

## MINI REVIEW

# PSYCHOLOGICAL TRAUMA AND PTSD DURING THE COVID-19 PANDEMIC: A NARRATIVE REVIEW

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## Abstract

As of August 9, 2021, there have been around 203 million confirmed cases of coronavirus disease (2019) COVID-19, including 4.3 million deaths. Adverse psychological effects are expected to be long-lasting in vulnerable groups, especially among frontline healthcare workers, given the magnitude of the crisis. Observing strict quarantine and social distancing measures, while being an important strategy to curb the spread, have also led to a significant negative impact on mental health indicators; the long-term consequences are yet to be assessed on a global scale. A medical crisis may become a mental health crisis and the updated findings are reviewed in this paper to provide an updated brief for immunological, occupational, socioeconomic, racial/ethnic, psychological predictors while commenting on care recommendations to prevent psychological trauma from progressing to PTSD. *ASEAN Journal of Psychiatry, Vol. 22(7), August 2021: 1-9.*

**Keywords:** Mental Health, COVID-19, Psychological Trauma, PTSD, Vulnerable Population

## Background

As of August 9, 2021, the worldwide statistic of confirmed coronavirus disease 2019 (COVID-19) cases have been around 203 million, including 4.3 million deaths [1]. It is common for people to feel added stress and anxiety during epidemics or pandemics like COVID-19. There is fear of lagging on professional work commitments, facing social isolation, fear of contracting a disease, or risking death [2]. The constant worry, fear and uncertainties are some of the stressors that may lead to long-term mental health consequences across populations. Infectious diseases of global health concern may lead to stress and anxiety due to fear of disease contraction, and can also lead to psychological trauma and Post-Traumatic Stress Disorder (PTSD) [2]. Observing strict quarantine and social distancing measures, while being an important strategy to curb the spread, have also led to a significant negative impact on mental health indicators; the long-term consequences are yet to be assessed on a global scale. Adverse psychological effects are expected to be long-lasting in vulnerable groups, especially among frontline healthcare workers, given the magnitude of the crisis. Psychological stress and a high prevalence of mental health disorders have earlier been reported during various infectious disease outbreaks like the 2003 Severe Acute Respiratory Syndrome (SARS) epidemic, 2014 Ebola virus infection and the 2015 Middle East respiratory syndrome (MERS) outbreak. While previous epidemics in

the 21<sup>st</sup> century did not present findings of chronic mental health diseases, psychological trauma and PTSD may be a common theme due to COVID-19 cause debilitating effects on social and mental health [3-5].

The American Psychological Association (APA) defines trauma as an “emotional response to a terrible event like an accident, rape or natural disaster” [6]. APA defines PTSD as “an anxiety problem that develops in some people after extremely traumatic events, such as combat, crime, an accident or natural disaster” [7]. Although the layperson uses both terms interchangeably, there are inherent differences between the two. PTSD can manifest as intrusive memories and flashbacks of the actual incident, along with nightmares and anxiety that did not exist before the incident whereas, for trauma, the immediate reactions may be shock and denial with unpredictable emotions, flashbacks, strained relationships, headache, and nausea being some of the symptoms that manifest long-term. Both PTSD and psychological trauma can have debilitating effects on the emotional, physical, social, and financial wellbeing of the individual. The COVID-19 pandemic has influenced the coping abilities of individuals who may or may not have been infected with the disease. Groups that previously had only a few anxieties and/or distress episodes may experience an increase in the number and severity of these leading to the development of adverse mental health conditions. Specific groups, such as the marginalized communities in the United States (i.e., African Americans, Latinos, and Asian Americans) felt more stigma and underwent higher discrimination in the health system. Loneliness and social isolation have tangible effects on mental and physical health, particularly for older adults aged 60 or above. Similarly, adolescents and children are also a member of the at-risk groups. One of the major differences between psychological trauma and PTSD is based on the time of exposure to the incidence of disease and presentational outcomes. Psychological trauma is classified as an acute finding whereas PTSD is a chronic mental condition that individuals may experience for years.

