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Impact of Covid-19 as an emerging disease on themental health of the Healthcare workers' - a review article

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Abstract— In March 2020, the World Health Organization (WHO) announced the novel coronavirus disease 2019 (COVID-19) a global outbreak or a pandemic. This brought to our mind the consequences of previous outbreaks to healthcare workers and their mental health. Earlier in 2020, a number of studies investigated the impact COVID-19 is thought to have on healthcare workers' mental health and numerous studies investigated the importance of a healthy recovery for both health systems and healthcare workers post the pandemic. Until the drafting of this manuscript, early November 2020, more than 45 million cases were reported as COVID-19 positice in 124 countries around the globe, which sheds the light on the magnificent psychological impact assumed on healthcare workers. Therefore, this review article was carried out to investigate the significance of psychological outcomes amid and post COVID-19 pandemic as well as the risk factors predisposing these outcomes. We concluded that personal factors such as age, being single, living alone and perceived clinical experience, psychological factors such as maladaptive activities and previous psychological and psychiatric events, social and workplace related factors such as the working environment and the inter-peer relationship are predictive that some people are more prone to mental illnesses following the pandemic. Moreover, we quote certain actions to be done to minimize these effects such as equitable workload distribution, sympathy and family support and sufficient times off. These intervention could help control the negative outcome of the pandemic on the mental health of healthcare workers responding to the pandemic.

Introduction and rationale of the work

The Coronavirus disease 2019 (COVID-19) epidemic has become a global public health emergency and has put unprecedented demands on the world's health systems. At the time this manuscript was prepared (5 November 2020), 45.968.799 infections were registered in 124 countries in the World Health Organisation (WHO).(World Health Organization, 2020)

One of the most primitive mentally reactions to a pandemic is the terror of human beings. Fear is an emotion that helps one to respond at both physical and psychological as well as socioeconomic level to an actual or perceived occurrence which is considered a threat. Therefore, our life is ensured by terror. Fear stimulates the three stages of response: emotional, physiological and motoric in our bodies, like other emotions.(Rodríguez and Sánchez, 2020)

Fear is the feeling that we encounter as disagreeable, though it is usable in and of itself, but as it controls our lives our emotions either surpass the condition that we must control our system and establish an alert about something, expecting and witnessing negatives without ever occurring, or the occurrence that we are subjected to is quite significant. In this case an anxiety-derived condition is a common anxiety disruption, panic disorder, agoraphobia or stress disorder (PTSD), a PTSD complex, prolonged grief disorder. High thresholds take the time to vanish while a situation of terror and anxiety persists. When we incorporate other considerations such as health loss, a loved one, work or quarantine, the symptoms of trauma will linger afterwards.(Rodríguez and Sánchez, 2020)

Intensive, global health care crises are caused by tens of thousands (HCWs) who take care of those afflicted by the outbreak,(The Lancet, 2020) and health professionals who provide COVID-19

patients with direct care are likely to suffer from severe physical, personal, and emotional trauma.(Barello *et al.*, 2020)

In this review, we present the major sources of stress to healthcare workers and how they contribute to affecting their normal patterns of living. In addition, we present the modalities in which healthcare professionals's wellbeing is influenced. We also explore the personal variations and differences among their individual responses and their predictors. We finally present certain recommendations to avoid these effects on health workers mental and physical health.

Aspects of stressors:

Several pressure elements from various sources will impact on ensuring optimum conditions for a stable business atmosphere during healthcare practise, and the health of these workers is clearly compromised by the saturation of sanitary facilities due to the high degree of virus infection. The productivity and proper working order of these organisations should not be ignored, primarily because of their professional well-being, and their conditions of employment jeopardise their physical and mental health, provided that they are subject to multiple stressors in the workplace. Concentration on facets of employment psychology may be considered in two categories, including lack of funding and intense workload, which might affect the future psychological impact of a pandemic in healthcare professionals.(Rodríguez and Sánchez, 2020)Stressors extend beyond workplace. Other factors play an important role; such as public awareness of the disease and protection measures, and the quarantine.(Barello *et al.*, 2020)

a) **Lack of resources**:

