild	5		5.0	
Moderate	2		2.0	
Severe	1		1.0	

$\alpha$  = the first day after the patient's COVID-19 test result was reported positive

$\beta$  = the patient's COVID-19 test result was reported negative, meaning the patient passed the COVID-19 and was healthy

$\gamma$  = one month after the patient passed the COVID-19 and was clear.

Table 3 shows the three main variables of this study (Depression, Anxiety, and Stress). Depression in Start stage was found  $11.85 \pm 8.66$ , in End stage it was found  $6.45 \pm 6.35$ , and finally in After stage it was found  $4.03 \pm 4.80$ . As shown in Table 3, Anxiety in Start stage was found  $17.96 \pm 10.82$ , in End stage it was found  $5.10 \pm 7.22$ , and in After stage anxiety was found  $3.70 \pm 4.81$ . Stress level in Start stage was found  $16.15 \pm 10.34$ , it was  $8.61 \pm 8.42$  in the End stage. The mean level of stress among participants in After stage was found  $5.68 \pm 6.04$ .

Table 3: The three stages of Depression, Anxiety and Stress among participants in Herat city (2020)

Variable		N	Min	Max	%25	median	%75	mean	SD
Depression	Start <sup>α</sup>	100	0	35.0	4.2	11.2	18.2	11.85	8.66
	End <sup>β</sup>	100	0	29.4	0.0	5.6	9.8	6.45	6.35
	After <sup>γ</sup>	100	0	23.8	0.0	2.8	5.6	4.03	4.80
Anxiety	Start <sup>α</sup>	100	0	42.0	10.0	17.0	27.5	17.96	10.82
	End <sup>β</sup>	100	0	30.0	0.0	2.0	8.0	5.10	7.22
	After <sup>γ</sup>	100	0	26.0	0.0	2.0	6.0	3.70	4.81
Stress	Start <sup>α</sup>	100	0	37.8	8.4	15.4	24.8	16.15	10.34
	End <sup>β</sup>	100	0	33.6	1.4	5.6	14.0	8.61	8.42
	After <sup>γ</sup>	100	0	28.0	0.0	4.2	9.8	5.68	6.04

$\alpha$  = the first day after the patient's COVID-19 test result was reported positive

$\beta$  = the patient's COVID-19 test result was reported negative, meaning the patient passed the COVID-19 and was healthy

$\gamma$  = one month after the patient passed the COVID-19 and was clear.

Table 2 shows the depression, anxiety, and stress level of the participants each categorized into Normal, Mild, Moderate, Severe and Extremely severe categories in Start, End, and After stages.

Table 4: Association between the three stages of Depression, Anxiety and Stress results among participants in Herat city (2020)

Variable	Test statistic	Std Error	Std.Test Statistic	Sig.	Adj. Sig.	
Depression	Ds-De	0.570	0.141	4.031	>0.001	>0.001
	Ds-Da	1.380	0.141	9.758	>0.001	>0.001
	De-Da	0.810	0.141	5.728	>0.001	>0.001
Anxiety	As-Ae	1.175	0.141	8.309	>0.001	>0.001
	As-Aa	1.375	0.141	9.723	>0.001	>0.001
	Ae-Aa	0.200	0.141	1.414	0.157	0.472
Stress	Ss-Se	0.690	0.141	4.879	>0.001	>0.001
	Ss-Sa	1.425	0.141	10.076	>0.001	>0.001
	Se-Sa	0.735	0.141	5.197	>0.001	>0.001

Significance value = 0.01

*Ds = Patient's depression level from the first day after the patient's COVID-19 test result was reported positive*  
*De = Patient's depression level when the patient's COVID-19 test result was reported negative, meaning the patient passed the COVID-19 and was healthy*  
*Da = Patient's depression level one month after the patient passed the COVID-19 and was clear*  
*As = Patient's anxiety level from the first day after the patient's COVID-19 test result was reported positive*  
*Ae = Patient's anxiety level when the patient's COVID-19 test result was reported negative, meaning the patient passed the COVID-19 and was healthy*  
*Aa = Patient's anxiety level one month after the patient passed the COVID-19 and was clear*  
*Ss = Patient's stress level from the first day after the patient's COVID-19 test result was reported positive*  
*Se = Patient's stress level when the patient's COVID-19 test result was reported negative, meaning the patient passed the COVID-19 and was healthy*  
*Sa = Patient's stress level one month after the patient passed the COVID-19 and was clear.*

As shown in Table 4 the relationship exists between depression in Start stage and depression in the End stage, depression in Start stage and depression in After stage, depression in End stage and depression in After stage was significant.

