



The mental health of healthcare workers during the COVID-19 pandemic: a narrative review

Johannes H. De Kock^a, Helen Ann Latham^b, and Richard G. Cowden^c

Purpose of review

Mental health (MH) problems among healthcare workers (HCWs) have the potential to impact negatively on the capacity of health systems to respond effectively to COVID-19. A thorough understanding of the factors that degrade or promote the MH of HCWs is needed to design and implement suitable intervention strategies to support the wellbeing of this population.

Recent findings

MH problems among HCWs were elevated prior to the COVID-19 pandemic. Accumulating evidence indicates that this public health crisis has had a disproportionately negative impact on the MH of specialised populations, including HCWs. Literature from prior health pandemics suggests that the adverse effects of the COVID-19 pandemic on the MH of HCWs are likely to persist in the aftermath of the public health crisis. Primary and secondary risk factors for adverse MH outcomes have been identified and should be considered when implementing interventions to protect the MH of HCWs.

Summary

The MH of HCWs has been negatively impacted by the COVID-19 pandemic, which is having a detrimental influence on the public health response to COVID-19. Protecting the MH of HCWs both during and beyond this public health crisis should remain a top priority, with particular emphasis on multifaceted interventions that aim to balance the psychological needs of individual HCWs with organisational-level strategies that could be targeted to promote their wellbeing.

Keywords

COVID-19, healthcare, mental health, psychology, workers

INTRODUCTION

Large-scale population [1] and representative community studies [2,3] have reported an increased prevalence of mental health (MH) problems in the general population during the COVID-19 pandemic. However, a growing body of evidence suggests that this public health crisis has had a disproportionately negative impact on the MH of specific populations, including healthcare workers (HCWs) [4]. MH issues in the HCW population can negatively affect morale, quality of care, absenteeism, and retention [5], with detrimental downstream consequences for health systems that are already overwhelmed by public health challenges caused by the COVID-19 pandemic. Given that HCWs play an indispensable role as an essential workforce involved in supporting the public health response to the COVID-19 pandemic, well informed, multifaceted interventions are needed to promote the MH of this population. During this dynamically evolving public health crisis, decisions about intervention strategies and resource allocation require up-to-date evidence

that provides a thorough understanding of risk and protective factors that should be considered when developing and implementing interventions to address the MH needs of HCWs.

MENTAL HEALTH TRENDS IN THE GENERAL POPULATION DURING THE COVID-19 PANDEMIC

To understand the impact of the COVID-19 pandemic on HCWs, we must consider its impact on the

^aDepartment of Clinical Psychology, New Craigs Psychiatric Hospital, ^bNairn Town and Country Hospital, NHS Highland, Inverness, UK and ^cHuman Flourishing Program, Harvard University, Cambridge, Massachusetts, USA

Correspondence to Johannes H. De Kock, MA, PhD, CPsychol. Department of Clinical Psychology, New Craigs Psychiatric Hospital, Leachkin Rd, Inverness, IV3 8NP UK. Tel: +01463 704000; e-mail: Hannes.De@nhs.scot

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KEY POINTS

- HCWs were at risk for poor MH prior to the COVID-19 pandemic.
- HCWs have experienced elevated MH symptoms and burnout during the COVID-19 pandemic, negatively impacting patient care and the overall public health response.
- Effectively supporting the MH of HCWs during the COVID-19 pandemic and its aftermath requires an understanding of both primary and secondary stressors.
- Psychological interventions aimed at addressing MH problems among HCWs should be tailored to the current context by including HCWs in their development.
- HCWs often emphasise the importance of multifaceted interventions for mitigating the negative psychosocial impacts that secondary stressors can have on their MH.

broader population [6]. For the general public, longitudinal and nationally representative studies [1] have indicated an overall increase in MH problems during the COVID-19 pandemic—especially during the first few months—before decreasing again to prepandemic MH levels by around the middle of 2020. This trend has been observed in other large-scale studies [7[■]] and systematic reviews [8], although there has been some variation across certain subpopulations. For example, there is evidence of a steady decline in MH over time among those who had MH problems prior to the COVID-19 pandemic [9[■]]. On the whole, however, existing research suggests that the general public, after an initial rise in psychological distress following the onset of the COVID-19 pandemic, demonstrated a form of resilience by psychologically adapting to the challenges posed by the public health crisis [9[■],10]. As we will see in the next section, the trend toward MH recovery that was largely observed for the general population was not mirrored among HCWs, who also experienced a decline in MH at the start of the COVID-19 pandemic [4].

