ORIGINAL ARTICLE

MENTAL HEALTH IMPACT OF THE COVID-19 PANDEMIC ON FRONTLINE HEALTHCARE WORKERS AT A TERTIARY CARE HOSPITAL IN RAWALPINDI, PAKISTAN

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ABSTRACT

OBJECTIVE
To explore the mental health impact of COVID-19 pandemic on the front-line health care workers at a tertiary care hospital in Rawalpindi, Pakistan.

STUDY DESIGN
Cross sectional research

PLACE AND DURATION OF THE STUDY
This study was conducted from 6th May to 6th June 2020 at Fauji Foundation Hospital, Rawalpindi.

SUBJECTS AND METHODS
Through purposive sampling, all frontline healthcare workers involved in the care of positive or high suspicion cases of COVID-19 at Triage clinics and Corona wards were recruited. Depression Anxiety and Stress Scale (DASS) and Impact of events scale-revised (IES-R) were administered; factors associated with significant mental health impact were analyzed using SPSS 20.0

RESULTS
A total of 94 frontline healthcare workers were made part of the sample. 18 (19.1%) reported significant depression while 32 (34%) had significant anxiety. Female gender and greater degree of contact with PCR positive COVID-19 cases were significantly related with higher depression and anxiety. Significant stress was reported by 33 (35.1%); there was a significant association of stress with being female, single, a nurse or paramedic and a greater degree of contact with PCR positive COVID-19 cases. 38 (40.4%) participants showed presence of significant trauma; healthcare workers at corona isolation unit or ICU were amongst the most affected.

CONCLUSION
Depression, anxiety, stress and trauma were seen among the front liners fighting the COVID-19 pandemic. Special attention should be paid to the mental health needs of this vulnerable population, particularly females and those having a greater contact with PCR positive cases in high-risk settings.

KEY WORDS
Corona Virus; Depression, Anxiety, Stress, Trauma

INTRODUCTION

The World Health Organization declared COVID-19 as a pandemic in March 2020, and this global health crisis has affected millions of people worldwide.[1] Given the absence of effective treatments and adequate safety resources, the healthcare community has been overwhelmed in its efforts to cater to patient needs effectively.[2] In these unprecedented times, the medical workers particularly at the frontlines of the pandemic are vulnerable to psychological trauma rooted in the new demands of their work; additionally the prevailing sense of insecurity and safety concerns for not only themselves, but also their loved ones can be a significant source of stress.[3,4] Understanding the mental health impact of the COVID-19 outbreak among health care workers is crucial so that the stakeholders can prioritize policies to address mental well-being of the front liners in addition to ensuring their physical safety.[5]

Current literature related to the pandemic has highlighted the high stress levels in healthcare workers particularly those working at the frontline with COVID-19. Rajkumar in his review suggested that preliminary evidence points towards anxiety and depression along with self-reported stress as common psychological reactions to the COVID-19 pandemic.[6] In a comprehensive paper, Asmundson et al. concluded that the novel Corona virus may lead to a variety of mental health problems among the health care professionals as well as the patients themselves.[7] Banerjee highlighted the role of psychiatrists in the current pandemic, stating that this viral pandemic may have multiple long term and short term mental health effects and it is up to the community of mental health experts to rise to this challenge.[8] Chen et al. also called attention to the mental health needs of medical workers during the pandemic, and suggested customized interventions for general stress management to help improve their productivity.[9]

In the local literature, a recent publication by Rana et al. highlighted the need to understand and address the impact of the current health crisis on the mental health of healthcare professionals dealing with suspected or confirmed cases of COVID-19, particularly in a low and middle income country like Pakistan.[10] The initial focus of most researchers has understandably been on the physical and mental health of the patients affected with COVID-19, and only limited work has been done to understand mental health aspects of the healthcare professionals working at frontline during this pandemic. Thus our study was planned to assess the levels of depressive, anxiety and stress and trauma related symptoms in frontline healthcare workers at Fauji Foundation Hospital Rawalpindi, and explore their association with socio-demographic profile and nature of duty including the degree of contact with positive cases. This would identify the mental health needs of the vulnerable workforce, and recommendations can be made to provide them with timely appropriate support.

SUBJECTS AND METHODS

Participants

This Cross-sectional study was carried out at Fauji Foundation Hospital, Rawalpindi from 6th May to 6th June 2020. Purposive sampling was used to recruit all the frontline healthcare workers working at the Hospital during the study period. Sample size was calculated by using the WHO sample size calculator by using the population prevalence proportion of 6.2%.[11] For our study, we included all doctors, nurses and paramedical staff performing duties that involved dealing directly with suspected or known cases of COVID-19 at Triage clinics, Emergency room, Corona isolation wards and Corona ICU as frontline healthcare workers.[12] Frontline workers with current or past psychiatric illness or use of psychotropic medications were excluded from the study.

