

**Title: COVID-19 pandemic fear and anxiety among healthcare professionals in Pakistan**

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## **ABSTRACT**

During the current pandemic, Pakistan is badly affected. It has exerted great pressure on vigor as well as the psychology of the healthcare professionals. Limited resources, illiteracy, myths, and not following the proper protocol by the general population may have increased the risk for everyone, and anxiety and fear among the frontline healthcare professionals. Anxiety is a common response to any stressful situation and its the fear of the unknown and it may have multiple consequences.

In the current study, we attempted to analyze the fear and anxiety among the healthcare professionals of Pakistan.

**Methodology:** An online questionnaire-based survey was performed using a non-probability snowball sampling technique. The questionnaire was validated and comprised of demographics and 10 questions regarding fear and anxiety as per fear of coronavirus-19 scale (FCV-19S). SPSS 21 was used for data analysis.

Data of 404 participants analyzed. A significant difference between gender, age group, and the profession was found ( $p < 0.05$ ). Out of 404 participants, 322 (79.70%) were considered to have high and severe anxiety ( $p = 0.020$ ). Based on the results anxiety was reported higher among the nurses and in females. A significant relationship was observed between fear and anxiety score and the different healthcare professionals with  $p \text{ value} < 0.001$  (Multilinear regression).

Concerning the high occurrence of anxiety and fear among healthcare professionals appropriate psychological/psychiatric intervention necessitates and emphasizes the need to implement urgent measures.

**KEYWORDS:** Healthcare Professionals, COVID-19, Fear, Anxiety, Pakistan

## **Introduction:**

Coronavirus disease 19 (COVID- 19) is a pathogenic viral infection that presents as a new public health crisis globally(1, 2). It is highly transmissible and caused by severe acute respiratory syndrome coronavirus 2 (SARS- CoV-2) (1). It is thought to initially emerge in Wuhan, Hubei province, China(1). The initial cases of pneumonia of unknown cause were reported on 31<sup>st</sup> December 2019 to the World health organization (WHO) country office in China (3). Later in mid-January, officials confirmed the first case of COVID-19 outside of China in Thailand (3). Currently (mid of June), 213 countries have been affected with 7.76M confirmed cases of COVID-19 and around 430k deaths (3).

In response to this threatening circumstance, certain public policies were introduced by governments globally (4). These measures include self-quarantine, isolation, and social distancing (5). The implementation of these policies caused the closure of educational institutes, offices, workplaces, public places, and social gathering restrictions. People are advised to stay at home and follow advice proposed by the WHO to protect oneself and others from the spread of COVID- 19. The strict lock self-quarantine order (lockdown) has kept the entire population in isolation which has put a significant impact on people's life(6).

Uneventful circumstances such as disease outbreaks and pandemics commence fear among many individuals. People fear getting infected and then transmitting to their loved ones and other people around them. A study indicates that such fear has caused individuals to commit suicide because they assume that they have been infected by COVID-19 even though the autopsies showed opposite results. (7, 8)

The variations in work routine and isolation have led to feelings of abandonment and helplessness globally. It has also caused heightened insecurity among people due to the declining economic and social repercussions of this pandemic(9). Subsequently, people are

concerned about their jobs since the process of firing and unemployment has been initiated in quite a few parts globally.

There's a constant update about the disease available on news channels and over the Internet which highlights the number of individuals affected and deaths due to COVID-19. Also, inadequate knowledge and overwhelming news may contribute to fear and anxiety among the public(10-12). People at large may experience disappointment, irritability, and boredom under isolation measures(13). The communication technologies' facilities and transmission of inaccurate or sensational information may contribute to an increase in unacceptable social reactions such as aggression and rage (14).

Suspected and confirmed COVID-19 cases are likely to experience anxiety, loneliness, depression, denial, insomnia, and fear. Suspected isolated patients may encounter anxiety due to vagueness about their health status and progressively develop obsessive-compulsive symptoms, such as sterilization and repetitive temperature evaluation (10). Furthermore, strict quarantine policy and mandatory contact tracing policy by health authorities may lead to social rejection, discrimination, financial loss, and stigmatization (11, 13). New psychiatric symptoms in people without mental illness can occur or aggravate the condition of those with pre-existing mental illness and cause distress to the caregivers of affected individuals (15).

