

Research Article

Psychosocial Effects of COVID-19 on Health Care Workers: A Cross Sectional Study from Tertiary Level Pediatric Hospital

Nabila Talat¹, Muhammad Kamran Azam², Muhammad Bilal Mirza³, Nishant Singh⁴, Usama Aziz⁵, Warda Tahir⁶, Kashif Nawaz⁷, Muhammad Rehan⁸, Asad Ameer⁹, Muhammad Saleem¹⁰, Masood Sadiq¹¹

¹Department of Pediatric Surgery, The Children's Hospital and the Institute of Child Health, Lahore; ²Department of Pediatric Surgery, The Children's Hospital and the Institute of Child Health, Lahore; ³Department of Pediatric Surgery, The Children's Hospital and the Institute of Child Health, Lahore; ⁴Department of Pediatric Surgery, The Children's Hospital and the Institute of Child Health, Lahore; ⁵Department of Pediatric Surgery, The Children's Hospital and the Institute of Child Health, Lahore; ⁶Department of Pediatric Surgery, The Children's Hospital and the Institute of Child Health, Lahore; ⁷Department of Pediatric Cardiology, The Children's Hospital and the Institute of Child Health, Lahore; ⁸Department of Pediatric Surgery, The Children's Hospital and the Institute of Child Health, Lahore; ⁹Department of Pediatric Surgery, The Children's Hospital and the Institute of Child Health, Lahore; ¹⁰Department of Pediatric Surgery, The Children's Hospital and the Institute of Child Health, Lahore; ¹¹Department of Pediatric Cardiology, The Children's Hospital and the Institute of Child Health, Lahore

Abstract

Objective: To identify the Psychosocial effects of COVID-19 pandemic on health care workers of a tertiary level pediatric hospital.

Methodology: This is a cross-sectional study done at The Children's Hospital and the Institute of Child Health, Lahore from 1st April to 15th April 2020. A questionnaire was circulated among health care workers of the hospital and responses were analyzed with SPSS V. 23.

Results: The questionnaire was filled by 989 hospital employees but 914 forms with complete were analyzed. Most participants (75%) were younger than 40 years of age. The male to female ratio was 1:1.5. There was almost equal participation of married and unmarried medical personnel (52% vs 48%). Regarding concerns about personal and family health, 544 (59.5%) were deeply concerned about their health, but the concern was far greater about their families (672, 73.5%). The fear of going home was expressed by 629 (69%) participants. Regarding employee protection using personal protective equipment (PPE), 680 (74.4%) hospital workers were dissatisfied. Wearing a protective suit and gloves were the precautions frequently cited as most bothersome (38.8%). Over 65% of workers felt anxiety while dealing with febrile patients. Over 60% of health care workers cited religion as their main source of coping with psychological impact.

Conclusions: Health care workers experience a great deal of psychological implications of the COVID-19 pandemic related to the uncertainty of the disease behavior, associated comorbidities and risk factors in the health care workers, and healthcare-related local policies.

Corresponding Author | Prof. Dr. Nabila Talat, Professor, Department of Pediatric Surgery, The Children's Hospital and the Institute of Child Health, Lahore. **Email:** nabila.talat@chich.edu.pk

Keywords | COVID-19, Psychological effects, Health care workers, Pandemic, Coronavirus.

Introduction

Human beings have been facing many global challenges especially health-related infectious diseases such as endemic Severe Acute Respiratory Syndrome coronavirus (SARS-CoV) and more recently the pandemic COVID-19.¹ Last year In China, a newly recognized β -coronavirus caused a lot of pneumonia cases in December 2019. World Health Organization (WHO) called this virus the 2019-novel coronavirus (2019-nCoV). On 30th January 2020, the COVID-19 was declared as the sixth public health emergency of global alarm and now declared as pandemic in february 2020. On 11th February 2020, WHO formally entitled the disease as coronavirus disease 2019 (COVID-19)^{2,3}

Very little has been done to know the psychological effects of such pandemic on health care workers. Due to increased contact, the healthcare community is the most anxious.⁴ During a greatly infectious SARS epidemic, more than 20% of the people who contracted SARS, were hospital staff and healthcare workers.⁵ A study in 2003, indicated that the SARS epidemic had substantial psychosocial effects on hospital workers in Toronto.⁶

The most worrying characteristic of a new communicable infection is that the exact mechanism and effects are at first unknown. This ambiguity causes a great level of psychosocial morbidity.⁷ Our aim of this study was to gain insight of the psychosocial impact of COVID-19 on the medical personals, and early identification of risk factors and management through proper counseling and psychological and social support.

