International Journal of Research in Medical Sciences
Prasad V. Int J Res Med Sci. 2021 Oct;9(10):3228-3234
www.msjonline.org
pISSN 2320-6071 | eISSN 2320-6012

DOI: https://dx.doi.org/10.18203/2320-6012.ijrms20213644

Review Article

Impact of the COVID-19 pandemic on healthcare workers

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Received: 21 August 2021
Revised: 27 August 2021
Accepted: 31 August 2021

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ABSTRACT

The coronavirus disease 2019 (COVID-19) pandemic has heavily burdened, and in many cases overwhelmed, healthcare systems including healthcare workers. The novel COVID-19 started from Wuhan in mainland China. Since then it has affected most of the nations and continents because of its rapid spread. Most commonly affected are the healthcare professionals who are working on the frontline. The COVID-19 epidemic has mushroomed globally, disrupting the existence of millions It is a generalized mental condition occurring without any trigger or stimulus. Various symptoms of depression are: anxious, sad and empty feelings, hopelessness, guilt and may be sense of helplessness, restless attitude, irritation, and lack of interest in various hobbies and activities and were once considered relax able and which are used to provide pleasure. Furthermore, healthcare workers reported mental health problems putatively associated with healthcare workers' occupational activities during and up until years after epidemics, including symptoms of post-traumatic stress, burnout, depression and anxiety. As for lack of material, a high percentage of professionals are getting infected for not having adequate personal protection equipment (PPE) and not using it properly, having to re-use in many occasions equipment which is only recommended for one-time utilization. During work performed by healthcare workers, several pressure elements from different sources may impact on keeping optimal conditions for a healthy working environment, and because of the saturation of the sanitary facilities due to the high level of virus infection, the health of these professionals has been obviously affected. While the main focus is concentrated on laboratory testing, finding the disease cure and prevention of transmission, all individuals are undergoing a plethora of psychological problems while adjusting to current lifestyles and disease fear. In current study, an attempt has been made to find out the impact of this pandemic situation on psychological well-being of healthcare and non-healthcare workers. Our study has reported identical findings to those reported by numerous investigators working across the globe. The present paper has outlined the stressors which the frontline health care professionals have faced including fear of spreading disease to co-workers and members of the family, irregular sleep patterns, abrupt work cycles, and lack of adequate training skills in dealing with such a novel situation.

Keywords: Stress disorders, Post-traumatic stress, Burnout, Psychological

INTRODUCTION

The coronavirus disease 2019 (COVID-19) pandemic has heavily burdened, and in many cases overwhelmed, healthcare systems including healthcare workers. The novel COVID-19 started from Wuhan in mainland China. Since then it has affected most of the nations and continents because of its rapid spread. Most commonly affected are the healthcare professionals who are working on the frontline. The COVID-19 epidemic has mushroomed globally, disrupting the existence of millions. Under this current pandemic situation, the frontline health care professionals are looped in the clutch of the virus and are relatively more exposed to the patients infected with the disease. In this precarious situation, the frontline health care professionals have contributed their best to provide

utmost care to the patients infected with the ailment. The direct involvement of these professionals, however, has taken a toll on their physical health as well as on their mental well-being. Several studies conducted recently have reported that frontline health care workers engaged in direct diagnosis, treatment, and care of patients with COVID-19 are associated with a higher risk of symptoms of depression, post-traumatic stress disorder and other mental health issues. Lack of personal protection equipment, unreasonable amounts of work, improper medicines, fear of contracting the disease, and lack of skilled training have interposed the frontline health care workers with unimaginable stress. Due to the widespread outbreak, the death count of the frontline health care professionals has also surged. However, studies exploring the physical and mental welfare of the frontline health care professionals and their families are very few and far behind. To address this aperture, the present paper attempts to highlight the psychological and physical impact of the COVID-19 pandemic on the frontline health care professions and to understand the impact of the death of these frontline health care professionals on the psychological well-being, mourning process, and complicated grief among the family members of healthcare professionals. The paper also presents some recommendations for providing psychological support to healthcare professionals and their bereaved families. They suffer from severe psychological side-effects which may be attributed to extremely long working hours, heavy work load, and inadequate supply of personal protective equipment's (PPE) supplies, over-reporting by audio-visual and social media, and various news channels and high rate of infection among the handling staff.[1]

