THE PRICE OF BATTLING COVID-19: A CROSS-SECTIONAL SURVEY

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ABSTRACT

Objective: To find out the psychological impact of COVID-19 pandemic on health care workers dealing with the outbreak compared to those who did not deal with COVID-19 positive cases directly.

Study Design: Cross sectional study.

Place and Duration of Study: Online survey conducted in tertiary care hospitals of Pakistan, from May 2020 to June 2020.

Methodology: Total 171 participants enrolled in the online survey using Google Forms and self administered proforma comprising of perceived stress score 10 and impact of event scale revised. Data was imported using Microsoft excel and analysed by SPSS v 23 software.

Results: Out of 171 participants, 105 (73 [69.3%] males, 32 (30.4%) females were dealing with COVID-19 patients. Moderate to high stress were documented in 51 (78.5%) and 4 non-COVID fighters respectively and in 66 (62.9%) and 6 (8.6%) COVID fighters. Moreover, front line Health Care Workers exhibiting a higher incidence of Post traumatic stress disorder i.e. 25 (23.8%) with Partial PTSD and 22 (21%) matching a clinical cut-off score for diagnosis of post traumatic stress disorder and 58 (55.2%) having Severe post traumatic stress disorder.

Conclusion: Our study concluded that stress and post traumatic stress disorder incidence was seen to be significantly higher in Health Care Workers who were directly dealing with COVID-19 patients as compared to those who were not dealing directly. Moreover, Health Care Workers working in setups which provided psychosocial support reported significantly lesser incidence of perceived stress and post traumatic stress disorder.

Keywords: COVID-19 pandemic, Health care workers, Perceived stress, Post traumatic stress disorder (PTSD), Psychological impact.

INTRODUCTION

The world has seen some major viral outbreaks in the last few decades. The most recent of them is COVID-19 that has rapidly transformed from a local outbreak into a global pandemic. It originated in Wuhan (mainland China), when in December 2019 multiple unexplained cases of pneumonia were reported to local health care centers, thus, prompting suspicions of an outbreak. By 7th January 2020, the Chinese Center for Disease Control and Prevention (CCDC) had isolated the causative organism, a 'Novel Corona Virus'. It was named as 'Corona Virus-19' by World Health Organization (WHO) and subsequently on 30th January 2020 a global emergency was issued[1]. Since the start of 21st Century alone outbreaks such as Influenza, Ebola, Severe Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS) have forced Health Care Workers (HCWs) to be at the fore front of such health emergencies across the globe. As of today, there is no specific cure to COVID-19, thus, Health Care Workers find themselves battling against an outbreak that so far seems to have no end. In order to limit the spread of disease, social distancing and measures such as lockdowns and quarantine are being enforced[2].

Being at the fore front of dealing with such global health emergencies have put Health Care Workers (HCWs) under great mental, physical and emotional stress. The recent COVID-19

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pandemic has overwhelmed the health care systems around the world in an unprecedented manner. Astounding work hours, losing fellow colleagues to the disease and the fear of unknown, all coupled together have greatly increased the psychological impact on health care workers. Evidence of severe stress in HCWs during past infectious disease outbreaks exists[3-4]. The psychological impact of such disease outbreaks on health care workers have been studied and documented in the past during Ebola, Middle Eastern Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS) outbreaks. Majority of health care workers dealing with patients of such viral outbreaks were reported to have significant psychological trauma in the form of Post traumatic stress disorder (PTSD) in a study conducted in China during the SARS outbreak. Moreover, it's been seen that staff directly in contact with such patients shows a higher prevalence of psychological symptoms as compared to those not directly in contact[5]. Long term psychological impact on health care staff is also evident from a study conducted in Toronto (Canada). HCWs were also seen to carry PTSD like symptoms even years after the outbreak who were directly involved in treating SARS patients in comparison to those who did not work in SARS dealing facilities and showed significantly lower levels of PTSS[6]. The recent COVID-19 outbreak has shown an acute increase in symptoms of PTSD, depression and anxiety in health care workers. Surprisingly, the prevalence was lower than what was seen during previous SARS virus outbreak[7].

Pakistan, a third world country, with meagre health care resources remained largely unaffected by major infectious disease outbreaks of the century such as Ebola, SARS, MERS etc. COVID-19, however, has posed a serious challenge to the country's fragile health system[8]. In Pakistan, to date (15 June 2020), health care workers are the most effected subset of the COVID-19 victims with 3,196 confirmed cases reported amongst them and reportedly 48 deaths so far[9]. Increasing numbers of effected health care workers added to the physical and psychological burden on otherwise healthy staff, performing duties in extra shifts amid the pandemic. There is practically negligible data present on prevalence of PTSD and psychological symptoms in HCWs secondary to COVID-19 outbreak in Pakistan. Thus, this study was conducted with the aim to find out the psychological impact of COVID-19 pandemic on health care workers dealing with the outbreak compared to those who did not deal with COVID-19 positive cases directly.

