

COVID-19 pandemic and post-traumatic stress among Moroccan caregivers

Abstract

The COVID-19 pandemic is an unprecedented challenge to society. Mental health support for health care workers is a critical component of the public health response. There is an urgent need to provide mental health support for front-line caregivers at risk for mental injury and post-traumatic stress disorder. We describe the literature base for a multilevel model of care and the practical steps for its implementation. The goal is to know the frequency of these disorders and the appropriate model of care. We reviewed articles found on PubMed through March 20, 2021, using the following keywords: Moral injury: a particular type of trauma characterized by guilt, existential crisis, and loss of confidence that can develop as a result of a perceived moral violation; Acute stress: a characteristic set of symptoms that may develop in response to exposure to a traumatic event(s). It usually involves an anxiety response that includes some form of reliving or reactivity to the traumatic event; Post-traumatic stress disorder: a characteristic set of symptoms that develops following exposure to a traumatic event(s).

A manual search of Google Scholar was performed to identify additional relevant studies. We included articles that met the following inclusion criteria: studies investigating possible risk and/or resilience factors for symptoms of moral injury, acute stress, post-traumatic stress disorder, and prevention steps among caregivers facing the COVID-19 pandemic. The initial search generated 122 articles and a total of 36 articles meeting our inclusion criteria. Symptoms of acute stress disorder, post-traumatic stress disorder in resuscitation providers and the risk of PTSD for front-line staff was approximately 10%.

Keywords: Mental health, Covid-19, caregivers, post-traumatic stress disorder, prevention model

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Introduction

The Corona virus-19 (COVID) epidemic, which emerged in December 2019 in Wuhan, China, has rapidly spread outside of China, leading the World Health Organization (WHO) Emergency Committee to declare a public health emergency of international concern on January 30, 2020. On March 19, 2020, WHO data showed that the total number of confirmed deaths in Italy (3,407) exceeded that in China (3,253). On March 28, 2020, the number of confirmed COVID-19 cases in the United States (85,228) surpassed that of China (82,213), and the United States became the country with the largest number of confirmed cases in the world.¹

The epidemic has had a significant psychological impact on individuals, particularly on caregivers working on the front lines of the pandemic.^{2,3} Isolation has a significant psychological impact on those exposed. A model for managing psychological well-being is proposed. Notwithstanding the need to preserve human mental well-being workers during the current pandemic, few studies have focused on this aspect. The experience of the 2003 severe acute respiratory syndrome (SARS) pandemic resulted in significant traumatic stress for caregivers caring for SARS patients.⁴⁻⁶

During the SARS outbreak in Hong Kong, both high-risk (respiratory medicine) and low-risk (nonrespiratory medicine) caregivers had high stress scores (17±5.66 for high-risk staff and 15.9±4.68 for low-risk staff).⁶ However, one year later, stress levels in the high-risk group were significantly higher (18.6±4.9) than in the low-risk group (14.8±5.0). For comparison, scores in the high-risk group were above the normative value of 12 to 14 in the general US population.⁷ A similar study conducted during the SARS pandemic on caregivers found that individuals with anxious personality traits and

coping mechanisms were at higher risk for mental health stress. In addition, problem-focused coping strategies among caregivers during the SARS pandemic have been reported to decrease their stress and reduce their fear.⁸

A review of 46 studies conducted in 59 countries with 54,707 participants (primarily nurses and primary care physicians) examined the mental health impact of the COVID-19 pandemic on caregivers. They concluded that caregivers generally reported more anxiety, depression, and sleep problems than the general population. The most commonly reported protective factor associated with a reduced risk of mental health problems was social support. However, only a minority of staff sought professional help, perhaps due to fear of stigma or the existing professional culture.⁸

An emerging question is how best to protect the well-being and mental health of caregivers facing these circumstances. Many are working outside their area of expertise and training, with rapidly changing clinical guidelines, limited equipment and structural resources; larger numbers of critically ill patients, many of whom will die; and less-than-ideal staffing levels, in part due to staff illness and quarantine. The particular challenges of working in unprecedented ways that test their professional codes of conduct can, if sustained for a long enough period of time, induce what is known as "moral injury." Appropriate support for staff, including mitigating and responding to traumatic work-related incidents, is recommended. The purpose of this review is to identify post COVID-19 PTSD exposure and elements of caregiver support.

