

A Prospective Study of Post Traumatic Stress Disorder among COVID 19 survivors at a tertiary care hospital

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ABSTRACT

Background: The Novel Corona Virus Disease (COVID-19) outbreak is unprecedented and traumatic event for the many people of the world. Post Traumatic Stress Disorder (PTSD) is the commonly encountered mental health problem after experiencing or witnessing a traumatic event. It is predicted that this outbreak have a more profound and widespread psychological impact. The current study is aimed at estimation of the prevalence of PTSD in patients with COVID-19 at two different points of time.

Methodology: A prospective study was carried out from may 2020 to October 2020 at a COVID notified tertiary care centre. Participants were approached using Semi-structured proforma and 'PTSD Symptom Scale Interview (PSS-I)' at the time of discharge and 1 month post-discharge. Descriptive statistics and Chi-square test were used for the analysis.

Results: A total of 440 participants took part in the study. 20.45% participants at the time of discharge from the hospital, and 18.33% at one month follow-up met the criteria for PTSD. Male participants and those who stayed in hospital for more than 14 days reported higher prevalence of PTSD.

Conclusion: High prevalence of PTSD was observed in patients with COVID-19 at the time of discharge from the hospital. It is more among those who stayed in Intensive care unit and high dependency unit, and stayed for longer duration in hospital.

Keywords: COVID-19, Post traumatic stress disorder, Survivors

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INTRODUCTION

Insufficient knowledge about the transmission of SARS-CoV-2 and protective measures such as wearing of face masks in public is associated with anxiety. Different infectious disease outbreaks such as bubonic plague, Asiatic flu and cholera, Middle East respiratory syndrome, and Ebola have been associated with polarization, racism, blame and resultant psychological distress [1]. PTSD is defined as a stress-related disorder that may develop in individuals who have experienced or witnessed a traumatic event or injury [2]. Previous study on severe acute respiratory syndrome (SARS) outbreak survivors estimated 25.6% rate of PTSD at 30 months' follow-up [3]. High rates of PTSD were also reported during the outbreak of Middle East respiratory syndrome corona virus (MERS-CoV) among both healthcare workers and patients under quarantine [4].

As the outbreak linger on, physical and mental wellbeing of people exposed to it is significantly affected [5]. Rather COVID-19 outbreak would have a more profound and widespread psychological impact as

compared to earlier outbreaks [6]. This could be due to the direct result of psychopathological sequel of viral infection of the central nervous system (CNS) or through an immune response [7].

Certain vulnerable groups such as frontline healthcare workers were found to have significantly elevated stress levels and a greater association with fatigue, poor sleep, worries about health and fear of social contact. A year later, the perceived stress levels in the same group were associated with higher depression, anxiety and post-traumatic stress scores. Previous study also reported that COVID 19 patients might experience depression, anxiety, insomnia and delirium [8]. Children, adolescents and elderly have also been identified as being more vulnerable to trauma with more than one mechanism of operation and risk factors [9-10].

Studies report the prevalence of COVID-19-related PTSD symptoms from 7% [11] to 96.2% [12] among patients before discharge from quarantine. A recent meta-analysis among patients with severe acute respiratory syndrome (SARS) infections reported prevalence of PTSD around 32.2% [8].

The degree to which mental health problems emerge after trauma may vary depending on the different variables. Therefore, the current study was aimed at the estimation of the prevalence of PTSD at two time points in individuals who had been hospitalized for the treatment of COVID 19.

METHODOLOGY

A prospective study was carried out from May 2020 to October 2020 at a COVID 19 notified tertiary care center among patients discharged after recovery from COVID 19. All the Participants were approached, first at the time of discharge and then at one month post-discharge from the hospital. A clinical interview was carried out using a semi-structured proforma containing demographic details and 'PTSD Symptom Scale Interview (PSS-I)' at the time of discharge. One month later, participants approached again during follow-up; patients who were not able to reach the hospital were contacted via mobile phone. Patients with pre-existing psychiatric illness and uncontrolled medical illnesses at the time of admission and discharge were excluded from the study. Written informed consent was taken from all the participants. Ethical approval for the study was taken from the Institutional Ethics Committee.

Demographic details

Demographic details such as name, age, gender, income, occupation, past history of psychiatric illness, family type, and history of substance use and chronic medical illness were included.