Methods

It is a cross-sectional study conducted at The Children's Hospital and the Institute of Child Health, Lahore from 1st April to 15th April 2020. After ethical approval from the institute, a questionnaire (online proforma, developed in Google Form application) was distributed online among doctors, nurses, paramedical and ancillary staff working. The questionnaire included questions regarding self and family health concerns, knowledge about COVID-19, precautionary measures at the hospital level, their fears about managing COVID-19 patients, and responses of the community during this pandemic.

The questionnaire was distributed mainly through hospital WhatsApp groups. After submission, all the demographic information like age, sex, designation, and psychosocial impacts of the COVID-19 leading to a behavioral change in hospital staff were recorded. All collected data were entered and analyzed using SPSS version 23. Qualitative data were analyzed using frequencies and percentages. Quantitative data were analyzed as Mean and standard deviation. The responses among various starta of participants were compared with chi-square test. A p-value ≤ 0.05 was considered as significant

Results

The questionnaire was filled by 989 hospital employees including doctors (27.2%), nurses (28.4%), paramedics (33.8%), and ancillary staff (10.5%). Excluding 75 incomplete forms, 914 forms were analyzed. Most participants (75%) were younger than 40 years of age (age group 18-30 years (42.5%), 30-40 years (32.8%), 40-50 years (19.3%), and 50-60 years (5.5%). The male to female ratio was 1:1.5 (male 362 and female 552). There was almost equal participation of married and unmarried medical personnel (52% vs 48%). Exactly 381(41.7%) were residing in hostels, whereas 533 (58.3%) in the local community/city. About 46% of the participants were occasional or regular smokers (Table 1).

Regarding knowledge about COVID-19, 47% expressed that they knew little about COVID-19 whereas 46% showed that they have detailed knowledge. Overall, social media (34%) and scientific articles (29%) were the main sources of information about COVID-19 (Table 1). Hospital staff below 40 years stated social media and people above 40 years described scientific articles as the main source of information about COVID-19 ($p < 0.0001$).

Regarding concerns about personal and family health, 544 (59.5%) were deeply concerned about their health, but the concern was far greater about their families (672, 73.5%) (Table 1). Among the various occupations, doctors and ancillary staff were more frequently concerned about personal health ($p < 0.0001$). Fear of going home (infecting family members) was expressed by 629 (69%) participants (Table 1).

Regarding employee's protection using personal

protective equipment (PPE) and other precautionary steps taken by the hospital/government, 680 (74.4%) hospital workers were dissatisfied. Dissatisfaction was more among the younger age group (18-30 years, 81.4% $p < 0.001$) Doctors and regular smokers were found among most displeased about precautionary measures and PPE provided by the administration ($p < 0.001$) (Fig.2). Wearing protective suit and gloves were the precautions frequently cited as most bothersome (38.8%). And one-third of the participants cited that botheration with the PPE stops them its practice (Table 1).

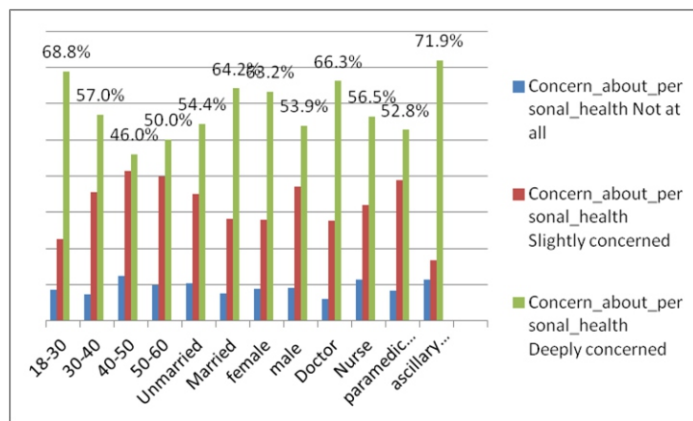


Figure 1: Showing Concerns about Personal Health by Various Strata of Health Care Workers

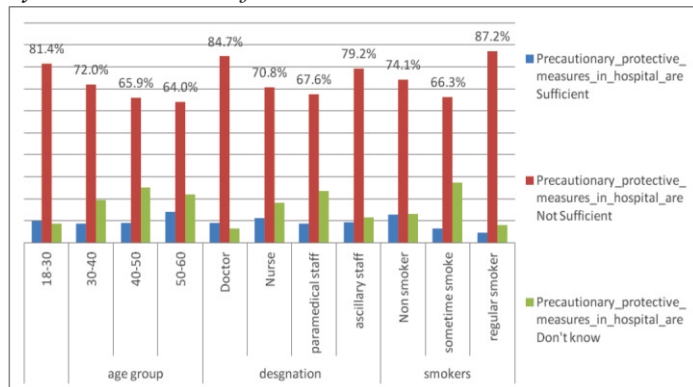


Figure 2: Level of confidence of various strata of health care workers on precautionary measures provided by hospital administration.