The World Health Organization (WHO) has emphasized the extremely high burden on healthcare workers, and called for action to address the immediate needs and measures needed to save lives and prevent a serious impact on physical and mental health of health care workers. Previous viral outbreaks have shown that frontline and non-front-line healthcare workers are at increased risk of infection and other adverse physical health outcomes. As per WHO, mental health disorders constitute one of the main cause of disability around the world. Stress is a process wherein external or environmental demands exceed the adaptation capability of any organism which results in biological along with psychological alterations which at large may place those people at risk of disease. Anxiety can be defined as "a physiological and psychological state which is characterized by various somatic, cognitive, behavioural, as well as emotional components." All of these components when combined together may lead to the creation of an unpleasant feeling which has been associated with fear, worry, and feeling of uneasiness.

It is a generalized mental condition occurring without any trigger or stimulus. Various symptoms of depression are: anxious, sad and empty feelings, hopelessness, guilt and may be sense of helplessness, restless attitude, irritation, and lack of interest in various hobbies and activities and were once considered relax able and which are used to provide pleasure.[2] Furthermore, healthcare workers reported mental health problems putatively associated with healthcare workers' occupational activities during and up until years after epidemics, including symptoms of post-traumatic stress, burnout, depression and anxiety. Likewise, reports of the mental toll on healthcare workers have persistently appeared during the current global health crisis. In the face of a prolonged crisis such as the pandemic, sustainability of the healthcare response fully relies on its ability to safeguard the health of responders: the healthcare workers. Yet the recent findings of psychological distress among healthcare workers might indicate that the healthcare system is currently unable to effectively help the helpers. The continuing coronavirus (COVID-19) pandemic has massive impact on psychological health of healthcare as well non-healthcare professionals. There is an increasingly pressing requirement to address these impacts on an individual's mental state by protection as well as promotion of overall well-being during as well as after the outbreak is over.[3]

HEALTH CARE WORKER DISTRESS

Uncertainty about the duration of the crisis: Risks threaten that timeline. The timeline in other countries will depend on seven crucial variables. And when herd immunity is reached, the risks will not vanish; herd immunity may prove temporary or be limited to regions in a country. Health care providers are facing a time of unprecedented stress in occupations which are highly demanding even in the best of times. The requirement of physical presence with the potential of contracting or spreading disease, coupled with the emotional strain of caring for frightened and sick patients will require high levels of emotional intelligence, self-care, emotion control, and stress management. Healthcare workers are one important group in the category of "front line workers"—employees who are directly public-facing. Not only does each worker's ability to manage stress have a ripple effect on their patients, co-workers, and families, managing stress effectively will protect their immune systems as they face daily challenges. But the responsibility to "cope better" should not rest solely with individual employees. Having supportive teams, managers, and organizations is critical. The virus is spread mainly by close contact such that healthcare workers and those admitted to or working in hospitals are particularly at risk. Healthcare workers and patients may be protected by adequate personal protective equipment and hygiene including frequent handwashing, showering, wearing gloves and masks. As a result of the pandemic, rapid spread and the associated increased mortality rate, the pandemic has caused public-health issues worldwide; further, the stress people experience in response to this situation has also had a severe negative effect.[4] Regarding health-care workers, COVID-19 has caused issues such as high health-care demands, increased patient mortality, emotional and physical stress, and rationing of health-care supplies.[5] Further, rapid increases

in the number of suspected and confirmed positive cases, low supplies of PPE, overwhelming work-loads, widespread media coverage of the pandemic, perceived inadequate organizational support, and an increased risk of contracting the disease and transmitting it to one's own family have also caused psychological distress among health-care workers.[6]

It is essential to consider both the psychological and physiological influence of the pandemic on health-care workers. Failure to assess and address psychological responses to pandemic-associated stressors can negatively impact health-care workers' physiological and psychological functioning. Notably, during pandemics, health-care workers who provide care to patients are among the populations most likely to experience psychological distress, including depression and anxiety.[7]