MENTAL HEALTH TRENDS AMONG HEALTHCARE WORKERS DURING THE COVID-19 PANDEMIC

HCWs had elevated rates of MH disorders, burnout, and suicide prior to the COVID-19 pandemic, suggesting that this population was especially vulnerable to poor MH outcomes during the current public health crisis [5,11]. At the start of the COVID-19 pandemic, single-shot cross-sectional studies

dominated the scientific landscape about the negative implications of the public health crisis for the wellbeing of HCWs. Several cross-sectional studies from different countries have reported evidence of elevated symptoms of depression, anxiety, posttraumatic stress disorder (PTSD), stress, insomnia, and burnout among HCWs during the COVID-19 pandemic [12–15,16^{■■}]. Due to the methodological drawbacks of cross-sectional evidence, calls were made for more rigorous research to provide clarity and improve the quality of knowledge in this area [6]. Since then, representative cohort studies have shown that the MH of HCW has been negatively affected by the burden of managing this public health crisis [4,17[■],18[■]], with some HCW cohorts reporting an almost four-fold increase in symptoms of anxiety and depression compared to before the COVID-19 pandemic [13]. In one systematic review that compared the pooled prevalence of MH problems in different populations affected by the COVID-19 pandemic up to May 2020, HCWs were found to be significantly more vulnerable to some adverse MH outcomes relative to the general population [19]. Beyond the immediate concerns raised by these findings, evidence from previous infectious outbreaks [20,21] suggests that HCWs will also be at risk of experiencing poor MH after the COVID-19 pandemic wanes [20]. Furthermore, in contrast with trends observed in the general population where MH declined in response to the initial ‘shock’ of the COVID-19 pandemic but recovered to prepandemic levels within a few months [7[■],8], longitudinal and large-scale repeated cross-sectional studies have revealed relatively consistent levels of MH problems [18[■]] and worsening MH [17[■]] among HCWs during this public health crisis. The General Medical Council in the UK noted that by early 2021, staff in the National Health Service (NHS) in the UK were exhausted—and that a similar picture was likely to be found in healthcare systems across the world [22]. By mid-December 2021, HCWs were reporting severe levels of fatigue across the UK [23].

RISK FACTORS FOR ADVERSE MENTAL HEALTH OUTCOMES AMONG HEALTHCARE WORKERS

Reviews and cross-sectional studies have revealed several sociodemographic and occupational risk factors for MH problems among HCWs, suggesting that some HCWs may be more vulnerable to adverse MH outcomes than others. Key sociodemographic risk factors for poor MH outcomes among HCWs during the COVID-19 pandemic include younger age, female gender, working as a frontline HCW (e.g., nurse), having less professional experience, and

having had past MH and organic health problems [12,13,16²²,24]. Heavy workloads, unreliable access to personal protective equipment, working directly with COVID-19 patients, and working through the workplace disruptions caused by COVID-19 are some of the more salient occupational risk factors that have been associated with MH problems among HCWs [18²²,24,25]. Staff working strictly with COVID-19 patients are more likely to report moral distress, which may be due to some of the decisions and challenges that HCWs are faced with as they treat COVID-19 patients [26]. For example, many HCWs have been required to enforce rules that restricted relatives from in-person visits or had to make decisions based on available resources rather than what they felt is ethically right.