This is a situation faced by both material and human capital by all countries afflicted by the virus. As long as the shortage of material is concerned, a high level of practitioners is contaminated because they lack and not use sufficient personal protective equipment (PPE), because equipment that is recommended only only once is reused in certain situations. In order to be aware of it, the virus spread at the height of the pandemic in Wuhan reached 29% of hospital health care staff,(*Aportaciones de esta actualización*, 2020) which declined markedly after appropriate security measures were taken. In Spain, one of the pandemic nations, three out of ten newly infected persons were healthcare professionals in April (*Coronavirus: 3 cada 10 contagios son sanitarios*, 2020) in accordance with the proposal of Redacción Médica. This indicates the severity of the problem.

Apart from the absence of EPPs, the lack of trials to classify potential cases for hospital staff must be noted, so that screened positive workers can be isolated to deter dissemination of the virus. All this leads to anxiety, confusion and vulnerability among staff because they do not know if EPPs protect the virus properly and whether it can be understood. Two factors are to be addressed in the absence of human capital. Next, medical leaves because of the virus specifically connected to the above-mentioned shortage of facilities. Secondly, health-related saturation. In confirmed cases 30 percent of individuals needing the use of COVID-19 were deemed vital and 4 percent of these were identified as mechanical ventilation or other conditions for assistance in the intensive care unit (ICU) (*Aportaciones de esta actualización*, 2020) according to data supplied by the Spanish Ministry for Health at the beginning of April.

In this sense, the finances are clearly not enough to satisfy existing needs, and so medical institutions have signed contracts with physicians, health care providers and non-specialized doctors in their last year of residence. This latter category consists of practitioners who are predominantly new to the working world, who may have been mentally overwhelmed due to their limited background which is already a problem for seasoned professionals. The discomfort they suffered with an unfamiliar and new work could build a detrimental emotional connection to the environment, which they would not want to be re-exposed to.

b) High volume workload:

It stems somewhat from the first, but we wanted to consider it separately because health professionals usually deal with it and previous research have demonstrated that it is a factor directly impacting their health, particularly in this case.(Rodríguez and Sánchez, 2020)

There are two types of job overload: quantitative, which concerns unnecessary work during working hours and in this situation the reorganisation of working hours includes the saturation of health services, which generates physical and psychological weight loss for workers when the staff have little potential for recovery.(Del Líbano *et al.*, 2006)

The psychological distress of employees is induced by all forms of overload, but in view of our present case, qualitative overload plays a key role in the effects that healthcare workers would have in the medium terms. The COVID-19 situation could create an inadequate and powerless feeling for staff as a result of their qualitative overwork, which contributes towards a high emotional burden which already affects health care workers.(Rodríguez and Sánchez, 2020)

In a population which has been already predisposed to this form of dilemma, these variables can cause multiple psychological symptoms in the long run. Indeed, the various levels of depression and anxiety are expected to rise steadily among health professionals and are above average among the general population, so the pandemic is expected to escalate.

More specifically, the Burnout Syndrome, described as an intense and prolonged tension, whose key components are the emotional exhaustion, which induces energy loss, wear out the feeling and fatigue; and dissociation and particularly depersonalization with respect to a individual' s safety by ignoring the emotions, are one of the effects that such stressors have and that health workers seem to suffer.(Maslach, Jackson and Leiter, 1996) In addition, BS (BS) has been a job risk affecting the quality of life of people and affecting the emotional and physical wellbeing of people by the World Health Organization.(Manuel and Luna, 2002)

Due to the influence of BS on the welfare of human employees, and to the influence that it would have on the health care system, if, as predicted, a high effect will be critical for the physical and mental care of these specific practitioners, as well as for the maintenance of high-quality medical systems and attests in the health system.

c) Quarantine:

Quarantine is used to reduce interaction between cases, carriers and stable people, in order to discourage expansion of infectious diseases. As Liu, et al. suggested in their 2012 analysis for hospital staff following the SARS pandemic,(Liu *et al.*, 2012) postraumatic pressures and quarantine-related depressive symptoms will persist for up to three years following the conclusion of the crisis. In comparison, health professionals in quarantine are more likely than the general population to experience post-traumatic stress. Because of this, the emphasis on this demographic is of special interest to us.(Rodríguez and Sánchez, 2020)

The comprehensive analysis of the Lancet (Brooks *et al.*, 2020) also shows that quarantine can lead to post traumatic stress manifestations (Wu *et al.*, 2009) or acute stress disorder,(Bai *et al.*, 2004) which are studied during SARS by other health staff. This condition is an ICD-10-related disorder in the post-traumatic stress disorder where a person is suffering from signs of anxiety in the face of exceptional physical or psychological pain in acute or transient terms, minimum 2 days to maximum four weeks.

It may be induced either by indirect contact, the witnessing of incidents with other persons or by being made aware of stressful events experienced by near individuals. It then triggers sleeping problems, agitation, low concentration, motion disorders, over monitoring among other things, which may increase burnout. People with these conditions may develop dissociative symptoms leading to a disconnection that comes with the next occurrence in an attempt to prevent anxieties. This means that people can feel senseless or detached mentally because of the symptoms of BS and suffer from dissociative amnesia and, in the more extreme situations, feel that incidents are not actual.(Rodríguez and Sánchez, 2020)

d) Public awareness:

It has been widely recognized that awareness of the public in epidemic situations is a crucial intervention to control the spread of infection and creation of new cases. In their study, Alanezi and colleagues show that effective awareness of the public could achieve high rates of pre-hospital control of the spread of the virus.(Alanezi *et al.*, 2020) Building on this fact, this would reduce the numbers of patients visiting hospitals to see doctors, This would reduce patients numbers and in turn the doctors workload.

However, it's understandable to say that doctors could be loaded with raising public awareness as part of their daily life activities, which would tend to be a source of stress in itself, there have not been enough evidence to support this hypothesis.

Negative psychological impact on healthcare workers

Various studies discussed the potential negative psychological outcomes following an outbreak. These outcomes vary in degree from mild to the severest forms of mental disorders. One systematic review from 2016 presented by Vyas and colleagues that gathered in-depth information about these outcomes. Following is a summary of what was proposed in the literature about this perspective.

I. Psychological distress:

In 13 studies after the SARS epidemic in 2003(Chong *et al.*, 2004) and one study after the H1N1 outbreak in 2009,(Goulia *et al.*, 2010) psychological distress was measured. In Exposed HCWs, there was an overall psychological distress rate of around 40% (range 11%-75%). In exposed HCWs overall levels of distress were found to have been significantly higher than safe controls; especially among doctors, followed by nurses and related HCWs.(Chong *et al.*, 2004)Yet, there is some indication that nurses are more anxious than surgeons.(Wong *et al.*, 2005)

II. Insomnia:

Insomnia has been tested in three 2003 SARS trials(Su *et al.*, 2007) and one during occupational human immunodeficiency virus (HIV) exposure.(Worthington, Ross and Bergeron, 2006) Insomnia was evaluated in 2003. The average insomnia rate among exposed HCWs was about 39% (range between 30 and 52%), considerably higher than that of stable controls.(Vyas *et al.*, 2016) Rates were slightly higher immediately after the epidemic, but within a matter of weeks, the rates among control groups were stabilised and parallel.(Worthington, Ross and Bergeron, 2006)

III. Alcohol and drug misuse:

In five trials following the 2003 SARS epidemic, alcohol and substance addiction were analysed.(Lancee, Maunder and Goldbloom, 2008) The average of HCWs reported using alcohol to deal with disagreeing emotions during the epidemic was around 13% (ranging from 6 percent to 21%), and 19% reported alcohol-related symptoms three years after exposure.(Wu *et al.*, 2008)