PTSD Symptom Scale Interview (PSS-I): This scale was designed to assess the symptoms of PTSD (symptoms in the past two weeks or since trauma if less than two weeks.). It consists of 17 items, each item corresponding to the 17 symptoms of PTSD. PSSI assesses re-experiencing, avoidance and arousal sub-scores as well as total PTSD severity score. Participants' answers were recorded on a four point linear scale ranging from 0 (Not at all) to 3 (5 or more times per week/Very much). Symptoms measured were considered as present if they are rated as 1 (Once per week or less/A little) or greater. Total severity scores on the PSS-I are based on sum of the raw items, which ranges from 0 to 51. This scale shows good concurrent reliability and validity, with test-retest reliabilities ranging from 0.66 to 0.77 over a 1-month period. A score of 13 or higher indicates likelihood of PTSD [13].

STATISTICAL ANALYSIS

Data entry and analysis was done using Microsoft excel and Epi Info software. The socio-demographic profile, prevalence of PTSD and different symptoms of it (re-experiencing, avoidance and arousal) have been expressed in terms of frequency and percentage. Chi square test was applied for categorical data such as gender, days of hospital stay, residing with family or alone, different age groups and history of co-morbid medical illness, to find out relation with post-traumatic stress disorder.

RESULTS AND DISCUSSION

A total of 440 participants participated in the study. There were 59.10% males and 40.90% females. The age of participants ranges from 21- 64 years with a mean age of 44.23 ± 12.56 years. Majority of the participants belonged to Hindu religion 96.36% followed by Muslim 3.18% and 0.46% others.

At the time of discharge from the hospital, 20.45% of the participants met the criteria for PTSD, with 35% experiencing re-experience symptoms, 29.10% experiencing avoidance and 47.27% experiencing arousal symptoms.

Table 1: Distribution of PTSD with different variables at the time of discharge

Variables		No of participants	Post traumatic stress disorder (n=440)		Statistical values*	
			Present n=90 (%)	Absent n=350 (%)	Chi square (χ^2)	P value
Gender	Male	260	62 (23.85)	198 (76.15)	4.493	0.034, †
	Female	180	28 (15.56)	152 (84.44)		
Duration of hospital stay	Less than 7 days	197	38 (19.29)	159 (80.71)	7.261	0.027 [†]
	7 – 14 days	175	30 (17.14)	145 (82.86)		
	More than 14 days	68	22 (32.35)	46 (67.65)		
Admission during treatment of COVID-19	In ward	303	52(17.16)	251(82.83)	14.505	0.001 [†]
	In HDU	88	18(20.45)	70(79.54)		
	In ICU	49	20(40.81)	29(59.18)		
Age groups	18-30 years	55	06 (10.91)	49 (89.09)	4.726	0.193
	31- 40 years	96	22 (22.92)	74 (77.08)		
	41- 50 years	160	38 (23.75)	122 (76.25)		
	More than 50 years	128	24 (18.75)	104 (81.25)		
Living condition	Alone	24	06 (25)	18 (75)	0.322	0.577
	Family	416	84 (20.19)	332 (79.81)		
Medical history [‡]	Absent	300	52 (17.33)	248 (82.67)	5.645	0.018 [†]
	Present	140	38 (27.14)	102 (72.86)		
Place of admission	General ward	303	52 (17.16)	251 (82.84)	14.505	0.001 [†]
	HDU [§]	88	18 (20.45)	70 (79.55)		
	ICU	49	20 (40.82)	29 (59.18)		

*Chi square test, †Statistical significant, ‡Stable on treatment, § High dependency unit. || Intensive care unit

Table 1 shows that male participants have statistically significant higher prevalence of PTSD than female participants as denoted by chi square test ($\chi^2=4.493$, $p=0.034$). Participants staying in the hospital for more than 14 days had a statistically significant higher prevalence of PTSD, which was denoted by chi square test ($\chi^2=7.261$, $p=0.027$). Participants having any co-morbid medical condition had a statistically higher prevalence of PTSD as shown by chi square test ($\chi^2=5.645$, $p=0.018$). Participants staying in ICU unit of the hospital had a statistically significant higher prevalence of PTSD, which was denoted by chi square test ($\chi^2=14.505$, $p=0.001$). No statistically significant difference was observed in the prevalence of PTSD among different age groups and living condition of participants, as shown in table 1.

One month later, 435 participants participated in further study; five participants didn't come for follow-up due to their death. The prevalence of PTSD at one month follow-up was 18.33%. Re-experience symptoms were present in 29%, avoidance symptoms in 19.72% and arousal symptoms in 39.21% of the participants.

