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Coronavirus Disease and its role in the Prevalence of PTSD Symptoms among Patients and Frontline Health Care Workers

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Abstract

The Coronavirus Disease (COVID-19) outbreak, which has emerged in China in December 2019, has remained an alarming issue universally in terms of its horrible features including significant loss of human lives and universal health crisis with massive and negative consequences for individuals and societies. Both previous and recent studies declared this infectious disease is highly traumatic experiences and suggesting that it has substantial effects on psychological well-being and may cause chronic psychological distress. Therefore, the current study was conducted to investigate the symptoms of post-traumatic stress disorder (PTSD) as a consequence to COVID-19 pandemic in COVID-19 recovered Patients as well as in Frontline Health Care Workers (HCWs) in District Malakand Khyber Pakhtunkhwa (KP), Pakistan. For this cross-sectional survey research 223 [n=223] participants were selected from the entire population through Cochran's sample size formula. 170 [76.2%] samples were COVID-19 recovered patients and 53 [23.8%] samples were Frontline HCWs including 15 [28.3%] Doctors, 8 [15.1%] Nurses and 30 [56.6%] Paramedics from category "A" Hospital Batkhaila. The selected samples were assessed through the Urdu version of Depression Anxiety Stress Scale (DASS-42) and PTSD Checklist for civilian by using simple random sampling technique. The results revealed significant prevalence of PTSD symptoms in COVID-19 recovered Patients as well as in Frontline HCWs, while the differences were not statistically significant between COVID-19 recovered Patients and Frontline HCWs. In conclusion, the results of the present study must be considered with regard to the way that the direction of the pestilence curve has been for time being effectively flattened in the District Malakand.

Keywords: *COVID-19 Patients, Frontline HCWs, PTSD*

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1. Introduction

In this study an attempt had been made to dig out and describe the prevalence of post-traumatic stress disorder (PTSD) Symptoms in Patients and Frontline Health Care Workers (HCWs) after facing the situations of infectious disease, formally called Coronavirus Disease (COVID-). The time when 2019 was about to take its final, China's province Hubei came under the victim of new-fangled virus (Li et al., 2020), which spread very rapidly and grabbed two hundred and six countries around the world (Zhu et al., 2020). Within first thirty days of its onset World Health organization (WHO) declared this disease as a public health emergency and properly declared it a pandemic in March 2020 (WHO, 2020; Nishiura et al., 2020).

Exposure to a severely traumatic event leads to the expression of PTSD which in an early days of mankind, traumatic events have been known to lead to disabling responses, but only in 1980 was PTSD officially included as a diagnostic category in the Diagnostic and Statistical Manual of Mental Disorders third edition (DSM-III). According to Diagnostic and Statistical Manual of Mental Disorders fifth edition (DSM-V), a person with PTSD must be exposed either directly or indirectly to a trauma that causes intrusive, avoidance and reactivity symptoms as well as alterations in cognition and mood and the symptoms must last for prior six months.

Thus, familiarity to the mortality rate of COVID-19, is perceptually terrible with the prospect of death in COVID-19 patients that may lead to a traumatizing experience and could cause maladaptive symptoms in patients with COVID-19.

Also, Frontline HCWs including Doctors, Nurses, Paramedics and other supporting staff are considered highly prone to be affected psychologically as they remain the primary people occupied in screening and treating of COVID-19 patients, painted the serious need to spotlight its impacts on the mental health of them. In line with that, the main factors responsible for that adverse effects were massive workload, insufficient protective equipment, flood of false information in the social as well as electronic streaming (Cai et al., 2020; S. M. Lee et al., 2018) the transmitted nature of the virus, death of fellow doctors and the attached social stigma all are also accounted chief predictors for PTSD symptoms.

Though, correlation between COVID-19 and PTSD is roughly debated, however PTSD symptoms are quiet active in severe acute respiratory syndrome (SARS) infected patients and HCWs. For example, In past outbreaks, after experiencing of pandemic, the prevalence of PTSD symptoms is reported from 4% to 41% in the overall population (Torales et al., 2020). For the COVID-19 outbreak, it is concluded that prevalence of PTSD symptoms was 31.8% in adolescence and teenage adults from 18 to 30 years age in the United States (US) and approximately 5% in Wuhan. (C. H. Liu et al., 2020; Sun et al., 2020). For patients and HCWs survivors at the time of severe acute respiratory syndrome (SARS) practically over 15 years prior, proposed that they were at higher risk of experiencing mental health issues during that episode (K. K. Wu et al., 2005).