POTENTIAL SHORTAGES OF HEALTH CARE RESOURCES, ESPECIALLY PPES

During such public health emergencies, personal protective equipment (PPE) like-gloves, surgical face masks, air-purifying respirators, ventilators, goggles, face shields, N95 respirators, and gowns are essential in preventing the spread of infection among the patients and health care workers (HCWs). As in this critical phase, a shortage of all of these PPE is about to develop or has already developed in high demand areas like triage, isolation wards etc. Previously, PPE was commonly used in the hospital environment, is now a scarce and precious commodity in many locations when it is needed most to care for highly infectious patients.

WHO calls on industry and governments to increase manufacturing by 40 per cent to meet rising global demand

The World Health Organization has warned that severe and mounting disruption to the global supply of personal protective equipment (PPE) – caused by rising demand, panic buying, hoarding and misuse – is putting lives at risk from the new coronavirus and other infectious diseases. Healthcare workers rely on personal protective equipment to protect themselves and their patients from being infected and infecting others. But shortages are leaving doctors, nurses and other frontline workers dangerously ill-equipped to care for COVID-19 patients, due to limited access to supplies such as gloves, medical masks, respirators, goggles, face shields, gowns, and aprons.

"Without secure supply chains, the risk to healthcare workers around the world is real. Industry and governments must act quickly to boost supply, ease export restrictions and put measures in place to stop speculation and hoarding. We can't stop COVID-19 without protecting health workers first," said WHO Director-General Dr Tedros Adhanom Ghebreyesus. In early March, WHO noted that Since the start of the COVID-19 outbreak, prices have surged. Surgical masks have seen a six-fold increase, N95 respirators have trebled and gowns have doubled. Supplies can take months to deliver and market manipulation is widespread, with stocks frequently sold to the highest bidder. WHO has so far shipped nearly half a million sets of personal protective equipment to 47 countries, but supplies are rapidly depleting. They urged industry to raise its production of PPE by 40%. Countries issued contingency plans for stock-outs. Nations such as the UK and the USA reported dangerously low supplies of PPE. In Italy, the shortages contributed to the high burden of infection and death among hospital staff. Providing direct care to patients with COVID-19 and Knowing someone who has contracted or died of the disease

Jahrami et al. have testified that 3/4th of healthcare workers in COVID-19 care centers have reported disturbances in sleep cycle due to the constant work stress, dealing with death and dying of patients and co-workers, chaotic work schedule and work cycle. Recent studies have established that due to the close contact with patients diagnosed with COVID-19, the frontline health care professionals have developed physical symptoms like fever, headache, cough, hemoptysis, and diarrhea.[8] Those at greatest risk were HCWs who felt less prepared, had less family support, felt less self-efficacy, perceived a higher level of stress, and those with poor sleep quality. Fear of self and colleague infection represented a top source of stress.[9] While health care workers often accept increased risk of infection, as part of their chosen profession, they often exhibit concern about family transmission, especially involving family members who are elderly, immunocompromised, or have chronic medical conditions. While the CDC and Occupational Safety and Health Administration provide clear recommendations, it is evident that more is required to optimize safety in the current environment. Health care workers may ask whether their family members can receive priority for testing, vaccination, and treatment when the testing becomes available.[10] Ensuring care of health care workers' family members would enhance workforce confidence and availability, but the feasibility and advisability of family priority is yet to be determined. For front-line caregivers, the concerns about transmitting the virus to family members will need to be addressed.[11]

