Insulating frontline COVID warriors from moral and mental distress during COVID pandemic- An Evidence based review

Lily Podder[1], Alisha[2], Geeta Bhardwaj[3]

Abstract

The commencement of Covid-19 pandemic has bothered moral and mental health of frontline Covid warriors. Scarcity of personal protective equipments, protracted working hours, improper hydration, hostile healthcare system, unprecedented settings and hurdles in provision of quality care have constituted a deterioration of mental health in healthcare workers. Frontline health care workers often experience burnout, anxiety, depression, insomnia and stress-related disorders. Moral distress rearing from baffling decisions regarding issuance of scarce resources and care to Covid-19 positive patients further amplify to strain health worker loads. Therefore, it is vital to admonish mental health of health care workers consistently using collaborative strategies at individual, system and organisational level. This article reviews the moral distress and mental health problems confronted by frontline health care workers and explores various strategies which ought to be executed to cope with them.

Keywords: Mental health, Frontline Covid warriors, Moral distress promotion

Covid-19, ascribed to an atypical severe acute respiratory syndrome corona virus-2 (SARS-COV-2), is a profoundly contagious disease, begetting steeply rising deaths of humankind, and hardly any disease-attributed treatment (Robertson et al, 2020). Incurring to deadly and transmittable nature of virus, WHO disclosed outbreak a public health emergency of global interest and was latter determined as pandemic on March 11, 2020 (Issac et al, 2020). To lessen the dissemination of virus, countries have executed intense safety measures including social distancing and nationwide lockdown, which have driven individuals to restructure their activities and health maintenance (Parihar & Grewal, 2020). It also entailed enormous mental health problems such as insomnia, anxiety, depression, stress-related disorders including post-traumatic stress disorder (PTSD) in infected as well as uninfected people (Gupta & Sahoo, 2020). As the struggle continued, the health care workers (HCWs) in frontline tended to be exceptionally endangered to mental stress.

With rise in illnesses and medical attention, HCWs throughout the world have been driven in place of frontline cadre. The duty of HCWs in such times of predicament is formidable with implications on both physical (headache, gastric agitation) and mental (mood swing, demotivation, depressive speculations and sequestration) levels (Vizheh et al, 2020). They work beyond bounds with possibility of infection to self and their families, requisites of security, extra shifts; they undergo self isolation and detachment from families. Thus, frontline HCW have an accelerated risk of mental health problems such as burnout, insomnia, anxiety, depression, illness anxiety, PTSD and so forth (Rajhans et al, 2020). The situation can lead to suicidal ideation and thoughts. Mental health conditions may negotiate working efficiency and increased threat to burnout, absenteeism and resignation (Al-Humadi et al, 2021). The HCWs who stated burnout or who had abandoned or were deliberating quitting the profession reported distinctive moral distress and engenders physical (diarrhoea, headache, palpitations, neck pain, muscle aches and vomiting), emotional (frustration, anger, anxiety, guilt, sadness, powerlessness and loss of self esteem) and psychological (withdrawal, emotional exhaustion and depersonalisation of patient) responses. Hence, insulating the mental health and contentment of frontline HCWs is crucial in the midst of pandemic (Khasne et al, 2020).

Researchers call for constructive strategies, psychological approaches and training for HCWs. Factual appraisal and possible mental health interventions pointing Covid warriors are comparatively limited. Indeed, there is desperate necessity for recognition and management of MHPs in HCWs via support, advisory and cathartic sessions. The present review aimed to discuss moral and mental

The authors are: 1. Associate Professor, Nursing College, AIIMS, Bhopal, (MP); 2. Registered Nurse, Sonia Hospital, Delhi; 3. Assistant Professor, AIIMS, Bhopal (MP).

distress confronted by Covid warriors.

Conducting during March to June 2021, it investigated moral and mental distress relative to Covid-19, with focus on frontline Covid warriors. An extensive literature review was executed by browsing databases namely PubMed, Scopus, web of science, Google scholar, associations webpages, Government of India Guidelines with keywords-Mental health, Covid-19, Frontline Covid warriors, Moral distress, Mental health promotion. The reference list of selected articles was screened to find out other relevant articles or studies.

