Article

PAMJ One Health

Review

The impact of COVID-19 on the mental health of healthcare workers in Africa: a scoping review

Benedict Raphael Oamen, Portia Jordan, Chinwe Iwu-Jaja

Corresponding author: Benedict Raphael Oamen, Department of Nursing and Midwifery, Faculty of Medicine and Health Sciences, Stellenbosch University, Tygerberg, Cape Town, Western Cape Province, South Africa. benoamen@gmail.com

Received: 16 Apr 2023 - **Accepted:** 19 Aug 2023 - **Published:** 25 Sep 2023

Keywords: Africa, coronavirus disease, COVID-19, healthcare worker, mental health, pandemic

Cite this article: Benedict Raphael Oamen et al. The impact of COVID-19 on the mental health of healthcare workers in Africa: a scoping review. PAMJ - One Health. 2023;12(7). 10.11604/pamj-oh.2023.12.7.40107

Available online at: https://www.one-health.panafrican-med-journal.com/content/article/12/7/full

The impact of COVID-19 on the mental health of healthcare workers in Africa: a scoping review

Benedict Raphael Oamen[1,&], Portia Jordan[1], Chinwe Iwu-Jaja[1]

[1]Department of Nursing and Midwifery, Faculty of Medicine and Health Sciences, Stellenbosch University, Tygerberg, Cape Town, Western Cape Province, South Africa

[&]Corresponding author

Benedict Raphael Oamen, Department of Nursing and Midwifery, Faculty of Medicine and Health Sciences, Stellenbosch University, Tygerberg, Cape Town, Western Cape Province, South Africa

Abstract

Coronavirus disease (COVID-19) caused a major impact on the mental health of healthcare workers, although there was no scoping review found that summarised the impact of COVID-19 on the mental health of health care workers in Africa. A scoping review method was used to search for relevant articles in English language on mental health symptoms of healthcare workers during the coronavirus pandemic in Africa. PubMed, Scopus, Web of Science and CINAHL were searched from January 2020 to September 2022. The search generated 2696 studies, after deduplication, screening, exclusion and further search, ten studies were included. The following outcomes associated with the COVID-19 pandemic were identified: stress, burnout, anxiety/generalized anxiety disorder,

depression, poor quality of sleep/insomnia, distress/post-traumatic stress disorder, coronavirus disease-related anxiety, functional impairment, self-report on lived experiences working during the coronavirus outbreak, subjective perceptions of employer support, coping strategies/skills, and resilience. Most studies reported that anxiety and depression are triggered by the coronavirus pandemic among healthcare workers. We found variation in mental health symptoms according to gender, healthcare worker subgroups, years of work experience, and age, wherein females, doctors and nurses, healthcare workers with lesser years of experience, and those who were relatively younger in age had a higher chance of experiencing more mental health symptoms.

Introduction

The SARS-CoV-2 virus responsible for COVID-19 has greatly burdened and overwhelmed healthcare systems and has had a significant impact on healthcare workers. Globally, nurses and other healthcare workers encounter enormous pressure in their workplace, and the pandemic continues to take a heavy toll on the physical and mental wellbeing of healthcare providers [1]. It was evidenced during the pandemic that healthcare workers were working under stressful conditions, coupled with the fear and anxiety of contracting the coronavirus infection, which might have resulted in severe psychosocial consequences and negatively impact workplace functioning [2].

Evidence from studies have indicated that healthcare workers were at risk of developing both short- and long-term mental health problems with approximately one-third of them experiencing high levels of distress which may have a long-lasting effect on their mental health [3,4]. Ricci-Cabello *et al.* mentioned that healthcare workers are at high risk of mental health problems during and after viral epidemic outbreaks [4]. A rapid systematic review and meta-analysis by Serrano-Ripoll *et al.* highlighted that the impact of viral epidemic outbreaks on the mental health of frontline healthcare workers was higher for acute stress disorder, anxiety, burnout, depression, and post-traumatic stress disorder [4]. The majority of the studies reviewed were conducted in Asian countries, followed by studies conducted in North America, Middle East, and a few from West Africa. Additionally, most of these studies were conducted in hospital settings with the majority of the participants being frontline healthcare workers in general, while a limited number only focused on nurses and doctors.

A preliminary search of the following database namely, PubMed, Google Scholar and other grey literature was conducted. To the best of our knowledge, no study has systematically synthesized evidence around the impact of COVID-19 among healthcare workers across Africa. This evidence is important as it can help in implementing context specific interventions that can be used to mitigate the impact of the pandemic on mental health of these health professionals. Therefore, this scoping review aimed to explore the impacts of COVID-19 on the mental health of healthcare workers in Africa, with the following objectives: 1) to explore the prevalence of mental health impact of COVID-19 among healthcare workers in Africa; 2) to describe the risk factors associated with the mental health symptoms impacted by COVID-19 among healthcare workers in Africa; 3) to identify the screening tools used for assessing the mental health disorders or symptoms impacted by COVID-19 among healthcare workers; 4) to provide future recommendations to prepare healthcare workers to cope with and be resilient towards mental health impacts of epidemic outbreaks.

Methods

The proposed scoping review was conducted in accordance with the Joanna Briggs Institute (JBI) methodology for scoping reviews [5].

Study inclusion and exclusion criteria

The Participants, Concept, and Context (PCC) described by JBI [6] was used to guide the inclusion

and exclusion criteria for eligible studies in this review.

