



Impact of the coronavirus disease 2019 pandemic on healthcare workers: systematic comparison between nurses and medical doctors

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Purpose of review

The COVID-19 outbreak has had major impact on individual's psychological health and overall well being worldwide. Evidence shows that these psychological challenges are especially prominent in healthcare workers (HCW); especially in nurses. Indeed, several studies report that nurses suffer more psychologically because of the consequences of the pandemic compared with medical doctors. To further look into this, we systematically review the recent literature to see whether the psychological impact of the COVID-19 pandemic differs between medical doctors and nurses across studies and which aspects of mental health are especially affected in nurses.

Recent findings

Across studies, there is solid evidence that nurses show poorer mental health outcomes compared with medical doctors during the COVID-19 pandemic. This is especially true for symptoms of depression, anxiety and posttraumatic stress disorder (PTSD). Here, prevalence rates in nurses are often higher than 50%. In contrast, general stress levels and burnout seem to be comparable between nurses and medical doctors.

Summary

Given that nurses suffer more from depression, anxiety and PTSD symptoms during the COVID-19 pandemic, special programs addressing their needs are required.

Keywords

anxiety, coronavirus disease 2019, depression, medical doctors, mental health

INTRODUCTION

The coronavirus disease 2019 (COVID-19) outbreak has led to an increase in psychological distress and mental health problems among the general population worldwide [1]. Evidence shows that these psychological challenges and the high susceptibility to stress-related disorders are especially prominent in healthcare workers (HCW) [2] who occupy the front-line during this pandemic, and thus, face specific challenges and stressors. Healthcare workers report that the most common causes for burden are job strain because of long working hours, instability of working hours, instability of teams, strict safety measures and uncertainty about the future [3]. Not surprisingly, these burdens in HCWs have been associated with increased prevalence of depression, stress and anxiety [4]. Alarming, prevalence of psychological disturbances seems to be even higher when focusing on one specific group of HCW, namely nurses. Indeed, recent findings indicate that

not all HCW are affected equally by the COVID-19 outbreak and that especially the group of nurses suffer more psychologically because of the consequences of the pandemic [5]. Several studies have reported that nurses report higher exhaustion/stress, depressive symptoms and lower job fulfillment compared with physicians during the COVID-19 pandemic [3], and thus, seem to be especially vulnerable. To further look into this, the aim

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Curr Opin Psychiatry 2021, 34:413–419

DOI:10.1097/YCO.0000000000000721

KEY POINTS

- Nurses have a significantly higher risk to develop mental conditions, such as anxiety, depression or PTSD compared with medical doctors during the COVID-19 pandemic.
- Only few studies used validated questionnaires to investigate the important conditions, such as sleep disturbances and substance abuse. Here, no difference between nurses and medical doctors were found but these aspects warrant further investigations.
- Hospitals and other healthcare facilities treating a relevant number of patients with COVID-19 should implement early detection and early intervention programs tailored to the special needs of nurses.

of this review is to systematically investigate whether the psychological impact of the COVID-19 pandemic indeed differs between medical doctors and nurses and which aspects of mental health are especially affected in nurses. Given the high numbers of publications on the topic worldwide, we limit this review on articles published in Western countries (e.g. USA, Canada, Europe).

SEARCH STRATEGY AND ARTICLE SELECTION

For this review, we searched PubMed for the terms COVID-19, HCWs, and for mental health. The search was limited to articles published from March 2020 until 10 January 2021. Studies were included if they were original studies, were conducted in Europe, North America or Australia, reported mental health outcomes separately for nurses and medical doctors, used validated questionnaires (all studies using self-developed questionnaires were excluded) and included a sample size more than 100 HCWs. The numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, are presented in a PRISMA flowchart (see Fig. 1). A summary of the characteristics of each study is provided in Supplementary Table 1, <http://links.lww.com/YCO/A61>. Joanna Briggs Institute (JBI) standardized critical appraisal instrument for prevalence studies [6] was used to assess the quality of the included articles (double rated by two researchers; no article had to be excluded because of low scores). The majority of the studies were conducted in Spain and Italy during the first wave of the pandemic (March to May 2020). With regard to our main interest, namely comparing mental health between medical doctors and nurses during the COVID-19 pandemic, studies used a variety of statistical approaches ranging

from simple between-group comparisons (e.g. *t* tests) to more complex regression analyses or to studies only reporting prevalence values for each group (prevalence differences >5% between groups are interpreted as indication for group differences). The proportions of nurses and physicians across studies were not balanced, with nurses outnumbering physicians in the majority of studies.

