Original Article

Assessment of Psychological Impact on the Health Care Workers due to Covid-19 Pandemic in Tertiary Care Hospitals of Karachi

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ABSTRACT

OBJECTIVE: To assess the psychological impact of the COVID-19 pandemic on health care workers in tertiary care hospitals of Karachi.

METHODOLOGY: This is a multicentric cross-sectional study conducted at tertiary care hospitals of Karachi (Pakistan). A total of 350 health care workers, including both males and females, from different private and Government tertiary care hospitals, were approached and enrolled after fulfilling the selection criteria from May to Aug 2020. The semi-structured Performa was used for demographic details while the Patient Health Questionnaire (PHQ-9) and Generalized Anxiety Disorder (GAD 7) were administered to evaluate depression and anxiety, respectively.

RESULTS: Out of 350 participants, 220 (62.8%) have depression in this study, while 206 (58.8%) have anxiety. The degree of depression was mild in 81 (23.1%) of health care workers, moderate in59 (16.8%), moderately severe in 50 (14.2%), severe in 30 (8.6%). Similarly, mild anxiety was present in 75 (21.4%), moderate in 74 (21.1%), and severe anxiety in 57 (16.3%) persons. The most common problem they faced is —Fear of transmission of disease family /close friends, being present in 311 (88.9%) p-value = 0.014.

CONCLUSION: It is evident that health care workers are affected with depression and anxiety due to pandemic. It is necessary to take appropriate steps to manage the psychological impact of the stress to be more productive in their respective fields.

KEYWORDS: Health care workers; Depression; Anxiety, COVID-19 Patient health questionnaire-9; generalized anxiety disorder-7

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INTRODUCTION

Since its origin in December 2019 in China, the novel coronavirus disease (COVID-19) has been spreading rapidly globally. The morbidity and mortality associated with it are challenging for the nations in several ways. COVID-19 was considered a health emergency by the World Health Organization and was declared a pandemic by March 2020, with a total of 2,3120000 affected population from different countries and 8,03,213 deaths by July 2020[1]. In the absence of proper therapeutic measures, including specific antiviral agents or vaccination to limit the spread of COVID-19, the primary goal was public health measures to prevent the person-to-person spread of the disease. To interrupt transmission of COVID-19, isolation, quarantine, social distancing, and community containment remain very helpful for the control of disease in the general population. Health care professionals, especially those looking after patients with confirmed or suspected COVID 19 disease, were front-line people fighting this pandemic and remain the most vulnerable population both physically and mentally[2]. The subsidizing factors faced by health care workers are poor health care safety measures, limited resources, unexpected increase in workload, and long working hours[3].

Apart from physical health problems, healthcare professionals who worked previously in units or hospitals during the SARS outbreak, especially ENT professionals, Pulmonologists, Anesthetist, Pediatricians, Ophthalmologists, Emergency Medicine faculty members, and paramedics, have reported mental health issues because of the fear of contracting the infection and spreading the virus to their loved ones[4-6].

In a study, stress-related symptoms were more pronounced in healthcare professionals who were quarantined, worked in high-risk clinical settings, or had family or friends infected with COVID 19 than those without these experiences[7]. Initial social media description of COVID- 19 as a killer virus and lack of evidence-based treatment to combat this virus further perpetuated the sense of danger and ambiguity among health workers that resulted in mental health issues including importunate anxiety, depression, psychomotor symptoms, psychosis, delirium, and even suicidal tendency[8,9]. Studies conducted regarding mental health issues faced by a medical professional in 2015 and 2003 after the outbreaks of

Middle East respiratory syndrome (MERS) and SARS, respectively, show early and late severe consequences of these events on the mental health of these health care workers[9,10]. In the given context, it is time to identify problems a health care worker can encounter during these pandemics and emergencies and find solutions. It is essential to protect the mental health of health care workers, who are working in a pandemic as front-line soldiers and taking this burden on their shoulders.

Therefore, this study was done to find out the common mental health problems in health care workers of our region who are dealing with the COVID-19 pandemic.

