Original Article

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Psychological Assessment of Health Care Workers in Intensive Care Units During the COVID-19 Pandemic

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A B S T R A C T

Objective: This study aimed at assessing the psychological effect of COVID-19 among the healthcare workers in the intensive care units of two tertiary care hospitals of Rawalpindi & Islamabad.

Methodology: It was a descriptive cross-sectional study, conducted over five months i.e., 1st July 2020 to 1st November 2020. Non-probability consecutive sampling technique was used for recruiting health care workers. PHQ-9 tool was used including 9 questions (items) related to the depression due to COVID-19. Other tool Fear of COVID-19 scale was based on 5 points Likert scale as 'strongly disagree', 'disagree', 'neutral', 'agree' and 'strongly agree'. Besides descriptive frequencies, mean and standard deviation, Spearman correlation (r) was applied to check the correlation between fear of COVID-19 with age (years) and professional experience (years).

Results: Out of 382 healthcare workers (doctors, nurses & other staff) recruited in the study, around 50% were found to be suffering from severe depression and have developed a fear of the disease. A significant positive correlation was observed between the age of the healthcare worker and the degree of fear of COVID-19 ($p < 0.05$). Similarly, a significant positive correlation was observed between the number of professional experience and the fear of COVID-19 ($p < 0.05$).

Conclusion: It is concluded that healthcare workers in ICU are at risk of depression because of fear of COVID-19. The current situation highlights the areas that need attention. Special training or orientation must be arranged for a situation of an outbreak or a pandemic and skills for keeping one's psychological wellbeing and mental health must be imparted.

Keywords: Fear; Depression; Psychological impact; COVID-19, Healthcare workers.

Introduction

On 11th March 2020, World Health Organization announced COVID-19 as a pandemic. It is a highly contagious disease that has infected more than one million people worldwide with more than 50,000 deaths.[1] COVID-19 infection leads to adult respiratory distress syndrome and multiorgan failure. The uncertainty of novel coronavirus has threatened not just the physical but also the mental wellbeing of individuals. As health care provider is in the front line to treat these infected patients of COVID-19, they have concern for their mental and psychological health. Continuous fear of contracting the disease and spreading it to their family members has caused insomnia, anxiety and depression.[2] Besides, stressful emotion also affects the immune system. Novel coronavirus has caused a lot of depression, stress and anxiety among healthcare providers mainly from hectic routines.[3] Unpredictability in job and financial security is also a cause of anxiety.

Various studies have elucidated that COVID-19 has badly affected the mental health and wellbeing of people.[4] However, the psychological effect may vary in different groups of health care workers. This pandemic

has led an increased exposure to stress. As a result, researchers around the globe have shown an increased interest in assessing the psychosocial disturbances caused by this pandemic.[5] This increased attention will help to manage the current pandemic as well as support future epidemics and pandemics. It is seen in every pandemic that certain segments of populations are more exposed to the risk of fear, anxiety, depression and post-traumatic stress disorders. Health workers are one of the segments of a population that are also affected by anxiety and depression disorders.[5] They are also at risk of developing symptoms that are common in any pandemic such as burnout, emotional exhaustion, post-traumatic stress, depersonalization and dissociation. A stigmatizing attitude to health care workers is common in an epidemic that is a cause of psychological stress. A study during SARS found that 50% of HCWs suffered from psychological stress caused by fear of contracting the disease to their families and prolonged isolation.[6]

As the intensive care unit has critically ill patients of COVID- 19 and health care workers are in close proximity with these patients, the aim of our study was to assess the risk of fear and depression in health care workers in intensive care unit (ICU). The hypothesis of our study was to identify the psychological stress of healthcare workers so they can be timely directed for medical attention or assistance.

Methodology

This was a descriptive cross sectional study. Ethics approval was granted by the Ethics Review Committee of the FFH vide letter no. 462/RC/FFH/RWP. Informed consent was taken from the study participants after the study objectives were explained to them.