HEALTH CARE WORKERS REQUIRED TO UNDERGO QUARANTINE OR ISOLATION

Pappa et al. conducted a systematic review and meta-analysis of the prevalence of anxiety, depression, and insomnia, respectively, among health-care workers during the COVID-19 Pandemic. Anxiety was assessed across 12 studies, and a prevalence of 23.2% was returned; meanwhile, depression was assessed across 10 studies, and a prevalence of 22.8% was returned. The findings of Pappa et al support the results of the current study, as they indicate that health-care workers experience anxiety and depression during COVID-19; however, Pappa et al's findings also contradict the results of the present research, as the systematic review and meta-analysis showed a

higher prevalence of anxiety than depression. Our study found higher depression than anxiety.[12] Finally, Labrague and De Los Santos found that 123 of 325 (37.8%) nurses examined had dysfunctional anxiety levels. Labrague and De Los Santos also indicated that COVID-19 anxiety is associated with social support, organizational support, and personal resilience. These findings support the current study results by showing that front-line nurses are affected by anxiety during the COVID-19 Pandemic.[13] To help health-care workers provide care under extremely difficult clinical circumstances such as COVID-19 pandemic, the emotional and behavioural reactions vary among health-care workers should be acknowledge and empowered through education and training to overcome fear and empathetic distress.

Around 69.6% were afraid of getting quarantined, whereas 66.3% were anxious about the cost of treatment. When asked if they felt afraid when they hear a colleague was infected and on a ventilator because of COVID-19, most participants (91.2%) answered yes. When asked if they were afraid of getting infected and not getting any medical treatment, a considerable number of participants (62%) responded yes. About 25.2% had sleeping difficulty, 56.8% were afraid of losing their life, and 49.2% were generally furious, angry, and depressed. On evaluating the fear of carrying the infection, most participants (94.2%) were afraid of transmitting the infection to their family members and friends, while 83.9% felt nervous when talking to their family members in close vicinity.

HIGH VOLUME WORKLOAD

This factor is derived from the first one to a certain extent, but we have decided to take it into account independently as it is something health professionals normally deal with and previous studies have shown it is a factor that affects their health directly, especially in this situation. Within work overload, there are two different types of overwork: quantitative, which relates to performing excessive tasks during working hours and, in this case, it is related to the saturation of health facilities which have required the reorganization of working days, thus generating physical as well as psychological exhaustion of professionals, as workers not having the opportunity to recover; and the qualitative overwork, defined as to having to cope with excessive demands on their cognitive as well as their emotional skills.[14]

Both types of work overload contribute to worker's psychological discomfort but, considering our current situation, the qualitative overload plays a very important part in the consequences which will appear in healthcare workers in the middle term. The situation caused by COVID-19 could generate in workers a feeling of ineffectiveness and helplessness because of this qualitative overwork that they are facing, which in turn contributes to a high emotional load which is already affecting healthcare workers. As we have said, if the factors described above last in time, they could generate different symptoms at psychological level in a population already predisposed for this type of problems. In fact, it is known that different levels of depression and anxiety are increasing progressively in healthcare workers and are above average of the general population, so it is assumed they could increase for the reasons explained before.

More precisely, one of the consequences caused by these stressors and to which healthcare workers are prone is the Burnout Syndrome (BS), defined as an excessive and prolonged stress whose main components are emotional fatigue causing energy loss, wear out feeling and fatigue; dissociation and, specifically, depersonalization, with regards to an individual's defence upon avoiding those emotions which cause discomfort; and diminish work performance, as work itself loses its previous value.[15] Burn out Syndrome is declared by World Health Organization (WHO) as a labour risk affecting person's life quality, compromising individual's mental as well as physical health. Besides, at the organizational level, the worker with BS has not all the capacity to give his patients the healthcare they need, getting the quality of the health services even worse. BS can be identified using the following clinical evidence: social isolation, anxiety, fear, depression, anger, addictions, personality changes, guiltiness and self-immolation, changes in eating habits, substantial gain or weight loss, loss of memory disorganization, problems with concentration and sleep disorders.[16] Due to the effects caused by BS in worker's health at the individual level, as well as the repercussion on health system if it had, as it is expected, a high effect on healthcare workers, the prevention and treatment of BS and its manifestations would be essential for the physical and mental health care in these particular professionals, and the preservation of a high quality health system and attention to patients.

HEALTH CARE WORKERS HEALTH

During work performed by healthcare workers, several pressure elements from different sources may impact on keeping optimal conditions for a healthy working environment, and because of the saturation of the sanitary facilities due to the high level of virus infection, the health of these professionals has been obviously affected.