Psychological trauma and PTSD is a key crisis for mental health practitioners during and after the coronavirus pandemic especially when attending to the elderly, children, and marginalized racial or ethnic groups. During pandemics, health care workers and other vulnerable groups are prone to face moral anguish due to uncertainty and inadequate resources when treating critically ill hospitalized patients. These stressors can lead to detrimental effects on mental health and eventually PTSD. A medical crisis may become a mental health crisis and the updated findings are reviewed in this paper to analyze the potential predictors and provide recommendations to prevent psychological trauma from progressing to PTSD.

### **Immunological predictors**

Psychological trauma is often thought to have adverse effects on immunoregulation [8]. There are multiple ways in which psychological trauma and chronic stress can potentially impact the immune system's functioning. Some of these include decreased NK cells activity hampering innate immunity, increased circulating levels of inflammatory cytokines like IL-6 along with reactivation of the latent virus impeding cell-mediated immunity, and decreased antibody production to immunization further hindering adaptive immunity [8]. Stress-incited immune dysregulation has been demonstrated to be sufficiently huge to play a role in causing increased susceptibility to clinical conditions like infectious diseases, allergic conditions, asthma, cardiovascular diseases, type-2 diabetes, and some cancers. Potential complications like decreased resiliency in recovery from infection, behavior/cognitive defects are also likely to occur [8].

Many studies have demonstrated correlative associations between PTSD and immune system alterations in humans. Increased levels of inflammatory cytokines IL-6, IL-17, TNF- $\alpha$ , IFN- $\gamma$ , and increased levels of Th1 Th17 cells have been reported in the plasma and blood respectively. These levels may be influenced by the

type and timing of trauma. Additionally, there have been innumerable genetic associations with PTSD. Some of these include mediators encoding the genes involved in immunoregulation. The best studied is the FKBP5 gene variants which mediate the impact of trauma presentation [6]. The minor allele of FKBP5 SNPs rs1360780 was found to be related to increase typhoon-related PTSD [7]. Identifying such genetic markers can progress early PTSD diagnosis.

Immune hyper activation can be a predictor for assessing the risk for PTSD. Blood levels of various inflammatory cytokines like IL-2, IL-4, IL-6, IL-8, IL-10, and TNF-  $\alpha$  were reported to be higher in PTSD patients [9]. Additionally, high CRP levels were also associated with vulnerability to develop PTSD symptoms. In other words, a state of inflammation usually considered as "physical injury" rather than "mental injury" tended to develop PTSD. Hence, an Assessment of Plasma C - reactive protein can be done to predict the risk of PTSD development [10]. Furthermore, Deployment of measuring salivary markers like MCP-1 can be done as in the case of hurricane survivors. Increased saliva levels of inflammatory chemokine MCP-1 were found to be correlated with PTSD severity [11].

Some of the interventions to lower the incidence of trauma-induced immune dysfunction include various protocols for the reduction of chronic stress. These include good nutrition, exercise, muscle relaxation activities like yoga, meditation.

### **Occupational predictors**

#### *Survivors and victims' families of COVID-19*

Infectious diseases and their exposure bring about a particular type of psychological trauma which can essentially be divided into three categories- Firstly, the suffering populace who experience and undergo a horrendous traumatic treatment. For instance, dyspnea, air hunger, mechanical ventilation, alteration of consciousness, death threat are major stressors that lead to trauma in patients with COVID-19. Secondly, to witness patients who experience the ill effects and battle against the virus. These are the relatives of patients and the health care workers. Thirdly, experiencing the social confinement, prohibition, derision, and the realistic or unrealistic dread of contamination.