Alcohol / drug addiction rates did not vary between race and profession.(Phua, Tang and Tham, 2005) Alcohol misuse was favourably linked with post-traumatic stress disorder and depressive symptoms, but the incidence of drug addiction and/or dependency syndrome was associated with mental health conditions preexisting.(Lancee, Maunder and Goldbloom, 2008)

IV. Post-Traumatic Stress Disorder:

In 17 experiments after the 2003 SARS epidemic, one studies after the 2009 H1N1 outbreak and one after work exposure to HIV were analysed.(Worthington, Ross and Bergeron, 2006) The overall PTSD prevalence was about 21% (from 10% to 33%), 40% of whom registered persistently elevated PTSD symptoms 3 years after exposure.(Wu *et al.*, 2009) In exposed HCWs, the symptoms of PTSD were considerably higher , especially in the allied HCWs and pursued by nurses and doctors.(Vyas *et al.*, 2016)

V. Depression

Depression has been tested in seven trials in the wake of the 2003 SARS epidemic and in one after HIV exposure in employment.(Liu *et al.*, 2012) The overall rates of depression were roughly 46% (range between 23 and 74%), with extreme depressive symptoms showing up to 9%,.However, only 11% were formally diagnosed a month after the epidemic.(Su *et al.*, 2007)

VI. Anxiety

In eight trials after the 2003 SARS epidemic,(McAlonan *et al.*, 2007) 2 after the 2009 H1N1 outbreak,(Matsuishi *et al.*, 2012) two after occupational exposure and one after occupational exposure to the potentially pathogens of blood anxiety were analysed.(Azmoon, Dehghan and Pourabdian, 2013) The average anxiety score was about 45 percent (from 19 to 77 percent).(Vyas *et al.*, 2016) The overall level of anxiety among exposed HCW was seen to be significantly higher than safe controls, particularly among nurses, followed by doctors and allied HCWs.(McAlonan *et al.*, 2007)

lessions learnt and practical points to prevent mental illness in the covid-19 era

In this area, we will cover the signs that should be looked for in HCWs responding to the outbreak indicating their mental health is endangered. In addition, we will extract practical points mentioned and learnt from previous outbreaks.

1. Prediction of negative psychological impact on healthcare workers

Given the major negative impacts outbreaks could bring to healthcare workers, it has become of utmost important to recognize early manifestations to observe in responding HCWs. This will enable us to take early and robust interventions to prevent further deteriorations in their mental health. These manifestations would be termed predictors,and, in this section, we will go through more details about them.

a) Personal predictors

The risk of HCW mental health disorders in an epidemic / pandemic has been raised by such personal characteristics. The single people were 1.4 times more likely, due to therapeutic cuts during the epidemic, to experience mild mental illnesses. No test was performed, however, to determine whether this varied from exposed to unexposed HCWs.(Chan and Chan, 2004)It was also observed that single

people were indicative of higher levels of distress in hospital workers during an epidemic, but this test did not remove exposure to non-exposed HCWs.(Liu *et al.*, 2012)

The occurrence of PTSD symptoms was more predicted to occur to married individuals, on the other hand. In another study, signs of PTSD were observed more often among those who resided in a dorm or outside their families than who lived in families.(Chong *et al.*, 2004)

Higher psychological distress symptoms in exposed HCWs is expected by less experience in healthcare practice.(Maunder *et al.*, 2006) Also, the occurrence of PTSD signs during an epidemic was estimated by a younger healthcare practitioner.(Sim *et al.*, 2004) HCPs with a lower household revenue showed elevated PTSD symptoms during the epidemic was also reported.(Vyas *et al.*, 2016) Finally, the HCP during the epidemic expected concomitant mental health problems (social disapproval, bigotry, or discrimination due to their work).(Park *et al.*, 2018)

b) Psychological predictors.