Both quantitative and qualitative studies were included including the reviews that were conducted between the time period dating from 2020 until May 2021. The studies covered several countries including South Africa, USA, China, India, Ethiopia, US, Kenya, Spain, Turkey, Jordan, Italy, Bangladesh and UK.

Selected literature was assessed and findings were synthesised and included in this article. Below is the table listing titles of the major studies included in this review.

Prevalence of Moral and Mental Distress among COVID Warriors

The National Institute of Health (NIH), after scrutinising prevalence of illnesses in exhausting profession, asserted that nurses and doctors are influenced by an array of nuisances at work in view of liability to dispense health care to patients (Vizheh et al, 2020). A recent systemic review estimated that the prevalence of depression is 24.3 percent, anxiety is 25.8 percent and stress is 45 percent in the health personnel generous to Covid patients (Salari et al, 2020). Evidence from scoping review during Covid-19 outbreak on physical and mental health after effects of Covid-19 on healthcare workers affirmed that females were more susceptible to anxiety than males and nurses surpassing doctors. The mental health impact on HCWs incorporated overall anxiety (23-44%), severe anxiety (2.17%), moderate anxiety (4.78%), mild anxiety (16.09%), stress disorder (27.4-71%), depression (50.4%) and insomnia (34.0%) (Shaukat et al, 2020). Another recent review estimated that mild anxiety, depression or insomnia was presented in one out of every four healthcare workers (Muller et al, 2020).

Likewise, a multicentre cross-sectional study

Table 1: Major studies included in this review with author name, year and country

S. No.	Author	Title of study	Year	Country
1	LJ Robertson et al	Mental health of healthcare workers during the COVID-19 outbreak: A rapid scoping review to inform provincial guidelines in South Africa	2020	South Africa
2	Snehil Gupta et al	Pandemic and mental health of front-line healthcare workers: A review and implications in the Indian context amid COVID-19	2020	India
3	Samer Al-Hamedi et al	Depressing, suicidal thoughts, and burnout among physicians during the COVID-19 Pandemic: A survey based cross-sectional study	2021	New York
4	Ruschira W Khasne et al	Burnout among healthcare workers during COVID-19 pandemic in India: Results of a questionnaire-based survey	2020	India
5	Sintayehu Asnakew et al	Mental health adverse effects of COVID-19 Pandemic on healthcare workers in North West Ethiopia: A multicenter cross-sectional study	2021	Ethiopia
6	Wen-Ping Guo et al	Prevalence of mental health problems in frontline workers after the first outbreak of COVID-19 in China: A cross-sectional study	2021	China
7	Kriti Prasad et al	Prevalence and correlates of stress and burnout among US healthcare workers during the COVID-19 pandemic: A national cross-sectional survey study	2020	USA
8	Jasmit Shah et al	Mental health disorders among healthcare workers during the COVID-19 pandemic: A cross-sectional survey from three major hospitals in Kenya	2021	Kenya
9	Monica Leira-Sanmartin et al	Psychological impact of COVID-19 pandemic and relatable variables: A cross-sectional study in a sample of workers in a Spanish tertiary hospital	2021	Spain
10	Mustafa Kursat Sahin et al	Prevalence of depression, anxiety, distress, and insomnia and related factors in healthcare workers during COVID-19 pandemic in Turkey	2020	Turkey
11	Jennifer Cohen et al	Contributing factors to personal protective equipment shortages during the COVID-19 pandemic	2020	USA
12	Eman Alnazly et al	Anxiety, depression, stress, fear and social support during COVID-19 pandemic among Jordanian healthcare workers	2021	Jordan
13	Sofia Pappa et al	Tired, worried and burned out, but still resilient: A cross-sectional study of mental health workers in UK	2021	UK
14	Emily S Burns et al	Physical and psychological impact of handwashing and personal protective equipment usage in the COVID-19 pandemic: A UK based cross-sectional analysis of healthcare workers	2021	UK
15	Mohammad Ali Hossain et al	Healthcare workers' knowledge, attitude and practice regarding personal protective equipment for the prevention of COVID-19	2021	Bangladesh

in Ethiopia contended the prevalence of anxiety, depression and stress being 64.7 percent, 58.2 percent and 63.7 percent. Respondents who had physical and psychological disorder, exposure to diagnosed Covid-19 patients and inadequate social aid conveyed a pronounced association with depression (Ashakew et al, 2021).