Epidemiological studies garnered from past coronavirus outbreaks suggested the prevalence of PTSD especially among survivors of MERS& SARS. Lee et al reported about 42% of MERS survivors scored above the cutoff for PTSD after one year and about 27% happened to remain above the cutoff after a period of 18 months. Similarly, PTSD was one of the major long-term psychiatric morbidity among SARS survivors. The prevalence of PTSD among SARS survivors was about 47.8%, while 25.5% continued to meet the criteria for PTSD after about 30months of SARS outbreak. This implicated the need for the identification of survivors who are at higher risk to hamper the development of PTSD. Mental screening follow-up might be particularly essential to recognize these survivors whose symptoms continue beyond acute stress responses to fully meet symptomatic standards of PTSD (i.e., more than one month after the event).

#### *Healthcare workers*

Encountering or witnessing the vulnerable diagnosed with COVID-19 may bring about a high prevalence of PTSD, a debilitating psychological disorder prompting genuine misery and distress among survivors, relatives, individuals who provide first-line emergency relief and care (clinical and general wellbeing experts,

paramedics, and so forth), and even among the overall population. While control of the scourge and care of patients with COVID-19 is one of the most demanding tasks in the world, this review points out for early intervention and prevention of PTSD among influenced populaces.

HCWs are one highly influenced people by the pandemic. Many epidemiological studies have demonstrated the psychological consequences among health care professionals. Psychological trauma was found to be prevalent following SARS and H1N1 outbreaks with the average rate being 40% among HCWs. Among the health care professionals, nurses accounted for higher distress levels followed by physicians and assistants [12]. Some of the major stressors include high risk of exposure, fear of becoming a vector of the disease, dismay and fear for self-health, close contact with the infectious patients, emotional disturbances, workload, fear of carrying the infection to the family, exhaustion, burnouts, high number of critical patients, lower-income, obligation to care for patients due to profession, and unprecedented deaths. Health care workers also tend to face greater stigma and avoidance behavior post quarantine. They are often named as the source for transmission and this stigmatization often leads to further isolation. A study on 147 nurses who worked in the direct care of infected patients during the MERS outbreak reported higher rates of PTSD among health care workers of emergency departments than non-emergency ones [13]. Ensuring support and having a supportive environment at the workplace can reduce the potential psychological impact among HCWs.

### **Socio-Economic predictors**

The outbreak of COVID-19 can be one of a bio-disaster. Populations at high risk for developing psychological trauma and PTSD include individuals having poor family relationships. Social interaction and family support play a critical role in protecting oneself from psychological trauma and PTSD. Peer rejection and isolation can progress to poor mental health. Inadequate psychological and organizational support at the workplace, lack of team spirit, coordination, stability, insurance, and compensation is often associated with anxiety and poor sleep, and depression [14]. Female gender, younger age groups, HCPs which majorly included nurses, having fewer years of working experience, and being single was identified as some of the predictors for the development of psychological trauma and PTSD. Additionally, a lower prevalence of PTSD was found amongst those who lived with family than those who lived in a dormitory or away from their family [15]. In a study of 661 individuals conducted by Chan and Huak during the SARS outbreak, it was reported that unmarried individuals were more likely to be affected than married ones [16]. However, a recent study by Lee et al on Health care workers revealed that married or divorced people had higher traumatization signs and symptoms in contrast to unmarried ones [17].

### **Racial/Ethnic predictors**

Whites are at higher risk of facing trauma or having someone close to experiencing traumatic events. However, the prevalence of PTSD was found to be higher among the Blacks (8.7%) [18]. The risk for development of PTSD was found to be intermediate among Whites and Hispanics (7.0% and 7.4%) and lowest among Asians. (4.0%) [19]. African-Americans are likely to experience psychological trauma and PTSD because of lack of social support, maltreatment as a child, subjected to domestic violence. Alcántara *et al* in a study assessing the various risk factors for PTSD reported that Latinos (Mexicans mostly) if exposed to trauma are at a higher risk to develop PTSD in contrast to Non-Latino Whites and Blacks [19]. In another prospective study conducted in New York City to assess the PTSD prevalence after the WTC attack, Latino ethnicity comprised the highest association [2.86 (1.93-4.22)] with PTSD [20]. A longitudinal study was done by Marshall *et al* further reported that Hispanics include the populace with higher PTSD severity as compared to Non-Hispanic

