

## Psychological Impact Among Patient Admitted with Coronavirus Disease (COVID-19) in A Tertiary Care Hospital in Southern Pakistan

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### ABSTRACT

**Introduction:** On 11<sup>th</sup> February 2020, WHO named the novel coronavirus as Coronavirus Disease 2019 (COVID-19). The current uncertainty of the prevailing situation of COVID-19 pandemic due to its clinical presentation, infectious cause and underprepared health facilities to address the coronavirus contagion have considerably high potential of psychological impact, more so in developing countries like Pakistan.

**Methods:** This was an observational study done on the patients admitted in the COVID Isolation wards of Ruth K.M Pfau Civil Hospital, Karachi. It was a self-reported questionnaire administered in Urdu with aid provided as needed. The questionnaire used the DASS-21 scale. SPSS version 22.0 was used to analyze the results. Chi-square test and independent sample T test were then applied with P-value <0.05 as significant.

**Results:** The study was completed by 201 patients. There were 108 (53.7%) male patients and 93 (46.3%) female patients. DASS-21 scores were categorized according to gender, employment status, financial dependence and family structure. It indicated that depression ( $p=0.012$ ) and stress ( $p=0.03$ ) were statistically significant for gender. Depression was significantly related to unemployment ( $p<0.0001$ ), financial dependence ( $p<0.0001$ ), and living with nuclear family ( $p=0.007$ ).

**Conclusion:** In light of the pandemic, it is evident that the COVID-19 cases are only going to rise and with it so will the incidence of mental health problems. Therefore, it is paramount that medical facilities catering those patients take into account the psychological distress that accompanies the virus and takes necessary steps to manage it. Further, a multidisciplinary approach should be adopted towards dealing with the COVID-19 pandemic.

**Keywords:** COVID-19, Psychological Impact, Mental Health, Multidisciplinary, Stress, Anxiety, Depression

### INTRODUCTION

World Health Organization (WHO) on January 30<sup>th</sup> 2020, announced the occurrence of novel coronavirus and declared a Public Health Emergency of International Concern (PHEIC). This is the sixth PHEIC under International Health Regulations (IHR) after H1N1 Influenza in 2009, Polio in 2014, Ebola in West Africa in 2014, Zika in 2016, Zika in Democratic Republic of the Congo (DRC) in 2019. On 11<sup>th</sup> February 2020, WHO named the novel coronavirus as Corona Virus Disease 2019 (COVID-19). The current uncertainty and unpredictability of the prevailing situation of COVID-19 pandemic due to its clinical presentation, infectious cause, epidemiological features, fast transmission both direct and local, seriousness of public health impact in our setup, novelty, scale, implications for international public health and underprepared health facilities to address the coronavirus contagion have considerably high potential of psychological impact [1]. Such, psychological impacts may include fear, anxiety, stigma, marginalization towards the disease and subsequent depression. Not only have these

psychological impacts been studied among the positive patients in the global literature but also among their families, their healthcare providers, and the general population living in quarantine. In pandemics, like COVID-19, people in the developed countries have been studied to be more resilient to stress and survive stressful events psychologically unharmed [2]. However, in developing countries, like our own, the fear of pandemic can be felt strongly due to lack of emotional support systems. Hence, the psychological footprint is