Instruments

Depression Anxiety and Stress Scale (DASS)

To measure the symptoms of depression, anxiety and stress DASS was used. It is reliable and valid scale. Cutoff scores for clinical significance were 9 for Depression, 7 for Anxiety and 14 for Stress [5,13].

Impact of events scale-revised (IES-R)

To assess level of trauma, Impact of events scale-revised was used. This scale has satisfactory measures of reliability and validity. A score of greater than 24 on IES-R was taken as significant trauma.[14,15]

Procedure

Ethical approval was obtained from the Institutional Ethical Review board at the study venue (Ref no. FF/FUMC/Psy-2/2020 dated 6th May 2020) All study participants were informed about the study and its objectives to assess the mental health impact of working at the frontlines of healthcare during the COVID-19 pandemic. After written informed consent was taken from each participant, each individual was assigned a serial reference number (written on their set of questionnaire booklet) and we proceeded to handle all subsequent data in total anonymity and confidentiality.

The relevant socio demographic details of healthcare workers participating in the research were noted in a specially designed data collection form. The variables included the age, gender, nature of service (medical doctor/ nursing or paramedical staff) and degree of contact with high suspicion cases (at triage clinic and Emergency room) or PCR positive cases (at Corona isolation ward and ICU). The participants were then asked to fill in the questionnaire booklet and return it to the researcher.

The data was entered and analyzed using SPSS version 20.0. The variables included age, gender, nature of service (medical doctors/ Nursing and Paramedical staff), place of duty (Triage clinic and Emergency room/ Corona Isolation ward and Corona ICU), along with scores on Depression Anxiety and Stress Scale (DASS) and Impact of events scale-revised (IES-R). Descriptive statistics (mean, standard deviation, and percentages) were used for summarizing the study variables. Between-group variance in categorical correlates was determined using chi-square test. A p value of <0.05 was considered as significant.

RESULTS

A total of 94 frontline healthcare workers were made part of the sample. Out of all, 41 (43.6%) were male while 53 (56.4%) were female, ranging from 22 to 60 years of age (Mean age 30.47± 9.39). There were 54 (57.4%) doctors while 40 (42.6%) nursing or paramedical staff were included in the study. Frontline workers deputed in Triage clinics and emergency room to deal with suspected cases were 45 (47.9%), and those managing known positive COVID-19 cases added up to 49 (52.1%).

Figure 1 showed the percentage distribution of depression, anxiety, stress and trauma scores of participants. We found that 18 (19.1%) had significant symptoms of depression, 32 (34%) reported significant symptoms of anxiety, and stress levels were significant in 33 (35.1%) of frontline healthcare workers.

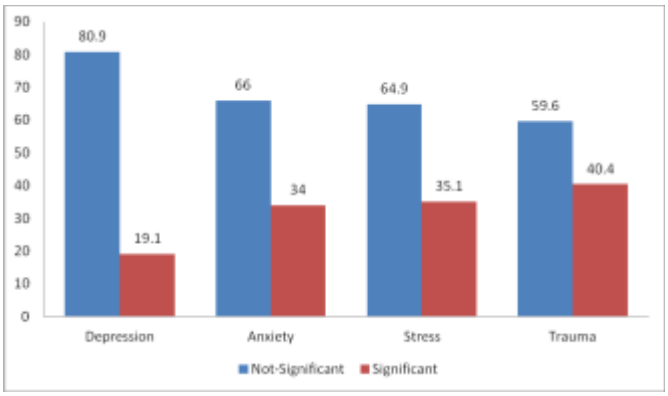

Figure 1
Percentage Distribution of Depression, Anxiety, Stress and Trauma Scores

As reported in Table 1 and 2, female gender and greater degree of contact with PCR positive COVID-19 cases were significantly related with higher scores on depression and anxiety in sample population. Higher levels of stress among the frontline healthcare staff was found to be significantly associated with being single, part of nursing or paramedical staff, and having greater degree of contact with known PCR positive cases (see table 3).