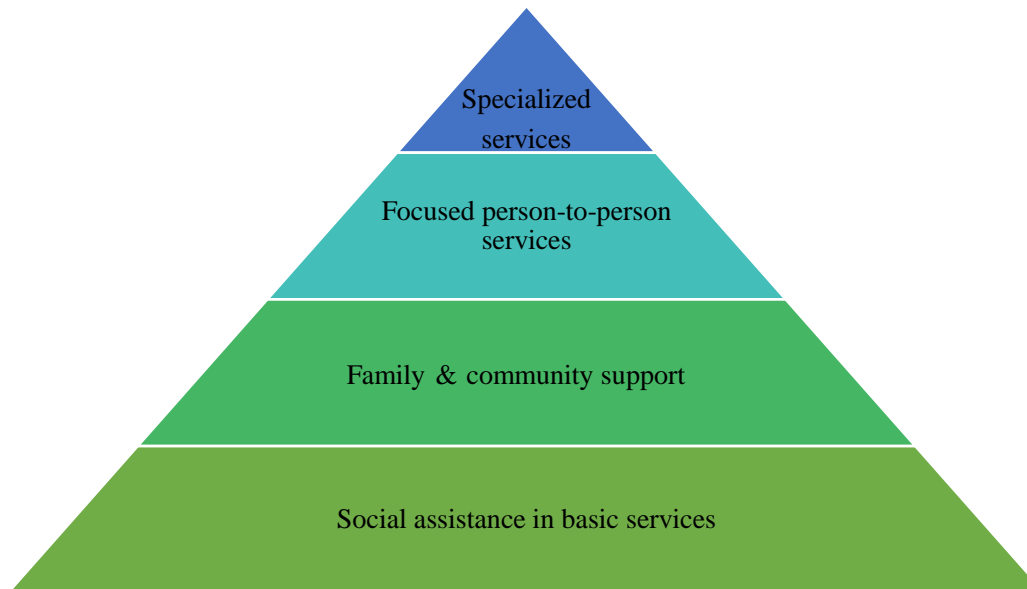
Caucasians. Hispanics had more significant levels of sensory and cognitive perceptions [21]. Nevertheless, Whites are more likely to seek treatment than other minority groups.

### **Psychological predictors**

A study done by Lehmann et al during the Ebola outbreak identified Fatigue as one of the health-related predictors [22]. Physical fatigue ( $B=-0.3$ ,  $p=0.02$ ) and mental fatigue ( $B=-0.53$ ,  $p < 0.001$ ) along with lack of knowledge of the infection were reported to be the best predictors of health-related quality of life [22]. Furthermore, a study during the MERS outbreak reported that disruption of emotions had a positive impact on people motivating them and increasing their coping ability allowing them to adapt to high-risk situations. Although, Results differed across occupations (medical care laborers versus non-medical care laborers), which infers that various contemplations are required for resilience among HCWs reacting to an episode. Specifically, lowering the risk appraisal was generally favorable to medical care workers, while fortifying coping ability was the best methodologies for non-medical care workers [23]. Stigma and resilience were also reported to have an impact on mental health both directly and indirectly. Directly, worse mental health outcomes corresponded to greater stigma when other variables were consistent. Indirectly, Stigma exerted its effect on mental health through stress ( $-0.061$ , Boot SE= $0.020$ ) [24]. A higher resilience score correlated directly to better mental health and emotional well being in exposed HCWs ( $\beta=0.49$ ,  $t=4.87$ ,  $p<0.001$ ). The indirect effect of hardiness on mental health was also reported ( $0.251$ , Boot SE =  $0.638$ )<sup>24</sup>. Maladaptive coping through blaming oneself, hostile confrontation towards coworkers, avoidance was another predictor among HCWs for psychological trauma ( $\beta=0.37$ ,  $t=4.39$ ,  $p<0.001$ ) and PTSD ( $\beta=0.31$ ,  $t=3.78$ ,  $p<0.001$ ) [25].