A recent study from China revealed that healthcare workers with masters and doctorate degrees may exhibit additional anxiety and PTSD than professional with lower academic degrees (Guo et al, 2021).

A questionnaire-based survey among HCWs superintending the Covid-19 patients reported that the prevalence of personal, work-related and pandemic-related burnout accounted for 44.6 percent, 26.9 percent and 52.9 percent respectively. The prevalence of personal and work-related burnout was specifically higher among females. The pandemic-related burnout was more prevalent in nurses (5 times) than doctors (1.64 times) (Khasne et al, 2020). Another study done in US unveiled that 61 percent HCWs experienced fear of transmission, 38 percent reported anxiety/depression, 43 percent endured workload and 49 percent had burnout. Stress and burnout was detected considerably higher in various healthcare personnel inclusive of nursing assistants, medical assistants, household managers, social assistants and racially discriminated employees. While, threats of burnout were 40 percent diminished in those feeling appreciated by their organisations (Prasad et al, 2021). Unequivocally, in the recent pandemicupraised prevalence of moral and mental health manifestations amongst HCWs showed that vocation coexisted with moral and mental distress.

Causes of Moral and Mental Distress

Various biomedical, psychical, communal and environmental factors and their co-action incline an individual to an amplified risk of psychological problems. These have been brought out by Gupta & Sahoo (2020).

Socio demographic factors: A recent cross-sectional survey in the group of HCWs from three leading hospitals in Kenya revealed that females with the median age of 32.75 years were jeopardised to mental health problems (Shah et al, 2021). Another study done in Spain stated that being women, younger workers under 25 years with less than 1 year clinical experience, correlate them with pronounced susceptibility and insufficient conformation to a strained and capricious healthcare system (Leira-Sanmartin et al, 2021). Literature proposed that being male, married, age over 40 years or older and possessing more patient-contact experience influenced upsurge in risk to distressing symptoms. The impact of these constituents may be appertained to the workplace in which healthcare professionals operate (Cohen et al, 2020).

These outcomes suggest exploring the genesis of mental health problems in HCWs and to practice a precautionary appraisal and curative plan to satisfy their desire (Rajhans et al, 2020).

Lack of resources: Besides allocation of personal protective measures, there needs to be in place, comparable configuration to neutralise unease and agitation among the HCWs (Gupta & Sahoo, 2020). Working with limited PPEs specifically mask have been noted to be primary cause of distress among HCWs (Sirosis & Owens, 2021). Along with PPE shortages, healthcare facilities have witnessed shortage of recommended medicines and necessary apparatuses including ventilator (Lagu et al, 2020). Healthcare personnel in Italy sustained extravagant rates of infection and death due to PPEs shortage. The paucity has numerous implications including trouble with the global chain supply (Cohen et al, 2020).

Bandyopadhyay et al (2020) reported that in USA, Kenya and Canada, the HCWs informing PPE insufficiency was quite significant. Most of HCWs mentioned shortfall of PPE at their institution in all-inclusive frameworks excluding long term care facilities, with no notable dissimilarity between the estimates of PPE shortage announced by physicians and other healthcare professionals. Moral distress is protuberant when HCWs operate in an environment where they do not have authority over salient particulars of working life like access to PPE. Thereupon, health care worker's worry concerning their personal health was struck by medical resources' paucity in their workplace (Vittone & Sotomayor, 2021).

A recent online survey reported data from 839 participants, and all participants notified scarcity of leastwise one kind of medical expedient including sanitising supplies and personal protective equipment, thus, procuring enough protective equipment and required medical resources (O'Neal et al, 2021).

Social causes: Many sociogenic or relational aspects alleviate mental and moral distress. Obtaining assistance from companion, family, workmate and administration was estimated to be a basic defensive element in several studies (Gupta & Sahoo, 2020). A recent systemic review estimated that healthcare workers deployed support from families and friends. 78.5 percent of respondents drew on family to cope with the stress while 65 percent of respondents probed social support to mitigate stress, 43 percent of respondent's appraised social support from family and friends as a pivotal strategy in reducing stress (Alnazly et al, 2021).