Participants

For the purpose of this scoping review, the term healthcare workers generally refers to individuals involved in the direct care of patients and indirect care of patients, for example, frontline or non-frontline healthcare workers including nurses and doctors/physicians (specialists or non-specialists), administrative staff, managers, public health officers, medical and clinical officers, laboratory scientists and technicians, pharmacists and technologists, physiotherapist and technicians, emergency medical personnel, dental professionals and students, medical and nursing students as well as cleaners and general workers. All healthcare workers are at risk of contracting the COVID-19 infection. It was necessary to explore and identify the impact it has on their mental health in the African context.

Concept

This section comprises the area of interest as well as the outcome measures. This review therefore considered studies that explored: 1) any mental health symptom, including medically diagnosable mental disorders and non-diagnosable conditions such as stress, moral injury, and emotions; 2) factors related to mental health symptoms, for example, types and prevalence; 3) risk factors associated with the impact of COVID-19 on the mental health of healthcare workers. Studies on non-mental health symptoms, for example, social, or physical health conditions were excluded. As a primary outcome measure, we considered studies that assessed both the prevalence and risk factors associated with mental health symptoms among health care workers. We also assessed the various mental health screening tools reported in the included studies.

Context

Studies conducted in Africa, where frontline or non-frontline healthcare workers are exposed to COVID-19 at any healthcare service level were included in the review.

Types of sources

This scoping review included primary research studies which included quantitative and qualitative research designs that focus on the effect of COVID-19 on the mental health of frontline or non-frontline health care workers. Studies were excluded in this review if they consisted of systematic review or meta-analysis; the full-text was inaccessible; they lack data on the impact of COVID-19 on the mental health of frontline or non-frontline healthcare workers, and if they were not published in English language.

Search strategy and information sources

An initial limited search using Medical Subject Headings (MeSH) terms and entry keywords to search for literature on PubMed was undertaken to identify published articles on the topic. Entry keywords and index terms were adapted from the text words contained in the titles and abstracts of relevant articles to develop a full search strategy (Annex 1). First, the search strategy used Medical Subject Headings (MeSH) terms and entry keywords to search for eligible articles on PubMed. Subsequently, Scopus, Web of Science and CINAHL were searched from January 2020 to September 2022 using all identified keywords and index terms. The reference lists of articles included in the review were further screened for additional papers. Relevant grey literature from Google Scholar, Research Gate, and the World Health Organization (WHO) and COVID-19 databases were also searched.

Study selection

Two steps were used in this process. Firstly, all retrieved articles from literature search were

independently screened for relevant titles and abstracts by two authors using the Mendeley Desktop 1.19.8 [7] and duplicates were removed. Afterwards, the citations of relevant papers for full text review was imported into covidence [8] based on our inclusion and exclusion criteria. Selected studies were screened and information on study characteristics and outcomes reported were extracted to meet the following criteria: 1) cross-sectional and longitudinal studies; 2) studies that used validated screening tool(s) to measure the mental health symptoms among health care workers during COVID-19 such as stress, distress, burnout, post-traumatic disorder symptoms, and COVID-19-related anxiety; 3) if frontline or non-frontline health care workers were exposed to COVID-19 at any healthcare service level; and (4) and studies conducted in Africa. Data were checked, extracted and analysed, and questions regarding study eligibility were jointly discussed and resolved. The PRISMA study selection flowchart is provided in Figure 1. The protocol for this scoping review was registered on the Open Science Framework (OSF) to avoid duplication.

Data extraction and synthesis

The articles were imported into Mendeley Desktop 1.19.8 for extraction of reported characteristics. The extraction of data and data synthesis was conducted using a standard data extraction table (Table 1). Assessment of all studies (n = 10) which met the selection criteria using the population, concept, context, and key findings relevant to the review questions was done. Afterwards, the data were checked the data extraction and analysis to finally resolve disagreements through discussions to obtain consensus. Descriptive analysis was used to group the extracted findings of homogenous data from quantitative studies into characteristics using categories based on our review questions. The following data were extracted: title, first author name and year, country, aim, design, type of mental health symptoms, screening tools, sample size of healthcare workers (nurses, doctors/physicians, and other healthcare workers/allied health workers), contexts, risk factors and prevalence.

Results

The original search yielded 2696 studies, from which 439 duplicates were removed, leaving 2257 studies to be screened for title and abstract against the inclusion criteria. From this, 2187 studies were excluded, and 70 studies were retrieved for full-text review, and of these, seven met the inclusion criteria. Three additional studies identified from Google Scholar were eligible for inclusion, subsequently, we had ten studies for the final review. The study selection and the reporting of our findings followed the Preferred Reporting Items for Systematic reviews and meta-analyses extension for Scoping Reviews (PRISMA-ScR) checklist (Figure 1). Findings, data extraction and analysis were reported narratively, and subsequently, to resolve disagreements through discussions and obtain consensus.

Characteristics of included studies

The included articles and extracted data were primary research studies that discussed the impact of COVID-19 on the mental health of healthcare workers during the COVID-19 pandemic in Africa. The primary research studies included quantitative and qualitative designs, and the sample sizes varied from 31 to 1,259 respondents. The response rates from these studies ranged between 32% to 100%. The included articles were conducted in both public and private healthcare facilities across Africa. The majority (n=4) of the studies were conducted in Kenya, East Africa [10-12]. The remaining studies were conducted in Egypt (n=1) [13], Ghana (n=1) [14], Malawi (n=1) [15], and South Africa (n=3) [17-20]. The data synthesis was based on the following themes: characteristics of healthcare workers; the study context; prevalence and risk factors of mental health symptoms related to COVID-19; and the screening tools for measuring mental health symptoms. Table 1 shows the summary of the included studies. The following

sections provide a descriptive summary of the findings in this scoping review.

