



Psychological Impact on Healthcare Workers of Past SARS and Current COVID-19 Outbreak: A Global Review

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Abstract

The emergence of novel severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2) in Wuhan, China during late 2019 spread quickly and creating international emergency and tremendous challenges for healthcare workers (HCWs) including dental and oral healthcare professionals. The brisk spread of this new viral disease forced HCWs to suffer from different types of stress including mortality and morbidity, delayed patient dealing, scarcity of complete personal protective equipment (PPE), and fear of being COVID-19 virus target and carriers to their family members. The dental and oral HCWs were also advised to apply mobility restrictions and social distancing measures. All of a sudden, most of the regular medical check-ups including dental clinic appointments were cancelled, reducing the number of patients flow. The abrupt cancellation of appointments put a sudden break on medical profession including dental practice. Different scales like progression of post-traumatic stress disorder (PTSD), Chinese Health Questionnaire-12 (CHd-12), Davidson Trauma Scale-Chinese (DTS-C), General Health Questionnaire (GHQ), Impact of Event Scale (IES), Perceived Stress Scale (PSS) etc. have been devised in different countries to assess the overall mental health status. The reports from earlier SARS outbreak in 2007 had also put a psychological impact on HCWs but least has been learned from this outbreak. The reports from previous Middle East respiratory syndrome (MERS) outbreaks and early COVID-19 pandemic have a considerable negative impact (short and long-term) on mental status of HCWs. Different types of negative impacts on mental health like depression, anxiety, sleep disorders and distress were reported in HCWs during COVID-19 pandemic. The current COVID-19 pandemic given a broader understanding of how much, how far and how fast an outbreak can occur and affect HCWs psychologically. In this review, authors summarize the impact of COVID-19 pandemic in the psychology of HCWs, as reported from different countries.

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Introduction

The devastating infectious disease “Severe Acute Respiratory Disease-Coronavirus Disease-2” (SARS-CoV-2) was declared as a pandemic in March 2020 by World Health Organization (Li et al, 2020). In initial five months of its emergence only, the COVID-19 virus spreads to 216 countries, infecting 4.7 plus million people and killing almost 0.32 million people (WHO, 2019). This pandemic has a challenging mental health impact on healthcare workers (HCWs) in addition to general public. The HCWs within no time were supposed to tackle with this great pandemic besides suffering from multiple nonclinical and clinical apprehensions like lack of protection kits as personal protective equipment (PPE), increased morbidity, mortality, afraid of losing friends/relatives, fear of being infected with this disease and carrying it to their family members. All these unexpected factors enhanced the psychological stress of HCWs to levels many had never experienced it before (Ripp et al, 2020).

The reports from earlier SARS outbreak in 2007 had also put a psychological impact on HCWs (McAlonan et al, 2007; Tam et al, 2004; Grace et al, 2005). The current COVID-19 pandemic in itself is considered as a highly traumatic owing to its emotional, physical and psychological impact (Bridgland et al, 2021). In addition the advisory policies imposed to counter its rapid spread like home staying, social distancing and introduced new stressors and chaos in the day to day life of most people including HCWs.

The data published about mental health of HCWs during first five months of COVID-19 pandemic reports one out of five or more HCWs are sufferers of depression, anxiety and loss of sleep (Pappa et al. 2020). Furthermore, a twenty studies data about mental status of HCWs and general public concluded that more depression, anxiety and sleep disturbance was found in HCWs as compared to general public (Vindegaard and Eriksen Benros, 2020). This article aims to discuss the briefs of the previous SARS pandemic, current COVID 19 pandemic and the immediate impact of current COVID-19 on mental health of HCWs.

In last twenty years, two coronavirus pandemics occurred described by severely infectious respiratory illness as SARS-CoV and MERS (Zhou et al, 2020). Different countries felt the consequences of 2003 SARS outbreak having high mortality and psychological concerns for the HCWs while treating the SARS infected patients. The viral infection was reported from 29 countries with 8,422 cases and 916 deaths, in which HCW’s cases and deaths was highest (Lin et al, 2007).