METHODOLOGY

This study was a comparative cross-sectional survey which was conducted from May 2020 to June 2020, on Health Care Workers (HCWs) working in Tertiary Care Facilities across Pakistan. All HCWs (including doctors, para-medics and registered nurses) directly dealing with COVID-19 patients and those not directly dealing with such patients were included in the study while those having a chronic disease, terminal illness or a psychiatric disease were excluded from the study. Non-probability convenient sampling was done and all participants were included in the study. The study enrolled a total of 171 individuals actively working in tertiary care hospitals at the time of the study by universal sampling method and using non probability convenient sampling technique. We conducted this study online due to prevalent condition of pandemic. A pre-validated self administered questionnaire was provided to HCWs via internet using Google Forms and WhatsApp. A brief description explaining the rationale of the study was circulated to enroll the participants along with the link to the online questionnaire. Written informed consent was taken from the participants as an opening statement of the questionnaire. The 'Impact of Event Scale Revised' (IES-R)[10], and 'Perceived Stress Scale 10' (PSS 10) questionnaires[11], were used as part of the Google Forms to check prevalence of PTSD and perceived stress respectively in HCWs. The complete questionnaire included demographic details like age, gender, location of duty, smoking, socioeconomic & marital status, numbers of children. The questionnaire included

additional details like designation at the hospital, number of years of service, duty performed at the

Table-I: Demographic details and answers to demographic details are given for both groups along with frequencies and percentages.

		Non-COVID-19 dealing Health Care Workers (n=66)	Frontline COVID-19 Fighters (n=105)
Gender	Male	32 (48.4%)	32 (30.4%)
	Female	34 (51.5%)	73 (69.3%)
Marital Status	Married	15 (22.7%)	46 (43.7%)
	Unmarried	50 (75.7%)	59 (56%)
	Divorced	1 (1.5%)	-
Smoking Status	Smoker	5 (7.5%)	19 (18%)
	Non Smoker	61 (92.4%)	86 (81.7%)
Co-Morbids	Asthma	2 (3.1%)	2 (1.8%)
	HTN	2 (3.1%)	-
	DM	2 (3.1%)	-
	IHD	3 (4.6%)	1 (0.9%)
	Others	1 (1.5%)	2 (1.9%)
	No comorbid	56 (85%)	100 (95%)
Province of Employment	AJK	2 (3.1%)	9 (8.5%)
	Balochistan	2 (3.1%)	9 (8.5%)
	Gilgit Baltistan	-	7 (6.6%)
	Khyber PakhtonKhwa	18 (27.2%)	22 (20%)
	Punjab	41 (62.1%)	56 (53.2%)
	Sindh	3 (4.5%)	2 (1.9%)
Number of Children	None	57 (86.1%)	74 (69.3%)
	1	3 (4.5%)	10 (9.5%)
	2	4 (6.1%)	6 (5.7%)
	3	1 (1.5%)	12 (11.4%)
	4	-	2 (1.9%)
	5 or more	1 (1.5%)	1 (.9%)
Designation at hospital	Consultant	3 (4.5%)	10 (9.5%)
	Demonstrator	1 (1.5%)	2 (1.9%)
	Lecturer	5 (7.6%)	-
	Medical/Dental Officer	48 (72.4%)	53 (50.3%)
	Nurse	-	26 (24.7%)
	Resident	9 (13.5%)	14 (13.3%)
Socioeconomic Status	Lower Class	-	2 (1.9%)
	Lower Middle class	10 (15.1%)	35 (33.2%)
	Upper Middle Class	54 (81.5%)	66 (62.7%)
	Upper Class	2 (3.1%)	2 (1.9%)
Number of earning hands in family	1	12 (18.1%)	10 (9.5%)
	2	21 (31.7%)	49 (46.5%)
	3	24 (36.2%)	25 (23.7%)
	4 or more	9 (13.5%)	21 (19.9%)
Are parents and extended family members financially dependent upon you?	No	48 (72.4%)	66 (62.7%)
	Yes	18 (27.1%)	39 (37%)
Is there any family member who is critically ill?	No	45 (67.9%)	51 (48.4%)
	Yes	21 (31.7%)	44 (41.8%)
Is any member of your family a COVID-19 patient?	No	61 (92.1%)	100 (95%)
	Yes	5 (7.5%)	5 (4.7%)
Is there a confirmed case of COVID-19 in your neighborhood?	No	50 (75.5%)	71 (67.4%)
	Yes	16 (24.1%)	34 (32.3%)
Years of service as health care worker	1 year	14 (21.1%)	1 (0.9%)
	1 to 2 years	27 (40.7%)	50 (27.5%)
	2 to 4 years	13 (19.6%)	17 (16.1%)
	4 to 6 years	5 (7.5%)	15 (14.2%)
	6 to 8 years	3 (4.5%)	3 (2.8%)
	8 to 10 years	1 (1.5%)	4 (3.8%)
	10 years and above	3 (4.5%)	15 (14.2%)
Does your hospital provide any type of support to the psychosocial/psychological support to the health care workers?	No	50 (75.5%)	82 (77.9%)
	Yes	16 (24.1%)	23 (21.8%)