Table 1
DEPRESSION Score on DASS as per socio demographic variables

Variables	No Significant Depression N (%) **76(80.9%)**	Significant Depression N (%) **18(19.1%)**	Total N (%) **94(100%)**	χ 2	p-value
Gender					
Male	37(39.4%)	4(4.3%)	41(43.6%)	4.144	**0.042**
Female	39(41.5%)	14 (14.9%)	53(56.4%)		
Marital status					
Single	37(39.4%)	11(11.7%)	48(51.1%)	0.899	0.343
Married	39(41.5%)	7(7.4%)	46(48.9 %)		
Nature of duty					
Doctor	46(48.9%)	8(8.5%)	54(57.4%)	1.540	0.215
Nursing and paramedical staff	30(31.9%)	10(10.6%)	40(42.6%)		
Degree of contact with COVID-19 cases					
Cases having high clinical suspicion (Triage clinics and Emergency room)	42(44.7%)	3(3.2%)	45(47.9%)	8.688	**0.003**
PCR positive cases (Corona Isolation and ICU)	34(36.2%)	15(16%)	49(52.1%)		

Table 2
ANXIETY Score on DASS as per socio demographic variables

Variables	No Significant Anxiety N (%) **62(66%)**	Significant Anxiety N (%) **32(34%)**	Total N (%) **94(100%)**	χ 2	p-value
Gender					
Male	33(35.1%)	8(8.5%)	41(43.6%)	6.838	**0.009**
Female	29(30.9%)	24(14.9%)	53(56.4%)		
Marital status					
Single	28(29.8%)	20(21.3%)	48(51.1%)	2.539	0.111
Married	34(36.2%)	12(12.8%)	46(48.9%)		
Nature of duty					
Doctor	36(38.3%)	18(19.1%)	54(57.4%)	0.028	0.866
Nursing and paramedical staff	26(27.7%)	14(14.9%)	40(42.6%)		
Degree of contact with COVID-19 cases					
Cases with high clinical suspicion (Triage clinics and Emergency room)	36(38.3%)	9(9.6%)	45(47.9%)	7.581	**0.006**
PCR positive cases (Corona Isolation and ICU)	26(27.7%)	23(24.5%)	49(52.1%)		

Table 3
STRESS score on DASS as per socio demographic variables

Variables	No Significant Stress N (%) 61(64.9%)	Significant Stress N (%) 33(35.1%)	Total N (%) 94(100%)	$\chi 2$	p-value
Gender					
Male	31(33%)	10(10.6%)	41(43.6%)	3.665	**0.056**
Female	30(31.9%)	23(24.5%)	53(56.4%)		
Marital status					
Single	26(27.7%)	22(23.4%)	48(51.1%)	4.954	**0.026**
Married	35(37.2%)	11(11.7%)	46(48.9%)		
Nature of duty					
Doctor	41(43.6%)	13(13.8%)	54(57.4%)	6.780	**0.009**
Nursing and paramedical staff	20(21.3%)	20(21.3%)	40(42.6%)		
Degree of contact with COVID-19 cases				4.308	**0.038**
Cases with high clinical suspicion (Triage clinic and Emergency room)	34(36.2%)	11(11.7%)	45(47.9%)		
PCR positive cases (Corona Isolation and ICU)	27(28.7%)	22(23.4%)	49(52.1%)		

Table 4 showed that 38 (40.4%)participants had significant trauma; working directly with known positive cases in Corona isolation ward or ICU was associated with higher levels of trauma as compared to other frontline health staff dealing with suspected cases at Triage clinics and Emergency room.

Table 4
Factors associated with Trauma score on Impact of Events Scale-Revised (IES-R) on study participants

Variables	No Significant Trauma N (%) 56(59.6%)	Significant Trauma N (%) 38(40.4%)	Total N (%) 94(100%)	$\chi 2$	p-value
Gender					
Male	24(25.5%)	17(18.1%)	41(43.6%)	0.033	0.857
Female	32(34%)	21 (22.3%)	53(56.4%)		
Marital status					
Single	31(33%)	17(18.1%)	48(51.1%)	1.022	0.312
Married	32(34%)	21(22.3%)	46(48.9%)		
Nature of duty					
Doctor	36(38.3%)	18(19.1%)	54(57.4%)	2.650	0.104
Nursing and paramedical staff	20(21.3%)	20(21.3%)	40(42.6%)		
Degree of contact with COVID-19 cases					
Cases having high clinical suspicion (Triage clinics and Emergency room)	32(34%)	13(13.8%)	45(47.9%)	4.771	**0.029**
PCR positive cases (Corona Isolation and ICU)	24(25.5%)	25(26.6%)	49(52.1%)		

DISCUSSION

Health care professionals have an enormous task to perform during this pandemic. The situation is made worse in developing countries with limited resources where the demand to see massive numbers of infected or highly suspect cases is present, and the staff may not be fully equipped with the essential resources necessary to fight under these unusual circumstances [10,16] Multiple factors may have an impact on mental health of the frontline workers and may compromise their ability to fight against COVID-19 most efficiently. Our focus was to explore the mental health impact of the COVID-19 pandemic on the front-line health care workers in a tertiary care hospital in Rawalpindi, and our research findings highlight significant levels of Depression, Anxiety, Stress and Trauma in considerable number of frontline healthcare workers included in our study.