Characteristics of healthcare workers and the study context

Out of a total of ten studies, three studies only recruited nurses as healthcare workers who completed the survey in their respective study contexts in Kenya (171, 67.1%) [9], Malawi (102, 32%) [15], and South Africa (286, 100%) [18]. In contrast, four studies included the subgroups of nurses, doctors and other/allied healthcare workers in the studies from Kenya [10,11], Ghana [14], and South Africa [16]. While three studies in Egypt [13], Kenya [12], and South Africa [17] included nurses and doctors as subgroups in their reports excluding other/allied healthcare workers.

Findings revealed that few, 9 (8.8%) of the nurses in Malawi [15] compared to less than one-third, 93 (32.5%) in South Africa [18] were diagnosed with COVID-19. There was no report on COVID-19 infection among healthcare workers in the Kenyan studies, but two studies in Kenya [9,12] reported previous history or diagnosis of mental health disorders amongst healthcare workers. One study in South Africa underscored the following comorbid medical conditions among healthcare workers: hypertension, cardiac disease, diabetes, lung disease, tuberculosis, human immunodeficiency virus, endocrine disease, gastro-intestinal disease, musculoskeletal, hyperlipidaemia, as well as pregnancy and pre-existing mental health symptoms [17]. Another study in South Africa highlighted that nurses have been diagnosed of the following co-morbidities: hypertension, cholesterol, diabetes mellitus, asthma, and ischemic heart disease [18]. In Malawi, Chorwe-Sungani [15] reported only the history of anxiety among nurses, while a study in Kenya [10] reported that healthcare workers had never been treated for any previous mental illness. There were no reports if healthcare workers were currently on any treatment for their medical conditions.

Seven studies [10-12,15,16-18] recruited healthcare workers in both public and private settings. However, two studies in Malawi and Egypt [13,15] did not clearly state if the hospitals where the healthcare workers were recruited was a public or private facility, but Chorwe-Sungani [15] mentioned that nurses (17, 16.6%) working in Non-Governmental Organisations (NGOs) were recruited to complete questionnaires. Additionally, one study in Kenya [9] conducted their study in a private, not-for-profit University Hospital, in comparison to another study in South Africa [16] which was conducted in a private eye clinic in an urban setting.

Occurrence of mental health symptoms among health care workers

Findings from eligible articles showed that there was a prevalence of stress, burnout, depression, anxiety, insomnia, distress/post-traumatic stress disorder (PTSD), functional impairment, coronavirus disease-related anxiety, poor coping skills and other potential risk factors for mental health symptoms related to COVID-19 [9-18]. Several self-administered screening tools were used to evaluate the mental health symptoms related to COVID-19 among healthcare workers across Africa.

Anxiety and depression as reported in seven studies (n = 7) were the most common mental health symptoms associated with COVID-19 among healthcare workers. We compared the mental health symptoms of nurses, doctors, and other healthcare workers. Among three studies [9,15,18] conducted among nurses only, there was a prevalence of burnout, generalised anxiety disorder, insomnia, PTSD, COVID-19-related anxiety, and functional impairment among the female nurses in comparison to their male counterparts. Of interest, was a study [9] which highlighted that male nurses suffered from depression more than female nurses. One study highlighted the relationship between PTSD, as well as effective and ineffective ways to cope with stressful life events, with the report showing a

relationship between PTSD and avoidant coping styles (self-distraction, denial, venting, substance use, behavioural disengagement, and self-blame) [18].

Six studies conducted across Ghana, Egypt, Kenya, and South Africa [10-14,17] reported subgroup comparisons among nurses, doctors, and other/allied healthcare workers. In one of these studies [14] there was a similar comparison between stress and burnout among the healthcare workers (nurses = 62.6%; doctors = 19.8%; allied healthcare workers = 17.6%). However, one study in Egypt [13] and three studies in Kenya [10-12] reported on the prevalence of anxiety, stress, burnout, anxiety, insomnia and distress/PTSD among healthcare workers. In the South African study [17], there were reports of mental health symptoms in the form of depression, anxiety and stress, with some of the healthcare workers already experiencing severe symptoms. In contrast, another study in South Africa [16] underlined that based on the findings from their quantitative analysis, healthcare workers presented with good mental health and seemed to be relatively unaffected by anxiety, depression and burnout. However, further probing into the lived experiences of these healthcare workers using a qualitative approach (open-ended questions), showed that most of them experienced anxiety because of personal and occupational stressors whilst working during the COVID-19 pandemic.

In Egypt, while the prevalence of depression was higher among doctors compared to nurses (specialised and non-specialised), there were no differences in other mental health symptoms, besides there was a higher prevalence of stress, anxiety, and depression among the doctors working in the intensive care unit [13]. Being a female and a doctor were associated with high rates of symptoms of depression, anxiety, insomnia, and distress [10,11,13].