Much of the existing evidence about primary risk factors has been derived from quantitative analyses of self-reported measures that HCWs completed while working through the COVID-19 pandemic. Recent qualitative studies [16²²,27] have shown that secondary stressors may also contribute substantially to the MH problems of HCWs beyond the primary stressors that have emerged during the public health crisis [28²²]. Secondary stressors could include any number of ordinarily trivial factors related to various aspects of life (e.g., work, family) that existed before the COVID-19 pandemic but had less impact on the MH of HCWs prior to the public health crisis [28²²,29²²]. However, against the backdrop of sweeping public health measures that have been enacted during the COVID-19 pandemic, many secondary stressors exacerbated primary stressors that HCWs have been confronted with because of their roles in supporting the public health response to COVID-19. For example, remote consultations, telecommuting, a lack of shared space for teamwork, and insufficient access to basic amenities (e.g., showers, parking spaces) are secondary stressors that have had a considerably negative psychological impact on HCWs during the COVID-19 pandemic [28²²,29²²].

Impact on service delivery and patient care

The evidence described so far provides an illustration of a healthcare workforce that is persistently tired, psychologically distressed, and burnt out, all of which are associated with lower-quality patient care [5]. Indeed, high levels of psychological distress among HCWs have been linked with lower staff morale, higher dissatisfaction with work, and productivity loss, with more severe consequences including higher rates of absenteeism and difficulties retaining staff [5,11]. During the COVID-19 pandemic, the Royal College of Nursing and the

British Medical Association reported unprecedented numbers of HCWs leaving or considering leaving the field of healthcare, with psychological distress and burnout identified as the main contributors to these trends [30–32]. In addition, a joint report by the Institute for Safe Medication Practices and the Emergency Care Research Institute reported that staffing shortages, together with the effects of the COVID-19 pandemic on HCW MH, are the top two safety concerns for 2022 [33]. The adverse impacts of this public health crisis on the MH of HCWs threatens the capacity of health systems to provide efficient and high-quality healthcare to patients during a time when the health system burden is especially high [34].

PROTECTING THE MENTAL HEALTH AND WELLBEING OF HEALTHCARE WORKERS DURING AND AFTER THE COVID-19 PANDEMIC

In the previous sections, we presented evidence from prior pandemics [20,25] and the COVID-19 pandemic [17²²,18²²] demonstrating that the HCW population is at increased risk for adverse MH outcomes [11], which in turn places strain on the health system and can negatively affect the quality of patient care. Protecting the MH and wellbeing of HCWs is an essential part of the ongoing COVID-19 response and a key component of maintaining progress toward postpandemic recovery.

Near the beginning of the COVID-19 pandemic, there was much focus on guidelines for staff interventions that centred on psychological support for individual psychopathology and avoiding MH disorders [16²²,35²²]. Laterally, our understanding of secondary stressors that can affect the MH of HCWs has improved, and calls have been made for interventions to also emphasise systemic factors that extend beyond the level of the individual [24,35²²]. A topical framework to support HCWs [36] is proposed by Murray *et al.* [29²²], which encourages multifaceted interventions aimed at providing psychological support to HCWs who are distressed and systemic support focused on promoting the wellbeing of all HCWs employed by a healthcare facility. Such an approach is promising because it offers an integrative framework for addressing the primary and secondary stressors that have the potential to degrade the MH and wellbeing of HCWs.

Interventions

Although evidence-based psychological interventions are available for HCWs [37], there is a paucity of evidence about MH interventions for HCWs

during public health crises such as the COVID-19 pandemic [11]. Early psychological intervention programmes, including psychological first aid; eye movement desensitisation and reprocessing; anticipate, plan, and deter (APD); resilience at work; resilience and coping for the healthcare community (RCHC); and trauma risk management, are being investigated for this population. Evidence acquired so far suggests that these kinds of interventions have potential utility in reducing psychopathology among HCWs, particularly APD and RCHC interventions that are tailored to the needs of HCWs who work in specific contexts [38].

The COVID-19 pandemic has ushered in a plethora of digital psychological interventions. These interventions can typically be offered for a fraction of the cost relative to traditional psychological interventions and could allow for large-scale dissemination. Although many of these digital psychological interventions were marketed as packages that can support the MH of the broad HCW population, evidence concerning the efficacy of such treatment approaches for frontline HCWs who have been working through the COVID-19 pandemic is only now accumulating [39]. Recent developments in this area have indicated that digital Cognitive Behavioural Therapy [40], as well as tailored digital psychological interventions designed for HCWs [41], are promising intervention options. Research into the efficacy of psychological interventions for HCWs during this public health crisis is ongoing and should continue, as psychological interventions have an important role to play in supporting the MH of HCWs who have become distressed [42].