A similar study assessing healthcare professionals at a tertiary care hospital in Lahore reported higher levels of psychological disturbances; 62.3% were found to have features of depression, 63.7% had significant anxiety and high stress was reported in 55.3% of the staff[17]. These findings may be explained on account of their study venue being a government facility that catered to a larger number of COVID-19 patients, thus adding to the physical and psychological burden on their doctors and nurses.

We found female gender and higher degree of contact with positive cases to be associated with higher levels of psychological morbidity. A local study conducted to evaluate knowledge and practices of medical professionals along with their stress levels in response to the pandemic also found female gender to be significantly associated with higher stress levels.[18] In terms of mental health, females are already part of a vulnerable group, with higher levels of psychiatric disorders such as depression being reported as compared with general population. This vulnerability in addition to the ongoing challenges of coping with the pandemic may explain the significantly higher depression, anxiety and stress levels in the female participants in our study. Our findings are also consistent with the outcomes reported in a review article assessing the magnitude of mental health issues and associated factors among health care workers treating COVID-19 patients in China. [3] In concordance with our results, the authors shared that women and front-line health care workers directly engaged in the diagnosis, treatment, and care for patients with COVID-19 have a higher risk of developing unfavorable mental health outcomes. Similarly, Bholken et al. pointed out that age, gender, occupation, type of activities performed and proximity to COVID-19 patients were the factors related to various psychological problems among the health care professionals fighting against COVID-19.[19]

A systematic search of literature databases was conducted by Pappa et al. and the authors reported a pooled prevalence of 22·8% depression which closely matches the prevalence of significant depression (19.1%) in our study. Furthermore, similar to our findings, the authors revealed that a subgroup analysis identified female healthcare workers and nursing staff to exhibit higher rates of disturbance as compared to male medical staff.[20] We also reported nursing staff to have higher prevalence of significant stress levels as compared with doctors. This finding may be confounded because nurses are mostly female, but could be also be explained by the nature of nursing duties requiring closer contact with patients and thus higher fear of being exposed to the Novel Corona virus during patient care. The authors reported 23·2% Anxiety when results from 12 studies were pooled; this is lower than our finding of 34% participants suffering from significant anxiety. Since the majority of studies included in the review were from China, our higher numbers may be on account of additional burden on our frontline workers in terms of limited support from healthcare infrastructure available in Pakistan to meet the demands of the pandemic.

In a publication by Spoorthy et al, several socio-demographic variables like gender, profession, age, place of work, department of work were found to be associated with increased stress, anxiety, depressive symptoms, insomnia in health care workers.[21] This is consistent with our finding that gender and degree of contact with COVID-19 patients were significantly related to higher levels of depression, anxiety, stress and psychological trauma among our study participants.

Finally a longitudinal study was conducted in China over a 4 week period during the COVID-19 pandemic to assess mental well being of general population.[22] During their initial evaluation, moderate-to-severe stress, anxiety and depression were noted in 8.1%, 28.8% and 16.5%, respectively. While our results for anxiety and depression appear to be comparable, we found stress levels to be markedly higher, and 35% of our frontliners had significant stress levels. This difference may be explained as our study was on frontline healthcare workers, who may be exposed to additional psychological stress on account of their occupational experiences. The authors reported that majority of participants had above the cut-off scores (> 24) for traumatic symptoms on IES-R, similarly we found 40.4% of our sample population to have significant trauma.

LIMITATIONS AND RECOMMENDATIONS

Our study was based on self administered questionnaires; clinical interviews by psychiatrist may generate more accurate reporting of mental health of the frontline healthcare staff. Moreover, studies with larger sample size and broadening the scope to include health care workers from multiple centers may also be useful in allowing better generalization of findings.

CONCLUSION

Depression, anxiety, stress and trauma were seen among the frontline healthcare workers fighting the COVID-19 pandemic. Special attention should be paid to the mental health needs of this vulnerable population, particularly females and those having a greater contact with PCR positive cases in high-risk settings.

Conflict of interest: No

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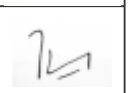
4	Dr Tahreem Waqar	Postgraduate trainee at Department of Psychiatry, Foundation University Medical College, Islamabad	Data collection, Literature review and Drafting manuscript	
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