A comparative writing supports the same negative impacts of COVID-19 pandemic for survivors and mental health care professionals to suffer of PTSD symptoms. Similarly, the health center of Beijing postulated considerably elevated level of PTSD symptoms in medical experts who worked in a very risky clinical chamber such as SARS unit or had parents, siblings or other relatives infected by SARS in comparisons to uninvolved in that situations(Anjum et al., 2020; P. Wu et al., 2009; Yi et al., 2020). Moreover, clinical practitioner who managed SARS patients or worked during epidemic of SARS also showed frustration, fear, anxiety and depression's symptoms (T. B. Liu et al., 2003; P. Wu et al., 2009).

Also, at the time when COVID-19 was at its peak, globally it was a leading issue to control the pandemic, deal with, care and cure of COVID -19 patients. And meanwhile, experiencing or witnessing either directly or indirectly, COVID-19 related situations made the pandemic a particular type of trauma that increases the chances for PTSD symptoms. For example, billions of people are terrified of financial loss, quarantined and social isolation and loss of normal health and even breaths. Likewise, people who personally experiencing and suffering from COVID-19 symptoms like dyspnoea, low saturation, respiratory failure, high temperature, death anxieties, and/or witnessing of other patients who struggling to defeat COVID-19, realistic or unrealistic worries about infection, segregation, and social stigma all are predicted to have direct impacts among survivors, including patients and their family members, Frontline HCWs and even among the general public.

Supporting the presumed etiologies a research in Hong Kong, demonstrated an effective correlation between the presence of SARS related worries and typical symptoms of traumatic disorder, the researchers added that HCWs who had recovered from SARS, seemed to be more frightened about dying, social and professional adjustments issues, biasness and quarantine as compared to untouched (Ho et al., 2005). Moreover, epidemiological studies have stated pretty much higher frequency of mental health issues among survivors, victimized kinships, medical practitioners, and general public for each pandemic subsequently, such as SARS, Middle East respiratory syndrome (MERS), Ebola, Flu, HIV and AIDS. The researchers studied SARS recovered patients for long lasting psychiatric morbidities and concluded that PTSD symptoms were most dominant long lasting psychological symptoms in SARS recovered patients among other psychiatric conditions, where the aggregated proportion of participants with PTSD was 47.8%, while 25.5% insistently fall in the criteria for PTSD about one and half year of post-SARS (Mak et al., 2010). Further, the total population of 116 Liberian's civilians who recovered from Ebola studied about 3 years later the outburst, estimated 76 (66%) with PTSD (Nyanfor & Xiao, 2020).

The comparative studies that concentrate on past pandemics, detailed that there is the chances of occurrence for typical psychiatric symptoms in Frontline HCWs, they are frankly prone to be more frustrated, anxious, fearful, nervous, overwhelmed and panic, as they provide service in emergency situations, working in intensive care units and infectious disease wards (Naushad et al., 2019). More reliably for greater PTSD range among HCWs is (8% to 30%) in Intensive Care Unit (ICU) (Iuliano et al., 2018; Karanikola et al., 2015; Mealer et al., 2009). Rana et al., (2021) concluded that the unexpected inversion of position from HCW to a client might fore fronted to powerlessness, disgrace, modification issues dissatisfaction and dread of segregation in the clinical employees.

Studies also show that SARS survivors hold PTSD symptoms; in Hong Kong initially Ninety-six SARS survivors were studied and were grouped into two groups including HCWs and non HCWs and found equivalent results of post-traumatic stress symptoms in both groups at the climax of the epidemic. The authors further extended their findings and tested two hundred and twenty three Chinese SARS survivors which revealed almost same conclusion of Post traumatic

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symptoms in vise versa (Wing & Leung, 2012). A review of total 23 articles by Galli et al., (2020) clamed for almost parallel results, describing that there was more chances for HCWs to espouse psychiatric symptoms however, the conclusion was somewhat opposing for Frontline HCWs. One paper here recommended that Frontline HCWs tend to be more perilous than their untouched colleague and other study's results are brimming with no critical contrast in stress as for the compartment. Additionally, the researchers stated that Frontline HCWs who endured the SARS disease, are chiefly prone for PTSD symptoms (Kwek et al., 2006). The Frontline HCWs who served in SARS and general paramedics who didn't take part in such unsafe sites were chosen and the data was collected after ninety days of released, both populations were compared and resulted that Frontline healers were more influenced by Post traumatic symptoms than general paramedics (Lee et al., 2007). Similarly, there is a higher risk of occurrence of maladaptive psychological symptoms in Frontline HCWs who provided services during COVID-19 (Zhang et al., 2020).