hospital, number of shifts per week, duration of duty performed in COVID facility, history of close family member/neighbor being effected by COVID-19 and history of any chronic medical condition. Perceived stress was classified on the basis of PSS 10 score and classified in three groups; Mild (total score: 0 to 13), moderate (total score: 14 to 26) and high stress (total score: 27 or above). PTSD was classified into 4 groups; no PTSD (total score: 0-23), partial (total score: 24 to 32), clinical PTSD (total score: 33 to 36) and severe symptoms (total score: 37 or above). The study protocols were approved by Ethics Review Board of Combined Military Hospital Quetta, Baluchistan (IRB No/028). Data were recorded on Microsoft excel sheet 360 with the help of import option from the Google Forms and later exported for analysis using IBM Statistical Package for the Social Sciences version 23 (SPSS-23) software. Descriptive analysis and cross-tabulation were run for the quantitative variables, chi square test and Phi Cramer V was applied on cross tabulation for nominal variables. The *p*-value ≤0.05 was considered statistically signi-ficant.

RESULTS

Age of the participants ranges from 20 to 76 years with mean age of 28.5 ± 8.2 years. Out of total 171 participants, 105 Health Care Workers were directly dealing with COVID-19 patients while 66, 34 (51.3%) males, 32 (48.3%) females were not dealing positive or suspected cases of COVID-19. Demographic details and answers to demographic details are given for both groups in table-I along with frequencies and percentages. The PSS 10 score was calculated in both groups and classified as mild, moderate and high perceived stress and there frequencies in COVID related and non related HCWs is shown in table-II. Correlation between Perceived stress with socio-economic status, number of earning hands in family was statistically insignificant, however presence of comorbid conditions and increased frequency of perceived stress was found statistically significant in both groups. Correlation of psychosocial support provided by the hospital with perceived stress levels is shown in table-III. The IES-R score was calculated in both groups and classified as No PTSD, mild, moderate and severe PTSD and there frequencies in both groups is shown in table-IV. Correlation of Psychosocial support provided by the hospital with perceived stress levels is shown in table-III. Correlation between PTSD with comorbid conditions, socioeconomic status, number of earning hands in family, and with history of a COVID-19 infected extended family members was statistically insignificant in both groups.

DISCUSSION

Stress and PTSD in HCWs as a result of emerging viral infection's outbreaks have been studied well across the globe. In Pakistan, however, the literature on psychological impact secondary to emerging infections is limited. Our study is one of the foremost studies to specifically analyze the impact of COVID-19 on HCWs in Pakistan.

Our study found a significant difference between recorded levels of stress in HCWs directly dealing with Corona patients in comparison to those not dealing with such patients. PSS-10 scores were seen to be significantly different between the two groups with HCWs treating Corona patients having Low Stress in 30 (28.6%), Moderate Stress in 66 (62.9%) and High Stress in 9 (8.6%) of individuals. This finding was seen to be in contrast with a study conducted in Hong Kong amidst Severe Acute Respiratory Syndrome (SARS). It was seen that there was no significant difference in 'Perceived Stress Scores' between High and Low risk groups of HCWs during the epidemic, however, the scores were seen to be significantly higher than the general population in the area[12]. It was reported that those HCWs who worked in hospitals providing psychosocial support reported significantly lesser "Perceived Stress Scores" i.e. 15 (37.5%) with Low Stress, 21 (17.9%) with Moderate Stress and 3 (23.1%) with High Stress, as compared to those who reported having no psychosocial support at their workplaces.