Screening tools for mental health symptoms among healthcare workers

In the eligible studies, various screening tools were utilised to evaluate the impact of mental health problems among healthcare workers. We identified and compared various screening tools (n = 16). In addition, we identified self-report, open-ended questions [18] as well as a questioning tool (adopted from [19]) for measuring healthcare workers' perceptions about employer's support [17]. Two studies [9,12] measured depression, anxiety, insomnia, distress, and burnout using the Patient Health Questionnaire (PHQ-9), 7-item Generalized Anxiety Disorder Questionnaire (GAD-7), 7-item Insomnia Severity Index Questionnaire (ISI), 22-item Impact of Event Scale-Revised (IES-R), and 16-item Stanford Professional Fulfilment Index Questionnaire (SPFI) among nurses and doctors in Kenya. The perception of stress was measured using the 10-item Perceived Stress Scale (PSS) in two studies [13,14]. Four studies [9,12,17,18] measured distress or post-traumatic stress disorder (PTSD) using a 22-item Impact of Event Scale-Revised (IES-R). Unlike, Kwobah *et al.* who preferred the 5-item Primary Care-Post traumatic Stress disorder (PC- PTSD) to identify healthcare workers with probable PTSD [10].

Different studies preferred to use various screening tools for measuring burnout. We noticed that two [9,12] studies employed the 16-item Stanford Professional Fulfilment Index Questionnaire (SPFI) to measure burnout among Healthcare workers. A third study [14] favoured a 14-item Shirom-Melamed Burnout measure (SMBM) to measure burnout including physical fatigue, emotional exhaustion, and cognitive weariness. A fourth study [10] used a 19-item Pittsburgh Sleep Quality Index (PSQI) to measure sleep quality and sleep disturbance among Healthcare workers. However, a fifth study [16] preferred to use the 10-item Burnout Measure - Short Version (BMS-S) to measure the level of an individual's physical, emotional, and mental exhaustion.

A total of five studies [9-13] measured anxiety/generalised anxiety using the Generalized Anxiety Disorder Questionnaire (GAD-7). Two studies in South Africa utilised the 14-item Hospital Anxiety and Depression Scale (HADS) [16] to measure anxiety and depression, while the 21-item Depression, Anxiety and Stress Scale (DASS-21) measured anxiety, depression and stress [17], respectively. In the Malawian study [15], a 7-item Coronavirus Anxiety Scale (CAS) screening tool was used to measure healthcare workers' COVID-19-related anxiety associated with the coronavirus crisis; and a 5-item Work and Social Adjustment Scale (WSAS) was used to measure healthcare workers´ functional impairment at work, home management, social leisure, private leisure and personal or family relationships.

Coping mechanisms and resilience of healthcare workers impacted by COVID-19

In South Africa, Engelbrecht *et al.* used a 28-item Brief Coping Orientation to Problems Experienced (COPE) Inventory to measure the coping mechanisms of nurses during the COVID-19 pandemic [18]. In a different province in South Africa, the same screening tool was used to measure the coping strategies of all sub-groups of healthcare workers in an ophthalmic clinic, while the 10-item Connor-Davidson Resilience Scale (CD-RISC-10) was used to measure the resilience of healthcare workers, in two consecutive surveys [16]. The Brief COPE Inventory scales can be grouped into approach coping (active coping, planning, positive reframing, acceptance, seeking emotional support, and seeking instrumental support); avoidant coping styles (self-distraction, denial, venting, substance use, behavioural disengagement, and self-blame); and humour and religion subscales [18]. The following coping mechanisms namely, active coping, planning, religion, acceptance, and positive framing were mostly used by healthcare workers, compared to adverse coping mechanisms like behavioural disengagement and substance use which are least relied on [16]. This corroborated with Engelbrecht *et al.* when they reported that acceptance, religion, planning, and active coping were the coping strategies mostly used by nurses [18].

Furthermore, open-ended questions were used to gain a more in-depth perspective of the lived experiences of the healthcare workers as the COVID-19 outbreak began in South Africa [16]. A questionning tool was used to measure the perceptions of healthcare workers in the public health sector (including primary and community health centres, and the district, regional and tertiary hospitals) regarding the support they receive from their employer, the majority of healthcare workers felt unheard, uncared for and unsupported even though they had access to some form of psychosocial support at their workplace [17]. However, in the private sector (an ophthalmic clinic), excellent organisational communication, good personal health and social support were identified as psychosocial buffers alleviating COVID-19 related stress while working [16].

Risk factors and prevalence of mental health symptoms during COVID-19

Regarding gender and healthcare workers' subgroup, healthcare workers reported depression, anxiety, insomnia, distress, PTSD and burnout across all the articles. There is a higher probability for females to experience more symptoms of mental health disorders than males in the workplace. According to the studies from Egypt and Kenya [9,10,12,13], females reported more burnout, and expressed severe forms of anxiety, depression, and stress related to the COVID-19 pandemic compared to males. In Egypt, Elkholy *et al.* [13] mentioned that doctors including doctors working in the intensive care units complained more of anxiety, depression, and stress compared to nurses. Similarly, in Kenya, Shah *et al.* [12] alluded that being a doctor and being female were associated with severe symptoms of depression and anxiety, with severe depression common among women compared with men, and severe anxiety common among doctors compared with nurses.

However, in Ghana, a study [14] highlighted that stress and burnout scores among nurses was higher than in doctors and other/allied healthcare workers. In Southern Africa, two studies [15,18] alluded that COVID-19-related anxiety was high amongst nurses working in hospitals and nurses reported that their health had changed for the worse since the COVID-19 pandemic. Nurses diagnosed with COVID-19 mentioned that they are concerned about infecting their family, and they experience high levels of anxiety and functional impairment [15,18]. Personal stressors related to healthcare workers health (fear of being infected with COVID-19, financial viability and family balance), and occupational stressors related to operational difficulties (staff shortage, absenteeism from work, insufficient personal protective equipment, and organisational routine changes) were associated with mental health symptoms during COVID-19 [16].