Methods

We reviewed articles found on PubMed through March 20, 2021. A manual search on Google Scholar was performed to identify additional

relevant studies. There was no time limit on the year of publication. The keywords in this search were combined with the Boolean operator as follows : “(Posttraumatic Stress OR Posttraumatic Stress Disorder OR Posttraumatic Stress Symptoms OR PTSD), (acute stress and prevention model). In addition, to complete the results of our study, the manuscripts identified in the first stage of the research process were used to retrieve appropriate documents in the “references” section of these manuscripts.

Thus, many published documents were examined. As a result, they N=36 met the following criteria : research findings related to risk and/or tolerance factors for high stress symptoms, post-traumatic stress disorder, as well as for protective measures for healthcare workers exposed to the COVID-19 pandemic. All documents in print or published prior to publication were accepted. Exclusion criteria included : (a) surveys conducted in population samples that excluded caregivers ; (b) research that focused on the consideration of other psychological disorders ; (c) research that focused on the detection of posttraumatic stress disorder without consideration of risk and resiliency factors ; and (d) articles for which full text was not available.

Results

The effects of stress on health care workers in a pandemic situation

Studies on the impact of infectious disease outbreaks, including severe acute respiratory syndrome (SARS) and pandemic influenza (H1N1), clearly show that reactions vary depending on the type of illness and how it is experienced by health care workers, those in quarantine, or those returning to work after a medical break.^{4,5} The problems faced by civil servants include the extra workload caused by these epidemics and the likelihood of contagion in their families, as well as the need to comply with different procedures and to have personal protective equipment at their disposal at all times, as well as the possibility of caring for critically ill patients with a sudden change in their vital prognosis.

In many circumstances, resources are severely limited because of the spread of certain epidemic diseases and, as noted in the COVID-19 crisis, severe measures must be taken to designate potential recipients of resuscitation or invasive treatments. Sometimes these treatment choices are going to be very different from those that might have been made had the disease not been so virulent. In addition, most health care teams are aware of the danger posed by this epidemic, but the public is less aware, which may make the process of recognizing the disease more complex.^{4,5}

Infection control measures and the application of personal protective equipment are sources of relational problems. Interactions are made more problematic when the personal protective equipment protects and covers the face to a large extent, which limits the amount of time that staff can talk to their patients. Normally, each patient is given individual attention, but during a COVID19 epidemic, all patients must be treated at the same time,⁶ forcing some caregivers to modify their daily procedures and behaviors.⁷ Visits by relatives are generally no longer possible, and health care workers often feel guilty that patients have died “unaccompanied. The usual procedures for declaring death are not possible; the information must then be transmitted by telephone or messaging system.^{8,9} In the same logic, the possibility of seeing the body and collecting the patient’s belongings is also impossible.

Many workers are affected by this highly contagious virus, which makes some of them seriously ill, while others eventually die. Staff

who are infected or who show symptoms are necessarily isolated, and usually separated from their families.⁴⁻¹⁰ According to some studies, they feel guilty about their colleagues being understaffed, fear the spread of the virus within their own families, and are reluctant to take on personal and parental responsibilities.¹¹ They also feel bored, exhausted, and isolated, especially because they work in close-knit teams. After returning from isolation, they often suffer severe anguish and reluctance to rejoin their profession.

It is also common for health care workers to be unable to travel to clinical settings where the likelihood of infection is greatest, particularly because of their underlying medical condition or their status as pregnant mothers.