It included participants from all the intensive care units of medical, surgical and neonatology departments of Fauji Foundation Hospital (FFH), Rawalpindi (a semi-autonomous establishment) & Pakistan Institute of Medical Sciences (PIMS), Islamabad (a public sector hospital). Total 382 health workers were included in the study. Non probability consecutive sampling technique was used to collect data from the healthcare workers in two tertiary care hospitals. Health care workers included doctors, nurses and other medical staff (e.g. ward boy, aya, sweeper, laundry person, computer clerk/assistant, telephone operator and security guards). The questionnaire was distributed among the participants in hard copy to be filled. According to the literature review,

the questionnaires were valid and reliable. We used two questionnaires: i) Patient Health Questionnaire (PHQ-9) for measuring the depression[7], and ii) Fear of COVID-19 scale for measuring the fear related to COVID-19.[8] All study participants responded to both questionnaires.

The questionnaire comprised of 9 questions that were self-administered among the participants of the ICU. the diagnostic validity of this tool was confirmed as a tool for screening depression. This study was useful for the detection of major depression. Each question was asked to answer the frequency of depressive symptoms among HCW in ICU in the peak period of the pandemic. All the scores were added in the checked boxes on the patient health questionnaire (PHQ-9). Scoring for each checked for done as follow: 0= not at all, 1= several days, 2= more than half of the day, 3= almost every day. We interpreted the total score as follows: 1-4 (minor depression), 5-9 (mild depression), score from 5-9 (mild depression), 10-14 score as moderate depression and 15-27 was severe depression.

Fear of Covid 19 Scale: This scale was developed to assess the fear of COVID-19. This scale has psychometric properties. It comprised 7 questions. We aimed to explore the fear of the HCW in the ICU for COVID-19. We scored each scale from the 1-5. The items were based on 5 rated Likert scale as 'strongly disagree=1', 'disagree=2', 'neutral=3', 'agree=4' and 'strongly agree=5. The items in this scale were developed by evaluation and various interviews from the participants.[8] The fear of the COVID-19 scale is used for the prediction of positive behavioral change. This scale is a quick and rapid means for the [prediction of positive behavioral change. This tool is also a rapid way to understand the fear of HCWs during this pandemic. We excluded the HCWs who refused to participate in this survey.

Statistical data was performed by using SPSS software (v 22.0). Quantitative variables were analyzed as mean±standard deviation. Qualitative variables were analyzed as frequency and percentage. Spearman correlation (r) was applied to check correlation between fear of COVID-19 with age (years) and professional experience (years). $P \leq 0.05$ was taken as level of significance.

Results

Total 382 health workers were recruited in the study whereas 337 (88%) participants responded by filling out

the questionnaire. The data missing or with incomplete information was referred as missing data outcome for the survey participants (n=45), we analyzed the data of 337 participants. Calculated mean age (years) of participants was 32.44±4.91 years, the majority were female participants 69% than male participants 31%. In the study, health care worker workings in intensive care units were sub categorized as doctors, nurses and other medical staff (47.8%, 32.6% and 19.6%) respectively. Among participants, the majority 82% share room/home with others while working in intensive care units simultaneously as shown in (Table I).

Assessment of COVI-19 scale Fear was analyzed among study participants. The scores for question 2 and 7 for the fear of COVID-19 scale was highly agreed among doctors, nurses and medical staff; i.e. the participants agreed when asked about 'uncomfortable to thinking of

COVID-19' and 'afraid of losing their life of COVID-19'. Similarly, participants including doctors, nurses and other medical staff agreed on the question when asked 'heart palpitates thinking of getting COVID-19' and 'disturbed sleep of worrying about getting COVID-19' (4.41±0.61, 4.37±0.87, 4.31±0.54) and (4.34±0.72, 4.31±0.12, 4.29±0.63) respectively, whereas participants did not agree when asked about question number 5 related to fear of COVID-19 'it is an unpredictable disease', as shown in (Table II).

The distribution of all three groups was made according to health care workers as doctors, nurses and related medical staff, analyzed in Table III. The depression severity level was assessed on the basis of PHQ-9 scale. In our study, PHQ-9 (depression severity level) was higher among doctors 52%, nurses 41% and other medical staff 61% whereas moderate depression levels were observed more in other medical staff 27% than doctors 23% and nurses14%. Out of the total participants, 169 (50%) were facing severe deterioration due to severe depression level among groups. (Table III).

Correlation analysis was done among fear of COVID-19 scale with age & professional experience. There was a significant (p<0.05) positive correlation observed among age (years) and fear of COVID-19. Similarly, a significant (p<0.05) positive correlation was observed between professional years and the fear of COVID-19 scale total score, as shown in (Table IV).