HCWs have often recited their state of health to be ailing, with insomnolence, headache, dehydration and fatigue. Inapt reach to satisfactory mental aid exacerbates, psychological health problems in HCWs (American Medical Association, 2021). Moreover, social isolation and conflict with doctors or organisational policies have been accounted as aetiological factor to moral distress. Conclusively, apprehending stigma and evasion of society was significantly associated with moral and mental distress.

Occupational causes: The HCWs developing infections leads to short-staffing at the medical institutions such circumstances induce HCWs to work with moderate means, do overtime and customarily unstable duties and to work in an unexplored setting with new colleagues, turns tangled by unusual need of self isolation and disciplinary continuation of social distancing (Gupta & Sahoo 2020). National Academy of Medicine has attributed the physician's health and patient's wellbeing to long working hours, physical and emotional collapse and inadequacy of workplace settings (Sirois et al, 2021).

HCWs working in intensive care settings were reported being suffered with substantial burden and extra shifts (Prasad et al, 2021). A recent multinational cross-sectional study estimated that depressive symptoms were significantly associated with HCWs directly immersed in medical care of patient who succumb to Covid-19, and reoriented in intensive care units (Saracoglu et al, 2020). Moreover, frontline HCWs usually are powerless to dehumanise personally whilst caring for their infected workmate on account of inability to circumvent the death of their workmates (Philip & Cherian, 2020). Studies suggests senior physicians and nurses were more prone to mental health issues during pandemics (Parihar & Grewal, 2020).

Risk of Covid-19 infection to self and near ones: A recent systemic review found that exposure to Covid-19 is the consistently reported source of mental health issues with concern about infecting family and friends (Vindegaard & Benros, 2020). The liable factors included direct exposure to Covid-19 diagnosed patient, working in critical care units, speculative to exposure and being a frontline HCW (Rajhans et al, 2020). Studies reported that unmediated and constant contiguity with infected brings about post-traumatic symptoms, depression, anxiety, insomnia and general mental health issues in contrast with those who had no constant contiguity with infected patients (Alnazly et al, 2021).

HCWs deal with Covid-19 with fear, suspicion of vulnerability, fidgety, worry for caregiver's own health and the health of family and friends. From this perspective, healthcare professionals acknowledged eminent grades of emotional exhaustion, annoyance and stress overcoming issues. Many healthcare workers view Covid-19 as an intimidation to their living, their family and their colleagues (Sirois & Owens, 2021).

Strategies to Promote Moral and Mental Health During Covid Pandemic

Resilience: The American Psychological Association defines resilience as "the process of adapting well in the face of adversity, trauma, tragedy, threats or significant sources of stress such as family and relationship problems, serious health problems or workplace and financial stressors". To carry off with pandemics, the potential to acclimate and conquer existing obstacles is required (Health et al, 2020). A study exhibited that vigilance can appear as safeguarding aspect for psychological problems. This specifies that resilience is linked to the extent of apprehension in healthcare professionals… vaster the resilience, finer the mental health (Bozdag & Ergun, 2020). A recent cross-sectional study done in UK showed that lower resilience was significantly associated with greater prospects of evincing depressive manifestations (Pappa et al, 2021).

Organisations and individuals can unroll intellectual, affective and communication proficiency that advocate adaptive confronting strategies and conduce to organisational as well as individualised resilience measures (Di Trani et al, 2021). Personally, the accent is on anticipating probable stressors, plausible manifestations and evolving cognitive and behavioural coping mechanism whereas, the organisational resilience is boost effectual leadership and a culture of organisational equity, that cushion occupational stressors and ameliorate individual resilience (Health et al, 2020; Di Trani et al, 2021).