Among the people surveyed, 65.5% told that they have anxiety while dealing with febrile patients which were more noticeable among regular smokers and workers with chronic illness. In response to their preferred method of coping with anxiety during the COVID-19 pandemic, 562 (61%) cited religion as their main source of strength ($p < 0.001$). Only 10% were occasionally using anti-anxiety medication to cope with work-related anxiety (Table 1).

There was a sense of hopelessness in 94% of participants citing lack of public awareness (38.7%), lack of protective equipment (34.4%), and mismanagement of administration (20.8%) as its reason. In doctors, nurses, and ancillary staff, it was mostly due to lack of PPE, whereas paramedics were mostly frustrated due to lack of public awareness. Regular smokers (51.2%) identified a lack of public awareness as the biggest reason for their disappointment ($p < 0.0001$), while hospital staff with chronic illness (48.0%) was more worried about the availability of PPE ($p < 0.001$) (Figure 3).

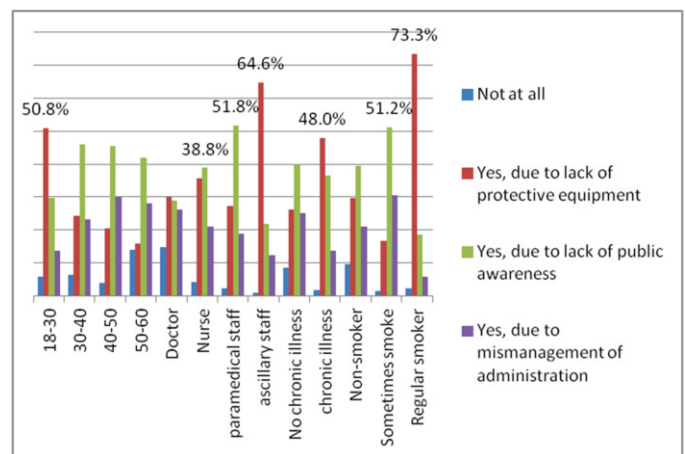


Figure 3: Showing the Feeling of Hopelessness among the Various Strata of Participants

About behavioral response of the community, 41.5% thought that people in the community are avoiding them, while 36.8% reported improved response. A sense of avoidance was more in nursing staff, but a significant percentage of paramedical staff thought that community response has improved towards them, while 40.2% of doctors stated no change in community response ($p < 0.001$) (Fig.4).