Organisational-level interventions and systemic support that create a healthy workplace also remain key to protecting the MH of HCWs [43]. A recent systematic review and meta-analysis that was published just before the COVID-19 pandemic investigated the effectiveness of interventions designed to reduce symptoms and prevalence of MH disorders and suicidal behaviour among HCWs [44]. The authors concluded that individually directed interventions were associated with some reduction in symptoms of common MH disorders, but they highlighted the need for greater emphasis on organisational-level interventions that improve the work environment. This was echoed by a review that found HCWs who were working through the COVID-19 pandemic preferred social support, rest and organisational support rather than individualised psychological interventions [16]. Targeted psychological interventions may contribute to alleviating symptoms among those who require more specialised support, whereas organisational support-oriented principally toward addressing secondary

stressors may lead to longer-lasting change and psychologically resilient HCWs [29]. Interventions geared toward addressing secondary stressors and providing longer-term support may be necessary, as we have learned from previous major incidents and emergencies that groups of people readily mobilise support at the start of an emergency but over time that support often deteriorates [45]. This pathway has been observed in the general population and among HCWs in the NHS during the COVID-19 pandemic [29].

Several reviews have identified a range of organisational-level factors that could be targeted to support the MH of HCWs as they deal with the challenges of working through the COVID-19 pandemic, such as providing positive feedback to HCWs, taking steps to ensure that staff have confidence in local infection control procedures and providing protective gear to them, and building a supportive team community [25,24,43]. Not only are these kinds of organisational-level factors possible pathways for addressing secondary stressors that have emerged during the COVID-19 pandemic, but many can also be implemented via relatively straightforward and low-cost intervention strategies.

An important potential benefit of organisational-level interventions is that they can help to avoid problematising complex issues strictly at the individual level, which may overlook occupational factors that could be contributing to MH difficulties among HCWs. For example, the concept of burnout is an individual response to chronic work stressors, which is characterised by exhaustion, cynicism, and detachment. Although burnout is experienced at the individual level, it is a contextualised experience that unfolds within a broader organisational setting [43].

Organisational-level interventions might also provide healthcare leaders with opportunities to support HCWs in ways that are more consistent with what they find to be most useful. For example, some studies have found that many of the guidelines HCWs were provided with emphasised the importance of receiving psychological support to avoid or treat MH issues, but HCWs tended to place greater emphasis on the structural conditions at work, responsibilities outside of work, and support from the community as key factors that could be addressed to enhance their wellbeing [16,35]. A mismatch between guidelines and the perceived utility of those guidelines among HCWs could explain why individualised psychological interventions are often underused [16]. Although this does not imply that psychological interventions are any less relevant or useful, it does reinforce the

importance of a caring climate in the workplace for promoting the MH of HCWs by also attending to secondary stressors that they encounter during the course of their work.

CONCLUSION

A psychologically healthy workforce is not a ‘nice to have,’ but is a necessity if health systems are to fulfil the ultimate goal of ensuring patient safety. The COVID-19 pandemic appears to have lifted the lid on a preexisting issue that has been a cause for concern. HCWs, a group that was at risk for adverse MH outcomes before the COVID-19 pandemic, have been experiencing a persistent burden of psychological distress that could have downstream consequences for health systems both during and after this public health crisis. Supporting this population’s MH remains a public health priority, and care should be taken to understand both the primary and secondary stressors that HCWs continue to face when considering interventions to support them.

As in any emergency, it is normal and appropriate to initiate reactive measures to deal with immediate issues that have emerged during the COVID-19 pandemic. We have seen this kind of emergency response to support the MH of HCWs, and the effort that has been dedicated to providing individual psychological support for distressed members of this population should be commended. As we move out of the emergency phase of this public health crisis into a more chronic phase, it will be important to explore and implement preventive measures. There will always be issues that are difficult to control (e.g., emergence of a novel SARS-CoV-2 variant), but the available evidence suggests that secondary stressors are exacerbating the direct impacts of COVID-19 and that HCWs find it useful when secondary stressors are addressed.