Self care: Although credible evidences of potency are sparse, physical exercise has shown favourable impact on discounting burnouts in frontline HCWs (Health et al, 2020). A recent study showed valued refinement in burnout scores and the quality of life in clinicians following innervated physical activities (Miller et al, 2021). A novel study by analysts at McMaster University (2021) in Hamilton revealed that among those who persisted to be physically inactive amidst pandemic, mental health problems were hurdles to physical exercise. Respondents listed the hurdles as deficit social support, incompetency, anxiety, impassable to exercise… whereas, those whose exercises suffered had lesser psychological problems. Good sleep is a crucial buffer in resolving burnout and advancing psychological resilience (Health et al, 2020). Adequate sleep habits, de-stressing, recreation techniques, raising cognizance of ordinary sleep problems and behavioural mediation may abet HCWs during this crisis (Chatterjee et al, 2021).

Studies have indicated that HCWs with burnouts require to be connected with their family, friends or colleagues and unleash with them. Workhome stability and occupational ease also need to be ensured (Zhu et al, 2021).

Strong leadership: Elements of leadership that are shield to the burnout risk include effective communication and cooperative working relations. Substantial support to HCWs by way of paying attention to their hurdles, rendering the operating environment worthwhile for functioning, perpetuating the financial assistance and meeting the needs of family can generate credence and personal assuredness.

Leaders should help regulate staff duties and plans wherever necessary (shuffle unpractised workers with more practised workers and reschedule workers from difficult to comfortable working environment), extend access to psychological counselling (resilience and wellbeing plans), observe and analyse fellow worker's wellness (investigate risk, evolving problems and self-adaptive reactions) and devise the social setting of clear communication (motivate HCWs to verbalise their worries, interrogate and uplift mutual support among colleagues).

Emotional well-being: Mindfulness practice and stress reduction techniques both have proven to be effective in abating burnout and upgrading resilience. Such practices have shown to reduce the rates of anxiety and depression. MBSR practices for clinicians comprise attentive group initiatives throughout eight weeks integrating yoga, meditation and bull session (Zhu et al, 2021).

Psychological assistance during Covid-19 pandemics, should be contemplated to avert stress and burnout among HCWs. Forging accessibility of mental health training, critical thinking, organising networked counselling or appointment to psychiatrist and scheduling a direct consultation to mental health expert could predominantly bring down mental health problems among frontline health care professionals. Interdisciplinary teams of psychological health professionals to lay out psychological health facilities can be help to HCWs (Griswold et al, 2021).

Ensuring adequate resources: Assuring the accessibility of PPEs for the HCWs diminish the likelihood to contract infection while providing in-patient care, and augment their moral to work out with any unease, specifically when endless reports point out the unavailability of PPEs and its inept distribution (Griswold et al, 2021). Appropriate training on the right utilisation of PPEs and precautionary measures must be ensured. On the contrary, PPEs also appears as considerable barrier while serving the patient care and curb rapport between HCW and patient (Hossain et al, 2021). Thus, changes should be placed to frame less stringent, comfortably wearable and removable PPEs (Burns Burns et al, 2021).

Organisational justice: Organisations require to make sure that occupational stressors are appropriately controlled by promising accessibility to PPEs, arranging carriage and sorting out challenges confronted by HCWs, reasonable dispersal of resources and being at hand to acquaint the worries of HCWs and amplify their confidence. Feedback session with HCWs have binary aims of assisting psychological resilience by the way of improved sense of authority over their surroundings besides accomplishing system of organisational integrity through direct support to staff (Delgado et al, 2021). The influence of sense of justice on mental health can as well explicated as safeguard that aids to insulate workers of core stressors and deprivation of needs (Vijay et al, 2021).

Discussion

The current review aimed to identify the insulating strategies to promote moral and mental health during Covid pandemic. The Covid-19 reached its peak during March-April 2020. It was not the first time in India that such outbreaks have occurred but the impact was something very different as it was droplet/airborne infection. The system and health care workers were not ready to deal with the sudden upsurge of the Covid-19 cases. There was piling of the cases and heap of deaths not only in India but across the world. Covid-19 pandemic has placed frontline workers under mammoth and unparalleled pressure, putting their health indicators at risk. Reviews suggested that frontline HCWs have undergone the episodes of anxiety, stress and depression. This highlighted the need of identifying the appropriate measures to promote moral and mental health during the pandemic. Current study emphasised on some important areas to be looked for like resilience, self care, strong leadership, emotional wellbeing, provision of adequate justice and organisational justice. These strategies were also supported by many other studies on stress, burnout and coping measures among frontline covid-19 warriors. A similar study by Kumar & Vijal (2020) depicted need for dedicated counselling, access to high quality PPE, training of psychological well being during pandemic sessions, adequate break in between and health insurance of the health care workers. This pandemic has given us the lesson of multifaceted approach to tackle such outbreaks that requires active participation of health care authorities.