METHODOLOGY

This was a multicenter cross-sectional study conducted at two tertiary care hospitals of Karachi, Creek General Hospital and United Hospital. This study included a total of 350 health care workers, including doctors (working on different striatum from consultants to house officers), paramedical staff, and other non-medical staff. Out of those 350 health care workers, 244(69.7%) participants are from Creek General hospital, and 106 (30.28%) participants are from United hospital. The sample size was calculated by the WHO sample size calculator (Raosoft); the margin of error was kept at 5%. At the same time, the confidence interval was 95%, and the sample size was 285[12]. The study was conducted from 22 May 2020 to 22 August 2020, after approximately three months of lockdown due to the COVID-19 pandemic. An ethical review committee approved the study of United Medical and Dental College Karachi, Pakistan (UMDC/ethics/2020/01/05/268). Inclusion criteria for the study include health care workers who gave informed consent, aged between 20 to 50 years of age of either gender, and working as full-time employees in these hospitals during the pandemic. Those health care workers (HCW) having premorbid depression and anxiety as per ICD 10 criteria were excluded from the study. The participants' demographic data were collected on semi-structured proforma and ten questions related to psychological problems faced during the COVID pandemic with either 'Yes' or 'No' For assessment of depression and anxiety, a self-administered PHQ-9 scale for depression and GAD-7 scale for anxiety was used.

The patient health questionnaire (PHQ9) is a self-administered version of the PRIME-MD diagnostic instrument for common mental disorders[13]. It is a 9-item instrument, which scores each of the nine DSM-IV criteria of depression as "0" (not at all) to "3" (nearly every day). A score of 0-4 is no depression, 5-9 represents mild depression, 10-14 shows moderate, 14-19 shows moderately severe, and more than 20 illustrates severe depression. Top of Form

The Generalized anxiety disorder 7 (GAD7) is a self-administered, seven-item questionnaire used to measure or assess the severity of generalized anxiety disorder[14]. Response options include "not at all," "several days," "more than half the days," and "nearly every day", Score of 0-4 represents normal, 5-9 mild anxiety, 10-14 moderate anxiety and >15 severe anxiety.

Data were entered and analyzed through IBM SPSS version 19. Two primary outcomes, anxiety and depression, were measured. Mean, and standard deviation were calculated for quantitative variables, including anxiety and depression scores. Frequencies and percentages were calculated for the severity levels of depression and anxiety. Participants were stratified by gender and occupation, and post-stratification Pearson's Chi-square test was applied with p-value ≤0.05 taken as significant.

RESULTS

Out of 350 HCWs, 59.4% (208) were male, and 40.6% (142) were females. The majority of the participants, 55.1% (193), were doctors, followed by paramedical staff and others like (phlebotomists, radiologists, and Physiotherapists) with the frequency of 29.1% (102) and 15.7% (55), respectively. In this study, 220 participants (62.8%) had depression, while 206 (58.8%) complained of anxiety and panic. **Figure I** show the number of patients having different degrees of depression and anxiety. The degree of depression was mild in 23.1% (81) of health care workers, moderate in 16.8% (59), moderately severe in 14.2% (50), severe in 8.6% (30). Similarly, mild anxiety was present in 21.4% (75), moderate in 21.1% (74), and severe anxiety was present in 16.3% (57) persons. The degree of depression and anxiety stratified by gender and occupation were presented in **Table I**. Both depression and anxiety levels were significantly higher among female participants with a mean PHQ9 score of 7.47 ± 7.12 vs. 9.77 ± 7.5 (p=0.004) and mean GAD7 of 6.62 ± 7.12 vs. 8.7 ± 7.5 (p=0.009) for male and female participants respectively. Similarly, the mean PHQ-9 score was slightly higher in non-medical personnel (8.98 ± 7.09) followed by paramedics (8.72 ± 7.64) and then doctors (8.31 ± 6.72). The mean GAD-7 score was also higher in non-medical personals (8.33 ± 5.79) followed by paramedics (8.14 ± 5.91) and then doctors (7.03 ± 6.13).

Table II shows the positive responses of ten questions asked through the questionnaire according to gender and occupation. The most common problem they faced was "Fear of transmission of disease to family / close friends" being present in 311 (88.9%) respondents; p-value = 0.014 followed by "lack of resource/limited resources" in 280 (80%) individuals, p-value = 0.027. The least faced problem they responded to was "increase in work burden" in only 171 (48.8%) participants; p-value = 0.663.