Healthcare professionals are the most vulnerable group of individuals. Not just because of their direct interaction with the patient's, but HCP are in a state of anxiety due to the number of HCPs that are severely infected and (16)

Most health professionals working in isolation units and hospitals very often do not receive any training for providing mental health care (17). the confinement “caused a sense of collective hysteria, leading the staff to desperate measures” (18). Being isolated, working in high-risk positions, and having contact with infected people are common causes of trauma. (19),

Various studies have been carried out worldwide that demonstrate the psychological impact of the disease on individuals. Patients whose mental health is affected during the pandemic appears to be higher than the patients affected by the COVID-19 disease. (9)

A recent study in Canada reports one-third of the participants who were worried about the current pandemic(20). Another German study demonstrates a higher number of patients worried about COVID-19 (21). USA study based on online poll reports 56% of participants who were concerned about the transmission of COVID-19(22). In another comparative study being conducted in the USA reports that participants were more concerned about COVID-19 as compared to seasonal influenza(20, 23). In Latin America One of the greatest fear among the evaluated population is being in contact with healthcare professionals (24).

Health care professionals interacting with infected and non-infected patients are of no exception. They are on duty of care to the patients, interaction with the patient's relatives, and occasionally, facing the public inquiry. Studies report excessive workload, isolation, and discrimination among frontline health professionals, thus, contributing to physical exhaustion, insomnia, emotional disturbance, and fear(25). A recent study demonstrates that more than 50% of health professionals report symptoms of depression, insomnia, and anxiety(26). In Pakistan few other studies have been carried out to evaluate the knowledge, anxiety, and fear among medical doctors, dentists, and nurses (27-31).

This study aims to analyze the COVID- 19 pandemics fear among the health care professionals of Pakistan who are putting their lives on the line to serve the public as per WHO criteria that include medical doctors, dentists, nurses, and pharmacists(32).

## **Methodology:**

This is a cross-sectional observational study. A total of 404 Individuals contributed to the study. As per the classification, medical doctors, dentists, nursing professionals, and pharmacists were included in this study. Data was collected by a convenience snowball sampling technique from HCPs working in different healthcare setups in different cities of Pakistan. Participation was entirely voluntary. Informed Consent was obtained electronically from each participant and was requested to fill out the online survey form.

The questionnaire was validated by 7 experts from medicine, dentistry, nursing, and psychiatry and pretested on 20 HCPs with experience ranges from 2- 38 years. It comprises two parts, the first consisting of demographic data including age, gender, country, and city of residence and profession and the second part comprises a total of 10 questions. It consists of a few questions obtained from fear of coronavirus-19 scale (FCV-19S) which was developed and validated using two types of psychometric scale; classical test theory (CTT) analysis and Rasch analysis (33). The level of agreement for each question is indicated by using a five-item Likert- type scale. Answers included strongly disagree, disagree, neutral, agree, and strongly agree. For each question, the minimum score possible is 1, and 5 is the maximum. A total score is calculated by summing up the score of all questions (ranging from 10 to 50). The higher the score, the greater the fear of the Coronavirus. We categorized anxiety levels into 5 categories i.e. No Anxiety, Mild Anxiety, Moderate Anxiety, High Anxiety, and Severe Anxiety as per cutoff values (34).

Informed consent was obtained from each participant as per Helsinki declaration and the study protocol was approved by the ethics and review committee of Altamash Institute of Dental Medicine, Karachi, Pakistan (AIDM/EC/04/2020/04).

Data from Google form was first downloaded in Microsoft Excel and later entered in SPSS v.22 for statistical analysis. Sociodemographic data of each participant was recorded and

reported as percentages. Internal consistency (reliability) of the questionnaire was tested by applying Cronbach's alpha and item test correlation. A Chi-square test and Multi-linear regression analysis tests were applied. P-value <0.05 was considered significant.

## Results:

Regarding the reliability, we found that our questioner has a Cronbach's alpha of 0.82 with a 95% confidence interval between 0.798 - 0.849, which is acceptable (35). We also check for item-test correlation, performed to assess the homogeneity of the test, and determine its criterion validity. Correlations vary between 0.500 (item 7) and 0.729 (item 8), which means it has moderate and significant relations between the items and the test. Considering this, no item was removed from the analysis (**Table 1**).