Conclusion

As struggle with Covid-19 persists, safeguarding healthcare workers from moral and mental distress is a top clinical challenge. Mental health problems are likely to emerge owing to their duty in rendering

care to Covid-19 patients. To contend the Covid-19 pandemic aftereffects, the moral and mental health of HCWs need to be addressed with recommended strategies, to reduce stated issues in HCWs working at the forefront. Utilisation of strategies to promote the capacity of HCWs shall accelerate the effectiveness to combat pandemic, and deliver more efficient care to patients Covid-19.

References

1. Robertson LJ, Maposa I, Somaroo H, Johnson O. Mental health of healthcare workers during the Covid-19 outbreak: A rapid scoping review to inform provincial guidelines in South Africa. *South African Medical Journal* 2020 Sep 30; 110(10): 1010-19
2. Issac A, Vijay VR, Krishnan N, Jacob J, Stephen S, Radhakrishnan RV, Dhandapani M. How the nations should gear up for future pandemics? *Journal of Global Health* 2021; 11
3. Parihar J, Grewal K. Unlocking the mental health crisis in health-care providers during Covid-19 pandemic. *Indian Journal of Medical Specialities* 2020 Oct 1; 11(4): 173
4. Gupta S, Sahoo S. Pandemic and mental health of the front-line healthcare workers: a review and implications in the Indian context amidst Covid-19. *General Psychiatry* 2020 Oct; 33(5): #e100284
5. National Institute of Mental Health and Neurosciences. Caring for healthcare warriors - mental health support during Covid-19. Bangalore, Karnataka; 2020
6. Vizheh M, Qorbani M, Arzaghi SM, Muhidin S, Javanmard Z, Esmaeili M. The mental health of healthcare workers in the Covid-19 pandemic: A systematic review. *Journal of Diabetes & Metabolic Disorders* 2020 Oct; 26: 1-2
7. Rajhans P, Deb KS, Chadda RK. Covid-19 pandemic and the mental health of health care workers: Awareness to action. Annals of the National Academy of Medical Sciences (India). 2020 Aug 5
8. Al-Humadi S, Bronson B, Muhlrad S, Paulus M, Hong H, Cáceda R. Depression, suicidal thoughts, and burnout among physicians during the Covid-19 pandemic: A survey-based cross-sectional study. *Academic Psychiatry* 2021; 14(6): 1-9
9. Khasne RW, Dhakulkar BS, Mahajan HC, Kulkarni AP. Burnout among healthcare workers during COVID-19 pandemic in India: results of a questionnaire-based survey. *Indian Journal of Critical Care Medicine: Official Publication of Indian Society of Critical Care Medicine* 2020; 24(8): 664
10. World Health Organisation. Keep Health Workers Safe to Keep Patients Safe: WHO. Geneva, Switzerland; 2020 (accessed10 June 2021). Available from: https://www.who.int/news/item/17-09-2020-keep-health-workers-safe-to-keep-patients-safe-who.
11. Salari N, Khazaie H, Hosseinian-Far A, Khaledi-Paveh B, Kazeminia M, Mohammadi M, et al. The prevalence of stress, anxiety and depression within front-line healthcare workers caring for Covid-19 patients: A systematic review and meta-regression. *Human resources for health* 2020; 18(1): 1-4