A study conducted in Singapore exploring the psychological impact of COVID-19 Pandemic on HCWs used the DASS-21 questionnaire in contrast to PSS-10. The prevalence of stress recorded in the two studies was in contrast. Only 19 (6.6%) of the HCWs were seen to match the recorded in our study. It showed those HCWs directly dealing with COVID related tasks to have a lower incidence of PTSD i.e. 17 (5.7%) as compared to those not dealing with COVID tasks i.e. 19 (10.9%)[13]. However, our findings were consistent with multiple other studies that demon-

Table-II: Stress in health care workers correlated with COVID-19 and Non-COVID-19 fighter health care workers.

		Does your work place directly deal with diagnosis, isolation and management of Corona Patients or with any of the mentioned?		*p*-value
		No (n=66)	Yes (n=105)	
Stress in Health Care Workers	Low Stress (PSS Score 0-13)	10 (15.4%)	30 (28.6%)	0.026
	Moderate Stress (PSS Score 14-26)	51 (78.5%)	66 (62.9%)	
	High Stress (PSS Score 27-40)	4 (6.2%)	9 (8.6%)	

Table-IV: Post traumatic stress disorder in health care workers correlated with COVID-19 and Non COVID-19 fighter health care workers.

		Does your work place directly deal with diagnosis, isolation and management of Corona Patients or with any of the mentioned?		*p*-value
		No (n=66)	Yes (n=105)	
Post Traumatic Stress Disorder in Health Care Workers using IES R Scale	No Post Traumatic Stress Disorder (IES R Score 0-23)	22 (33.3%)	-	0.038
	Partial Post Traumatic Stress Disorder (IES R Score 24-32)	16 (24.2%)	25 (23.8%)	
	Clinical Post Traumatic Stress Disorder (IES R Score 33-36)	5 (7.6%)	22 (21%)	
	Severe Post Traumatic Stress Disorder (IES R Score ≥37)	23 (34.8%)	58 (55.2%)	

Table-V: Psychosocial support by the hospital correlated with post traumatic stress disorder among health care workers.

		Post Traumatic Stress Disorder in Health Care Workers				*p*-value
		No Post Traumatic Stress Disorder	Partial Post Traumatic Stress Disorder	Clinical Post Traumatic Stress Disorder	Severe Post Traumatic Stress Disorder	
Does Your Hospital provide any form of Psychosocial / psychological support to health care workers?	No	1 (50%)	31 (75.6%)	22 (81.5%)	78 (77.2%)	0.045
	Yes	1 (50%)	10 (24.4%)	5 (18.5%)	23 (22.8%)	

cut-off value for clinical recording of stress. Our study showed a higher percentage of stress in individuals with "Perceived Stress Scores" i.e. 15 (37.5%) with Low Stress, 21 (17.9%) with Moderate Stress and 3 (23.1%) with High Stress amongst HCWs treating COVID-19 patients directly[13].

However, the same study also used IES-R questionnaire to record prevalence of PTSD in non-medical and medical related individuals. The findings were seen to be in contrast to those strated a higher incidence of PTSD amongst frontline HCWs as compared to those not involved directly with patients of SARS, MERS and COVID-19 etc. A study conducted in Guangdong (China), reported significantly higher PTSD scores in individuals dealing with MERS related patients compared to those who were not dealing with he disease directly. The difference was seen not only in the immediate setting but a secondary survey showed a significantly higher persistent of

PTSD like symptoms in the high-risk group over time. Our study had similar finding (p<0.05) with front line HCWs exhibiting a higher incidence of PTSD on IES-R scores, i.e. 25 (23.8%) with Partial PTSD and 22 (21.0%) matching a clinical cut-off score for diagnosis of PTSD and 58 (55.2%) having severe PTSD. This was a significant difference when compared to the group of HCWs not dealing with Corona patients i.e. 22 (33.3%) with no PTSD, 16 (24.2%) with Partial PTSD, 5 (7.6%) with a cut-off value for PTSD and 23 (34.8%) with Severe PTSD[14].

Thus, majority of studies had shown similar findings to ours with front-line HCWs having a higher incidence of Stress and PTSD. The trend shown in the current pandemic is similar to the previous Pandemic of SARS[15]. Health care workers directly dealing with the pandemic and those who were at risk owing to unavailability of protective gear and individuals who themselves had comorbid conditions[16]. Previous literature and our study highlighted the importance of organizational and governmental support to reduce the psychiatric morbidity of health care workers[17-18].

CONCLUSION

Our study concluded that Stress and PTSD incidence was seen to be significantly higher in Health Care Workers who were directly dealing with COVID-19 patients as compared to those who were not dealing directly. Moreover, HCWs working in setups which provided psychosocial support reported significantly lesser incidence of perceived stress and post traumatic stress disorder. Thus, highlighting not only the psychological toll of dealing with such pandemics but also the importance of providing Psychosocial Support to HCWs.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

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