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# Psychological Impact of COVID-19 in Health Care Workers in Early Days of COVID-19 Pandemic

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**Abstract:** Introduction: With the end of year 2019, the coronavirus disease (COVID-19) has emerged as the largest pandemic since 2003, rapidly spreading worldwide. COVID-19 was first discovered in Wuhan province in China, it is now declared as public health emergency of international concern by World Health Organization (WHO) on 30 January 2020. The evaluation of psychological impact and status of overburdened HCWs is of immense importance in regard to planning preventive strategies, dealing and coping with upcoming challenges in COVID-19 pandemic. To date, research on immediate psychological effect in HCWs working in hospitals, treating suspected or diagnosed patients with the 2019-nCoV (SARs-CoV-2) in Pakistan in early phases of COVID-19 outbreak is still deficient. We therefore, aimed to investigate the psychological status of HCWs in early phases of COVID-19 pandemic. Material and methods: This study was multicentre, cross-sectional survey conducted in multiple tertiary care hospitals performing diagnostic test, treating and managing patients with signs and symptoms of COVID -19 disease. Data was collected using a predesigned questionnaire Performa. HCWs working in all clinical departments including doctors, nursing staff, technicians and supporting staff were included in the study. HCWs not consenting for participation in study were excluded. Results: Total of 517 HCWs were included in the study of whom 267 (51.6%) were males and 250 (48.6%) were females. Mean age was 30.4 years (Standard deviation, SD: 7.2, age ranges from 19-70 years). Regarding the risk of self-infection, 193 (37.3%) HCWs were worried and 156 (30.2%) were strongly worried. Female HCWs (31.2%) were more concerned than males (29.2%). Most of HCWs were apprehensive about their family members being infected from them. 58.4% of females were strongly worried and 29.2% of females were worried. Medical violence was also concern for HCWs. 39.2% of females and 40.8% of males were worried. Most of HCWs were strongly worried about the health of their colleagues treating and managing the COVID -19 patients on the front line. Prevention strategy for COVID-19 such as social distancing and lockdown was also a concern for all HCWs. Majority of HCWs (48.4%) were hopeful that this pandemic will end within 3 months. Conclusion: We have concluded that there is strong psychological impact among HCWs with special focus on doctors and nurses regarding COVID-19 pandemic making their mental health more vulnerable. Therefore, more attention should be paid on HCWs with allocation of medical and human resources and providing incentives to efficiently manage COVID-19 outbreak.

**Keywords:** COVID-19 Pandemic, Healthcare Workers, Psychological Impact

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## 1. Introduction

With the end of year 2019, the coronavirus disease (COVID-19) has emerged as the largest pandemic since 2003, rapidly spreading worldwide [1]. COVID-19 was first discovered in Wuhan province in China with the first confirmed case in Ningbo reported on 21 January 2020 [2], it

is now declared as public health emergency of international concern by World Health Organization (WHO) on 30 January 2020 [1, 3]. With global spread in 208 countries, areas and territories, approximately 1,056,159 cases have been reported worldwide with death seen in 57,206 cases [4] and recovery in 243000 cases. [2, 5-7]. In Pakistan, there is gradual increase in number of COVID-19 patients. Up to date, 98943

patients are tested positive for COVID-19 with 2002 dead and 34355 patients recovered from disease [5]. Exponential escalation in number of cases is expected due to highly contagious nature of disease and explicit capacity of human to human transmission [8].

2019 novel coronavirus (2019-nCoV) now designated as SARS-CoV-2, responsible for current COVID-19 pandemic is a new strain positive-sense, single stranded RNA virus [9, 10]. It is known to affect the neurological, respiratory, enteric, and hepatic systems. [10]. There is wide spectrum of clinical presentation ranging from mild disease with fever, sore throat, dry cough, fatigue and diarrhoea to critical condition manifesting as respiratory failure and multiorgan dysfunction [9, 11, 12]. Higher fatality rate is usually secondary to life-threatening atypical pneumonia which is more frequently seen in patients with comorbidities which include diabetes (7.3%), respiratory disease (6.5%), cardiovascular disease (10.5%), hypertension (6%), and oncological complications (5.6%) [12]. Patients without comorbidities were reported to have lower fatality rate (0.9%) [12].

This is evident by earlier infectious pandemics comprising severe acute respiratory syndrome (SARS), middle east respiratory syndrome (MERS), 2009 novel influenza A (H1N1) [2] and on-going COVID-19 epidemic that health care workers (HCWs) especially those working in hospitals catering infected patients, are highly susceptible to psychological stress with associated mental health issues [2]. There is fear of self-infection and contagion of disease in family and colleagues with potentially fatal virus. [13]. More than 60,000 HCWs are treating patients with COVID-19 [8]. It has been reported that more than 3000 HCWs were being infected by virus in China accounting for approximately 29 percent of all hospitalized COVID-19 patients [14].