The respondents who had a higher score on the

Table I: Descriptive statistics of participants (n=337)

Age (years)		32.44±4.91
Gender	Male	104 (31.0)
	Female	233 (69.0)
Profession	Doctor	161 (47.8)
	Nurses	110 (32.6)
	Other Medical staff	66 (19.6)
Work Area	Surgical ICU	112 (33.2)
	Medical ICU	116 (34.4)
	NICU	109 (32.3)
Sharing home with others	No	61 (18.0)
	Yes	276 (82.0)

Table. II: Fear of COVID-19 scale among HCW in critical care unit (n=337)

10 items	Mean ± standard deviation			P-value
	Doctors	Nurses	Other Medical Staff	
Are you afraid of COVID-19	3.12±1.26	3.02±1.02	3.00±0.16	0.021*
Does it make you uncomfortable thinking about it	4.52±0.38	4.40±0.21	4.11±0.18	0.223
Do you worry a lot about COVID-19	3.42±1.16	3.10±1.27	3.02±1.23	0.126
Is it a terminal illness	2.34±1.12	2.02±1.18	2.04±1.04	0.481
It is an unpredictable disease	3.82±0.62	3.27±0.41	3.23±0.12	0.012*
Does your hands become clammy thinking about it	3.82±0.62	3.27±0.41	3.23±0.12	0.012*
Are you afraid of losing your life because of COVID-19	4.34±0.45	4.06±0.48	4.01±0.34	0.002*
Do you become nervous when watching news about COVID-19	3.62±1.27	3.51±1.01	3.48±1.31	0.041*
Is your sleep disturbed because of COVID-19	4.34±0.72	4.31±0.12	4.29±0.63	0.032*
Does your heart palpitates thinking about it	4.41±0.61	4.37±0.87	4.31±0.54	0.003*

Table. III: Depression severity scale of critical care unit (n=337)

		Doctors	Nurses	other medical Staff	Overall %	P-value
PHQ-9 (Depression Severity Level)	Minimal	6 (4)	15 (14)	3 (5)	24 (7)	
	Mild	34 (21)	34 (31)	5 (7)	73 (22)	0.352
	Moderate	37 (23)	15 (14)	18 (27)	70 (21)	
	Severe	84 (52)	45 (41)	40 (61)	169 (50)	
(p<0.05)* is significant, n(%)						

Table. IV: Correlation Analysis among Fear of COVID-19 scale with Age & Professional Experience (n=337)

		Total	1st item	2nd item	3rd item	4th item	5th item	6th item	7th item	8th item	9th item
age (year)	r	0.821	0.632	0.704	0.627	0.557	0.879	0.821	0.802	0.800	0.643
	p	0.001	0.002	0.042	0.001	0.010	0.007	0.004	0.004	0.003	0.007
professional experience (year)	r	0.342	0.199	0.121	0.212	0.203	0.122	0.079	0.161	0.184	0.172
	p	0.000	0.003	0.026	0.000	0.001	0.077	0.243	0.014	0.007	0.003

The header row spanning 1st–9th item is under the banner "Fear of COVID-19 Scale".

($p<0.05$)* is significant

depression scale also showed evidence of greater fear of COVID-19. As regards to the working environment and type of the hospital, no significant difference was found among the state of fear and anxiety among the health care workers of the two hospitals.

Discussion

Although a number of studies have been conducted around the globe to evaluate the psychological effect of COVID-19 on HCWs but after an extensive search of the literature, no significant survey was found which has assessed the psychological impact (fear and depression) of COVID-19 pandemic in Pakistan's context. Hence, this paper endeavors to fill in this gap by evaluating the psychological impact of this pandemic on the hospital staff working in the intensive care units of two busy tertiary hospitals of Pakistan, designated to admit and treat critically ill COVID-19 patients. After the outbreak of SARS the health professionals had to struggle with the disease in order to protect the mental health of the public, which in turn caused considerable psychological distress among themselves. The findings in our study seem to be in concordance with the studies conducted in SARS times.[9] In our study, there were almost a quarter of HCWs with mild to moderate depression and 50% had severe depression due to COVID-19. A higher level of fear and depression was exhibited by the younger health care workers, working in ICUs, which corroborates with another study.[10] Similar findings were seen in a study where 43% of health staff had moderate and 45% had severe depression, and an increased level of anxiety among study participants.[11] Surveys from China report local resident doctors suffering from mild to moderate impact of COVID-19 on their mental health.[12,13]