We must not forget the efficiency and proper working order of these institutions depend mostly on its professionals' wellbeing, and the conditions in which they are performing their duties are putting at risk the physical and mental health of many of them as they are exposed to different stressors at work.

Focusing on aspects related to occupational psychology, we can consider highlighting two groups of main factors which could influence on the possible psychological consequences caused by the pandemic in healthcare workers: lack of resources and heavy workload.

LACK OF RESOURCES

This is a situation that all countries affected by the virus are facing, both material and human resources. As for lack of material, a high percentage of professionals are getting infected for not having adequate personal protection equipment (PPE) and not using it properly, having to re-use in many occasions equipment which is only recommended for one-time utilization. To get an idea of this, at the beginning of the pandemic in Wuhan, virus transmission reached 29% of healthcare workers in hospitals, these high numbers decreased considerably when adequate protection steps were implemented. In Spain, one of the countries most affected by the pandemic, in April, according to Redacción Médica, three out of ten new infected people are healthcare workers, this shows the problem's magnitude. Besides the lack of PPEs, we must mention the lack of tests to identify possible cases in hospital professionals, in this way we can isolate tested positive workers to avoid virus propagation. All of this generates fear, uncertainty and insecurity in workers for not knowing if PPEs are protecting adequately and even if they could have the virus and not being aware of it. Regarding the lack of human resources two elements must be considered. First, medical leaves due to the virus, which is directly related to the lack of equipment mentioned above. Second, the saturation of health institutions. According to data provided by Spain's Ministry of Health at the beginning of April. In European Union and United Kingdom, in cases confirmed, 30% of persons with COVID-19 required hospitalization and 4% of these were considered critical, defined as requiring mechanical ventilation, or other criteria to be provided with assistance in intensive care unit (ICU).[17,18]

In this context, it is evident there are not enough human resources to meet current demands, so medical institutions have signed contracts with doctors and nurses being in their last year of residency, as well as with medical graduates without specialization. This last group is formed by professionals who are mostly new in labour environment and might have been overloaded at psychological level because of the situations they have had to face since their little experience which is already a challenge for experienced professionals. The distress suffered in an unknown and new job for them, could generate a negative emotional association to this work environment, becoming an aversive stimulus to which they would not want to be exposed again.

Also, the working hours for many professionals have been modified, having to work more hours than usual, even making double shifts; time needed for resting to guarantee personal wellness and, therefore, a proper job performance. We must not forget fatigue is related to possible accidents, for example handling PPEs that increase the risk of infection. Additionally, the change of shifts could be a problem for family conciliation, increasing even more the pressure they are exposed to.

BEING QUARANTINE AND ISOLATED

In addition to the labour conditions and its consequences quarantine is implemented to stop the expansion of pandemic. Recent history has had situations where quarantine was used as a measure to avoid expansion of contagious disease, such is the case for China and Canada during the outbreak of Severe Acute Respiratory Syndrome (SARS) or in some African countries during Ebola disease. Based on these, we know the psychological consequences caused by this type of isolation.

As stated by Liu, et al. in their study, performed after the SARS pandemic in 2012, for the hospital workers, the post-traumatic stress and depression symptoms associated to the quarantine, can last up to three years after the crisis finalizes. Besides, they add, the healthcare workers placed in quarantine show greater symptoms of post-traumatic stress than the average population.[19] Due to this fact, we consider particularly relevant to focus on this population. In the systematic review launched by The Lancet, other research performed on healthcare workers active during SARS highlights that quarantine can produce a predisposition to suffer post-traumatic stress symptoms or acute stress disorder.[20-22] This disorder, according to ICD-10, is a disorder linked to Post-Traumatic Stress Disorder (PTSD) when an individual suffers in acute and temporary terms -minimum 2 days and maximum four weeks- the symptoms of anxiety as a reaction to an exceptional physical or psychological distress. This experience can be caused by indirect exposition, for witnessing events happening to other individuals, or by being informed about traumatic events that close people have suffered. Consequently, among others, it causes difficulty sleeping, irritation, poor concentration, motion disorders, hyper-surveillance, which could contribute to an increase in burnout.