MAJOR DEPRESSION

An increase in symptoms of depression has been reported early on during the COVID-19 pandemic, with an up to three-fold prevalence increase in the general population. Alarming, this increase in prevalence appears to be even more pronounced in HCWs [4,7]. In 18 studies, depressive symptoms in nurses and medical doctors were systematically assessed. Here, the prevalence of clinically significant depression in HCW was reported to be as high as 57.9% [8]. These very high values were especially reported in areas/countries where the pandemic was particularly severe during the first wave (e.g. Spain, Italy), whereas countries less affected by the pandemic reported lower prevalence values. Moreover, when comparing these prevalence values between nurses and doctors, the majority of studies consistently showed higher levels of depressive symptoms in nurses (see Fig. 2). This observation of increased vulnerability to depression in nurses during the pandemic is not limited to Western countries but has also been reported for the Asian population [9]. What might underlie this increased vulnerability? Several aspects might play a role. For once, nurses often face a greater risk of exposure to patients suffering from COVID-19 compared with medical doctors given that they spend more time on wards and provide direct care to patients, including the collection of sputum for virus detection. Furthermore, because of this closer contact with COVID-19 patients, nurses may be more directly exposed to the burden, death and ethical dilemmas. Another explaining factor surely is the confounding gender aspect, with most nurses being women and women having a higher prevalence rates of depression. Finally, nurses experience less recognition on various levels compared with medical doctors, and this may increase depressive symptoms especially during stressful events, such as the COVID-19 pandemic.

ANXIETY

Comparable to depression, an increase in anxiety symptoms during the COVID-19 pandemic has also been reported for the general population and likewise seems to be even more pronounced in HCW