The future defence of endurance (resilience) has been shown to impair mental health directly and implicitly during the epidemic.(Park *et al.*, 2018) In exposed HCWs, higher resilience specifically forecast improved mental wellbeing. Indirectly, resistance was related to reduced experience of stress and, in turn, to improved mental health.(Stuijfzand *et al.*, 2020)

Maladaptive activities done for coping were recognized as a risk factor, and the signs of burnout, PTSD and mental illness were impaired in long term by predictive effects.(Maunder *et al.*, 2006) Tiredness (physique and emotional), along with presumed lack of infection awareness, avoided signs of impaired physical and mental health during an epidemic. In addition, a poor mental view of the outbreak estimated that PTSD was more likely in HCWs.(Lehmann *et al.*, 2016)

c) Social predictors.

Organizational support and support for family / friends may serve as preventive factors in the sense of an epidemic / pandemic where they are sufficient. However, mental health risk factors included low levels or lack of organisation's assistance, including psychological support and inadequate insurance. The mental health consequences of social exclusion or loneliness were less pronounced. The epidemic has further issues with mental health, with the HCP 's having had an effect on life (e.g. decreased interaction with the family).(Brooks *et al.*, 2018)

d) Workplace-related predictors.

The work function has affected mental wellbeing in HCWs with the worst psychiatric results in those in close contact with infectious patients. Nurses had worse findings than physicians. Specialized training and readiness were shown to protect against stress and anxiety. However, where preparation was viewed as insufficient, the effects of HCWs with burnout and PTSD were more vulnerable and often persisted throughout the long term. Increased symptoms such as anxiety, depression, PTSD, alcohol intake, burnout and sleep disorders were linked with high-risk conditions (i.e. high risk of exposure to infectious patients). Increased signs of acute stress, PTSD and alcohol use under quarantine have been associated. The longer the quarantine, the greater the detrimental effect on the effects of frustration and avoidance.(Brooks *et al.*, 2018)

Job tension, particularly in situations when one's ability to do his job has been disrupted and the loss of control and involuntary work has adversely affected mental health results with contaminated patients. For instance, those who had to handle the contaminated patients accidentally showed greater signs of anxiety and depression than volunteers. Perceptions of the danger and safety hazard is described as a preventive and mental health risk factor. Feels of faith in the control of appliances and

pathogens expected lower physical fatigue and vengeance. Trust in the safeguards in the workplace has minimised fears. However, there has been a high awareness of PTSD symptoms in the personal danger.(Stuijfzand *et al.*, 2020)

2. Learning practices to prevent negative psychological impact.

In light of the aforementioned predictive factors of negative outcomes on mental health, reversing these factors have been reported to be useful in variable studies. A rapid but thorough meta-analysis by Kisely and colleagues gathered most of the handy interventions that would be of feasible and realistic impact to HCWs mental health.(Kisely *et al.*, 2020) Such methods included Many brief breaks, sufficient time off work , family care and sympathy, a sense of being well-trained, a friendly work atmosphere, clearly defined contact with workers and trust in precautionary steps is protective. It has been noted that psychiatric techniques had been available and guidelines for staff care established.(Kisely *et al.*, no 2020)

While nurses may be more prone to psychiatric trauma than other staff, infection management protocols are more likely to be followed. Many reports have shown access to appropriate facilities for personal safety. Finally, the increase in psychological effects of compromised colleagues and a generic decline in disease spread.(Kisely *et al.*, no 2020)

Health agencies should recommend creating state and national multidisciplinary mental health networks for mental health problems and supplying both patients and HSW with clinical resources. Evaluation can be carried out via web applications such as We Talk using electronic media. Health professionals engaged with recovery, diagnosis of COVID-19 patients should be routinely screened for fatigue, depression and anxiety. They should be evaluated. Timely management of mental health conditions in HCW by psychotherapeutic methods is ideally important on the basis of the stress adaptation model.(Spoorthy, 2020)

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