FIGURE I: DEGREE OF DEPRESSION AND ANXIETY (n=350)

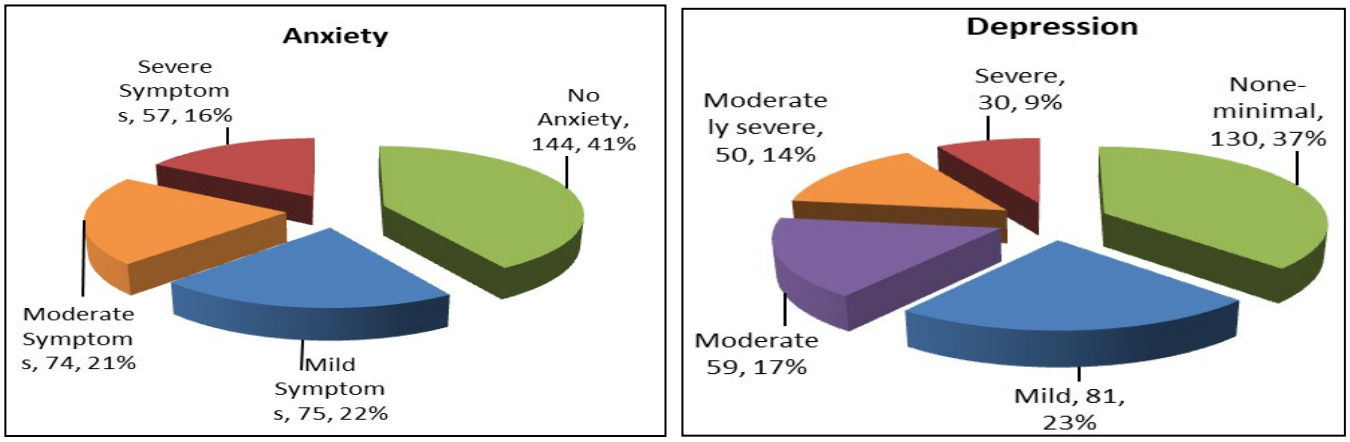

TABLE I: DEGREE OF DEPRESSION AND ANXIETY STRATIFIED BY GENDER AND OCCUPATION (n=350)

			Gender			Profession			
		Total	Male	Female	P- Value	Doctors	Paramedics	Non-Medical	P- Value
Depression Score (PHQ-9 Depression)	None-minimal	130 (37%)	86 (41%)*	44 (31%)	.037(*)	69 (36%)	41 (40%)	20 (36%)	.006(*)
	Mild	81 (23%)	50 (24%)	31 (22%)		44 (23%)	23 (23%)	14 (25%)	
	Moderate	59 (17%)	31 (15%)	28 (20%)		39 (20%)	15 (15%)	5 (9%)	
	Moderately severe	50 (14%)	30 (14%)	20 (14%)		29 (15%)	7 (7%)	14 (25%)*	
	Severe	30 (9%)	11 (5%)	19 (13%)*		12 (6%)	16 (16%)*	2 (4%)	
Anxiety Score (GAD-7 Anxiety)	No Anxiety	144(41%) *	95 (46%)	49 (35%)	0.113	91 (47%)	35 (34%)	18 (33%)	0.214
	Mild Symptoms	75 (21%)	45 (22%)	30 (21%)		40 (21%)	23 (23%)	12 (22%)	
	Moderate Symptoms	74 (21%)	40 (19%)	34 (24%)		32 (17%)	27 (26%)	15 (27%)	
	Severe Symptoms	57 (16%)	28 (13%)	29 (20%)		30 (16%)	17 (17%)	10 (18%)	

TABLE II: POSITIVE RESPONSES OF A TEN-ITEM QUESTIONNAIRE RELATED TO THE PROBLEM FACED DURING COVID-19 (n=350)

	Overall	Gender		Medical		
		Male	Female	Doctors	Paramedics	Non-Medical
fear of quarantine/isolation	199 (57%)	120 (58%)	79 (56%)	132 (68%)*	40 (39%)	27 (49%)
Lack of transport due to lock down	202 (58%)	111 (53%)	91 (64%)*	122 (63%)*	56 (55%)	24 (44%)
Lack of resources/limited resources	280 (80%)	164 (79%)	116(82%)	152 (79%)	90 (88%)*	38 (69%)
Fear of transmission of disease to family / close friends	311 (89%)	181 (87%)	130(92%)	170 (88%)	96 (94%)*	45 (82%)
Fear of contracting COVID 19	246 (70%)	140 (67%)	106(75%)	136(70%)	69 (68%)	41 (75%)
Increase in work burden	171 (49%)	101 (49%)	70 (49%)	98(51%)	54 (53%)	19 (35%)
Information by social media	296 (85%)	179 (86%)	117(82%)	154 (80%)	93 (91%)*	49 (89%)
Uncertainty about future	238 (68%)	145 (70%)	93 (65%)	142 (74%)	63 (62%)	33 (60%)
Lack of social and financial support	202 (58%)	117 (56%)	85 (60%)	112 (58%)	65 (64%)	25 (45%)
Lack of evidence based treatment of COVID-19	278 (79%)	166 (80%)	112(79%)	154 (80%)	77 (75%)	47 (85%)