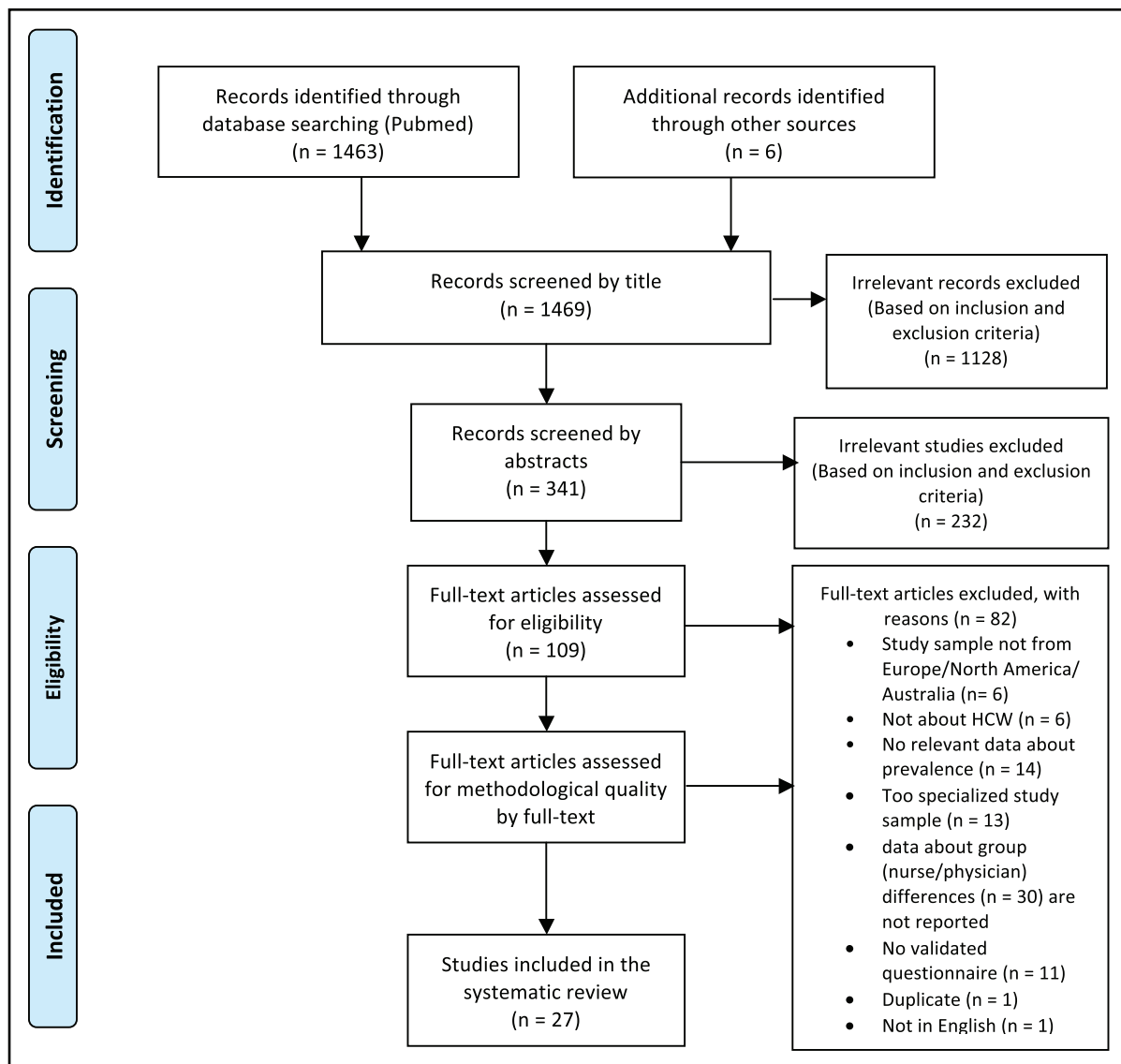


FIGURE 1. PRISMA flowchart, displaying the selection process of studies included in this review.

[4,7]. In 19 studies, anxiety symptoms were assessed in nurses and medical doctors and the prevalence of clinically significant anxiety amongst these HCW groups was reported to be as high as 65.2% [8^o]. These very high prevalence values were again mostly found in areas/countries hit especially hard during the first wave of the pandemic. Moreover, mirroring the findings on depression, prevalence rates were much higher in nurses compared with medical doctors; here 14 out of 19 studies showed nurses to score higher on anxiety (see Fig. 2). The reasons for this heightened vulnerability for anxiety symptoms in nurses are most likely similar to those listed for depression. Again, the longer and closer, direct exposure to patients affected by COVID-19 in nurses might be a crucial factor. In the context of anxiety, this greater exposure to COVID-19 can elicit

heightened fears about becoming infected oneself or of taking the infection home to one's family. Moreover, the heightened anxiety scores in nurses might also be fueled by uncertainties about the access to childcare during increased working hours or by uncertainties in working conditions/work areas (e.g. non-ICU nurses having to function as ICU nurses). Moreover, the gender aspect with most nurses being female might again also be a confounding factor.

POSTTRAUMATIC STRESS DISORDER

The prevalence of posttraumatic stress disorder (PTSD) among HCW is known to be significantly higher (approximately two-fold) compared with the general population even in nonpandemic times.