Workers affected by this issue, as well as those not directly involved on the front lines for various causes, sometimes feel indebted.⁵ Staff in this situation, or those who are not directly affected on the front lines for any other reason, may feel responsible. Indeed, they are often obliged to work longer days and to be away from their residence, disrupting any relationship and preventing any possibility of taking time off and enjoying leisure days. In addition, the personnel and their relatives are confronted with many other socio-economic constraints that the rest of the population faces. The various reactions of the population can cause them to be distressed. Moreover, the constant media coverage blurs the barriers between family and workplace.¹²

The personnel in question are not necessarily affected in the same way or to the same degree. Therefore, Williams et al (2014), observe that people’s responses to catastrophic events as well as disasters can be broken down into four main groups :

- Not affected at all (slight suffering but recovering thanks to the support of their relatives, parents or other people).
- Fairly disturbed, but can function in the short and mid-term (no psychological disorders).
- Behavioral impairment in the short and medium term (relative recovery in the short term with proper assistance, but possibility of triggering psychological crises, so further evaluation of this group is required).
- Psychiatric disorder over a longer period of time or even in between (requires specialized mental health treatment in a timely and effective manner)

It is important for caregivers to be aware of the fluctuating nature of their behaviors and the fact that they are likely to change during the stressful period. Distressing events in daily life also trigger some adverse reactions, including the proliferation of post-traumatic stress.^{13,14} It should also be noted that many severe reactions among staff will always remain within the realm of what are considered “natural” reactions and will not, in most circumstances, constitute a mental health disorder. Concerns have been expressed about the negative psychological impact during the pandemic, including burnout, fatigue, anxiety disorders, and even depression and post-traumatic stress disorder (PTSD).¹⁵ However, some of the negative aspects will not necessarily occur long after the pandemic has passed. Some of these are described below in more detail.

Manifestations resulting from high stress

The manifestations of acute stress can be very severe, but they usually disappear within two weeks. They often manifest as combinations of emotional, behavioral, social and physical symptoms. Care teams should be made aware of these types of manifestations and the habitual nature of these manifestations should be emphasized,

since the suffering usually stems from a feeling of shame or guilt towards these manifestations.

Predictors of acute stress response¹⁶

Physical	Behavioral	Emotional	Cognitive
Palpitations	Avoidance	Numbness	Difficulty concentrating
Nausea, lack of appetite	Indifference	Anxiety	Intrusive thoughts
Chest pain	Detachment	Depressed mood	Flashbacks
Headaches	Withdrawal	Anger, fear	Memory problems
Abdominal pain	Irritability	Mood instability	Confusion
Insomnia	Drug or alcohol use	Anhedonia	Hypervigilance
Hyperexcitation	Conflict with others	Low confidence	Rumination

From post-traumatic stress to evidence-based interventions

Moral Injury

The concept of “moral injury,” which derives from the military context, is described as the situation where a person is faced with irresistible demands for which he or she feels unprepared and where his or her actions or inactions challenge an ethical code.¹⁷ It is associated with negative emotions such as shame or guilt, and can lead to the development of mental illnesses such as depression and post-traumatic stress disorder (PTSD). Whether moral injury itself is a subgroup of PTSD remains a subject of debate and controversy.¹⁸

Psychic disorders are more common in young women than in men, and in nurses than in physicians.^{19,20} However, these recent data are different for primary and secondary caregivers. For Li et al. second-line caregivers, there is more indirect trauma,²¹ whereas for Lu et al.,²² caregivers in direct contact with infected patients (resuscitation, pneumology, emergency room.) have more symptoms of anxiety and depression, and even PTSD.^{19,20}

Hospitals are receiving a much higher than usual number of patient deaths, in addition to a very tangible threat of physical disability and death^{21,22} that the staff themselves and their families are now facing, increasing the risk of PTSD. New research suggests that PTSD among resuscitation providers at baseline is 9.6%.²³ The risk of PTSD for frontline staff in this pandemic may therefore be greater than 10%.²³

However, conversely, most individuals exposed to trauma do not have long-term sequelae, even without support, and posttraumatic growth can occur in such settings. Treating COVID-19 carries the risk of moral injury. Professional codes teach us to provide care only when we feel sufficiently trained, experienced and equipped to do so. Many health care professionals may feel inadequately prepared or equipped for their work during the pandemic. The support received during and after this time will influence whether individuals suffer injury or thrive.²⁴ Although not directly responsible for moral injury, institutions and services play a key role in mitigating the likelihood of negative outcomes. However, to date, no explicit evidence-based practice plan has been published to guide staff and service providers.