According to Table 4 the relationship between anxiety in Start stage and anxiety in End stage, anxiety in Start stage and anxiety in After stage are significant.

The relationship between anxiety in End stage and anxiety in After stage was not significant.

Table 4 shows that there is a significant relationship between stress in Start stage and stress in End stage, stress in Start stage and stress in After stage, stress in End stage and stress in After stage.

## Discussion

To the best of our knowledge, this descriptive study is the first study to assess the depression, anxiety, and stress level among COVID-19 patients in

Afghanistan on a sample of Herat adults. This study compares the level of depression, anxiety and stress in Start stage, End stage and After stages in patients with COVID-19 in Herat during the pandemic as the link between depression, anxiety and stress with patients suffering different diseases has been demonstrated by previous studies (31-32).

The result of this study shows that at the Start stage, 52.0% of the participants had a level of depression from mild to extremely severe. In After stage only 10.0% of the participants had a level of depression from mild to severe. A cross-sectional study by Jie Zhang RN et, al. in China shows that 18.6% of the participants with mild symptoms of COVID-19 had a level of depression (33). Another cross-sectional study by Sabuj Kanti Mistry et, al. in Bangladesh shows that 47.2% of people had a level of depression during the COVID-19 while the prevalence of depression among older adult's citizens of Bangladesh in pre-pandemic situation was evaluated 36.9% (34). Starting of implementation of the lockdown on 25<sup>th</sup> March 2020 by the government and spreading false news about

COVID-19 around the country were some of the major reasons behind the elevated prevalence of depression among COVID-19 patients in Herat (35-36). However, the hunger and need for food by daily work made most of the people to break the lockdown and pay less attention to the news on morbidity of COVID-19 compared to the first days of the quarantine due to COVID-19 (37-40).

The result of this study shows that at the Start stage, 82.0% of the participants had a level of anxiety. At the End stage, 29.0% of the participants suffered a level of stress from mild to extremely severe. At the After stage 20.0% of the participants had a level of anxiety. Xiangyu Kong et, al. shows the anxiety 34.72% of the patients suffered a level of anxiety (41). Another study by Jie Zhang RN et, al. shows that 20.9% of patients with COVID-19 suffered a level of anxiety from subthreshold anxiety to major anxiety (33). Spreading of false information across the country especially Herat province may be one of the major reasons for the higher percentage of patients suffered anxiety (37).

The relationship between the depression, anxiety, and stress at Start, End, and After stages were found significant except for anxiety between the End stage and anxiety at the After stage. The data shows that at the Start stage, the patients' psychological distress was high for all the three domains (Depression, Anxiety, and Stress), at the End stage the patients' mental health was in a better state. And at the After stage, their mental wellbeing was found to be better than both the Start stage and the End stage. Ministry of health's Call Center Program was effective and had a good impact, resulting a better mental health for people who suffered COVID-19. The Call Center Program's objective was to give information to everyone who wants to know about COVID-19, plus to call all the COVID-19 patients registered in each province and bedded at home and talk to them and ask them for the symptoms and to give them advice on their health.

### **Limitations of our study**

Small sample size and short duration were our main study limitations. That is the reason we cannot generalize our study findings to the population level, for this, we need a larger sample size and long duration study. Another thing is that the measurement scales

we have used need to be weighed and validated against our Afghan participants, because stress and anxiety are subjective feeling of human beings and it varies from person to person, region to region.

### **Conclusion**

COVID-19 affected not only people's physical health but also their mental health too. Mental health was affected mostly because of the negative thoughts and myths which was around since the first positive case of COVID-19 in Afghanistan. Generally, the COVID-19 patients' mental health was affected negatively due to the disease. After passing the COVID-19 disease and knowing the facts about the disease, the anxiety, stress, and depression level of patient's caused by the disease were decreased.

### **Future study directions**

In future, further qualitative studies are required to know the exact reasons for the variation in stress, anxiety and depression pattern among the Afghan population so that it will help in health policy making.

### **Contributions**

NAS, ATA, and AN did contribute in study design, analysis, and interoperation. NR, HA, MN, and HW contributed in data collection. AN, ATA, NR, and HA wrote manuscript draft. NAS and SB revised and finalized the manuscript. All the authors approved the final revision for publishing.

### **Ethical consideration**

Permission was secured from Public health department of Herat through a formal letter. All the participants were briefed on the relevance and objectives of the study. Confidentiality of information was maintained by omitting any personal identifier from the questionnaire. Only participants who did complete all the three stages of this study were included.

### **Conflicts of interest/ Competing interest**

The authors declare no conflict of interest.

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