Data of 437 HCPs was collected after filtration a total of 404 HCPs data has been analyzed. A significant difference has been observed among males and females, 141 (34.9%) participants were male and 263 (65.1%) were female. In the current study, 166 (41.3%) were dentists, 124(30.7% ) were medical doctors, 77(18.8%) were nurses and 37 (9.2%) were pharmacists. We observed that 14 (3.46%) of participants were infected with COVID-19 and 34.9% of participants reported that they knew someone in their family infected with COVID-19.

Severe anxiety was reported by the majority of the health care professionals (62.6%) whereas only 0.2% reported no anxiety. Chi-square test was applied to test the association between gender and age group, gender profession. A statically significant association was observed between gender and age group, gender, and profession (**Table 2**).

Chi-square was applied to test the association between questionnaire responses and the different healthcare professions. A significant association was reported between the two variables with a p-value < 0.005 for 5 questions (Items) (**Table 3**). We found that nurses are more anxious as compared to other health care professionals.

We found that nurses are more anxious as compared to other health care professionals. The mean Anxiety score among the nurses was recorded at  $4.05 \pm 0.66$ . Dentists, Medical doctors, and pharmacists scores were  $3.98 \pm 0.61$ ,  $3.8468 \pm 0.76$ ,  $3.78 \pm 0.67$  respectively (**Fig1**).

The relationship between sociodemographic variables and fear and anxiety score was tested by multi-linear regression analysis. Highly significant relationship ( $p < 0.05$ ) was found between profession and anxiety scores (**Table 3**).

**Figure 2** demonstrates the contrast of anxiety/ fear score by sociodemographic characteristics. According to this, females overall demonstrate more anxiety in comparison to males. Among health care professionals, nurses report more anxiety levels.

## **Discussion:**

In the current study, we aimed to evaluate the fear and anxiety among the frontline warriors of Pakistan. For the current study medical doctors, dentists, nurses, and pharmacists working in different health care setup were the Participants.

We analyzed that more than 95% of the HCPs of Pakistan are under the category of moderate level of anxiety to a severe level of anxiety. A study recently conducted in Pakistan has demonstrated similar findings (29).

As per the findings of the current study, among Pakistan's healthcare professionals, nurses reported the highest anxiety and fear. Nurses have intense workload due to comprehensive monitoring, prompt recognition, and prevention of several complications, close contact with physicians, symptomatic and psychological support (36). In another study performed exclusively on nurses managing the COVID-19 patients in Karachi, Pakistan exhibits similar results(28) . According to the results of this study, females have more anxiety as compare to males which are in agreement with the outcome of other studies (37, 38). Moreover, the results of different studies performed in Pakistan to analyze the anxiety levels of HCPs are in accordance with the finding of the current study (27, 39). On the other hand, we have also noticed that the level of anxiety among the pharmacist is less as compared to medical doctors, dentists, and nurses. In Pakistan the interaction of pharmacists with the patients is limited so in our opinion, this could be the reason.

In contrast to the previous studies conducted in Pakistan on HCP, in the current study we have a sufficient number of dentists. Fear and anxiety among the dentist are nearly close to the nurses' Dentists are categorized in the High-risk zone due to aerosol-generating procedures and close contacts with the patients' (40). During the current pandemic, most of the dentists have temporarily suspended the non-essential dental procedures and many dental clinics have been

temporarily shut down. Few dentists started working from home and provided free telemedicine/consultancy (41).

What is noteworthy that in the current study, we have also observed that instead of losing their life healthcare professionals of Pakistan are more concerned about transmitting the disease to the society or their family members. This shows the dedication of the frontline warriors of Pakistan even though during the last few weeks about 17 healthcare professionals in Pakistan have lost their lives and about 2000 are infected and many of them are in a constant battle between life and death (42). Furthermore, during the current crisis, thousands of HCPs and healthcare workers are infected or died in China, Spain, Italy, France, Turkey, and other parts of the world (16, 43, 44).

A significant majority of the HCPs have a high prevalence of high to severe anxiety. Similar finding from the neighboring countries China, Iran, India further confirms our findings (45-48). Furthermore, previously a study regarding the SARS outbreak also revealed that more than 50% of the healthcare workers experienced anxiety(49).