Effects of previous SARS pandemic on the psychology of the HCWs

The current COVID-19 pandemic gives understanding that how fast an outbreak can occur and affect the workers of all the sectors mainly health care unit. Different studies surveyed about the immediate effects of SARS occurrence on HCWs (Tam et al, 2004; Maunder, 2004). These surveys evaluated the HCWs from different countries like China, Canada, Hong-Kong, Singapore and Taiwan. A survey in Taiwan focussed specially on emergency department (ED) staff to evaluate their psychological well-being, like the progression of PTSD symptoms (Lin et al, 2007). Some HCWs working in high-risk areas like ED, infection wards, detention wards, medium-risk and low-risk areas. The PTSD symptoms and the Chinese Health Questionnaire-12 (CHQ-12) were assessed by DTS-C to measure the psychological well-being. The mental health status measurement scales used during past SARS outbreak and current COVID-19 pandemic are briefly shown in Figure 1.

As compared to the general population, that demonstrated 7% of PTSD, the medium-risk areas exhibited 13% PTSD, while the high-risk areas staff exhibited 22% of PTSD (Lin et al, 2007; Black and Andreasen, 2014). Some common PTSD symptoms include feeling of detachment, anxiety, bad dreams, illusions of negative things happening and many more. Likewise, 38.5% of medium-risk areas and 51.6% of high-risk areas workers presented their CHQ-12 score coherent with psychiatric morbidity. In addition, 28.6% described physical manifestation of headache, 35.2% demonstrated loss of sleep due to over-worrying, and 63.3% indicated worry about family and close friends (Lin et al, 2007).

In a parallel study of psychological stress in 652 forefront HCWs in Hong-Kong, from three hospitals during the SARS outbreak used GHQ to identify the psychiatric morbidity (Tam et al, 2004). The study showed that 56.7% of HCWs had psychological distress. In this study, one of the most significant factors was related to job (68%). Inadequate backing like psychological support, provided from employers was other important factor causing significant level of stress. As this was the very infectious and contagious disease because of which the infected person has to be isolated from friends, relatives and family to avoid the spread of the disease to their surrounding people and fear of their own health contributed to high stress level (Tam et al, 2004).

The status of mental health of HCWs from Toronto, Canada was assessed during the past two SARS outbreaks (Maunder, 2004). The extent of traumatic stress was evaluated using a commonly used IES for higher than 1,550 HCWs working with the patients infected with SARS directly or indirectly having different levels of exposure with the infected people. The survey reported that 30% workers who were having direct clinical contact with the patients had IES score with significant trauma as compared to HCWs without a direct contact with



SARS patients. As compared to the physicians, the nurses reported more stress. HCWs with children demonstrated significantly higher level of stress as compared to workers without children. The isolation from friends and family of HCWs attributed to more than 31%, while 30.9% suffers from job stress and 30.6% demonstrated perceived isolation and isolation from community (Maunder, 2004).