12. Shaukat N, Ali DM, Razzak J. Physical and mental health impacts of Covid-19 on healthcare workers: A scoping review. *International Journal of Emergency Medicine* 2020; 13(1): 1-8
13. Muller RA, Stensland RS, van de Velde RS. The mental health impact of the Covid-19 pandemic on healthcare workers, and interventions to help them: A rapid systematic review. *Psychiatry Research* 2020; 1: 113441
14. Asnakew S, Amha H, Kassew T. Mental health adverse effects of Covid-19 pandemic on Health Care Workers in North West Ethiopia: A multicenter cross-sectional study. *Neuropsychiatric Disease and Treatment* 2021; 17: 1375-84
15. Guo WP, Min Q, Gu WW, Yu L, Xiao X, Yi WB, Li HL, Huang B, Li JL, Dai YJ, Xia J. Prevalence of mental health problems in frontline healthcare workers after the first outbreak of Covid-19 in China: a cross-sectional study. *Health and Quality of Life Outcomes* 2021; 19(1): 1-0
16. Prasad K, McLoughlin C, Stillman M, Poplau S, Goelz E, Taylor S, et al. Prevalence and correlates of stress and burnout among US healthcare workers during the Covid-19 pandemic: A national cross-sectional survey study. *E Clinical Medicine* 2021; 35:100879
17. Shah J, Monroe-Wise A, Talib Z, Nabiswa A, Said M, Abeid A, et al.. Mental health disorders among healthcare workers during the Covid-19 pandemic: A cross-sectional survey from three major hospitals in Kenya. *BMJ Open* 2021; 11(6): e050316
18. Leira-Sanmartín M, Madoz-Gúrpide A, Ochoa-Mangado E, Ibáñez Á. Psychological Impact of Covid-19 pandemic and related variables: A cross-sectional study in a sample of workers in a spanish tertiary hospital. *International Journal of Environmental Research and Public Health* 2021; 18(7): 3608
19. Şahin MK, Aker S, Şahin G, Karabekiroğlu A. Prevalence of depression, anxiety, distress and insomnia and related factors in healthcare workers during Covid-19 pandemic in Turkey. *Journal of Community Health* 2020; 45(6): 1168-77
20. Sirois FM, Owens J. Factors associated with psychological distress in health-care workers during an infectious disease outbreak: A rapid systematic review of the evidence. *Frontiers in Psychiatry* 2021 Jan 28; 11:1591
21. Lagu T, Werner R, Artenstein A. Why don't hospitals have enough masks? Because coronavirus broke the market. *Washington Post*, 21 May 2020
22. Cohen J, van der Meulen Rodgers Y. Contributing factors to personal protective equipment shortages during the Covid-19 pandemic. *Preventive Medicine* 2020' Oct 2:106263
23. Bandyopadhyay S, Baticulon RE, Kadhum M, Alser M, Ojuka DK, Badereddin Y, et al. Infection and mortality of healthcare workers worldwide from Covid-19: A systematic review. *BMJ Global Health* 2020; 5(12): e003097
24. Vittone S, Sotomayor CR. Moral Distress Entangled: Patients and Providers in the Covid-19 Era. *InHec Forum* 2021 Mar 28 (pp. 1-9). Springer Netherlands
25. O'Neal L, Heisler M, Mishori R, Haar RJ. Protecting providers and patients: Results of an Internet survey of health care workers' risk perceptions and ethical con-