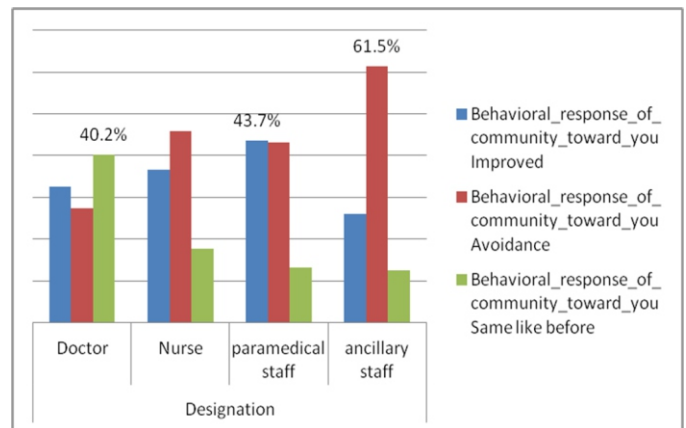


Figure 4: Community Response to Health Care Workers during this Pandemic

Table 1: Summary of all Responses by the Participants

Variables	Categories	Frequency	Percentage
Concern about personal health	Not at all	82	9.0
	Slightly concerned	288	31.5
	Deeply concerned	544	59.5
Concern about family health	Not at all	60	6.6
	Slightly concerned	182	19.9
	Deeply concerned	672	73.5
Afraid of going home in fear of infecting ur family	No	285	31.2
	Yes	629	68.8
	Working less than usual	639	69.9
	Same like before	244	26.7
Precautionary protective measures in the hospital are	Sufficient	87	9.5
	Not Sufficient	680	74.4
	Don't know	147	16.1
Most bothersome precaution	Mask	273	29.9
	Gloves and other PPE	355	38.8
	Restricted movement	286	31.3
Does botheration stops from its practice	Never	179	19.6
	Sometimes	459	50.2
	Most of the time	276	30.2
Did you had the feeling of hopelessness	Not at all	56	6.1
	Yes, due to lack of protective equipment	314	34.4
	Yes, due to lack of public awareness	354	38.7
	Yes, due to mismanagement of administration	190	20.8
Comfortable to remove your protective equipment	After leaving duty area	142	15.5
	After leaving hospital building	237	25.9
	After leaving hospital premises	308	33.7
	After reaching home/hoste	227	24.8
How much you know about COVID-19	No	62	6.8
	Little	428	46.8
	In detail	424	46.4
Main source of information	Electronic media	156	17.1
	Social media	308	33.7
Anxiety while dealing with febrile patients	No	315	34.5
	Little	599	65.5
Cope with COVID19 related anxiety	Religion	562	61.5
	Humor	252	27.6
	anti-anxiety medication	100	10.9
Behavioral response of community toward you	Improved	336	36.8
	Avoidance	379	41.5
	Same like before	199	21.8

Discussion

The SARS-CoV-2 is an enveloped non-segmented positive-sense RNA virus, causing the symptoms of fever, dry cough, shortness of breath, headache, and pneumonia.² It is a progressive disease that may result in respiratory failure owing to alveolar damage and ultimately death. Initially, it was thought to be caused by seafood; however, now it has established that the disease transmits mainly by human-to-human contact.⁸

The COVID-19 outbreak is greatly affecting people especially working in hospitals all around the world. The perception towards personal danger and the potential risk to the family have increased among the healthcare workers due to the uncertainty about this new disease. Infection control protocols and public health recommendations are updating day by day or sometimes hour by hour, thus increasing anxiety among hospital workers.⁹ In the COVID-19 pandemic, thousands of new cases are being diagnosed and hundreds of people are critical with considerable morbidity and mortality. Health care workers are not only worried about managing known cases of COVID-19 but many patients who are silent carriers and do not undergo testing, also pose a great risk of transmitting the infection to the health care workers. Though concerns about personal and family health are shown by each category of healthcare workers, ancillary staff has been significantly more concerned about personal health, whereas doctors have shown more concern about family health.

The most common mental disorder that is linked to disaster-related experiences is post-traumatic stress disorder (PTSD). But it is also found that medical personnels having comorbid depression are more prone to PTSD. Researchers have shown that medical staff that performed duties during previous outbreaks have the highest risk for post-traumatic stress disorder (PTSD) symptoms. Timely and continuous psychiatric evaluation is needed in high mortality infectious disease outbreaks.⁸ Health care workers who have worked closely with patients of SARS are found to have a high level of depressive symptoms.¹⁰ The psychological effects become more pronounced if the health care workers have preexisting ailment or risk factors that may increase the likelihood of getting the severe disease. In our study, health care workers with preexisting chronic ailments have shown more

concerns about personal or family health (though statistically insignificant), but these health care workers have felt significantly more anxiety ($p < 0.001$) than those without any chronic ailment. Similarly, the health care workers who are smokers have shown significantly deep concerns about personal and family health and felt significantly more anxiety ($p < 0.001$) while dealing with febrile patients.

A South Korean study suggests that medical staff that performed SARS related tasks are at a higher risk of PTSD even after a long time of initial stress.¹¹ Another study has shown that stigma is also a prominent issue to be considered among healthcare workers associated with infectious disease due to its transmission characteristic. In the Taiwan outbreak, about 20% of healthcare workers involved with the SARS felt dishonored and rejected from their relatives and neighbors.¹² Similarly in our study, 41.5% of the health care workers have felt avoidance by the community during this pandemic. More doctors, however, do not feel any change in the community's behavior, but nurses and ancillary staff have felt more avoided by the community. On the other hand, paramedics have felt equally improved response and avoidance by the community. Similar changes in community behavior to the healthcare workers were documented in a study of an outbreak of vancomycin-resistant enterococci in an Australian hospital.¹³

In a study from Singapore, the prevalence of anxiety during the outbreak in doctors has been more than that of nurses. Those health care workers who were single have been at higher risk. But there has been no significant difference between prevalence among those who were or were not exposed to SARS patients and those working in high-risk areas or those in the general wards.¹⁴ In our study, Ancillary staff has statistically significantly more anxiety followed by doctors. Nurses and paramedics have less anxiety. In contrast, to study from Singapore, married health care workers have felt more anxiety in our study.