Moreover, Investigations directed on ninety samples of SARS survivors after two years and six months of the outbreak resulted that Frontline HCWs were extensively related to PTSD; in addition, the scholars hypothesize that this finding could be put through to femininity because due to the fact most people of the samples within the study have been females HCWs (Mak et al., 2009). The study stated that after testing COVID-19 positive, it's normal for a health care provider to feel certain psychological issues such as frustration and fear of social and professional adjustments however such dominant features that include exceptional and remarkable sick clients with a regularly capricious route of the issue, high death ratio and absence of viable pharmacotherapy or caring strategies increase the risk for PTSD symptoms for Frontline HCWs (Guan et al., 2020; Peeri et al., 2020).

In line with this, The Frontline HCWs in the COVID-19 outbreak should granted closest attention, as they have strong concern in the diagnosis, cure and custody of positive COVID-19 clients, that inspiring mental uneasiness and psychological discomfort (Bao et al., 2020; Carmassi, Foghi, et al., 2020; Lai et al., 2020). The COVID-19 pandemic is described by some relevant and applicable attributes that expansion the risk for PTSD symptoms among HCWs addressing the crisis, such as the phenomenal facts and unprecedented numbers of critically ill patients, with a regularly capricious course of the disease, high mortality and lack of effective and compelling treatment, or treatment guidelines(Peeri et al., 2020; Wang, Horby, et al., 2020). Thus, the burden of the COVID-9 outburst on Health Care workers be entitles the devoted attention, as almost certainly the Frontline HCWs involved in the diagnosis, treatment and care of patients with COVID-19, are at risk of emerging psychological distress and other mental health symptoms (Bao et al., 2020; Carmassi, Cerveri, et al., 2020; Lai et al., 2020).

Therefore, in a underprivileged country like Pakistan where state of mind is not only troubled as a result of disrupted working schedule due to lockdown that created passionate unsettling influences such as frustration and irritation but, also the experiences of direct exposure to COVID-19 patients, moderately close communication with COVID-19 sufferers where the physical as well as emotional conditions are directly observed and the death of fellow doctors are witnessed and the uncontrollable inflation after COVID-19, followed by financial, political and democratic instabilities, all are notable traumatizing factors in rendering Frontline HCWs and they are thought to be responsible for PTSD symptoms. Only a few research has researched this vital topic among patients and HCWs separately. One thing this study has covered the presence of PTSD symptoms in both population including COVID-19 recovered patients as well as in Frontline HCWs simultaneously and on the other hand this is the very first research in Pakistan, specifically in District Malakand Khyber Pakhtunkhwa that outlined the supportive writing for forthcoming studies as well as a contribution regarding that newest issue in the grooming field of psychology and for local psychologist.

Considering the need for scholarly studying this issue, the current research aimed to explore PTSD-like symptoms in COVID-19 recovered patients and frontline healthcare workers (HCWs), compare the severity levels of PTSD symptoms in both groups, and examine the relationship between PTSD symptoms experienced by COVID-19 recovered patients and frontline HCWs. To achieve these objectives of this study are to explore PTSD-like symptoms in COVID-19 recovered patients and frontline healthcare workers (HCWs), compare the severity levels of PTSD symptoms in both groups, and examine the relationship between PTSD symptoms experienced by COVID-19 recovered patients and frontline HCWs. To achieve these objectives, the study is guided by the existing literature and the following hypotheses: First, COVID-19 will provoke PTSD-like symptoms in recovered patients; Second, frontline HCWs will have a higher risk of developing PTSD symptoms after being diagnosed with COVID-19. Third, there will be a linear relationship between COVID-19 and PTSD; and last, frontline HCWs will have a greater likelihood of experiencing PTSD compared to COVID-19 recovered patients.

2. Methods

2.1 Research Design

In this quantitative study, cross-sectional survey was conducted through questionnaires for both variables between January and June 2024. Simple random sampling technique was used in consecutive manner to recruit COVID-19 recovered patients and Frontline HCWs in district Malakand.

2*.2 Participants*

Two hundred and twenty-three samples were selected from the entire population through Cochran's sample size formula. 170 [76.2%] samples were COVID19 recovered patients and 53 [23.8%] samples were Frontline HCWs including 15 [28.3%] Doctors, 8 [15.1%] Nurses and 30 [56.6%] Paramedics from category "A" Hospital Batkhaila, District Malakand, KP, Pakistan. Probability sampling was chosen for collecting the data from respondent. According to the procedure of data collection, simple Random sampling technique was used in order to collect the data from both populations, recovered COVID-19 patients and Frontline HCWs.