The evaluation of psychological impact and status of overburdened HCWs is of immense importance in regard to planning preventive strategies, dealing and coping with upcoming challenges in COVID-19 pandemic. To date, research on immediate psychological effect in HCWs working in hospitals, treating suspected or diagnosed patients with the 2019-nCoV (SARS-CoV-2) in Pakistan in early phases of COVID-19 outbreak is still deficient. We therefore, aimed to investigate the psychological status of HCWs in early phases of COVID-19 pandemic.

## 2. Materials and Methods

This study was multicentre, cross-sectional survey conducted in multiple tertiary care hospitals performing diagnostic test, treating and managing patients with signs and symptoms of COVID-19 disease. Convenience sampling was done. Data was collected in 11 days from 1<sup>st</sup> April 2020 to 11<sup>th</sup> April 2020 using a predesigned questionnaire Performa. Only single response to every question was permitted. HCWs working in all clinical departments including doctors, nursing staff, technicians and supporting staff were included in the study. HCWs not consenting for participation in study were excluded.

Basic demographic data including age, gender, marital status, professional status and work experience along with COVID-19 contact history and recent travel history were collected. Presence or absence of physical symptoms of COVID-19 disease in past 14 days including fever, cough, SOB, body aches, flu, and diarrhoea were also evaluated. HCW's perception of risk to COVID-19 was evaluated using questions which are (1) Are you worried about getting infected with COVID-19 yourself? (2) Are you worried about your family members getting infected with COVID-19 from you? (3) Are you worried about medical violence? (4) Are you worried about colleagues at the front line (direct contact with COVID-19 patients)? (5) Are you worried about inadequate protective measure? (6) Are you worried about the current grass roots prevention and control strategy? (Social distancing / lockdown). Risk perception of HCWs was assessed using a five-point Likert scale (5. strongly worried; 4. worried; 3. not sure; 2. not too worried; 1. not worried at all), with score points of 1 to 5 assigned, a higher score indicating a higher level of concern. Opinion about the culmination of COVID-19 pandemic was also taken. The data was analysed by using the Statistical Product and Service Solutions 22.0 (SPSS 22.0). Different groups were compared by means of chi-square tests.

## 3. Results

Total of 517 HCWs were included in the study of whom 267 (51.6%) were males and 250 (48.6%) were females. Male to female ratio was 1.06:1. Mean age was 30.4 years (Standard deviation, SD: 7.2, age ranges from 19-70 years). Of the HCWs, 272 (52.6%) were doctors, 146 (28.2%) were nurses, 57 (11.0%) were technicians and 42 (8.1%) were supporting staff. Majority of HCWs that is 332 (64.2%) have working experience of 1-5 years, 90 (17.4%) have working experience of 6-10 years and 95 (18.4%) have >10 years working experience. 103 (19.9%) HCWs have positive history of contact with COVID-19 patients. 25 (4.8%) of HCWs have history of travel in last 14 days. Physical symptoms of HCWs were also evaluated and are shown in table 1.

Regarding the risk of self-infection, 193 (37.3%) HCWs were worried and 156 (30.2%) were strongly worried. Female HCWs (31.2%) were more concerned than males (29.2%). 33.3% of nurses and 26.5% of doctors were strongly worried. p- value was significant (0.000) among different HCWs. Risk of self-infection among HCWs is presented in figure 1.

Most of HCWs were apprehensive about their family members being infected from them. p-value was significant (0.06) based on gender. 58.4% of females were strongly worried and 29.2% of females were worried. Of males, 49.8% were strongly worried and 30.3% were worried. Doctors were most worried among HCWs regarding the transmission of infection in their family members with significant p-value (0.01). Angst among HCWs about their family members being infected from them is given in figure 2.

Medical violence was also concern for HCWs due to fear of rapid rise in cases of COVID-19 patients in this pandemic thus leading to limited availability of health care facilities for those in dire need. 39.2% of females and 40.8% of males were worried. p-value was significant (0.004) among different health care professionals. Technician were most concerned among HCWs (45.6%). Figure 3 demonstrates the concern of HCWs about medical violence.