The validity of these observations is limited by the nonsystematic methods of data gathering. Information is collected quickly over a period of 2 weeks in which there has been much uncertainty about the nature of the disease being observed. We did our study in the early period of the outbreak in Pakistan when the understanding of the disease is partial so we

can expect a change in the perception of the health-care workers over time with improvement in disease information, institutional guidelines, and government policies. Also, our institute is a specialized teaching hospital, and finding of this study can not be generalized to other settings. So studies from different health care centers will be vital for a better understanding of the psychosocial effect of this pandemic over time.

Conclusion

This study confirmed profound psychosocial impact in all strata of healthcare workers during COVID-19 pandemic including affects on their family and personal lifestyle. This demands for a commensurate psychosocial support for healthcare workers at institutional as well as governmental level. Incorporating religious practices in the support program of health care workers would benefit it more as over 60 percent of health care workers documented religion as a source of coping with the psychological implications of the current pandemic.

Reference

1. El Zowalaty ME, Järhult JD. From SARS to COVID-19: A previously unknown SARS-CoV-2 virus of pandemic potential infecting humans—Call for a One Health approach. *One Health*. 2020;9(3):100124.
2. Guo YR, Cao QD, Hong ZS, Tan YY, Chen SD, Jin HJ, et al. The origin, transmission and clinical therapies on coronavirus disease 2019 (COVID-19) outbreak—an update on the status. *Military Med Res*. 2020; 7(1):11.
3. Lai CC, Shih TP, Ko WC, Tang HJ, Hsueh PR. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and corona virus disease-2019 (COVID-19): the epidemic and the challenges. *Int J Antimicrob Agents*. 2020;55(2):105924.
4. Al-Rabiaah A, Temsah MH, Al-Eyadhy AA, Hasan GM, Al-Zamil F, Al-Subaie S, et al. Middle East Respiratory Syndrome-Corona Virus (MERS-CoV) associated stress among medical students at a university teaching hospital in Saudi Arabia. *J Inf Public Health*. 2020;13(4): 687-91.
5. Wu P, Fang Y, Guan Z, Fan B, Kong J, Yao Z, et al. The psychological impact of the SARS epidemic on hospital employees in China: exposure, risk perception, and altruistic acceptance of risk. *Can J Psych*. 2009;54(5):302-311.
6. Nickell LA, Crighton EJ, Tracy CS, Al-Enazy H,

- Bolaji Y, Hanjrah S, et al. Psychosocial effects of SARS on hospital staff: survey of a large tertiary care institution. *CMAJ*. 2004; 170(5):793-798.
7. Sim K, Chua HC. The psychological impact of SARS: a matter of heart and mind. *CMAJ*. 2004; 170(5): 811-812.
 8. Zhou P, Yang XL, Wang XG, Hu B, Zhang L, Zhang W, et al. A pneumonia outbreak associated with a new coronavirus of probable bat origin. *Nature*. 2020; 579(7798):270-273.
 9. Liu X, Kakade M, Fuller CJ, Fan B, Fang Y, Kong J, et al. Depression after exposure to stressful events: lessons learned from the severe acute respiratory syndrome epidemic. *Comprehensive Psych*. 2012; 53(1): 15-23.
 10. Lee SM, Kang WS, Cho AR, Kim T, Park JK. Psychological impact of the 2015 MERS outbreak on hospital workers and quarantined hemodialysis patients. *Comprehensive Psych*. 2018;87(3): 123–127.
 11. Park JS, Lee EH, Park NR, Choi YH. Mental health of nurses working at a government-designated hospital during a MERS-CoV outbreak: a cross-sectional study. *Arch Psych Nurs*. 2018;32(1):2-6.
 12. Tan BYQ, Chew NWS, Lee GKH, Jing M, Goh Y, Yeo LLL, et al. Psychological Impact of the COVID-19 Pandemic on Health Care Workers in Singapore. *Ann Intern Med* [Internet]. 2020 Apr 6 [cited 2020 Jun 21]; Available from: <https://www.acpjournals.org/doi/abs/10.7326/M20-1083>.
 13. Mitchell A, Cummins TE, Spearing NA, Adams J, Gilroy L. Nurses' experience with vancomycin-resistant enterococci (VRE). *J Clin Nurs*. 2002; 11(1): 126-33.
 14. Maunder R, Hunter J, Vincent L, Bennett J, Peladeau N, Leszcz M, et al. Immediate psychological and occupational impact of the 2003 SARS outbreak in a teaching hospital. *CMAJ*. 2003;168(10):1245-51.