Recent research shows that psychological trauma leads to mental disorders, including PTSD and depression, as well as suicide, in a minority.²⁴ To anticipate, recognize, and manage psychological trauma or illness, a multilevel approach is needed. This approach includes:

Primary prevention: interventions to prevent the onset of mental illness ; secondary prevention : focusing on individuals with early signs of possible illness; and tertiary prevention: treating individuals with these problems.²⁴

Primary prevention

Staff should be trained with clear and realistic information, explicit briefings, and reflection on the risks and challenges they face, including mental injury. This should be repeated afterwards at appropriate times, such as the beginning or end of the job. Obvious examples of COVID-19 include wearing PPE for extended periods of time, having many sick patients in very intensive environments, and high mortality rates.²⁵

Several factors contribute to the risk of subsequent development of PTSD, including life events, pre-disaster history of mental disorders, direct exposure to trauma, performance of tasks that are not part of a person’s normal functions, and perceived risk to self or loved ones (25). Initial self-assessment forms can help individuals consider these difficulties and associated stresses and confirm their perceived suitability for this type of work.

Accurate and up-to-date information about available resources, such as self-help techniques, digital applications, and online resources, should be available in reliable and easily accessible locations, such as organizational websites and posters. Social support within teams should be encouraged, possibly with the help of fellow “buddies” to monitor each other’s well-being. The beginning and end of work shifts are good opportunities for discussion and exchange within the team to build solidarity and team spirit. However, there is a lack of evidence for psychological debriefing and post-incident counseling, which can actually reduce harm. These methods are not the same as manager-led operational debriefing, which is an important aspect of good leadership.²⁶

Team leaders can benefit from active listening skills and trauma awareness training, for example, by actively engaging with those who seem to avoid discussions or meetings or who are “present”. This can include helping staff to problem solve and facilitate access to professional assistance and support. Rapid feedback and improvement cycles should be established so that front-line staff can learn from them.²⁶

The work environment must be optimized to allow for adequate periods of restoration, rest and sleep. Many “wellness” initiatives exist in various forms, both specific to COVID-19 and more general, such as, in the United Kingdom, the implementation of the guides developed by the COVID Trauma Response Working Group (www.traumagroup.org) and the Royal College of Psychiatrists (<https://www.rcpsych.ac.uk/about-us/responding-to-COVID-19/responding-to-COVID-19-guidance-for-clinicians>), to support staff with psychological stress.

Secondary prevention

Staff with pre-existing mental health problems may experience recurrence or worsening. It is reasonable to assume that anxiety, depression, adjustment disorders, PTSD and substance use disorders will be the most common. While there is no evidence of more widespread organizational post-incident screening, experienced wellness staff with mental health training can help identify those who appear to be developing disorders and support them more appropriately. Outcomes may include additional support, referral to wellness resources, or further follow-up by a medical specialist, occupational health or mental health services.²⁷

Proven peer support protocols are available to train staff to care for one another. A notable example is the Trauma Risk Management (TRiM) program, originally developed by the British armed forces.²⁷ This program aims to reduce the stigma surrounding mental illness, teach recognition of emerging symptoms and encourage access to appropriate services and processes, particularly when individuals may be reluctant to talk to their supervisor. It is essential that peer helpers receive adequate support and supervision, as they are likely to be indirectly traumatized.

Tertiary prevention - mental health support

Based on the experiences of military personnel during deployed operations, tertiary prevention must be provided through effective “advanced psychiatry” and not through routine activities. Accessibility and responsiveness of services are important in determining whether individuals can return to work, possibly with counseling or adjustments in the workplace, or whether further review is needed. The PIES model - Proximity, Immediacy, Hope, and Simplicity - is an evidence-based approach to occupational health that helps individuals continue to work when they are able and builds their self-esteem so they can cope with distress. This approach encourages staff to stay on the front lines, even when they have modified duties, to seek help before distress escalates to crisis, to take a positive, strengths-based approach to address normal responses in difficult times, and to keep interventions simple.²⁸