Moreover, in the current study, more than 90% of the HCPs are not satisfied with the facilities of health care in Pakistan and a previous study about the health care system of Pakistan further supports the current finding (50). This factor may not only increase the fear but also affects the efficacy of the HCP. And this dilemma may lead to the deterioration of HCPs' health and previous studies have emphasized that additional supplies and beds will not prove to be useful unless there's sufficient workforce (16, 51, 52).

More than 3/4<sup>th</sup> HCP have fear of getting infected during the management of COVID-19 patients. Pakistan is a developing country with limited healthcare facilities, hence there's an immense burden on the health care system during the current pandemic. Healthcare professionals being frontline workers are at a higher risk of disease transmission. They experience a higher chance of exposure risk and face extreme workloads, moral dilemmas, and

rapidly varying working environments but at the same time, they handle societal shifts and emotional stress experienced by patients(51).

Health care professionals experience a higher chance of exposure risk and face extreme workloads, moral dilemmas, and rapidly varying working environments but at the same time, they handle societal shifts and emotional stress experienced by patients (52-55). They are at risk of lower immunity due to long working hours (36). Past studies reported extraordinary stress among health care providers during the SARS and MERS epidemic due to high infection risk, understaffing, stigmatization and uncertainty, and comprehensive support of highlighted during and after the outbreak(56, 57). Speedy spread and severity of symptoms of COVID-19 have acutely burdened the health care system globally. Despite the fear of getting infected, health care professionals still took up their charge, focused on their duties, and showed a spirit of dedication and unity during the current pandemic (36).

The results of our study substantiate with a recent study carried out in the United States of America, pointed out 8 sources of anxiety among health care professionals. These include, (a) access to suitable personal protective equipment, (b) disease exposure at workplace and carrying it to home, (c) non-rapid access to investigation in case of disease symptoms and the concomitant fear of transmission at work, (d) uncertainty that they would get support from their organization for their personal and family needs if they get infected, (e) child care access during increased working period and closure of educational institutes, (f) personal and family support due to increase in work duration and demands including food, transportation, hydration, and lodging, (g) being able to provide efficient medical care if posted to a new department, (h) lack to access to advanced information and communication(51).

In agreement with the finding of the current study, a recent study demonstrates that in Pakistan, medical workers have been under pressure, both psychological and physical along with high infection risk, isolation, insufficient safety equipment, exhaustion, and lack of interaction with

the family. Mental health-related problems are appearing which affects decision making power of the health care professionals and may have a chronic negative impact on overall well-being(58). Therefore, speaking about mental health concerns is important for the prevention and control of the current pandemic (59).To improve mental health among health care professionals, it is important to focus on self-care and reduce overwork by setting maximal duty hours and arranging shifts (53). In addition to this, knowledge of infection, control, and protection of personnel skills should be improved among health care providers. Previous studies have shown that the knowledge among the HCPs of Pakistan is satisfactory (31, 60). Hospitals should play a role in providing a safe working atmosphere along with the provision of sufficient protective supplies (36). Concern about disease transmission to loved ones should be addressed. Supportive measures such as separating living rooms, immediately showering, and changing clothing after work should be practiced by health care providers to reduce anxiety (53).

**Conclusion:**

Our study concludes that there's a high level of anxiety and fear among health care professionals in Pakistan during the current pandemic. Considering stable mental health is essential and plays a significant role in strengthening immunity, certain measures need to be taken to reduce the fear and anxiety level among health care providers.

**Conflict of Interest:-**

The authors declare that they do not have any interests that could constitute a real, potential or an apparent conflict of interest concerning their involvement in the publication

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**Author's contribution: -**

SZ and MM conceived the study and designed the questionnaire. TH, ZS, and RS collected data. SZ and TH performed statistical analyses and prepared tables and figures. MM, SZ and GD drafted and revised the manuscript. MM supervised the project and is responsible for the integrity of the research. All authors comprehensively contributed to writing and critically revised and approved the final draft of the manuscript.