DISCUSSION

The current study observed that around 20% participants had PTSD symptoms at the time of discharge from the hospital. In accordance with these findings, Mazza and others reported 28% prevalence of PTSD among

COVID 19 patients by using self-report questionnaires [14]. Mak and others observed 25.6% prevalence of PTSD among severe acute respiratory syndrome survivors [3]. Roger and others observed 32% prevalence of PTSD during severe acute respiratory syndrome (SARS) infections [8]. Higher prevalence of PTSD symptoms during COVID 19 pandemic occurs as a result of more stress. The significant psychological stressors contributing to this might be; non-clear evidence about how many cycles of COVID-19 a country may face stigma [15], traumatic memories of severe illness, uncertainty of the future and social isolation [16]. Media also laid great emphasis on the COVID 19 mortality and added fear of death. All these factors could also be possible reasons for higher prevalence of PTSD symptoms in participants with co-morbid medical illness as compared to those without other illnesses in the current study.

The present study observed high prevalence of PTSD among participants with longer duration of hospital stay and participants admitted in ICU unit. Kong and others [17] and Shoar and others [18] observed higher prevalence of psychiatric co-morbidities in patients with longer duration of hospital stay. Tedstone and others [19] and Kangas and his group [20] also observed higher prevalence of PTSD among participants who had experienced life-threatening situations such as admission in intensive care unit (ICU).

These findings are consistent with the view that higher exposure to traumatic events may result in higher rates of morbidity, particularly post-traumatic stress syndromes. Cao and others [21] observed 23.4% prevalence of PTSD among residents of villages where most houses were destroyed during the Yun Nan (China) earthquake compared to 16.2% among residents where only minor damage occurred. This demonstrated that prevalence of PTSD was related to the level of exposure to the epicentre of the earthquake [22]. As people were more likely to remember unpleasant events after the disaster, longer duration of hospital stay was associated with more deleterious effect.

The current study observed that male participants had higher level of post-traumatic stress. Chong and others in a study among healthcare workers using impact of event scale at the time of severe acute respiratory syndrome attack observed an increased risk of PTSS among male participants [23] while Rajkumar and others in his study found higher prevalence of post-traumatic stress disorder among female participants during the 2004 Asian tsunami [24]. However, risk factors other than gender may also be operative in a given individual.

No difference in post-traumatic stress among different age groups was observed in the current study. Whereas a study by Wu and others [25] in China and Su and others [26] in Taiwan during SARS outbreak among healthcare workers reported that younger participants had a greater risk of developing PTSS. The results of the current study may differ due to a different study sample or the presence of various co-morbidities among different age groups.

The current study observed 18.33% prevalence of PTSD at one month follow-up. A study by Kawakami and others reported that the mood/anxiety disorders have a greater incidence in the first year post-disaster among survivors and stay for long time [27]. Mak and his group in his study among SARS survivors reported that PTSD was the most prevalent long-term psychiatric condition, even 30 months post-SARS.[3] A Study reported that coping mechanisms used by people may vary and use of different coping mechanisms plays a significant role in the development or maintenance of PTSD [28]. Positive coping attitudes and strong social and family support may have a protective role against acute stress.

The current study was conducted using clinical interview which helps in confirming the diagnosis of PTSD and adds value to the study. However a limitation of this study is that there is no comparison group. Since COVID 19 is a new disease, the psychological effect of some possible long-term physical outcomes related to the disease and treatment regimen has not been discovered until recently. There is a need for further studies to find the true prevalence rate of natural disaster-related PTSD which can then be related to other natural disasters through the use of a similar methodology. Protective factors including resilience should also be explored, which will give us more insight into understanding the coping strategies of those survivors who have not been affected by any kind of mental disorder. Further long term follow up studies are needed to explore the lasting impact as it has been observed that post traumatic symptoms persisted for years after the disaster had ended. Finally the study was carried out at single centre and multicentre studies are needed for better understanding of the phenomenology.

CONCLUSION

High prevalence of PTSD was observed at the time of discharge among hospitalized participants. Longer duration of hospital stay is associated with more unpleasant events, subsequently resulting in higher rates of morbidity, particularly post-traumatic stress syndromes. Pre-existing co-morbid conditions further exacerbate the disease outcome. For survivors, a decrease in symptom severity from discharge to one month post-discharge was identified. Exploration of protective factors would give more insight into the understanding of any kind of mental disorder.

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