In most cases, signs of PTSD resolve quickly, and the National Institute for Health and Care Excellence (NICE) recommends “active monitoring” without treatment in most cases. However, there will be a need to be prepared to intervene in the event of a crisis, including initiating medication and working with primary care, occupational health, secondary and tertiary mental health services. Long-term follow-up should be considered, particularly because many staff will be temporarily assigned to new services and work teams, and will return to services that are unfamiliar with their difficulties and needs.²⁹

Coping strategies

The COVID-19 pandemic emerged in an anxiety-provoking context, with pressing global concerns about increasing inequality, environmental degradation, terrorism, racism, xenophobia and societal polarization: it is likely that the negative consequences of the pandemic on individuals’ mental health combine synergistically with these factors to create widespread societal unrest.²⁹

With respect to coping styles, research confirms that a positive attitude is the most powerful protective factor against distress. In fact, the higher the positive attitude, the lower the levels of distress.³⁰ This factor refers to a functional coping strategy that allows individuals to reinterpret negative situations positively, as it is linked to self-efficacy, greater psychological well-being and improved quality of life.³¹

Social support and avoidance strategies were risk factors, with higher levels of these strategies associated with greater stress. This coping mechanism is grouped with dysfunctional responses to stressful situations because it relates to the likelihood that individuals will adopt avoidance strategies (such as denial) when faced with problematic situations. These findings are consistent with the literature on the relationship between coping and response to epidemics.³²

Higher social support predicts greater distress. Previous research on social support has considered it as a functional strategy for coping with problematic situations,³³ but a study on the Italian general population during the COVID-19 pandemic found that social support was positively related to perceived stress.³¹ This result may

be explained by the fact that, according to Litman,³³ the support factor includes several elements (such as emotional social support, instrumental social support, emotional relief, and emotional focus), which may be more or less adaptive. Furthermore, other research has highlighted the critical situation experienced by caregivers and must be interpreted in the specific context of the current pandemic. Caregivers may be exhausted due to increased work hours, concerned about the risk of infecting family and colleagues, and in many cases caregivers have chosen to live away from their families to protect them from the risk of contagion.³⁴ In addition, governments at the international level have issued decrees imposing social distancing measures for all persons, especially those in contact with symptomatic patients. According to these premises, seeking social support may be frustrating for caregivers and may be more stressful than in other situations. However, this conclusion should be viewed with caution as more research is needed to explore it.

Problem solving refers to an active strategy, aiming to focus on the solution of a problem by removing competing activities and planning actions.³³ A possible explanation is related to the dramatic situation associated with the COVID-19 epidemic, as an unknown and uncontrollable disease could produce a sense of weakness, affecting the coping skills of the health care staff. At the beginning of the pandemic, no vaccine or medication had been proven effective for the prevention or treatment of COVID-19, which influenced the perception of health care professionals regarding their own ability to solve problems. Thus, it can be assumed that this pandemic, at least in the early months of its spread, represented a stressor that overwhelmed the use of problem-focused strategies.

Furthermore, religious coping is a “multifaceted phenomenon”³⁵ and, according to Ano and Vasconcelles,³⁶ to better understand the role of religion in the coping process, it is important to analyze the dynamic ways in which people use their religion in specific situations. We can argue that extreme working conditions during the pandemic, such as grueling shifts, left little time for health care professionals to engage in prayer and religion. On the other hand, the religion-oriented items of the COPE scale probably fail to capture the aspect of spirituality, which can be very different from religion, as it refers to the development of a personal value system and the search for a deeper meaning of life, which can cross religious boundaries.³⁵

Overall, this article has highlighted the importance of the coping strategies used by health professionals in the face of the highly stressful situation caused by the COVID-19 pandemic. This category of individuals was the most directly involved in managing the emergency produced by the very rapid spread of Sars-Cov-2, which resulted in a large number of infected persons suffering from severe medical problems and a large number of deaths. A positive attitude toward the stressful situation was the main protective factor, while seeking social support, working with COVID-19 patients, and avoidance strategies were risk factors.