Based on our review of the existing literature, interventions focused on protecting the MH of HCWs during the COVID-19 pandemic would do well to balance the psychological needs of individual HCWs with systemic support strategies that could be pursued to promote their wellbeing in the organisational contexts where they work. Methodologically rigorous research is needed to build a more robust body of evidence on the effectiveness of multifaceted interventions that are implemented to promote the MH of HCW’s MH, which could have important implications for the postpandemic recovery of this key population and assist with preparing for future public health crises that emerge.

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Conflicts of interest

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REFERENCES AND RECOMMENDED READING

Papers of particular interest, published within the annual period of review, have been highlighted as:

- of special interest
- of outstanding interest

1. Daly M, Robinson E. Longitudinal changes in psychological distress in the UK from 2019 to September 2020 during the COVID-19 pandemic: evidence from a large nationally representative study. *Psychiatry Res* 2021; 300:113920.
 2. Kwong ASF, Pearson RM, Adams MJ, *et al.* Mental health before and during the COVID-19 pandemic in two longitudinal UK population cohorts. *Br J Psychiatry* 2021; 218:334–343.
 3. Shevlin M, McBride O, Murphy J, *et al.* Anxiety, depression, traumatic stress and COVID-19-related anxiety in the UK general population during the COVID-19 pandemic. *BJPsych open* 2020; 6:E125.
 4. Lamb D, Gnanapragasam S, Greenberg N, *et al.* Psychosocial impact of the COVID-19 pandemic on 4378 UK healthcare workers and ancillary staff: initial baseline data from a cohort study collected during the first wave of the pandemic. *Occup Environ Med* 2021; 78:801–808.
 5. Tawfik DS, Scheid A, Profit J, *et al.* Evidence relating healthcare provider burnout and quality of care: a systematic review and meta-analysis. *Ann Internal Med* 2019; 171:555–567.
 6. Lamb D, Greenberg N, Stevelink SAM, Wessely S. Mixed signals about the mental health of the NHS workforce. *Lancet Psychiatry* 2020; 7:1009–1011.
 7. Fancourt D, Steptoe A, Bu F. Trajectories of anxiety and depressive symptoms during enforced isolation due to COVID-19 in England: a longitudinal observational study. *Lancet Psychiatry* 2021; 8:141–149.
- This study indicated an overall increase in MH problems during the COVID-19 pandemic—especially during the first few months.
8. Robinson E, Sutin AR, Daly M, Jones A. A systematic review and meta-analysis of longitudinal cohort studies comparing mental health before versus during the COVID-19 pandemic in 2020. *J Affect Disord* 2022; 296:567–576.
 9. Pierce M, Hope H, Ford T, *et al.* Mental health before and during the COVID-19 pandemic: a longitudinal probability sample survey of the UK population. *Lancet Psychiatry* 2020; 7:883–892.
- This research suggests that the general public, after an initial rise in psychological distress following the onset of the COVID-19 pandemic, demonstrated a form of resilience by psychologically adapting to the challenges posed by the public health crisis. It also shows a steady decline in MH over time among those who had MH problems prior to the COVID-19 pandemic.
10. Shiba K, Cowden RG, Counted V, *et al.* Associations of home confinement during COVID-19 lockdown with subsequent health and well being among UK adults. *Curr Psychol* 2022; <https://doi.org/10.1007/s12144-022-03001-5>.
 11. Gold JA. Covid-19: adverse mental health outcomes for healthcare workers. *BMJ* 2020; 369:m1815.
 12. Lai J, Ma S, Wang Y, *et al.* Factors associated with mental health outcomes among healthcare workers exposed to coronavirus disease 2019. *JAMA Network Open* 2020; 3:e203976.
 13. Gilleen J, Santaolalla A, Valdearenas L, *et al.* Impact of the COVID-19 pandemic on the mental health and well being of UK healthcare workers. *BJPsych Open* 2021; 7:e88.
 14. Tan BYQ, Chew NWS, Lee GKH, *et al.* Psychological impact of the COVID-19 pandemic on healthcare workers in Singapore. *Ann Internal Med* 2020; 173:317–320.
 15. Naldi A, Vallelonga F, Di Liberto A, *et al.* COVID-19 pandemic-related anxiety, distress and burnout: prevalence and associated factors in healthcare workers of North-West Italy. *BJPsych Open* 2021; 7:e27.