cerns during the Covid-19 pandemic. *International Journal of Emergency Medicine* 2021; 14(1): 1-1

26. Alnazly E, Khraisat OM, Al-Bashaireh AM, Bryant CL. Anxiety, depression, stress, fear and social support during Covid-19 pandemic among Jordanian healthcare workers. *Plos One* 2021 Mar 12; 16(3): e0247679
27. American Medical Association. 4 ways Covid-19 is causing moral distress among physicians. 2020 (accessed 13 June 2021). Available from: https://www.ama-assn.org/practice-management/physician-health/4-ways-covid-19-causing-moral-distress-among-physicians
28. Saracoglu KT, Simsek T, Kahraman S, Bombaci E, Sezen Ö, Saracoglu A, et al. The psychological impact of Covid-19 disease is more severe on Intensive Care Unit healthcare providers: A cross-sectional study. *Clinical Psychopharmacology and Neuroscience* 2020; 18(4): 607
29. Philip J, Cherian V. Factors affecting the psychological well-being of health care workers during an epidemic: A thematic review. *Indian Journal of Psychological Medicine* 2020; 42(4): 323-33
30. Vindegaard N, Benros ME. Covid-19 pandemic and mental health consequences: Systematic review of the current evidence. *Brain, Behavior, and Immunity* 2020; 89: 531-42
31. Sun N, Wei L, Shi S, Jiao D, Song R, Ma L, et al. A qualitative study on the psychological experience of caregivers of Covid-19 patients. *American Journal of Infection Control* 2020; 148(6): 592-98
32. American Psychological Association. Building your resilience. 2012. (accessed 14 June 2021). Available from: https://www.apa.org/topics/resilience.
33. 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. *Anaesthesia* 2020; 75(10): 1364-71
34. Bozdağ F, Ergün N. Psychological resilience of healthcare professionals during Covid-19 pandemic. *Psychological Reports* 2020; Oct 13: 0033294120965477
35. Pappa S, Barnett J, Berges I, Sakkas N. Tired, worried and burned out, but still resilient: A cross-sectional study of mental health workers in the UK during the Covid-19 pandemic. *International Journal of Environmental Research and Public Health* 2021; 18(9): 4457
36. Di Trani M, Mariani R, Ferri R, De Berardinis D, Frigo MG. From resilience to burnout in healthcare workers during the Covid-19 emergency: The role of the ability to tolerate uncertainty. *Frontiers in Psychology* 2021 Apr 16; 12: 987
37. Miller JJ, Reddin Cassar J. Self-care among healthcare social workers: The impact of Covid-19. *Social Work in Health Care* 2021; 60(1): 30-48
38. McMaster University. People want to improve mental health by exercising, but stress and anxiety get in the way. Science Daily 12 April 2021 (Accessed 15 June 2021). Available from: https://www.sciencedaily.com/releases/2021/04/210412121216.htm.
39. Chatterjee SS, Chakrabarty M, Banerjee D, Grover S, Chatterjee SS, Dan U. Stress, sleep and psychological impact in healthcare workers during the early phase of Covid-19 in India: A factor analysis. *Frontiers in Psychology* 2021; 12: 473
40. Feroz AS, Ali NA, Ali NA, Feroz R, Meghani SN, Saleem S. Impact of the Covid-19 pandemic on mental health and well-being of communities: An exploratory qualitative study protocol. *BMJ Open* 2020 Dec 1; 10(12): e041641
41. Zhu JL, Schülke R, Vatansever D, Xi D, Yan J, Zhao H, et al. Mindfulness practice for protecting mental health during the Covid-19 pandemic. *Translational Psychiatry* 2021; 11(1): 1-1
42. Griswold DP, Gempeler A, Kolias AG, Hutchinson PJ, Rubiano AM. Personal protective equipment for reducing the risk of Covid-19 infection among healthcare workers involved in emergency trauma surgery during the pandemic: An umbrella review protocol. *BMJ Open* 2021; 11 (3): e045598
43. Hossain MA, Rashid MU, Khan MA, Sayeed S, Kader MA, Hawlader MD. Healthcare Workers' knowledge, attitude, and practice regarding personal protective equipment for the prevention of COVID-19. *Journal of Multidisciplinary Healthcare* 2021; 14: 229
44. BurnsBurns ES, Pathmarajah P, Muralidharan V. Physical and psychological impacts of handwashing and personal protective equipment usage in the Covid-19 pandemic: A UK based cross-sectional analysis of healthcare workers. *Dermatologic Therapy* 2021; May 1:e14885
45. Delgado J, Siow S, de Groot J, McLane B, Hedlin M. Towards collective moral resilience: The potential of communities of practice during the Covid-19 pandemic and beyond. *Journal of Medical Ethics* 2021; 47(6): 374-82
46. Vijay VR, Krishnan N, Issac A, Jacob J, Stephen S, Rakesh VR, et al. Safeguarding the frontier covidians during the Covid-19 pandemic: Scuffles and proposed strategies. *Indian Journal of Psychological Medicine* 2021; 43(1): 89-90
47. Sumit Kumar, MN Vijal. Mental stress, and burnout among Covid warriors – A new healthcare crisis. *The Journal of Medical Research* 2020; 6(5): 193-96

■