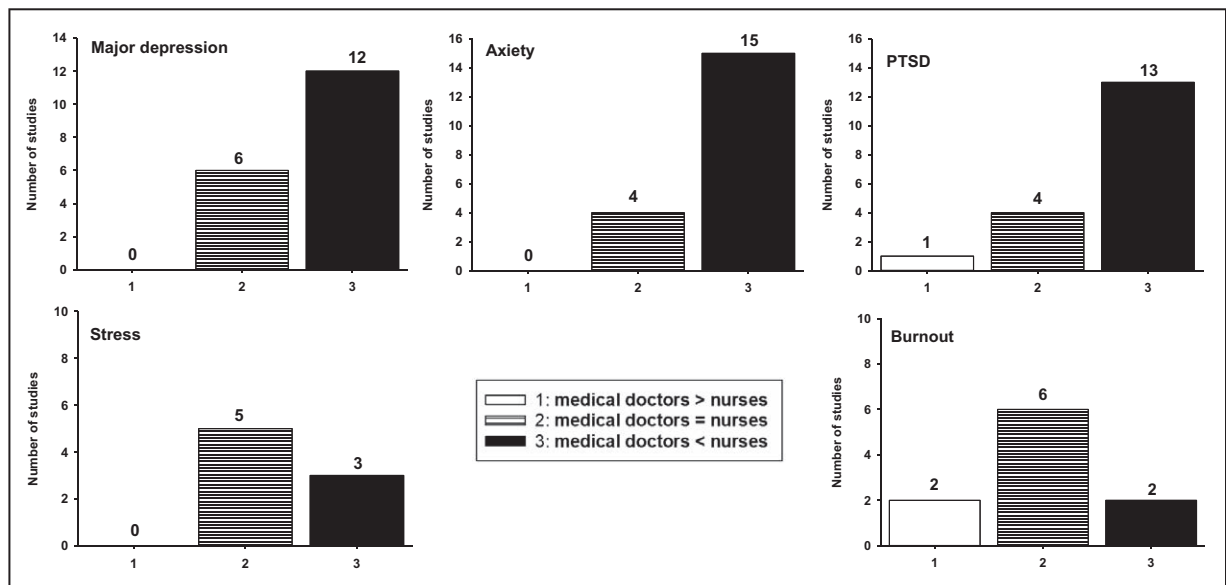


FIGURE 2. Number of studies that assessed different areas of mental health in nurses and medical doctors during the coronavirus disease 2019 pandemic. Numbers refer to group comparisons between the group of nurses and the group of medical doctors and indicate whether nurses showed decreased, increased or comparable mental health outcomes.

This increased risk for PTSD in HCW seems to be even more amplified because of the COVID-19 pandemic, with prevalence values reaching up to 73.6% [10]. Comparable with the findings for anxiety and depression, it is again the group of nurses amongst the HCW who are especially vulnerable to develop PTSD during the COVID-19 pandemic. Out of 18 group comparisons between PTSD symptoms in nurses and medical doctors, 13 showed higher PTSD values in the group of nurses (see Fig. 2). These heightened PTSD values in nurses are likely again because of the higher susceptibility to infection, given the closer and longer contact with the patients suffering from COVID-19. Moreover, the heightened prevalence also suggests a lack of adequate training and preparation to face such a pandemic and calls for the implementation of preventive measures (in education as well as in the hospital setting) in order to protect nurses from psychological trauma during a pandemic. Reviewing the PTSD literature, one must acknowledge that the time-lag between the experienced traumatic event and the onset of the symptomatology has not been specified across studies.

STRESS

Overall stress levels in HCWs increased during the COVID-19 pandemic, with more than 40% of HCWs suffering from moderate-to-extreme levels of stress [11[¶]]. HCW have reported that their increased stress was associated with an inability to disconnect from work, heightened irritability and increased fear of

infecting one’s family. Again, stress levels were especially high in those areas/countries that were hit especially hard. Surprisingly (and in contrast to depression, anxiety and PTSD), the overall stress level seems to be more comparable between the group of nurses and the group of medical doctors. Only three out of eight studies showed heightened stress values in nurses compared with medical doctors (see Fig. 2). Thus, nurses and medical doctors seem to be comparably vulnerable to heightened stress during the COVID-19 pandemic.

BURNOUT

Acknowledging that the burnout syndrome integrates several aspects of depression, anxiety or addiction, some studies used burnout as the specific variable of interest. However, in contrast to the aforementioned conditions, it is still unclear how the COVID-19 pandemic has affected the burnout prevalence amongst HCW. Included studies suggest a significant increase in burnout prevalence in HCW, comparable to those found for depression, anxiety, PTSD and stress, with values up to 45.6% [12[¶]]. The extended duration of the pandemic will likely lead to an even more increased burnout prevalence in the coming months. When comparing burnout levels between nurses and medical doctors, no clear difference occurs, with 6 out of 10 studies reporting no group differences, 2 studies showing decreased and 2 studies showing increased burnout levels in nurses (see Fig. 2).

OTHER MENTAL HEALTH ASPECTS

Sleep

The impact of the COVID-19 pandemic on sleep disturbances in nurses and medical doctors was only assessed in two studies [12[■],13]. Here, both studies showed that sleep disturbances were frequent in HCW (prevalence rates up to 68.7%) and both showed that these were more frequent in nurses; thus, being in line with the aforementioned findings of more affective and stress-related disorders in nurses.

Somatization

Only in one study, symptoms of somatization during COVID-19 were compared between nurses

and medical doctors [8[■]]. Again, nurses scored higher on somatization compared with medical doctors.