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expected to be larger than the medical footprint [3]. With the advent of novel coronavirus, an uncharted territory in Pakistan on 26<sup>th</sup> February 2020, the state is on high alert and has implemented partial lockdown. As of 25<sup>th</sup> April 2020, Pakistan coronavirus tally has risen to 11,940. The worst hit countries like China, United States, Italy, Spain, Iran, France, United Kingdom and Germany are intensifying their efforts to manage the pandemic via collective public health intervention measures [4]. Being a developing nation with a struggling healthcare system and high ratios of poverty and illiteracy; coronavirus also has a huge psychological impact especially on positive patients and their families. Experts have advised people to stay in self-isolation but the necessary restrictions would have short and potentially long-term detrimental impact on mental health. Pakistan being a collectivistic culture highly dependent on socialization (social support and social connectedness) has been critical towards self-isolation, social-distancing and quarantine and are reluctantly dealing with emotional, psychological, behavioral and social impacts of this crisis. In this context, psychiatrists and mental health workers can play pivotal role in supporting the well-being of those affected and their families, the at-risk healthcare staff as well as the public. They are in fact in a unique position to offer a balanced perspective to improve the knowledge, attitude and practices about the illness as well as addressing the generalized anxiety and apprehension. Similar roles have been shown to improve the overall health-care service utilization and efficacy in similar earlier outbreaks like SARS (Severe Acute Respiratory Syndrome) [5]. This study assesses the proportion of COVID patients suffering from concomitant psychological comorbidities including depression, anxiety and stress. This would help to plan adequate psychological interventions to be implemented for a multidisciplinary approach to improve the morbidity, mortality, and psychological status of those affected.

## MATERIALS AND METHODS

An observational study was conducted in COVID-19 isolation wards at Dr. Ruth K. M. Pfau Civil Hospital Karachi from 1<sup>st</sup> June till 31<sup>st</sup> August 2020. Consecutive non-probability sampling technique was adapted and all patients of age 18 years and above diagnosed as COVID-19 positive by Real Time Polymerase Chain Reaction testing panel for SARS-COV-2, admitted in isolation ward with moderate COVID-19 (symptomatic patients requiring ward admission but not severe enough to indicate ICU admission) were included. Patients with altered level of consciousness / loss of consciousness / on ventilator support / acutely psychotic / or who could not comprehend the interviewer due to any reason were excluded. A semi-structured questionnaire was constructed which included demographic characteristics of the patient and Depression, Anxiety and Stress Scale - 21 Items (DASS-21) [6]. DASS-21 is a set of three self-report scales designed to measure the emotional states of depression, anxiety and stress. Each of the three

DASS-21 scales contains 7 items, divided into subscales with similar content. The depression scale assesses dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest / involvement, anhedonia and inertia. The anxiety scale assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. The stress scale is sensitive to levels of chronic nonspecific arousal. It assesses difficulty relaxing, nervous arousal, and being easily upset / agitated, irritable / over-reactive and impatient. Scores for depression, anxiety and stress are calculated by summing the scores for the relevant items. The DASS-21 is based on a dimensional rather than a categorical conception of psychological disorder [6]. For the purpose of this study, Urdu version of DASS-21 was utilized. It has been translated and validated by Husain et al. [7]. Data was entered and analyzed through SPSS version 22.0. Mean and standard deviation was calculated for quantitative variables. Frequency and percentage were calculated for qualitative variables like gender. Internal consistency was calculated for DASS-21. Effect modifiers such as age and gender were stratified to see their effect on outcome variables. Chi-square test was applied after stratification for comparison of categorical variables. Independent sample T test was applied for comparison of means. P-value <0.05 was taken as significant.

## RESULTS

The study was completed by n= 201 patients. There was n=108 (53.7%) male patients and n=93 (46.3%) female patients. Their mean age was  $53.23 \pm 7.94$  years. Most of the sample was married (n=112; 55.7%), unemployed (n=123; 61.2%), educated from intermediate to bachelors (n= 83; 41.3%), financially dependent 116; 57.7%), and living in nuclear family (n=126; 62.7%). All characteristics are summarized in **Table 1**.

Depression, anxiety, and stress were assessed using DASS-21. There were 70 (34.8%) non-depressed patients, 35 (17.4%) non-anxious patients, and 25 (12.4%) non-stressed patients. One hundred and fourteen (56.7%) patients were mild to moderately depressed; 138 (68.6%) were mild to moderately anxious; and 133 (66.2%) were mild to moderately stressed. Seventeen (8.5%) patients were severe to extremely severely depressed, 28 (13.9%) were severe to extremely severely anxious, 43 (21.4%) were severe to extremely severely stressed.