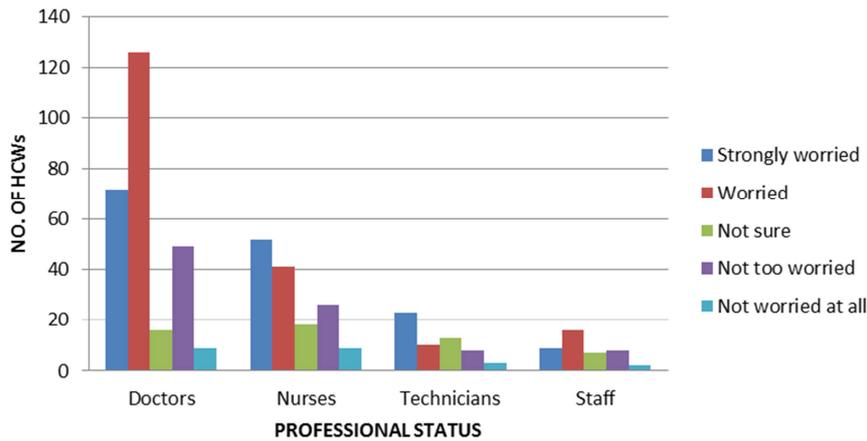
Most of HCWs were strongly worried about the health of their colleagues treating and managing the COVID-19 patients on the front line. 171 (62.9%) doctors and 82 (56.2%) nurses show high concern (p-value of 0.000). Female (63.2%)

HCWs were more anxious than males (51.3%) (p-value of 0.06). Regarding the availability of protective measures and equipment, females were more apprehensive than males (significant p-value 0.008). 189 (69.5%) doctors, 63 (43.2%) nurses, 31 (54.4%) technician and 12 (28.6%) staff were strongly worried (significant p-value 0.000). Prevention strategy for COVID-19 such as social distancing and lockdown was also a concern for all HCWs. Majority of HCWs (48.4%) were hopeful that this pandemic will end within 3 months (p-value 0.003). Figure 4 demonstrates the opinion of HCWs about end of pandemic.

*Table 1. Frequency of physical symptoms in HCWs.*

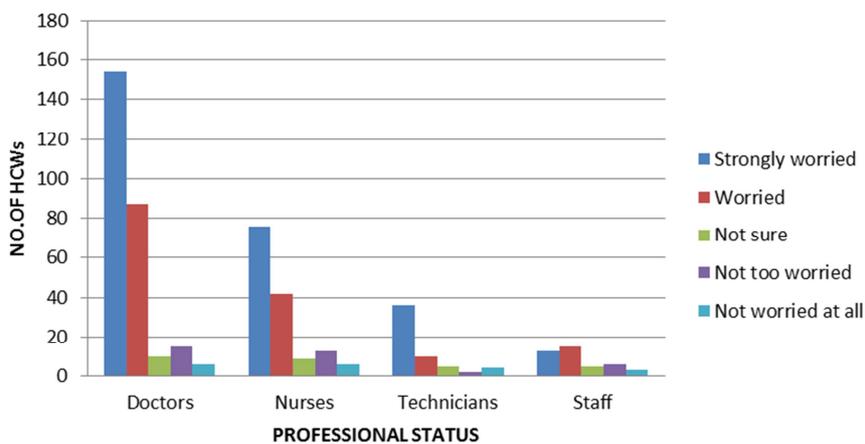
Symptoms	Frequency	Percentage	Cumulative percentage
Body ache	47	9.1	9.1
Cough	36	7.0	16.1
Fever	14	2.7	18.8
Flu	49	9.5	28.2
Shortness of breath	1	0.2	28.4
Diarrhoea	0	0.0	28.4
None	370	71.6	100.0
Total	517	100.0	100.0

**RISK OF SELF INFECTION IN HCWS**



*Figure 1. Concern about risk of self-infection in HCWs.*

**CONCERN AMONG HCWS OF TRANSMISSION OF INFECTION TO FAMILY MEMBERS**



*Figure 2. Concern about transmission of infection in family members among HCWs.*

### CONCERN AMONG HCWs ABOUT MEDICAL VOILENCE

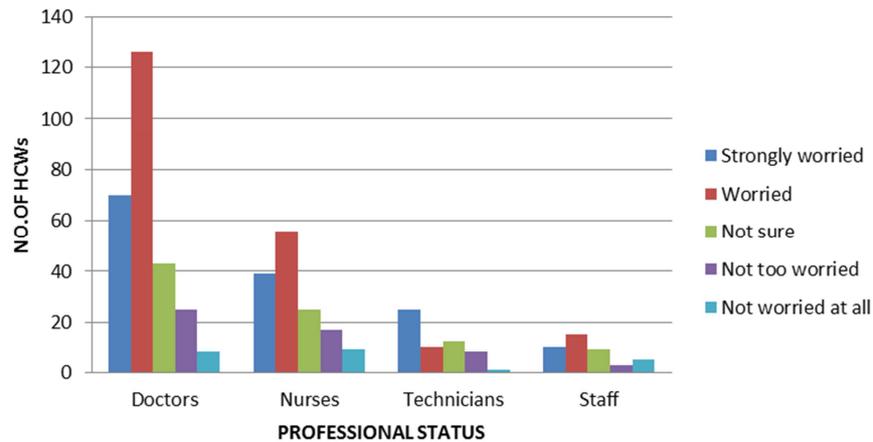


Figure 3. Concern in HCWs about medical violence.