2.3 Inclusion & Exclusion Criteria

People who were diagnosed positive and recovered from corona virus disease, Professional Frontline Health Care workers who diagnosed COVD-19 patients and Nurses and Paramedics who experienced direct contact with positive COVID-19 patients were included in this study while People who didn't experienced COVD-19 personally or professionally, were not the part of the study.

2.4 Instruments

Depression Anxiety Stress Scale having 42 items (DASS-42) Urdu version translated by Zafar, H., & Khalily, M. T. (2017), consisting of

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three self-report scales, was used as a screening tool. PTSD symptoms were accessed by PTSD checklist for civilian Urdu version, consist of seventeen items with Likert format. Psychometric properties include the Cronbach's alpha reliability coefficient is, 0.91 of that checklist.
Post-traumatic stress disorder (PTSD) refers to a chronic, devastating condition, lasting for six months, in which memories of traumatic events become uncontrollable, intrusive, and disabling. In this present study PTSD checklist for civilian Urdu version was applied to assess PTSD symptoms in COVID-19 recovered patients and in Frontline HCWs. The checklist consists of seventeen items with Likert format. Psychometric properties include the Cronbach's alpha reliability coefficient, 0.91 of that checklist. Higher scores on PTSD checklist indicated higher levels of PTSD symptoms in vice versa.

2.5 Statistical Analysis

All analyses were performed by IBM Statistical Package of Social Science (SPSS) software Version 26. Acquired data were summed up for all populations in order to know the presence of PTSD symptoms and were categorized in "Little to no Severity of PTSD, Moderate to Moderately High severity of PTSD and High Severity of PTSD" categories. The categorization is based on severity levels according to the standard manual of PTSD checklist for civilian. Further, Independent sample t tests was applied to the data for mean comparison between COVID-19 recovered patients and Frontline Healthcare Workers and one-way Analyses of Variance (ANOVA) was used for mean comparison among Frontline Health Care Workers including Doctors, Nurses and Paramedics.

3. Results

This research aimed to investigate PTSD-like symptoms in COVID-19 recovered patients and frontline healthcare workers, comparing the severity levels between these two groups. A total of 223 respondents participated in the study, with 170 (76.2%) being COVID-19 recovered patients and 53 (23.8%) frontline healthcare workers. Among the healthcare workers, paramedics represented the largest group at 30 individuals (56.6%), followed by doctors at 15 (28.3%) and nurses at 8 (15.1%). These findings underscore the significant prevalence of PTSD symptoms in both populations, highlighting the psychological impact of the pandemic on both recovered patients and those who worked on the frontlines.

Table 1 is regarding severity levels of PTSD symptoms in COVID-19 recovered patients. According to the scoring criteria of the scale, 10.0 % patients appeared to be little to no severity of PTSD symptoms, 35.9% patients appeared in Moderate to Moderately High severity of PTSD symptoms and 54.1% patients seemed in High Severity of PTSD symptoms from the COVID-19 pandemic. Further results showed that according to the scale's scores, 13.3% Doctors appeared to be little to no severity, 40.0% Doctors appeared in Moderate to Moderately High severity of PTSD symptoms and 46.7% Doctors seemed in High Severity of PTSD symptoms from the COVID-19 pandemic. Similarly, according to the scale's scores, 50.0% Nurses appeared in Moderate to Moderately High severity of PTSD symptoms while 50.0% Nurses seemed in High Severity of PTSD symptoms from the COVID-19 pandemic. Furthermore, the findings indicated that according to the scale's scores, 66.7% Paramedics appeared in High severity of PTSD symptoms, followed by 33.3% in Moderate to Moderately High severity of PTSD symptoms from the COVID-19 pandemic.

Table 2 revealed non-significant mean differences between frontline healthcare workers and patients on PTSD with t. (.507) =, P>0.05 Findings showed that Frontline Health Care Workers exhibited (M=45.00, SD=6.77) relatively similar score on PTSD as compared to COVID-19 recovered patients (M=44.25, SD=10.03). The value of Cohen's d was 0.08(<0.50) value indicates small effects size.

Table 3 shows mean, standard deviation and F-values for PTSD across doctors, nurses, paramedics and patients. Results indicated non-significant differences across with F (3,219) =.731, p>005. Findings revealed that all four papulations are relatively same in PTSD. The value of η^2 was 0.00 (>005) which indicated non-significant between group mean differences of each group.