Conclusion

The challenges presented by COVID-19 are significant and the long-term health and social outcomes remain to be determined. Organizational and occupational aspects have a significant impact on the psychological health of caregivers, especially in the context of a global pandemic. The workplace is therefore an important target for efforts to manage mental health issues related to the COVID-19 pandemic. Mental health issues related to the health emergency, such as anxiety, depression, post-traumatic stress disorder, suicidal ideation, sleep disorders, and drug and alcohol abuse, are more likely to affect

health care personnel, particularly those on the front lines. These problems are variously linked to high work pressure, fear of being infected and passing the disease on to family, and the discrimination and stigma that can result.

For these reasons, the public health response must address this so-called psychological pandemic, including psychological health support, especially for high-risk populations and those with pre-existing psychological disorders who are particularly vulnerable to the stress of the pandemic. Possible actions to mitigate the impact of the pandemic on workers' mental health include improving workplace infrastructure, adopting correct and shared anti-contagion measures, implementing resilience training programs, especially for workers in leadership roles. Monitoring the mental health of different populations, understanding the different needs and planning specific actions are also fundamental public health interventions.

In this scenario, it is essential to promote the development of reliable preventive approaches. For example, the use of coaching psychology can be seen as a valuable strategy to reduce levels of burnout and create a safe environment in which individuals can feel free to discuss their professional development and understand how to improve their resources to overcome obstacles, such as new challenges. The need for rapidly accessible mental health professionals who can provide timely "return to work" assessments and brief interventions is also a major challenge caused by the COV-19 pandemic. Unless services take active steps and adopt a proactive approach.

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Conflicts of interest

The authors declare no conflicts of interest.