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**Table 1.** Cronbach alpha and item-test correlation

	Cronbach's Alpha			N° of elements			95% Interval Confidence				
	0.82			10			Inferior	Superior			
							0.798	0.849			
<b>Item – test Correlation</b>											
Items	2	3	3	3	3	3	3	3	3	3	Total
1	1	.440**	.546**	.323**	.332**	.235**	.236**	.389**	.293**	.399**	.670**
2	.440**	1	.455**	.371**	.289**	.285**	.196**	.376**	.306**	.441**	.681**
3	.546**	.455**	1	.414**	.299**	.286**	.246**	.451**	.292**	.414**	.713**
4	.323**	.371**	.414**	1	.384**	.300**	.190**	.420**	.346**	.333**	.641**
5	.332**	.289**	.299**	.384**	1	.244**	.216**	.423**	.320**	.286**	.591**
6	.235**	.285**	.286**	.300**	.244**	1	.168**	.332**	.205**	.189**	.509**
7	.236**	.196**	.246**	.190**	.216**	.168**	1	.369**	.170**	.175**	.500**
8	.389**	.376**	.451**	.420**	.423**	.332**	.369**	1	.417**	.412**	.729**
1	.293**	.306**	.292**	.346**	.320**	.205**	.170**	.417**	1	.420**	.578**
10	.399**	.441**	.414**	.333**	.286**	.189**	.175**	.412**	.420**	1	.647**
<b>Total</b>	.670**	.681**	.713**	.641**	.591**	.509**	.500**	.729**	.578**	.647**	1

**Table 2.** Sociodemographic characteristics of the sample

	Gender			$X^2$	P value
	% Male (n= 141)	% Female (n= 263)	% All (n=404)		
<b>Age group</b>					
18-30 years	13.8% (56)	44.5% (180)	58.4% (236)	46.356	<0.001**
31-40 years	11.8% (48)	15.8% (64)	27.7% (112)		
41-50 years	2.9% (12)	2.7% (11)	5.6% (23)		
51-60 years	2.2% (9)	1.4% (6)	3.7% (15)		
>61 years	3.9% (16)	0.4% (2)	4.4% (18)		
<b>Profession</b>					
Dentist	10% (44)	30% (122)	41.1% (166)	12.017	0.007
Medical Doctor	14% (57)	16.5% (67)	30.7% (124)		
Pharmacist	3% (14)	5.6% (23)	9.2 (37)		
Nurse	6% (26)	12.6% (51)	19.1 (77)		
<b>Does anyone in your family infected with covid19? –</b>					
Yes	36.2	34.2	34.9	0.743	0.388 <sup>a</sup>
No	63.8	65.8	65.1		
<b>Anxiety Levels</b>					
No anxiety	% (0)	0.2% (1)	0.2% (1)	11.635	<b>0.020*</b>
Mild anxiety	1.2% (7)	0.7% (3)	2.4% (10)		
moderate anxiety	5.4% (22)	12.1% (49)	17.5% (71)		
High anxiety	23.7% (96)	38.8% (157)	62.6% (253)		
Severe anxiety	3.9% (16)	13.1% (53)	17% (69)		