The individuals with these disorders can show dissociative symptoms caused by the disconnection produced when trying to avoid anxiety by the upcoming event. This means that individuals could feel emotionally senseless or disconnected- as it occurs as consequence of BS-, suffer dissociative amnesia and, in the most severe cases, have the sensation that events are not real. If not treated in time, the disorder or episode of acute stress could become a chronic PTSD, considered over time, or even a complex PTSD.

PTSD is a disorder, according to ICD-10, characterized by: flashbacks or nightmares about the traumatic event which produce terror and strong physiological reactions, avoidance of memories or thoughts related to the event, or to avoid activities, situations or persons related to, and a lasting perception of a current noticeable threat. Due to these symptoms, professionals working in intensive care units (ICU) may not desire to keep working there.[23] If these individuals develop post-traumatic stress, as a self-protection strategy either being aware or unaware, they may not want to return to where it was produced.

Therefore, the psychological consequences derived from the social situation to which the healthcare workers are exposed could not only have implications at individual level, but also increase the burnout already mentioned and may help degrade the health system institution; due to the fact that having professionals with PTSD would decrease human resources either with sick leaves or for not being able to cover.

CONCLUSION

The control of COVID-19 disease is also largely impacted by intervention of psychological problem faced by medical and non-medical individuals. COVID-19 has left the frontline health care professionals with health uncertainty. HCW may experience psychological distress as a result of the COVID19 pandemic due to: providing direct patient care; vicarious trauma; getting infected; quarantine. The virus has donned upon the frontline health care professionals to a larger extent leaving a deeper impact on their physical and psychological well-being. Forefront medical workers and researchers have played a foremost role in combating against the COVID-19 outbreak. Many recent studies have highlighted the psychological issues which has impacted the lives of the frontline health care professionals (i.e. depression, anxiety, insomnia, and post-traumatic stress symptoms). There are rare evidences of studies that have explored the mourning processes or complicated grief faced by the families of these health care professionals who lost their life fighting the pandemic. The paper has also attempted to make some recommendations to provide psychological support to the bereaved family, to fight the mental health problems encountered after the loss of their loved ones. Strong leadership with clear, honest and open communication is needed to offset fears and uncertainties. Provision of adequate resources and mental health supports will bolster self-efficacy and confidence Self-care is our responsibility.

Recommendations

Supporting health care workers –at organisational level strategies

Limit working hours to no longer than 12-hour shifts. Utilize teams. Provide defusing and assess responder functioning after each shift. Frequent, clear and rapid communication from leadership. Appropriate provision of supplies and equipment. Regular debriefing sessions. Informal and formal mental health support should be offered to health care workers.