16. Muller AE, Hafstad EV, Himmels JPW, *et al.* The mental health impact of the covid-19 pandemic on healthcare workers, and interventions to help them: A rapid systematic review. *Psychiatry Res* 2020; 293:113441.

This early review found that who were HCWs working through the COVID-19 pandemic preferred social support, rest and organisational support, rather than individualised psychological interventions.

17. Jordan J-A, Shannon C, Browne D, *et al.* COVID-19 Staff Wellbeing Survey: longitudinal survey of psychological well being among health and social care staff in Northern Ireland during the COVID-19 pandemic. *BJPsych Open* 2021; 7:e159.

This longitudinal study reports worsening MH among HCWs over time, which is of interest when compared to the general population's trend towards MH recovery over time.

18. De Kock JH, Ann Latham H, Cowden RG, *et al.* The mental health of NHS staff during the COVID-19 pandemic: two-wave Scottish cohort study. *BJPsych Open* 2022; 8:e23.

This cohort study showed that HCWs working in a remote area with low COVID-19 prevalence reported substantial sustained levels of anxiety and depression, similar to those working in areas with high COVID-19 prevalence.

19. Cénat JM, Blais-Rochette C, Kokou-Kpolou CK, *et al.* Prevalence of symptoms of depression, anxiety, insomnia, posttraumatic stress disorder, and psychological distress among populations affected by the COVID-19 pandemic: a systematic review and meta-analysis. *Psychiatry Res* 2021; 295:113599.

20. Maunder RG, Lancee WJ, Balderson KE, *et al.* Long-term psychological and occupational effects of providing hospital healthcare during SARS outbreak. *Emerg Infect Dis* 2006; 12:1924.

21. Brooks SK, Dunn R, Amlôt R, *et al.* A systematic, thematic review of social and occupational factors associated with psychological outcomes in healthcare employees during an infectious disease outbreak. *J Occup Environ Med* 2018; 60:248–257.

22. Williams R, Kaufman KR. Narrative review of the COVID-19, healthcare and healthcarers thematic series. *BJPsych Open* 2022; 8:e34.

23. General Medical Council. The State of Medical Education and Practice in the UK, 2021. General Medical Council, 2021. website and pdf. available on: <https://www.gmc-uk.org/about/what-we-do-and-why/data-and-research/the-state-of-medical-education-and-practice-in-the-uk>.

24. De Kock JH, Latham HA, Leslie SJ, *et al.* A rapid review of the impact of COVID-19 on the mental health of healthcare workers: implications for supporting psychological well being. *BMC Public Health* 2021; 21:104.

25. Kisely S, Warren N, McMahon L, *et al.* Occurrence, prevention, and management of the psychological effects of emerging virus outbreaks on healthcare workers: rapid review and meta-analysis. *BMJ* 2020; 369:m1642.

26. Rimmer A. Covid-19: Eight in 10 doctors have experienced moral distress during pandemic, BMA survey finds. *BMJ* 2021; 373:n1543.

27. Cogan N, Archbold H, Deakin K, *et al.* What have we learned about what works in sustaining mental healthcare and support services during a pandemic? transferable insights from the COVID-19 response within the NHS Scottish context. *Int J Ment Health* 2022; 51:1–25.

28. Williams R, Ntontis E, Alfidhli K, *et al.* A social model of secondary stressors in relation to disasters, major incidents and conflict: implications for practice. *Int J Disaster Risk Reduct* 2021; 63:102436.

This social approach is promising because it offers an integrative framework for addressing not only the primary but also the secondary stressors that have the potential to degrade the MH and wellbeing of HCWs.

29. Murray E, Kaufman KR, Williams R. Let us do better: learning lessons for recovery of healthcare professionals during and after COVID-19. *BJPsych Open* 2021; 7:e151.

A perspective centred on effectively supporting HCWs not only now during the pandemic with individual psychological support, but also after, by utilising systemic support.