### OPINION ABOUT END OF PANDEMIC

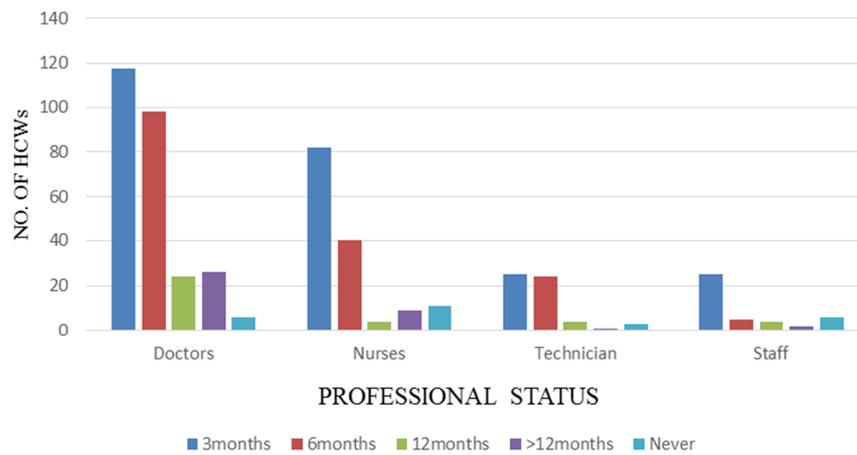


Figure 4. Opinion of HCWs about end of pandemic.

## 4. Discussion

Covid-19 pandemic has spread widely affecting thousands of people throughout the world. The pathogen responsible for this pandemic is single stranded RNA coronavirus with 86.9% of nucleotide sequence similar to bat SARS-like coronavirus genome [8, 15]. The rapid rise in number of patients in short duration of time, due to highly contagious nature of disease has led to psychological distress and panic among HCWs. Moreover, limited medical health care facilities, shortage of personal protective equipment and lack of training have aggravated the distress in HCWs.

The results of this study show high concern in HCWs about self-infection. Doctors and nurses were most worried. These results are due to the fact that they have prolonged contact time with the infected patients while providing care for them. Moreover, ambiguous pattern of presentation of disease along with limited sensitivity of PCR test and false negative results further complicates the identification of the infected patients and asymptomatic carriers from uninfected patients. Furthermore, rapid rise in number of cases with

lack of proper training and limited medical supplies with shortage of personal protective equipment further contributes to increase distress. Around 12 casualties of doctors due to Covid-19 infection have been reported to date in Pakistan which further aggravates the anxiety among HCWs. Previous studies by Ying Y [2] and Zhu Z et al. [14] have also shown extreme psychological response among HCWs in COVID-19 pandemic. Highly contagious nature of disease and rapid increase in infection among HCWs has also contributed to increase in concern about infection to their family members.

During the current pandemic, HCWs also show strong concern about medical violence. Few incidents of medical violence on HCWs have been reported so far in Pakistan. In our opinion, this has occurred due to limited medical care facilities and underdeveloped health care system in our country which has contributed to deficient medical care and unavailability of medical services to all those in need. In addition the lack of expertise in managing the critically ill patients due to COVID-19 has also contributed to increase in mortality thus further aggravating the anger in families of

infected patients. Lack of knowledge about the course and presentation of disease in general population has amplified the medical violence on HCWs. However despite all these hindrances, frontline HCWs are showing professional heroism while taking care of Covid-19 patients. We think that all available resources should be utilized to educate and increase awareness in general population about the disease and its course which may result in reduction in violent incidents. Moreover there is need to further develop health care system and expand medical facilities along with professional critical care training to attain expertise so that critically ill patients can be efficiently catered.

Initial preventive measures such as social distancing and lockdown taken by health administration has resulted in slow rise in cases of COVID-19 in beginning however, relaxation in preventive measures now contributes to rapid increase in cases of COVID-19. We think these measures should be continued to limit the spread of disease and reduced mortality rate.

The limitations of this study is that we conducted this study in early phase of COVID-19 outbreak, therefore we were unable to conduct face to face interview with HCWs. More over our data was based on convenience sampling which has resulted in non-uniformity in distribution of different HCWs, hence lacking true representation of technician and staff groups.

## 5. Conclusion

We have concluded that there is strong psychological impact among HCWs with special focus on doctors and nurses regarding COVID-19 pandemic making their mental health more vulnerable. Therefore, more attention should be paid on HCWs with allocation of medical and human resources and providing incentives to efficiently manage COVID-19 outbreak.

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