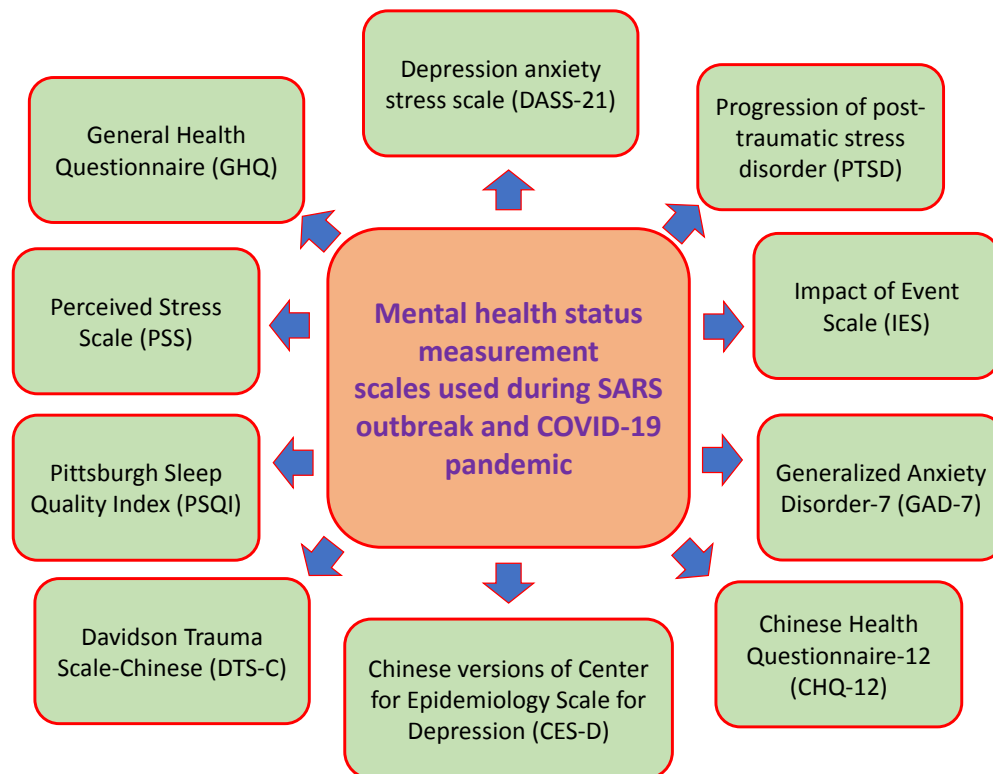


Figure 1: Mental health status measurement scales used during past SARS outbreak and current COVID-19 pandemic

A study in China during 2006 showed that 10% of hospital based HCWs experienced a significantly higher level of PTSD symptoms during the outbreak (Wu et al, 2009). Among those, 46% HCWs were working in areas like ED, infectious disease department, fever department, SARS ward, and pulmonology section, which is considered as a high-risk zone. 40% HCWs had no symptoms and they developed symptoms after a long time of three years (Wu et al, 2009). The SARS outbreak long-term psychological effects were also reported in HCWs from Hong Kong (McAlonan et al, 2007). A survey examined the level of stress in low-risk and high-risk HCWs during 2003-2004. The results showed a minimal difference in PSS score in these two groups of 2003. But, in the year 2004, a significant difference was observed in PSS score, with elevated PSS scores for high-risk workers. The observed grade of stress, negative thoughts, depression and anxiety was higher in HCWs along with the greater score of PSS (McAlonan et al, 2007).



In a parallel study in Toronto, HCWs were examined for 13 to 22 months after the last SARS patient discharge/ death (Lancee et al, 2008). This survey reported that 19% of the HCWs experienced the panic attacks before also and 5% of HCWs experienced a new psychiatric diagnosis. Among the panic attack cases 33% of HCW were old psychiatric cases strugglers, advocating mental support to HCWs suffering from these psychological health issues (Lancee et al, 2008).

Immediate effects on the psychology of HCWs due to current COVID-19 situation

The rapid spread of current COVID-19 pandemic made a tremendous influence on mental status of HCWs negatively in each domain of their livelihood like home surrounding, job stability, financial continuity, work environment. To fight with the COVID-19 pandemic, the healthcare system was not so much prepared even in most developed countries. The HCWs faced a great challenge of shortage of most needed materials to cope up with COVID-19 situation like masks, PPE kit, hand gloves, gowns, face shield and respirators (Adams and Walls, 2020). When the COVID cases started increasing remarkably and most of the hospitalities of the hospital were halted and healthcare system in many countries redeployed some HCWs and laid off many. The immediate and long-term impact of past SARS outbreak and current COVID-19 pandemic on HCWs is shown in Figure 2.

Most of the private practices were significantly affected, reducing the number of staff, as patient number was decreased and telemedicine replaced in person clinical visits (Norvell and O'Donnell, 2020). The safety of family members was a major concern of most frontline HCWs. In addition, social distancing with limited physical contact with family members and constant use of sanitizers and PPE enhanced the stress level (Branson et al, 2020). To reduce the risks of spreading of COVID-19 virus, some HCWs preferred to stay far away from their family members (Ripp et al, 2020). The impact of COVID-19 on the psychological status of HCW is already documented in majority of the countries around the world (Borter and Cooke, 2020; Huang and Zhao, 2020; Lai et al, 2019; Chew et al, 2020).