30. Royal College of Nursing. Staffing for safe and effective care: state of the nation's labour nursing market 2022. UK: Royal College of Nursing; 2022. Report available on: <https://www.rcn.org.uk/professional-development/publications/staffing-for-safe-effective-care-labour-nursing-market-2022-uk-pub-010-108>.

31. British Medical Association. The mental health and wellbeing of the medical workforce – now and beyond COVID-19. British Medical Association, 2020. (<https://www.bma.org.uk/media/2475/bma-covid-19-and-nhs-staff-mental-health-wellbeing-report-may-2020.pdf>).

32. British Medical Association. COVID-19: analysing the impact of coronavirus on doctors. British Medical Association, 2021. live survey available on: <https://www.bma.org.uk/advice-and-support/covid-19/what-the-bma-is-doing/covid-19-analysing-the-impact-of-coronavirus-on-doctors>.

33. Emergency Care Research Institute. Top 10 patient safety concerns 2022. 2022. Report available on: <https://www.ecri.org/top-10-patient-safety-concerns-2022>.

34. Galbraith N, Boyda D, McFeeters D, Hassan T. The mental health of doctors during the COVID-19 pandemic. *BJPsych Bulletin* 2021; 45:93–97.

35. Vera San Juan N, Aceituno D, Djellouli N, *et al.* Mental health and well being of healthcare workers during the COVID-19 pandemic in the UK: contrasting guidelines with experiences in practice. *BJPsych Open* 2021; 7:e15.

This paper provides a comprehensive overview of the mismatch between guidelines to support the psychological health of HCW and their own preferences.

36. Stevenson D, Farmer P. Thriving at work: the Stevenson/Farmer review of mental health and employers. London: Department for Work and Pensions and Department of Health; 2017.

37. Melnyk BM, Kelly SA, Stephens J, *et al.* Interventions to improve mental health, well being, physical health, and lifestyle behaviors in physicians and nurses: a systematic review. *Am J Health Promotion* 2020; 37:929–941.

38. Hooper JJ, Saulsman L, Hall T, Waters F. Addressing the psychological impact of COVID-19 on healthcare workers: learning from a systematic review of early interventions for frontline responders. *BMJ Open* 2021; 11:e044134.

This is a systematic review looking into early interventions for healthcare staff in the context of the COVID-19 healthcare crisis.

39. Rauschenberg C, Schick A, Hirjak D, *et al.* Evidence synthesis of digital interventions to mitigate the negative impact of the COVID-19 pandemic on public mental health: rapid meta-review. *J Med Internet Res* 2021; 23:e23365.

40. Weiner L, Berna F, Noury N, *et al.* Efficacy of an online cognitive behavioral therapy program developed for healthcare workers during the COVID-19 pandemic: the REduction of STress (REST) study protocol for a randomised controlled trial. *Trials* 2020; 21:870.

41. De Kock JH, Latham HA, Cowden RG, *et al.* Brief Digital interventions to support the psychological well being of NHS staff during the COVID-19 pandemic: 3-Arm Pilot Randomised Controlled Trial. *JMIR Ment Health* 2022; 9:e34002.

This pilot RCT shows the potential usefulness of tailored digital psychological interventions for healthcare staff working through the COVID-19 pandemic.

42. Holmes EA, O'Connor RC, Perry VH, *et al.* Multidisciplinary research priorities for the COVID-19 pandemic: a call for action for mental health science. *Lancet Psychiatry* 2020; 7:547–560.

43. Montgomery A, Panagopoulou E, Esmail A, *et al.* Burnout in healthcare: the case for organisational change. *BMJ* 2019; 366:14774.

44. Petrie K, Crawford J, Baker STE, *et al.* Interventions to reduce symptoms of common mental disorders and suicidal ideation in physicians: a systematic review and meta-analysis. *Lancet Psychiatry* 2019; 6:225–234.

45. Cowden RG, Captari LE, Chen ZJ, *et al.* Effectiveness of an intensive experiential group therapy program in promoting mental health and well being among mass shooting survivors: a practice-based pilot study. *Prof Psychol Res Pract* 2022; 53:181–191.