Substance abuse

The impact of COVID-19 on substance abuse was compared between nurses and medical doctors in only one study [14[■]]. Here, no group differences were found, with an average prevalence of 6.2% being reported across groups of HCW.

A more detailed overview of all investigated outcome measures can be found in Table 1 [3,8[■],10,11[■],12[■],13,14[■],15–20,21[■],22[■],23,24,25[■],26,27,28[■],29[■],30,31–34].

Table 1. Overview on the included studies and the reported outcomes when comparing mental health burden in nurses and in medical doctors during the coronavirus disease 2019 pandemic

| Reference | Outcome: nurses vs. medical doctors | | | | | | | So |
|--------------------|-------------------------------------|---------|--------|------|--------|---------|------|----|
| | MDD | Anxiety | Stress | PTSD | SleepD | Burnout | SUD | |
| [3] | < | < | < | | | = | | |
| [8 [■]] | = | = | | = | | | | < |
| [10] | | | | < | | | | |
| [11 [■]] | < | < | < | </ = | | | > | |
| [12 [■]] | = | < | = | | < | < | | |
| [13] | < | = | | < | < | | | |
| [14 [■]] | < | < | | < | | | = | |
| [15] | < | < | | < | | | | |
| [16] | | | | | | = | | |
| [17] | | | | < | | | | |
| [18] | = | = | | = | | = | | |
| [19] | < | < | | = | | < | | |
| [20] | < | < | < | | | | | |
| [21 [■]] | N.R. | N.R. | N.R. | N.R. | | = | | |
| [22 [■]] | < | < | | < | | | | |
| [23] | = | < | = | | | | | |
| [24] | N.R. | N.R. | | < | | | | |
| [25 [■]] | < | < | | < | | | | |
| [26] | = | < | | < | | | N.R. | |
| [27] | | | | | | = | | |
| [28 [■]] | | | = | | | | | |
| [29 [■]] | | = | | < | | = | | |
| [30] | | | = | > | | > | | |
| [31] | = | = | = | | | | | |
| [32] | < | < | | < | | | | |
| [33] | < | < | | | | | | |
| [34] | < | < | | < | | | | |

The symbol < indicates higher rates of symptoms reported in nurses (medical doctors < nurses); = indicates no difference between groups (medical doctors = nurses); > indicates higher rates of symptoms reported in physicians (medical doctors > nurses). N.R., not reported; MDD, major depression disorder; PTSD, posttraumatic stress disorder; SleepD, sleep disorder; So, somatization; SUD, substance use disorder.

CONCLUSION

Across the different areas of mental health, the majority of evidence shows that nurses have suffered the impact of the COVID-19 pandemic markedly more than medical doctors. This is especially true for symptoms of depression, anxiety as well as PTSD where nurses have been found to be at higher risk for developing more severe psychological symptoms. Although this heightened vulnerability in nurses might partly be confounded by gender aspects, other aspects, such as length of contact with patients and level of exposure to the patients' (mental) burden seem to be the crucial factors. Indeed, one study that has been not included in our review, given that self-developed questions were used instead of validated questionnaires, specifically controlled for a gender effects in a large cohort of HCW and showed that the increased levels of stress and burden in nurses compared with medical doctors are rather unrelated to gender [2].

Most importantly, the heightened vulnerability requires careful clinical attention with regard to providing nurses easy access to counselling and/or psychotherapy as well as (wherever appropriate) to pharmacological treatment. Moreover, structural capacities ensuring adequate working hours and usage of clear operative protocols should also be put in place, as well as early detection programs in hospitals and other areas of the healthcare systems facing high numbers of patients with COVID-19 infection.

Acknowledgements

We thank Theresa Zerrle for her support in the screening and selection of articles.

Financial support and sponsorship

This study was funded by a grant of the Bavarian Ministry of Science and Art to Miriam Kunz and Alko-miet Hasan.

Conflicts of interest

M.K. and M.S. declare no conflicts of interest. A.H. is editor of the German (DGPPN) Schizophrenia treatment guidelines and first-author of the WFSBP schizophrenia treatment guidelines. He has been on the advisory boards, and has received speaker fees from Janssen-Cilag, Lundbeck and Otsuka.

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- of special interest
- of outstanding interest

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