Supporting health care workers –at personal level strategies

Recognize and heed early warning signs of stress. Reduce physical tension by deep breathing, meditating, walking. Take brief breaks for basic bodily care and refreshment. Maintain a healthy diet and get adequate sleep and exercise. Avoid or limit caffeine and use of alcohol. Realize that it is okay to draw boundaries and say “no”. Talk with your co-workers about experiences. Support one another. Ask for help if you need it.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Spoorthy MS. Mental health problems faced by healthcare workers due to the COVID-19 pandemic – A review. Asian J Psychiatr. 2020;51:102119.
2. Maunder R. The experience of the 2003 SARS outbreak as a traumatic stress among frontline healthcare workers in Toronto: Lessons learned. Philos Trans R Soc Lond B Biol Sci. 2004;359:1117-2.
3. Khan YH, Malthi TH, Alotaibi NH, Alzarea AI. Work related stress factors among healthcare professionals during COVID-19 pandemic; a call for immediate action. Hosp Pract. 2020.
4. Heath C, Sommerfield A, von Ungern-Sternberg BS. Resilience strategies to manage psychological distress among healthcare workers during the COVID-19 pandemic: a narrative review. Anesthesia. 2020;75(10):1364-71.
5. Maben J, Bridges J. Covid-19: Supporting nurses’ psychological and mental health. J Clin Nurs. 2020;29(15–16):2742-50.
6. Centers for Disease Control and Prevention. Strategies for optimizing the supply of facemasks. 2020. https://www.cdc.gov/coronavirus/ 2019-ncov/hcp/ppe-strategy/face-masks.html. Accessed on 20th May, 2021.
7. Global shortage of personal protective equipment. 2020.
8. Xiao H, Zhang Y, Kong D, Li S, Yang N. The effects of social support on sleep quality of medical staff treating patients with coronavirus disease 2019 (COVID-19) in January and February 2020 in China. Med Sci Monit. 2020;26(26):e923549.
9. Preti E, Di Mattei V, Perego G, Ferrari F, Mazzetti M, Taranto P. The psychological impact of epidemic and pandemic outbreaks on healthcare workers: rapid review of the evidence. Curr Psychiatry Rep. 2020;22(8):43.
10. Jahrami H, BaHammam AS, AlGahtani H, Ebrahim A, Faris M, AlEid K, et al. The examination of sleep quality for frontline healthcare workers during the outbreak of COVID-19. Sleep Breath. 2020;1-9.
11. Shaukat N, Ali DM, Razzak J. Physical and mental health impacts of COVID-19 on healthcare workers: a scoping review. Int J Emerg Med. 2020;13:40.
12. Du J, Dong L, Wang T. Psychological symptoms among frontline healthcare workers during COVID-19 outbreak in Wuhan. Gen Hosp Psychiatry. 2020.
13. Predictive Factors Associated With Fear Faced by Healthcare Workers During COVID-19 Pandemic: A Questionnaire-Based Study Monitoring. 2020.

14. Pappa S, Ntella V, Giannakas T, Giannakoulis VG, Papoutsi E, Katsaounou P. Prevalence of depression, anxiety, and insomnia among healthcare workers during the COVID-19 pandemic: a systemic review and meta-analysis. Brain Behav Immun. 2020;88:901-7.
15. Labrague LJ, De Los Santos J. COVID-19 anxiety among front-line nurses: predictive role of organizational support, personal resilience and social support. J Nurs Manag. 2020;22(7):1653-61.
16. Del-Líbano M, Llorens S, Schaufeli W, Salanova M. Adicción al trabajo: concepto y evaluación (I). Gestión Práctica de Riesgos Laborales. 2006;27:24.
17. Maslach C, Jackson SE, Leiter MP, Schaufeli WB, Schwab RL. Maslach burnout inventory. Palo Alto, CA: Consulting psychologists press. 1986;21:191-218.
18. Juan Manuel Rocha Luna. Síndrome de "Burn Out". ¿El médico de urgencias incansable? Revista Mexicana de Medicina de Urgencias. 2002;1:2.
19. Lai J, Ma S, Wang Y, Cai Z, Hu J, Wei N, et al. Factors Associated with Mental Health Outcomes Among Health Care Workers Exposed to Coronavirus Disease 2019. JAMA Netw Open. 2020;3:e203976.
20. Ministry of Health, Spain. Información científica-técnica. Enfermedad por coronavirus, COVID-19. 2020;18.
21. Liu X, Kakade M, Fuller CJ, Fan B, Fang Y, Kong J, et al. Depression after exposure to stressful events: lessons learned from the severe acute respiratory syndrome epidemic. Version 2. Compr Psychiatry. 2012;53:15-23.
22. Brooks SK, Webster RK, Smith LE, Woodland L, Wessely S, Greenberg N, et al. The psychological impact of quarantine and how to reduce it: rapid review of the evidence. Lancet. 2020;395:912-20.
23. Wu P, Fang Y, Guan Z, Fan B, Kong J, Yao Z, et al. The psychological impact of the SARS epidemic on hospital employees in China: exposure, risk perception, and altruistic acceptance of risk. Can J Psychiatry. 2009;54:302-11.

Cite this article as: Prasad V. Impact of the COVID-19 pandemic on healthcare workers. Int J Res Med Sci 2021;9:3228-34.