Table 1

Prevalence of PTSD Severity among Different Groups during the COVID-19 Pandemic (N=223)

Group	*PTSD Categories*	*f*	*%*
COVID-19 Recovered Patients	Little To No Severity Of PTSD	17	10.0
	Moderate To Moderately High Severity Of PTSD	61	35.9
	High Severity Of PTSD	92	54.1
Doctors	Little to No Severity of PTSD Symptoms	2	13.3
	Moderate to Moderately High Severity of PTSD Symptoms	6	40.0
	High Severity of PTSD Symptoms	7	46.7
Nurses	Moderate to Moderately High Severity of PTSD symptoms	4	50.0
	High Severity of PTSD symptoms	4	50.0
Paramedics	High Severity of PTSD	20	66.7
	Moderate to Moderately High Severity of PTSD	10	33.3

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Table 2

Mean Comparison of Frontline Healthcare Workers and Patients (N=223)

	Frontline HCWs		Patients				
Variables	*M*	*SD*	*M*	*SD*	*t(221)*	*p*	*Cohen's d*
PTSD	45.00	6.77	44.25	10.03	0.507	0.610	0.08

Table 3

Mean, standard deviation and one way analysis of variance in Doctors, Nurses, Paramedics and Patients across on PTSD (N=223)

	Doctors		Nurses		Paramedics		Patients			
Variables	M	SD	M	SD	M	SD	M	SD	F(3,219)	η^2
PTSD	42.87	10.357	43.13	5.817	46.57	4.057	44.25	10.035	.731*	0.00

* $p<0.05$

4. Discussion

The present survey was conducted in District Malakand KP, Pakistan. From the entire population, 223 samples were selected for study through Cochran's sample size formula including 170 [76.2%] COVID-19 recovered patients and 53 [23.8%] frontline healthcare workers. The results reveal excessive prevalence rate of PTSD symptoms in both population.

A cross-sectional research reported 30.2% prevalence of stress in patients who have experienced COVID-19 (Janiri et al., 2021). Survivors of coronavirus disease revealed more positive results when compared with findings described after other kinds of traumatic events (Rogers et al., 2020). In line with this, Greek's Health care professionals scored highly stressed while facing catastrophic satiation of COVID-19 (Blekas et al., 2020).The conclusion drawn in previous survey from Singapore and India & Singapore among healthcare workers reported similar prevalence of stress symptoms (Chew et al., 2020; Tan et al., 2020). But, precise comparisons on PTSD may not be made because the measures used in that studies were different, while in this current study PCL-5 has been used, which is more validated for PTSD diagnosis according to Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-V) criteria. The reasons behind that little variation in PTSD prevalence among different population and stable results could be hindered by the utilization of various measures to explore PTSD symptomologies. A study conducted in Pakistan on healthcare workers during COVID-19 found a significant relationship between optimism, problem-focused coping, and avoidance coping styles. The findings indicated that male health professionals scored higher on optimism compared to their female counterparts, whereas female health professionals exhibited a higher tendency toward avoidance coping. Additionally, the results revealed that optimism and psychiatric morbidity were significantly associated with problem-focused and avoidance coping styles among healthcare professionals

Additionally, some western nations have higher threat of PTSD in light of the fact that there are exclusive expectations for normality in life and high thoughtfulness regarding potentially harmful emotional and psychological impacts of catastrophic events in life (Heir et al., 2019). Front line HCWs and general civilian who served for humanity during COVID-19 and dealt directly with COVID patients testified highly with PTSD and depression symptoms. Similarly, the current findings reflect the conclusions from China in COVID-19 (Lai et al., 2020). The current results also supported by previous studies about the psychological effects of the COVID-19 pandemic(Forte et al., 2020; Sood, 2020; Wang, Pan, et al., 2020). These studies reported an increased risk of psychopathologies and stress-related disorders, as well as a high rate of PTSD symptomatology (Boyraz & Legros, 2020). Altogether, the aim of the present study was to explore the prevalence of PTSD symptoms in COVID-19 recovered patients and frontline HCWs in district Malakand.

To the best of my knowledge, no published research to date has simultaneously examined COVID-19 recovered patients and frontline healthcare workers (HCWs) in the aftermath of the COVID-19 pandemic. This current study, in accord with past research conducted in other pandemics, dissipated the myth that frontline HCWs are resistant to psychological issues. Frontline HCW are equally susceptible not only to coronavirus disease but also to its psychological outcomes. Assessing frontline HCWs for the aforesaid symptomatology might be favorable in evaluating and improving their psychological well-being and mental health.

Along with this, the current study hold some limitations For example, the survey was conducted in very short time and literature claiming that PTSD symptoms tend to emerge timely and/or over the period of time and most of the civilian suffered by a traumatizing experiences or events begin to get resilient (Riggs et al., 1995). In conclusion, the results of present study ought to be considered with regards to the way that the direction of the pestilence curve has been for the time being effectively flattened in District Malakand KP, Pakistan.

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