Working in the frontline is regarded as a risk for depression and burnout; frontline healthcare workers are vulnerable to negative mental health effects from COVID-19 [9,11-13,15]. A study in Kenya [12] added that frontline healthcare workers, females and doctors were at higher risk of mental health symptoms. However, another study in a tertiary facility in Kenya argued that frontline nurses, especially females reported experiencing more moderate to severe symptoms of depression, distress and burnout [9]. In Egypt, Elkholy *et al.* reported that female healthcare workers were at higher risk of experiencing symptoms of severe anxiety, severe depression, and severe stress than their male counterparts [13].

Furthermore, regarding years of work experience, one study [10] reported that healthcare workers with more years of experience were less anxious and worried less about COVID-19 compared to those who had lesser years of experience. We compared the years of experience of healthcare workers and their age and found out that younger healthcare workers reported a higher proportion of mental health impact related to COVID-19 in the workplace. In terms of age, two studies [10,13] reported that healthcare workers between the age group of 26-30 years old experienced higher levels of depression and stress while there was a high proportion of depression and generalized anxiety among those less than 35 years old compared to those above 35 years old. However, one of the studies [13] mentioned that those within the age group of 31-40 years old were at higher risk of severe insomnia compared to those who were more than 40 years old, and those within the age group of 26-30 years old were at higher risk of severe stress compared to those more than 40 years old.

Discussion

Although a previous study has examined mental health of healthcare workers during previous outbreaks such as H1N1 influenza and Severe Acute Respiratory Syndrome (SARS) [20], to our knowledge, this is among the first scoping review of studies conducted to investigate the relationship between COVID-19 and mental health symptoms among healthcare workers in resource-limited settings in Africa. This scoping review identified ten eligible studies which reported the mental health impact of COVID-19, their prevalence, and risk factors among healthcare workers. The low number of eligible articles implies that there is a sparse number of primary research studies that has been conducted regarding the impact of COVID-19 on the mental health of healthcare workers in Africa.

The prevalence of mental health symptoms caused by the COVID-19 pandemic varies across the subgroup of healthcare workers. Noteworthy in our findings, is that mental health symptoms related to COVID-19 was predominant among female nurses and female doctors who were frontline healthcare workers exposed to COVID-19 patients. This aligned with other findings in which females, nurses and frontline healthcare workers are at higher risk of developing unfavorable mental health symptoms associated with caring for patients with COVID-19 [21,22]. Findings from the subgroup revealed interesting differences as per gender and

occupation in which doctors working in the intensive care unit reported higher levels of anxiety, depression, and stress, which may be related to the complexity of the intensive care unit and acuity of COVID-19 critically ill patients. Nevertheless, high level of post-traumatic stress disorder was reported among nurses working in different types of healthcare facilities in South Africa [18]. It was interesting to note that in one of our findings, male nurses experienced signs of depression more than female nurses. This was in keeping with the International Council of Nurses's (ICN) report that there is an increasing risk of burnout, post-traumatic and other stress related disorders among nurses [1].

Findings show that healthcare workers were worried about being infected with COVID-19 because of the fear of transmitting the infection to their family or loved ones. A previous study has reported on the reluctance of healthcare workers to work during an influenza pandemic due to concern of contracting the infection and spreading it to their family and loved ones [23]. Another interesting finding from the eligible studies was that a history of previous mental illness could be a risk factor for poor mental health symptoms among healthcare workers. In comparison with other underlying healthcare conditions, Blumberg *et al.* reported that individuals of older age groups; male sex; and other comorbidities such as: hypertension, diabetes, chronic cardiac disease, chronic lung disease, chronic renal disease, malignancy, human immunodeficiency virus, active tuberculosis and obesity were associated with severe COVID-19-related illness and fatal outcomes [24].

Strengths and limitations

This scoping review used a systematic approach to search for literature, identified available studies, and extracted data on this topic. This review did not address the effectiveness of mental health interventions. Our objective was to map the evidence on the prevalence, and risk factors of mental health problems including the screening tools and future recommendations to cope with mental health problems. There are limited findings from studies conducted in Africa on the impact of COVID-19 on the mental health of healthcare workers, perhaps the excluded studies on previous pandemics or similar studies from Europe, North America, South America Australia, New Zealand, and Asia could have informed this scoping review.

Another reason for the low number of identified studies was related to the specific key terms applied in our search strategy, and our inclusion of papers only published in English language. Additionally, the eligible studies in this review measured mental health symptoms by using different screening tools, which made comparison difficult. In spite of these caveats, this scoping review informs the need for further primary research studies to be conducted regarding the impact of COVID-19 on the mental health of frontline and non-frontline healthcare workers, including workplace interventions to be adopted in resource-constrained settings in Africa.