DASS-21 scores were categorized according to gender as shown in table 2. It indicated that depression (p=0.012) and stress (p=0.03) were statistically significant for gender. Most women (n=36; 38.7%) were moderately depressed and most men (n=49; 45.4%) were non-depressed; most men (n=43; 39.8%) were mildly stressed and most women (n=41; 44.1%) were moderately depressed (**Table 2**).

**Table 1.** Socio-demographic characteristics of COVID-19 patients (n=201).

Patient characteristics	Frequency (%)	Patient characteristics	Frequency (%)
<b>Gender</b>		<b>Education</b>	
Male	108 (53.7%)	No formal education	24 (11.9%)
Female	93 (46.3%)	Primary to secondary	71 (35.3%)
<b>Age in years</b>		Intermediate to bachelors	83 (41.3%)
Means (± SD)	53.23 ± 7.94	Masters and above	23 (11.4%)
<b>Marital status</b>		<b>Financial status</b>	
Single	59 (29.4%)	Dependent	116 (57.7%)
Married	112 (55.7%)	Independent	85 (42.3%)
Divorced / Widow	30 (14.9%)	<b>Family structure</b>	
<b>Occupation</b>		Nuclear	126 (62.7%)
Unemployed	123 (61.2%)	Joint	75 (37.3%)
Employed	78 (38.8%)		

**Table 2.** Gender based stratification for scores of depression, anxiety, and stress (n=201).

DASS-21	Depression*		Anxiety		Stress*	
	Male (%)	Female (%)	Male (%)	Female (%)	Male (%)	Female (%)
<b>Normal</b>	49 (45.4%)	21 (22.5%)	22 (20.4%)	13 (13.9%)	15 (13.9%)	10 (10.8%)
<b>Mild</b>	24 (22.2%)	28 (30.1%)	27 (25.0%)	28 (30.1%)	43 (39.8%)	24 (22.2%)
<b>Moderate</b>	26 (24.1%)	36 (38.7%)	42 (38.9%)	41 (44.1%)	25 (23.1%)	41 (44.1%)
<b>Severe</b>	5 (4.6%)	6 (6.5%)	11 (10.2%)	8 (8.6%)	19 (17.6%)	13 (13.9%)
<b>Extremely severe</b>	4 (3.7%)	2 (2.2%)	6 (5.6%)	3 (3.2%)	6 (5.6%)	5 (5.4%)

\* p<0.05 on Chi Square Test

Scores of depression, anxiety, and stress on DASS-21 were then correlated with employment status, financial dependence, and family structure as shown in table 3. Depression was significantly related to unemployment (p<0.0001), financial dependence (p<0.0001), and living with nuclear family (p=0.007). Stress was significantly related to unemployment (p=0.04) and living with nuclear family (p=0.025) (Table 3).

**DISCUSSION**

This study assessed the psychological impact on COVID-19 positive patients admitted in a tertiary care hospital. This study showed high depression, anxiety, and stress in hospitalized COVID-19 patients. The available literature demonstrates that there has been a rise in mental health disorders such as anxiety, depression, panic disorder, among other in the general population ever since COVID-19

outbreak mainly due to the general fear and uncertainty associated with the disease [8]. Moreover, studies have also shown that individuals who contracted COVID-19 reported higher levels of anxiety, depression and other psychological symptoms compared to those who weren't infected [9,10]. The reasons for this could be the prolonged isolation from family and friends, misinformation surrounding the disease, lack of clarity regarding the outcome as well as incessant worry of transmitting the virus to said friends and family prior to hospital admission [11,12]. In our study, we also found that women were more likely to have symptoms of anxiety and depression as is concurrent with other studies [13]. A study by Wang et.al claimed that women were three times more likely to develop an anxiety disorder compared to men in the COVID-19 pandemic [14]. This can be attributed to the fact that women are usually overburdened with numerous responsibilities and are more prone to

**Table 3.** Stratification of depression, anxiety, and stress according to employment status, financial dependence, and family structure (n=201).