A survey on 7,236 people in China, including 2,250 HCWs observed and remarked the mental status of the HCW by the symptoms of depression, anxiety, stress and sleep disturbances. The survey used Chinese versions of Center for Epidemiology Scale for Depression (CES-D), Generalized Anxiety Disorder-7 (GAD-7) scale and Pittsburgh Sleep Quality Index (PSQI). These reports demonstrated that 19.8% of HCWs were suffering from depression, 34.7% of HCWs were suffering from anxiety and 23.6% reported sleep disturbances. In comparison to the workers in other profession, HCWs acknowledged the highest level of anxiety, stress, tension and sleep disturbance whereas level of depression in



them were low (Huang et al, 2020). A parallel study was done in China from 34 hospitals with admitted COVID-19 patients focused on 1,257 HCWs (Lai et al, 2020). The study evaluated the symptoms of depression, anxiety and sleep disturbances, in addition to distress level. This study was based on IES-R and GAD-7 and patient health questionnaire (PHQ-9) for the assessment of depression and insomnia severity index (ISI) for assessing insomnia. It was observed that significant number of HCWs experienced depression (50%), distress (71.5%), anxiety (44.6%) and sleeplessness (34%).

The forefront HCWs were having moderate and severe anxiety and sleeping disorder in comparison to second-line HCWs (Lai et al, 2020). Furthermore, HCWs looking after the 906 COVID-19 patients from five hospitals in India and Singapore were correlated between their physical symptoms and psychologic symptoms (Chew et al, 2020). This evaluation used the depression anxiety stress scale (DASS-21), with subscales for anxiety, depression and stress. Nearly 11% were having the symptoms of depression, 16% were having the symptoms of anxiety, and 5% had stress. Of those, who reported anxiety, depression, and PTSD, more than 50% reported symptoms in moderate to extremely severe state. The physical symptoms reported by 66.7% acknowledged anxiety, lethargy, headache, and insomnia (Chew et al, 2020).



Figure 2: Immediate and long-term impact on HCW due to past SARS outbreak and current COVID-19 outbreak



During early months of pandemic due to COVID-19, general and specific safety measures were also set for dental and oral HCWs. The dental and oral HCWs were also advised to apply mobility restrictions and social distancing measures. The sudden warning to use complete PPE and regular sanitation at dental clinics was an impulsive burden on dental and oral HCWs (Spagnuolo et al, 2020; Guo et al, 2020). The sudden shortage of PPE for all HCWs including dentists, also led to extra stress and anxiety among HCWs (Petrovski et al, 2020). The adverse effects of this pandemic on the activity of dentists have been vastly reported (Consolo et al, 2020). To stop the cross-infection, routine dental procedures were abruptly stopped within no time in different parts of the globe during starting months of COVID-19 breakout (Meng et al, 2020; Ahmed et al, 2020). All of a sudden, most of the regular dental clinic appointments were cancelled due to very fewer patient visits in clinics of dentists (Consolo et al, 2020). This cancellation put a sudden break abruptly on most of the dental practice in different countries. Many dental practitioners changed the way of giving services to their emergency patients following the COVID-19 guidelines and many dentists shut down their practices without any certainty of opening the clinics (ALNohair et al, 2020). Another study also shown that there was limitation of treatment of dental only to emergency cases during COVID-19 outbreak (82.5%) (Tarakji et al, 2021).

In some province of Italy, 85% of dentists were reported to be over worried over contracting the viral infection during their work (Consolo et al, 2020). A constant fear of getting infections during the dental procedures was a psychological tension among oral and dental HCWs (Shacham et al, 2020). As oral mucosa is forefront entry route for the start of viral infection, the dental clinics were significantly affected and were forced to treat only emergency patients, to reduce the productivity of spread of aerosols and therefore infection (Peng et al, 2020). All these activities, forced the overall dental manpower management for regular dental clinics to suspend part of their staff (Proffitt et al, 2020). Dentists were forced to reduce their daily practice to avoid the spreading of viral infection to their friends, family members and patients. Dental and oral HCWs. However, a major concern related to financial consequences during the lockdown was an extra stress burden (Coulthard et al, 2020; El-Hage et al, 2020). Furthermore, the long-time closure of all teaching schools and colleges for example dental and medical colleges also affect the dental and medical education (Villa et al, 2020). The online classes for dental students was extremely difficult to manage, as dentistry is a practical application of dental sciences (Meng et al, 2020). The suspension of lectures and practical classes which includes preclinical and clinical work also led to extra frustration among dental students (Clark, 2003).