Recommendations

Healthcare workers have a high risk of developing avoidable mental health symptoms and may require mental health support or interventions. Findings in this review showed that various screening tools for assessing mental health symptoms were implemented in the eligible studies. Notable in this regard, was the Coronavirus Anxiety Scale used to measure COVID-19 related anxiety among healthcare workers. Our finding regarding coping strategies shows that avoidant coping strategies (self-distraction, denial, venting, substance use, behavioural disengagement, and self-blame) were not significantly beneficial. Hence, it is recommended that healthcare workers engage in emotional, psychological, and debriefing intervention sessions that focus on positive coping strategies to actively address stressful situations. Good coping skills and social support could build resilience among healthcare workers. Nurses who perceived higher levels of organisational and social support, developed resilience toward COVID-19 related anxiety [25]. This review was in agreement

with the report from Zhu *et al.* which underlined that positive coping strategies is associated with decreased mental distress, anxiety and stress amongst healthcare workers [26].

There is a scarcity of evidence on the interventions that are beneficial to the resilience and mental health of frontline healthcare workers during or after disease outbreaks, including the COVID-19 pandemic [3]. Interventions drawn from a scoping review recommended management initiatives and mental health support including individual care for healthcare workers with mental health symptoms and support to overcome shortages among healthcare workers [2]. Healthcare organisation can use work-based interventions, including changing routines or improving equipment; or psychological support interventions, such as counselling to support the mental well-being of frontline and non-frontline healthcare workers. Thus, it is important to take note of organisational, social, personal, and psychological factors that play a role in the well-being of the individual [3]. Considering the challenges of limited resources in the African context, an intervention programme for building coping strategies and resilience must be kept simple, cost-effective and accessible to all subgroups of healthcare workers. A structured COVID-19 intervention programme targeted at healthcare workers in three resource-limited hospitals in South Africa during the COVID-19 outbreak yielded a positive feedback based on their reports of having a better knowledge about COVID-19, improvement of their stress levels, and gaining perceptions about their ability to cope with COVID-19 as well as to recognise stress in others and provide support [27].

Conclusion

This scoping review identified ten primary research studies on the impact of COVID-19 on the mental health of frontline and non-frontline healthcare workers, in Africa. The sparse number of eligible studies indicate that further high-quality primary research is required on this subject in Africa. Mental health symptoms varied ranging from anxiety, depression, and stress being more persistent among healthcare workers. This review discusses validated scales and diagnostic criteria for screening mental health problems. The findings characterised in this review sets the precedence for conducting future studies and developing best practice interventions for the mental health wellbeing preparation of healthcare workers in the presence or absence of an outbreak in Africa.

What is known about this topic

- *Studies have shown that the COVID-19 pandemic has had a significant impact on the mental health of healthcare workers across the globe;*
- *There is a paucity of studies conducted regarding the impact of COVID-19 on the mental health of healthcare workers in Africa compared to other continents.*

What this study adds

- *This scoping review draws attention to the studies that have been conducted on the mental health symptoms impacted by COVID-19 among healthcare workers in Africa during the COVID-19 pandemic along with the various screening tools and risk factors;*
- *The variety of screening tools utilised for screening mental health problems in the identified studies suggests that a universally acceptable tool does not exist - in Africa, female healthcare workers seemed to have a higher probability of developing mental health symptoms compared to their male counterparts;*
- *The recommendations highlighted in this scoping review can be implemented for building a positive mental health during a pandemic among healthcare workers in Africa - reports from this study can be used as a reference for future primary research and systematic review that may be conducted.*

Competing interests

The authors declare no competing interests.

Authors' contributions

Benedict Raphael Oamen, Portia Jordan and Chinwe Iwu-Jaja contributed equally to this work. All the authors reviewed and agreed to the final manuscript.

Acknowledgments

We are grateful to Alvina Mathee from the Faculty of Medicine and Health Sciences Library at Stellenbosch University, Western Cape Province, South Africa for assisting with the search.

Table and figure

Table 1: characteristics of studies included for the mental health impact of COVID-19 pandemic on health care workers in Africa

Figure 1: PRISMA flow diagram showing the study selection process for a scoping review, the impact of COVID-19 on the mental health of health care workers in Africa

Annex

Annex 1: search strategy on the impact of COVID-19 pandemic on health care workers in Africa

References

1. International Council of Nurses (ICN). International Council Of Nurses Covid-19 Update. Accessed July 2022.
2. 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. S Afr Med J. 2020 Sep 30;110(10): 1010-1019. **PubMed**| **Google Scholar**
3. Pollock A, Campbell P, Cheyne J, Cowie J, Davis B, McCallum J, *et al*. Interventions to support the resilience and mental health of frontline health and social care professionals during and after a disease outbreak, epidemic or pandemic: a mixed methods systematic review. Cochrane Database Syst Rev. 2020 Nov 5;11(11): CD013779. **PubMed**| **Google Scholar**
4. Serrano-Ripoll MJ, Meneses-Echavez JF, Ricci-Cabello I, Fraile-Navarro D, Fiol-deRoque MA, Pastor-Moreno G, *et al*. Impact of viral epidemic outbreaks on mental health of healthcare workers: a rapid systematic review and meta-analysis. J Affect Disord. 2020 Dec 1;277: 347-357. **PubMed**| **Google Scholar**
5. Peters MD, Godfrey C, McInerney P, Munn Z, Tricco AC, Khalil H. Chapter 11: scoping reviews (2020 version). JBI manual for evidence synthesis. In: Aromataris E, Munn Z (Editors). JBI Manual for Evidence Synthesis, JBI, 2020. Accessed July 31 2023.
6. Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, *et al*. PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. Ann Intern Med. 2018 Oct 2;169(7): 467-473. **PubMed**| **Google Scholar**
7. Mendeley Desktop for Windows. Mendeley Reference Manager for Desktop. 2021. Accessed on July 31 2022.
8. Covidence. Better systematic review management. 2022. Accessed July 31 2022.
9. Ali SK, Shah J, Talib Z. COVID-19 and mental well-being of nurses in a tertiary facility in Kenya. PLoS One. 2021 Jul 1;16(7): e0254074. **PubMed**| **Google Scholar**