More than half of our respondents reported feeling horrified by this pandemic. In our study, we evaluated the fear of COVID-19 with a previously validated instrument. The scale of this test was investigated for its reliability and validity in Italian populations and they performed confirmatory factor analysis. It was found to be valid and reliable to evaluate the fear from COVID-19.[14] Critical medical condition of patients in ICU is an important factor. Moreover, a higher mortality rate has been reported in COVID-19 patients while receiving mechanical ventilation supporting ICU. Such a scenario could possibly contribute in causing a certain level of fear and depression among the ICU doctors and nurses as compared to other staff in the hospital. The height of fear is that they might transmit this distress onto their families. For this reason, many HCWs prefer to isolate themselves from their families.[15]

Study conducted to compare the level of fear and depression among medical staff and hospital administration reported a higher level of depression in HCWs dealing directly with the COVID-19 patients. Similarly, the medical staff also suffered from sleep deprivation and eventual insomnia.[16] Our study revealed similar results i.e., higher tendencies of sleep disturbances, particularly among the nurses. As majority of the patients in critical care require vigorous monitoring and advanced life support such as ventilator support., the nurses and other auxiliary staff experience long term fatigue from the workload and a great deal of anguish at the time of deaths of the patients. Another study conducted with the ICU nurses documented 45% with difficulty in sleeping, 59% had a loss of appetite and 28% felt nervousness.[16] Generally, nurses have been found to be more nervous than doctors in an epidemic situation.[17] Our study revealed 41% suffered from severe depression whereas, mild depression was observed in 14% of the nurses. Nevertheless, doctors too have exhibited symptoms of mild to moderate depression[18], which is similar to what we found in our study. In a survey on the gender impact of COVID-19, 68% of health professionals affected mentally, comprised of women with a mean age was 26-40 years.[19] Another research in Italy found women at higher risk of anxiety and depression during public health emergencies.[20] These findings too are in accordance with our study where 69% of females were

found to suffer from fear and depression due to COVID-19. Studies demonstrate that younger HCWs are more likely to be depressed because of their lesser exposure and experience of working in such disease outbreaks of this scale. Association of age and depression shows that the younger medical staff having higher depression scores. Majority of the medical staff were less than 30 years of age.[21] In contrast to this, our study shows more depression in older age group. Overall, in our study, the majority of respondents express that they feel anxious and uncomfortable thinking of ongoing pandemic which is an alarming situation that corroborates with studies from China where 62.5% of the respondents stated feeling anxious about this pandemic.[22,23] Similarly, our findings also sync with the large scale systematic review and meta-analysis conducted in Iran.[24]

In our study, the cause of anxiety was found to be associated with the unpredictability of this disease and fear of losing their lives, stated by most of the HCWs. Depression was reported to be associated with watching the news and social media. These findings were also found to be consistent with other studies which state that media is responsible for circulating reports that are emotionally disturbing, therefore, COVID related news needs to be aired with lot of prudence.[25,26]

The rising trend of this pandemic signifies that it is imperative to control its psychological impact on doctors and to limit their anxiety and depression. It is important for every hospital to help in dealing with post-traumatic stress and reduce the risk of depression of the HCWs through proactive mentoring and supervisory structures.[27] Therefore, a culture paying more attention to the mental health of HCWs needs to be promoted in the future within the hospitals. The findings in our study have furnished an ample amount of local evidence for the implementation of psychological intervention for the HCWs in Pakistan with an immediate effect.

Conclusion

COVID-19 continues to surge despite the implementation of SOPs and the introduction of vaccination. Amidst this, there is little attention paid to the psychological impact of this disease on HCWs, and moreover, there is a lack of research in this regard, especially in Pakistan. Our study revealed the psychological conditions including fear and depression, grossly affecting HCWs during the pandemic, and that ICU health care workers are at a higher risk of suffering from mental health disorders, while at work. It would be imperative to introduce the prevention and response strategies for the HCWs by providing training in crisis and mental health management. The current situation highlights the need and importance of such training which will inculcate better resilience and improved preparedness among HCWs in a situation of an outbreak or a pandemic in future.

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