Discussion

During COVID-19, frontline HCWs had to deal with substantial deficiency of PPE kit, were more prone to infection, very high patient flow, and deaths of their colleagues (CDC, 2020). The painful feeling to be separated from society, mood swings, mental tension, stress related to job continuation especially in private sector and fear of viral transmission to their family members (CDC, 2020; Borter and Cooke, 2020; Maunder, 2004) were some most vital factors of a HCW to deal with along with giving services to the infected persons. These stressors are almost same as HCWs experiencing during spread of SARS which follows the same type of psychological consequences (Huang and Zhao, 2020; Lai et al, 2020; Chew et al, 2020). The HCWs at the forefront of COVID-19 pandemic have been experiencing distress, depression, anxiety, irritability, sleep disturbances, and other PTSD as found in prior SARS pandemic (Lin et al, 2007; Tam et al, 2004; Maunder, 2004; Xiang et al, 2020). The number of cases of COVID-19 and deaths, have exceeded significantly more than during the past SARS outbreak as this current pandemic has almost covered whole globe as compared to past outbreaks. The COVID-19 pandemic has shattered every type of business and after two and half years of the pandemic, now the people feel little comfort.

The lessons from past SARS outbreak had given us much information, but still the health administration and ministries did not take it seriously even in most developed countries. All these outbreaks have taught us a lesson. First of all, the psychological health of HCWs needs more concern. There should be the availability and information about self-assessment kits like Beck Depression Index (BDI), DASS, IES-15 and PSS to assess and monitor anxiety, depression, stress and PTSD level. These tools should be used during and after the pandemic to get the perfect overview of the stress impact. The provision of multidisciplinary resources from different healthcare ministries and other organizations should be provided for all HCWs.

The fulfilment of psychotropic medication, drop-in-counselling, employee support group, telemedicine, an insurance program for a healthy work environment, counselling to balance the mental, emotional or behavioural disorder, and a kind of short term management technique to reduce the potential damage to an individual affected by management during crisis to prevent the loss/damage to an individual is the utmost important to be considered for future pandemics (Xiang Y-T et al, 2020; Maunder et al, 2003). The pandemic control team should also include multidisciplinary support in addition to HCWs like therapists, psychologists, psychiatrists, social workers. Frontline HCWs suffer from most psychiatric symptoms when they deal with severe pandemic patients and need special attention from



healthcare ministry (Adams et al, 2020). Such frontline HCWs need the assessment and treatment for months or years at local, state, union territories and countries.

There are some specific programs which has been employed to help HCWs experiencing mental health issues. The psychiatrists in Mount Sinai Hospital in New York, USA, estimated that 25 – 45% of frontline HCWs could have PTSD (Borter and Cooker, 2020). Some special training programs are also being offered for individual and group therapy sessions (Ripp et al, 2020; Borter and Cooker, 2020). Even though, the previous pandemics warned of the possible mental health issues for HCWs, no seriousness was implemented from such pandemics. However, the ongoing COVID-19 outbreak has a lot of evidence which teaches us to get ready for any future global disasters to save the lives of HCWs and human kind.

Conclusion

The COVID-19 outbreak proved to have a substantial ill effect on psychological health on HCWs including dental and oral healthcare professionals in different fields and positions. The HCWs of all countries were not prepared for this disaster and rapid spread of current pandemic as previous SARS and MERS outbreaks happened in few countries was not seriously taken as a lesson for future pandemic. In this scenario, various studies in different countries demonstrated that majority of the HCWs especially frontline workers suffered from anxiety, distress, depression, and sleep disturbances during the outbreak of COVID-19. Because of the COVID-19 situation, the HCWs including dentists faced the problems of almost no disaster management training, meagre availability of PPE and a minimum opportunity for satisfactory sleep and rest because of heavy work burdens. It is expected that as the time flies, a large number of HCWs could suffer from mental illness problems. So there is a need of some proactive organizations which can implement some specific approaches/techniques or take actions that could be effective for improving any kind of adverse situation due to any unavoidable circumstances, if occurred in future. The healthcare system including dental and oral HCWs equally plays a crucial role in handling an emergency in commonly during this COVID-19 outbreak. Some new guidelines were implemented during this breakout which were not even thought of. Thus, COVID-19 pandemic has been a great lesson for all HCWs including dentists to learn some new approaches to be applied during global emergency services in future. There is also an urgency to incorporate regular psychological risk assessments, high quality research in pandemic preparedness planning. In addition, mental health service provision should be made available in all hospitals.

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