10. Kwobah EK, Mwangi A, Patel K, Mwogi T, Kiptoo R, Atwoli L. Mental Disorders Among Health Care Workers at the Early Phase of COVID-19 Pandemic in Kenya; Findings of an Online Descriptive Survey. Front Psychiatry. 2021 Jul 22;12: 665611. **PubMed**| **Google Scholar**
11. Onchonga D, Ngetich E, Makunda W, Wainaina P, Wangeshi D, Viktoria P. Anxiety and depression due to 2019 SARS-CoV-2 among frontier healthcare workers in Kenya. Heliyon. 2021 Mar;7(3): e06351. **PubMed**
12. 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 Jun 9;11(6): e050316. **PubMed**| **Google Scholar**
13. Elkholy H, Tawfik F, Ibrahim I, Salah El-Din W, Sabry M, Mohammed S, *et al*. Mental health of frontline healthcare workers exposed to COVID-19 in Egypt: A call for action. Int J Soc Psychiatry. 2021 Aug;67(5): 522-531. **PubMed**| **Google Scholar**
14. Afulani PA, Gyamerah AO, Nutor JJ, Laar A, Aborigo RA, Malechi H, *et al*. Inadequate preparedness for response to COVID-19 is associated with stress and burnout among healthcare workers in Ghana. PLoS One. 2021 Apr 16;16(4): e0250294. **PubMed**| **Google Scholar**
15. Chorwe-Sungani G. Assessing COVID-19-related anxiety and functional impairment amongst nurses in Malawi. Afr J Prim Health Care Fam Med. 2021 Jun 30;13(1): e1-e6. **PubMed**| **Google Scholar**
16. Cook LJ, Hassem T, Laher S, Variava T, Schutte E. Mental health experiences of healthcare professionals during COVID-19. SA Journal of Industrial Psychology. 2021;47(1): 1-10. **Google Scholar**
17. Dawood B, Tomita A, Ramlall S. 'Unheard,' 'uncared for' and 'unsupported': The mental health impact of Covid -19 on healthcare workers in KwaZulu-Natal Province, South Africa. PLoS One. 2022 May 4;17(5): e0266008. **PubMed**| **Google Scholar**
18. Engelbrecht MC, Heunis JC, Kigozi NG. Post-Traumatic Stress and Coping Strategies of South African Nurses during the Second Wave of the COVID-19 Pandemic. Int J Environ Res Public Health. 2021 Jul 27;18(15): 7919. **PubMed**| **Google Scholar**
19. Shanafelt T, Ripp J, Trockel M. Understanding and Addressing Sources of Anxiety Among Health Care Professionals During the COVID-19 Pandemic. JAMA. 2020 Jun 2;323(21): 2133-2134. **PubMed**| **Google Scholar**
20. Lee SM, Kang WS, Cho AR, Kim T, Park JK. Psychological impact of the 2015 MERS outbreak on hospital workers and quarantined hemodialysis patients. Compr Psychiatry. 2018 Nov;87: 123-127. **PubMed**| **Google Scholar**
21. Lai J, Ma S, Wang Y, Cai Z, Hu J, Wei N, *et al*. Factors Associated With Mental Health Outcomes Among Health Care Workers Exposed to Coronavirus Disease 2019. JAMA Netw Open. 2020 Mar 2;3(3): e203976. **PubMed**| **Google Scholar**
22. Pappa S, Ntella V, Giannakas T, Giannakoulis VG, Papoutsi E, Katsaounou P. Prevalence of depression, anxiety, and insomnia among healthcare workers during the COVID-19 pandemic: A systematic review and meta-analysis. Brain Behav Immun. 2020 Aug;88: 901-907. **PubMed**| **Google Scholar**
23. Devnani M. Factors associated with the willingness of health care personnel to work during an influenza public health emergency: an integrative review. Prehosp Disaster Med. 2012 Dec;27(6): 551-66. **PubMed**| **Google Scholar**

24. Blumberg L, Jassat W, Mendelson M, Cohen C. The COVID-19 crisis in South Africa: Protecting the vulnerable. S Afr Med J. 2020 Jul 8;110(9): 825-826. **PubMed**| **Google Scholar**
25. Labrague LJ, De Los Santos JAA. COVID-19 anxiety among front-line nurses: Predictive role of organisational support, personal resilience and social support. J Nurs Manag. 2020 Oct;28(7): 1653-1661. **PubMed**| **Google Scholar**
26. Zhu W, Wei Y, Meng X, Li J. The mediation effects of coping style on the relationship between social support and anxiety in Chinese medical staff during COVID-19. BMC Health Serv Res. 2020 Nov 4;20(1): 1007. **PubMed**| **Google Scholar**
27. Zingela Z, van Wyk S, Bronkhorst A, Groves C. Developing a healthcare worker psychological preparedness support programme for the COVID-19 outbreak. S Afr J Psychiatr. 2022 Mar 10;28: 1665. **PubMed**| **Google Scholar**