- *Shows significance at 0.05*

DISCUSSION

Since the first reported case of COVID-19 in Pakistan, health care professionals have faced a lot of stress due to multiple factors, including fear of being susceptible to infection, lack of control over the situation, poor resources and planning to fight with illness, the fear of the spread of virus and transmission of disease to their families and the fear of being isolated[15]. There are various physical and psychological aspects associated with this dangerous viral disease. As the physical component of the disease is significant, likewise, the psychological aspect has its vitality[16]. The mental pressure due to COVID-19 aroused feelings of ambiguity in health care workers consecutively, leading to a spectrum of psychological disorders. In developing countries like Pakistan, a pandemic challenges the health care system, where a shortage of personal protective equipment, poor health policies, apathetic attitude of the community towards preventive and protective measures, and denial of the existence of pandemic worsens the scenario[17].

In our study, a significant number of health care professionals reported varying degrees of anxiety and depression. Overall, 220 participants (62.8%) had depression, while 206 (58.8%) had anxiety. These figures can be compared with the previous studies done in Pakistan, which reported the overall mean anxiety score of 19.0 ± 9.2 while that depression score to be 18.2±10 in those health care workers working in the COVID unit were assessing patients[3].

The most common psychological stress factor faced by health care workers related to COVID 19 and lockdown was the transmission of disease to their loved ones (88.9%). This percentage may be slightly higher in Asian countries like Pakistani population with very close family structure and joint family system than western population. These results were comparable to those studies done in HCW working in COVID units. Health care authorities in Pakistan started to support some private and Government hospitals after converting them to COVID units. Health care professionals in those setups were provided with the best possible support and protective wearing. But other health care workers in different setups remained deficient in PPEs and other protective strategies. The diverse presentation of COVID 19 virus infection and the threat of spread through asymptomatic people in the absence of protective wearing resulted in anxiety and depression in HCW, even if they were not posted in COVID-19 units. In our study, 57.7% of the HCW reported a lack of social and financial support problems. This percentage is higher than HCW working in COVID units. 73.1% of HCW in our study were worried about contracting COVID-19; this percentage is slightly lower than other studies.

Moreover, the work burden from hospitals converted to COVID-19 units was shifted to another hospital, resulting in increased workload. While in most of the health care workers working in specialties where exposure to COVID-19 related patients is less are identified as less stressed (<50%). In comparison, studies conducted in COVID-19 units HCW showed stress related to increased workload in more than 60% of the respondents[3].

Misunderstanding and rumors about COVID-19, denial of the existence of this disease, and social stigma attached with a COVID-19 positive case among the general population spreading through social media impacted HCPs very severely. Consequently, most patients with mild and moderate diseases started avoiding government and private hospitals where proper COVID-19 testing and units were available and referred to COVID-19 units. The percentage of HCW that faced aggressive behavior of attendants in our study was 80.6% due to the spread of wrong information spread by social media.

The strength of this study is that data were collected from tertiary care hospitals and from health care workers who were working in non - COVID units, while in previously published studies, data were collected from health care workers that were working in COVID units and were getting some help from the government and their setups. Other than that, the sample was collected from both extremes from consultant to junior level doctors, which cover socioeconomic differences. An adequate number of participants was included in this study to get enough data to apply to health care workers in Karachi.

The only limitation of our study is that health care workers were reluctant to give data because of fear of given information getting to their employer, although its confidentiality was ensured.

The results of our study show that there is an alarmingly high number of health care workers who are affected by psychological health problems in this pandemic while not working in the COVID-19 unit or treating COVID-19 exposed patients. Many of the factors leading to this stress level are modifiable by providing personal protective equipment, arranging proper healthcare facilities, promoting general public awareness, and developing appropriate health policies that can make things better for health care workers.

CONCLUSION

COVID-19 brought a myriad of psychological impacts on the mental health of HCWs, especially those working in the fields of Otolaryngology, Neurology, Psychiatry, Ophthalmology, Anesthesia, Gynecology, Pulmonology, and Emergency Medicine. This necessitates a more organized and longitudinal assessment of the psychological needs of HCW as

their wellbeing as front-line soldiers are mandatory to deal with this pandemic.

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AUTHOR CONTRIBUTIONS

Mahmood K: Manuscript writing
Feroz S: Study design, data analysis
Nisa ZU: Statistical analysis
Raza MS: Data collection
Zain S: Data collection
Udaipurwala IH: Critical Review

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