### **Recommendations for care**

Psychosocial interventions need to be considered to get back to the "new normal". The ongoing concerns for mental health have led to the dire need for recommendations to curtail or prevent the onset of psychological trauma and PTSD. The Inter-Agency Standing Committee (IASC) issued guidelines addressing mental health and psychosocial aspects of the COVID-19 outbreak (MHPSS). MHPSS ought to be a core component of any general public health response. These guidelines are arranged systematically around a 4 layered intervention pyramid which includes (i) Providing basic mental healthcare by primary health care physicians like practical and emotional support offered by social and community workers (ii) Providing specialized mental health services by psychiatrists, psychologists to the vulnerable (elderly, adults in isolation, disabled, children, frontline workers) (iii) strengthening social and family networks by community outreach programs, social networking, encouraging supportive environment (iv) Embedding cultural and social considerations in providing basic health services that are safe, secure and appropriate socially [26]. Individuals can potentially be categorized into four levels: This approach can help provide the right support and attention to people who are more susceptible as compared to others.



**Figure 1: The intervention pyramid for mental health support for individuals with psychological trauma and PTSD**

Level 1 should involve the most vulnerable population which essentially involves the critical hospitalized patients (ICU patients), frontline workers, and survivors of severe COVID-19 infection. Lesser burnout trends leading to reduced psychological distress were observed during the SARS outbreak implicating that doubling the number of health care workers can reduce and buffer the negative impact among them. Hostile confrontation and agitation/blame directed towards one another can be reduced by encouraging a good working environment that will foster a positive working relationship [25]. Additionally, hospitals must intervene to provide support and to their staff and facilitate adaptive coping. Altruism is another approach that is recommended which is reported to protect some HCWs against psychological distress post-SARS outbreak [27]. Right support given at the right time can foster resilience.

Level 2 can be the elderly and relatives or the victim's families. Older populations with dementia or decreased cognitive abilities may become stressed, anxious, and even agitated when kept in isolation. Also, owing to the higher mortality rates and weakened immune systems, they are at higher risk for the development of infection. The elderly must be provided adequate emotional support through informal networking and specialized services. Furthermore, older adults have limited access to smartphones and the internet which restrict their capacity to educate themselves about the pandemic. Health organizations must be set up to break this communication barrier to avoid panic among the community-dwelling elderly population. The information must be conveyed in simple words for those with cognitive impairment.

Level 3 can include isolated patients with asymptomatic or mild disease, volunteers and organizing committee members who were active participants of the pandemic response, disabled, and the children. The disabled are often perceived to be people who cannot contribute to the outbreak. This prejudice and stigma need to be addressed to their voices and needs must be heard to reduce the emotional stress among them and improve their mental health. Various forms of communication should be included to avoid discrimination. Health care physicians must take utmost care to have sign language interpreters and understandable verbal communication for patients with hearing and visual impairments. Children must receive extra attention and love during a crisis.

Family support is crucial and measures should be taken for children living in dormitories to have frequent contact with their caregivers.

Level 4 should include the general public who are affected by the prevention measures and strategies undertaken to curtail the spread of the pandemic. Most of the mental health problems are due to phobia created by the incorrect plethora of information. This can be reduced by rational control of misinformation and fake news on social media.

## **Conclusion**

Psychological trauma and PTSD are prevalent among the elderly, children, healthcare workers, and vulnerable populations. It is imperative to note that psychological trauma among these groups may eventually lead to a high prevalence of PTSD. The four-tiered intervention pyramid for mental health support is useful in strengthening social and family networks, embedding cultural and social considerations in providing basic health services, and promoting positive mental health. Our review summarizes potential predictors while providing recommendations for overcoming negative mental health behaviors during the COVID-19 pandemic.

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