References

- Umakanthan S, Sahu P, Ranade AV, et al. Origin, transmission, diagnosis and management of coronavirus disease 2019 (COVID-19). *Postgrad Med J*. 2020;96(1142):753–758.
- Kang L, Li Y, Hu S, et al. The mental health of medical workers in Wuhan, China dealing with the 2019 novel coronavirus. *Lancet Psychiatry*. 2020;7(3):e14.
- Imo UO. Burnout and psychiatric morbidity among physicians in the UK: a systematic review of the literature on prevalence and associated factors. *BJ Psych Bull*. 2017;41(4):197–204.
- Brooks SK, Webster RK, Smith LE, et al. The psychological impact of midlife and how to reduce it: a rapid review of the evidence. *Lancet*. 2020;395(10227):912–920.
- Maunder R, Hunter J, Vincent L, et al. The immediate psychological and occupational impact of the 2003 SARS outbreak in a teaching hospital. *CMAJ*. 2003;168(10):1245–1251.
- Einav S, Hick JL, Hanfling D, et al. Surge capacity logistics: care for the critically ill and injured during pandemics and disasters: a CHEST consensus statement. *Chest*. 2014;146(4 Suppl):e17S–e43S.
- Christian MD, Devereaux AV, Dichter JR, et al. Introduction and executive summary: care of the critically ill and injured during pandemics and disasters: the CHEST consensus statement. *Chest*. 2014;146(4 Suppl):8S–34S.
- Straus SE, Wilson K, Rambaldini G, et al. Severe acute respiratory syndrome and its impact on professionalism: a qualitative study of physician behavior during an emerging health crisis. *BMJ*. 2004;329(7457):83.
- Styra R, Hawryluck L, Robinson S, et al. Impact on health care workers employed in high-risk areas during the SARS outbreak in Toronto. *J Psychosom Res*. 2008;64(2):177–183.
- Wu Z, Mc Googan JM. Characteristics of and important lessons from the 2019 coronavirus disease (COVID-19) outbreak in China: summary of a 72,314-case report from the Chinese Center for Disease Control and Prevention. *JAMA*. 2020;323(13):1239–1242.
- Tomlinson T. Caring for patients at risk: duty or virtue?. *J Med Ethics*. 2008;34(6):458–462.
- Williams R, Bisson J, Kemp V. Principles for addressing the psychosocial and mental health needs of people after disasters. *Royal College of Psychiatrists*. 2014.
- Ogińska BN. Social support and negative and positive outcomes of experienced traumatic events in a group of male emergency workers. *Int J Occup Saf Ergon*. 2015;21(2):119–127.
- Brooks S, Amlôt R, Rubin GJ, et al. Psychological resilience and post-traumatic growth in disaster-exposed organizations: an overview of the literature. *BMJ Mil Health*. 2020;166(1):52–56.
- Greenberg N, Docherty M, Gnanapragasam S, et al. Managing mental health issues faced by healthcare workers during the covid-19 pandemic. *BMJ*. 2020 ;368 :1211.
- Rockville. Substance abuse and mental health service administration. Comparison of acute stress disorders from DSM-IV to DSM-5. 2016.
- Suchita Shah. Acute stress reaction. *Patient*. 2022.
- Shay J. Moral injury. *Psychoanalyst Psychol*. 2014;31(2):182–191.
- Huang JZ, Han MF, Luo TD, et al. Mental health survey of 230 medical staff in a tertiary infectious disease hospital for COVID-19. *Zhonghua Lao Dong Wei Sheng Zhi Ye Bing Za Zhi*. 2020;38(3):192–195.
- Lai J, Ma S, Wang Y, et al. Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. *JAMA Netw Open*. 2020;3(3):203976.
- Li Z, Ge J, Yang M, et al. Vicarious traumatization in the general public, members, and non-members of medical teams aiding in COVID-19 control. *Brain Behav Immun*. 2020;88:916–919.
- Lu W, Wang H, Lin Y, et al. Psychological status of medical workforce during the COVID-19 pandemic: Across-sectional study. *Psychiatry Res*. 2020;288:112936.
- Spencer SA, Nolan JP, Osborn M, et al. The presence of psychological trauma symptoms among resuscitation providers and an exploration of debriefing practices. *Resuscitation*. 2019;142:175–181.
- Senior J. *Opinion/The psychological trauma that awaits our doctors and nurses*. The New York Times. March 29, 2020.
- Brooks SK, Rubin GJ, Greenberg N. Traumatic stress in disaster-prone professions: an overview of the literature and suggestions for managing traumatic stress at work. *Br Med Bull*. 2019;129(1):25–34.
- Greenberg N, Langston V, Jones N. Trauma risk management (TRiM) in the British armed forces. *JR Army Med Corps*. 2008;154(2):124–127.
- Solomon Z, Shklar R, Mikulincer M. First-line treatment of combat stress reaction: a 20-year longitudinal evaluation study. *Am J Psychiatry*. 2005;162(12):2309–2314.
- National Institute for Health and Care Excellence. *Post-traumatic stress disorder (NICE guideline NG116)*. NICE; 2018.
- Kesner L, Horáček J. Three challenges that the COVID-19 pandemic presents to psychiatry. *Br J Psychiatr*. 2020;217(3):475–476.
- Khalid I, Khalid TJ, Qabajah MR, et al. Health care workers' emotions, perceived stressors, and coping strategies during an MERS-CoV outbreak. *Clin Med Res*. 2016;14(1):7–14.

31. Flesia L, Monaro M, Mazza C, et al. Predicting perceived stress related to the covid 19 outbreak through stable psychological traits and machine learning models. *J Clin Med*. 2020;9(10):3350.
32. Teasdale E, Yardley L, Schlotz W, et al. The importance of coping appraisal in behavioural responses to pandemic flu. *Br J Health Psychol*. 2012;17(1):44–59.
33. Litman JA. The COPE inventory: Dimensionality and relationships with approach and avoidance motivations and positive and negative traits. *Personality and individual differences*. 2006;41(2):273–284.
34. Wu P, Styra R, Gold WL. Mitigation of the psychological effects of COVID-19 on health care workers. *CMAJ*. 2020;192(17):E459–E460.
35. Perera CK, Pandey R, Srivastava AK. Role of religion and spirituality in stress management in nurses. *Psychol Goujon*. 2018;63:187–199.
36. Ano GG, Vasconcelles EB. Religious coping and psychological adaptation to stress: a meta analysis. *J Clin Psychol*. 2005;61:461–480.