DASS-21	Unemployed (n=123)			Financially dependent (n=116)			Nuclear family (n=126)		
	Depression * <0.0001	Anxiety 0.07	Stress* 0.04	Depression* <0.0001	Anxiety 0.59	Stress 0.38	Depression 0.007	Anxiety 0.52	Stress 0.025
<b>Normal</b>	29 (23.5%)	19 (15.4%)	12 (9.7%)	21 (18.1%)	19 (16.3%)	17 (14.6%)	38 (30.2%)	25 (19.8%)	22 (17.4%)
<b>Mild</b>	45 (36.6%)	27 (21.9%)	35 (28.5%)	39 (33.6%)	34 (29.3%)	36 (31.0%)	43 (34.1%)	37 (29.4%)	37 (29.4%)
<b>Moderate</b>	37 (30.1%)	59 (47.9%)	45 (36.5%)	46 (39.6%)	49 (42.2%)	41 (35.3%)	33 (26.2%)	47 (37.3%)	44 (34.9%)
<b>Severe</b>	9 (7.3%)	11 (8.9%)	25 (20.3%)	5 (4.3%)	8 (6.8%)	18 (15.5%)	8 (6.3%)	11 (8.7%)	16 (12.7%)
<b>Extremely severe</b>	3 (2.4%)	7 (5.7%)	6 (4.8%)	5 (4.3%)	6 (5.2%)	4 (3.4%)	4 (3.2%)	6 (4.7%)	7 (5.6%)

\* p<0.05 on Chi Square Test

developing mental health disorders [15]. A study by Soni [17] also discovered that fluctuations in ovarian hormone levels are responsible for altered sensitivity to emotional stimuli during certain phases in the menstrual-cycle thus forming the basis of a specific vulnerability to psychological disorders in women [17]. Another finding was that the participants who were unemployed and/or financially dependent experienced far greater symptoms of anxiety and depression as compared to those who were employed and/or financially independent. A recent review in Lancet Psychiatry had similar findings whereby showing that populations with social inequality are more susceptible towards mental health problems [18]. This is not a surprising finding considering the exorbitant expenses of COVID-19 patients. In addition, the imposition of the lockdown and the hit that the world economy took in light of COVID-19 pandemic reduced the chances of finding another job thereby further adding to the psychological burden [19]. Furthermore, as Pakistan is a developing country, most people survive on daily wages and are therefore least likely to have sufficient savings. In light of the findings of this study, it is essential for hospitals to create a treatment plan that caters to the mental well-being of COVID-19 patients in adjunct to their physical well-being. It is recommended to maintain an exercise regimen for COVID-19 patients according to their level of fitness and mobility [20] and focus on a healthy lifestyle that ensures nutritious meals to strengthen their immunity and allow for speedy recovery. Furthermore, use of helplines and tele-health to provide psychological support to those diagnosed with COVID-19. Additionally, since women are majorly affected by the pandemic, interventions should target them more. The government should also work towards creating a package that would allow for some financial support for those families that have recently lost their employment due to the losses of the pandemic such as the Ehsaas programme. In addition, free meals being provided by NGOs such as Edhi, Chippa, etc. are also a great way of providing support to the worst hit during the pandemic. As per our knowledge, this

study is the first of its kind to be conducted in Karachi, Sindh, Pakistan. However, like all studies, ours too has its limitations. The first one being that our sample size was small. Its cross-sectional design did not allow us to construct any causal relationship. Further investigations, with robust research designs, should be done to highlight the correlations. Identification of the most vulnerable groups may help to tailor psychological interventions to improve the outcome.

**CONCLUSION**

In conclusion, it is evident that a diagnosis of COVID-19 brings with it a significant mental distress. This shows that it will be beneficial for the patients suffering from mental stress and COVID to receive psychological assessment and management. An awareness about this issue along with provision of counselling services may be able to lessen the psychological burden of the COVID-19 outbreak. Further investigations should take place and a multidisciplinary approach should be adopted towards dealing with the COVID-19 pandemic.

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