Table 1: characteristics of included studies

Author (Year)	Country	Study design	Mental health symptoms reported	Population sampling of Healthcare workers		
				Nurses	Doctors/physicians	Other/Allied Healthcare workers
Afulani *et al.* (2021)	Ghana	Cross-sectional study	Stress, and burnout	62%	20%	18%
Ali *et al.* (2021)	Kenya	Cross-sectional survey	Depression, anxiety, insomnia, distress, and burnout	100%	0%	0%
Chorwe-Sungani *et al*. (2021)	Malawi	A cross-sectional study that collected quantitative data online.	COVID-19-related anxiety, and functional impairment	100%	0%	0%
Cook *et al.* (2021)	South Africa	Longitudinal, non-experimental research design	Anxiety, depression, burnout, coping skills, resilience and self-report.	First survey: 9; Second survey: 4	First survey: 4; Second survey: 4	First survey: 18; Second survey: 7
Dawood *et al.* (2022)	South Africa	Cross-sectional electronic survey	Depression, anxiety, traumatic stress related symptoms and subjective perceptions of employer support.	27.7%	72.3%	0%
Elkholy *et al.* (2021)	Egypt	Cross-sectional, and hospital-based survey	Screening for symptoms of anxiety, insomnia, depression, and stress.	40%	60%	0%
Engelbrecht *et al.* (2021)	South Africa	A cross-sectional survey	Post-traumatic stress and coping strategies of nurses during the COVID-19 pandemic.	100%	0%	0%
Kwobah *et al*. (2021)	Kenya	Cross- sectional descriptive online survey	Worry/Anxiety related to COVID-19 and generalized anxiety disorder, depression, posttraumatic stress disorder and poor quality of sleep/insomnia	19.5%	55.8%	24.7%
Onchonga *et al*. (2021)	Kenya	A cross-sectional study design was employed.	Anxiety and depression due to the coronavirus pandemic among healthcare workers in Kenya	43.7%	20.8%	35.5%
Shah *et al.* (2021)	Kenya	Cross-sectional study	Symptoms of depression, anxiety, insomnia, distress, and burnout	44.6%	55.4%	0%

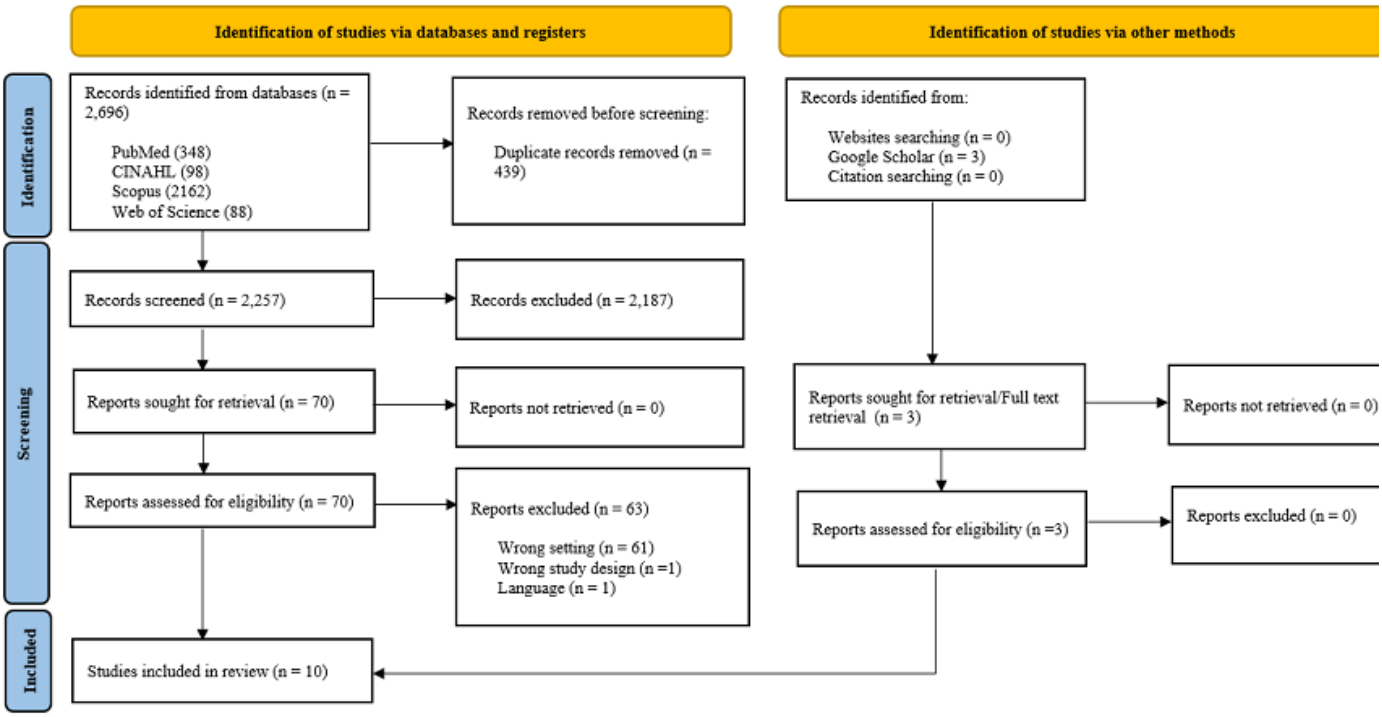

Figure 1: PRISMA flow diagram showing the study selection process for a scoping review, the impact of COVID-19 on the mental health of health care workers in Africa