$X^2$ : Chi-square test, a: Fisher Test

**Table 3.** Percentages of responses between Health care professionals

Fear and anxiety questions regarding COVID19	Profession	Totally disagree	Disagree	Neutral	Agree	Totally agree	X <sup>2</sup>	P value
<b>1- It makes me uncomfortable to think about coronavirus-19.</b>	Dentist	1.80%	9.60%	40.10%	44.30%	4.20%	22.265	<b>0.035</b>
	Medical Doctor	0.00%	0.80%	9.70%	65.30%	24.20%		
	Pharmacist	2.70%	2.70%	0.00%	54.10%	40.50%		
	Nurse	0.00%	0.00%	1.30%	27.60%	71.10%		
<b>2.- I am afraid of losing my life because of coronavirus-19</b>	Dentist	9.00%	34.10%	38.90%	15.60%	2.40%	21.266	<b>0.047</b>
	Medical Doctor	0.00%	3.20%	39.50%	44.40%	12.90%		
	Pharmacist	0.00%	10.80%	18.90%	40.50%	29.70%		
	Nurse	0.00%	2.60%	6.60%	50.00%	40.80%		
<b>3.- When watching news and stories about coronavirus-19 on social media, I become nervous or anxious.</b>	Dentist	3.60%	25.10%	31.10%	37.10%	3.00%	26.390	<b>0.009</b>
	Medical Doctor	0.00%	3.20%	14.50%	62.90%	19.40%		
	Pharmacist	0.00%	0.00%	5.40%	64.90%	29.70%		
	Nurse	0.00%	0.00%	2.60%	32.90%	64.50%		
<b>4.- I'm afraid of the depression and anxiety the disease has caused in the society</b>	Dentist	1.20%	12.00%	23.40%	53.90%	9.60%	18.393	0.104
	Medical Doctor	0.00%	0.00%	5.60%	66.10%	28.20%		
	Pharmacist	0.00%	0.00%	0.00%	27.00%	73.00%		
	Nurse	0.00%	1.30%	0.00%	26.30%	72.40%		
<b>5.- The negative impact of the disease on the current and future economy stresses me out</b>	Dentist	1.20%	9.00%	16.20%	62.30%	11.40%	21.744	<b>0.040</b>
	Medical Doctor	0.00%	1.60%	8.10%	54.00%	36.30%		
	Pharmacist	0.00%	0.00%	8.10%	32.40%	59.50%		
	Nurse	0.00%	0.00%	3.90%	18.40%	77.60%		
<b>6.- I fear disease transmission to others than being affected by it myself</b>	Dentist	1.80%	6.00%	24.60%	47.90%	19.80%	5.346	0.945
	Medical Doctor	0.00%	3.20%	5.60%	62.90%	28.20%		
	Pharmacist	0.00%	2.70%	2.70%	40.50%	54.10%		
	Nurse	0.00%	0.00%	3.90%	22.40%	73.70%		
<b>7.- I fear the period of quarantine following COVID-19 more than the disease symptoms</b>	Dentist	5.40%	29.90%	24.00%	37.10%	3.60%	21.381	<b>0.045</b>
	Medical Doctor	2.40%	17.70%	19.40%	46.00%	14.50%		
	Pharmacist	0.00%	5.40%	27.00%	37.80%	29.70%		
	Nurse	0.00%	1.30%	18.40%	35.50%	44.70%		
<b>8.- The uncertainty of when COVID-19 will be eradicated stresses me out</b>	Dentist	1.80%	12.00%	28.70%	50.30%	7.20%	14.337	0.280
	Medical Doctor	0.00%	1.60%	7.30%	66.90%	24.20%		
	Pharmacist	0.00%	0.00%	0.00%	27.00%	73.00%		
	Nurse	0.00%	1.30%	0.00%	22.40%	76.30%		
<b>9.- Lack of health facilities in our country stresses me out</b>	Dentist	1.20%	4.80%	10.80%	57.50%	25.70%	17.670	0.126
	Medical Doctor	0.00%	0.00%	4.00%	33.10%	62.90%		
	Pharmacist	0.00%	0.00%	0.00%	18.90%	81.10%		
	Nurse	0.00%	0.00%	1.30%	19.70%	78.90%		
<b>10.- Transmission of disease despite taking all precautionary measures during patient's treatment stresses me out</b>	Dentist	3.00%	10.20%	24.60%	53.30%	9.00%	15.818	0.200
	Medical Doctor	0.80%	0.80%	12.10%	55.60%	30.60%		
	Pharmacist	0.00%	0.00%	2.70%	16.20%	81.10%		
	Nurse	0.00%	1.30%	1.30%	42.10%	55.30%		

X<sup>2</sup>: Chi-square

**Table 4.** Multi-linear regression of fear and anxiety total score and sociodemographic variables

<b>R squared</b>	<b>SEE</b>	<b>F</b>	<b>p value</b>
<b>0.616</b>	3.47049	159.755	<b>&lt;0.001**</b>
<b>Coefficients</b>			
<b>Variables</b>	<b><math>\beta</math></b>	<b>SEE</b>	<b>p value</b>
<b>(Constant)</b>	32.962	0.84	<b>&lt;0.001**</b>
<b>Age</b>	-0.173	0.176	0.326
<b>Gender</b>	0.232	0.386	0.547
<b>Profession</b>	2.813	0.113	<b>&lt;0.001**</b>
<b>Item 1</b>	-0.479	0.363	0.188

SEE= Standard error of the estimation,