



## Original Article

# Burnout among healthcare workers during public health emergencies in sub-Saharan Africa: Contributing factors, effects, and prevention measures



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## ARTICLE INFO

## Keywords:

Burnout  
Healthcare workers  
Sub-Saharan Africa  
Public health emergencies  
Contributing factors  
Prevention measures

## ABSTRACT

Countries in sub-Saharan Africa (SSA) are expected to experience more public health emergencies (PHEs) in the near future. The fragile health systems emanating from poor health governance, inadequate health infrastructure, shortage of healthcare workers (HCWs), inadequate essential medicines and technology, and limited funding will make responses to these outbreaks slow and ineffective as seen with the COVID-19 pandemic. The workload for HCWs will grow due to these PHEs, which will increase the likelihood that they may experience burnout. This narrative review loosely followed the guidelines provided in the Preferred Reporting Items for Systematic Reviews and Meta-Analysis Protocols (PRISMA-P) statement. Google Scholar, PubMed, and ScienceDirect databases were used to retrieve relevant articles. Two reviewers assessed the titles and abstracts of all identified articles and extracted the data independently and compared their results thereafter. The causes of burnout among HCWs, its impact on patients, HCWs, and healthcare institutions, as well as preventive steps that should be taken to safeguard HCWs from burnout, are all covered in this article.

## 1. Introduction

Working in an emotionally and physically taxing setting for an extended period leads to burnout. Even though burnout can impact any profession, it is becoming acknowledged as a serious issue for healthcare workers (HCWs) globally, particularly during public health emergencies (PHEs) (Lam et al., 2022). Burnout can have negative implications on patients, HCWs, healthcare organizations, and healthcare systems if it is not properly handled (Ong et al., 2021). Burnout, initially described by Herbert Freudenberger in 1974 (Khasne et al., 2020), is a multifaceted illness, characterized by emotional tiredness, depersonalization, and a diminished sense of personal success (Maslach & Jackson, 1981). Freudenberger's twelve phases of burnout development were ultimately reduced to five (Okoroafor et al., 2022). The five phases are shown in Fig. 1 below.

The honeymoon phase begins with excitement. HCWs eventually endure job stress. Without coping mechanisms, burnout starts during this phase. The second phase, stagnation, or stress onset is when HCWs recognize some days are harder than others. HCWs' personal, family, and social lives are disregarded. This phase causes physical and emotional stress. The third phase is the chronic stress period. Chronic stress

frustrates HCWs, and they feel incomplete, helpless, and unappreciated. They feel like failures during this stage. The fourth phase, the apathy phase, involves despair and disillusionment. HCWs feel trapped and grow apathetic. The final step, habitual burnout, is marked by physical and emotional symptoms that lead to HCWs seeking help (De Hert, 2020).

Several tools have been developed to assess burnout among HCWs and chief among them are the Maslach Burnout Inventory-Human Services Survey (MBI-HSS), Oldenburg Burnout Inventory (OBI), and the 19-item Copenhagen Burnout Inventory (CBI). The MBI-HSS is the most often used instrument for identifying burnout in HCWs. It has 22 items and is the HCW instrument that has undergone the most extensive validation. The 16-item OBI and the 19-item CBI are two tools that have been developed because the MBI-HSS tool is expensive to administer in large populations. A major drawback of these instruments is the length of the tools, which has often times led to decreased user response and engagement (Ong et al., 2021).

Recent significant PHEs in Sub-Saharan Africa (SSA) have included the COVID-19 pandemic, cholera, yellow fever, dengue fever, and the Ebola virus disease (EVD). Responses during these PHEs were usually slow and ineffective due to the weak and fragile health systems resulting from poor health governance, inadequate health infrastructure, a

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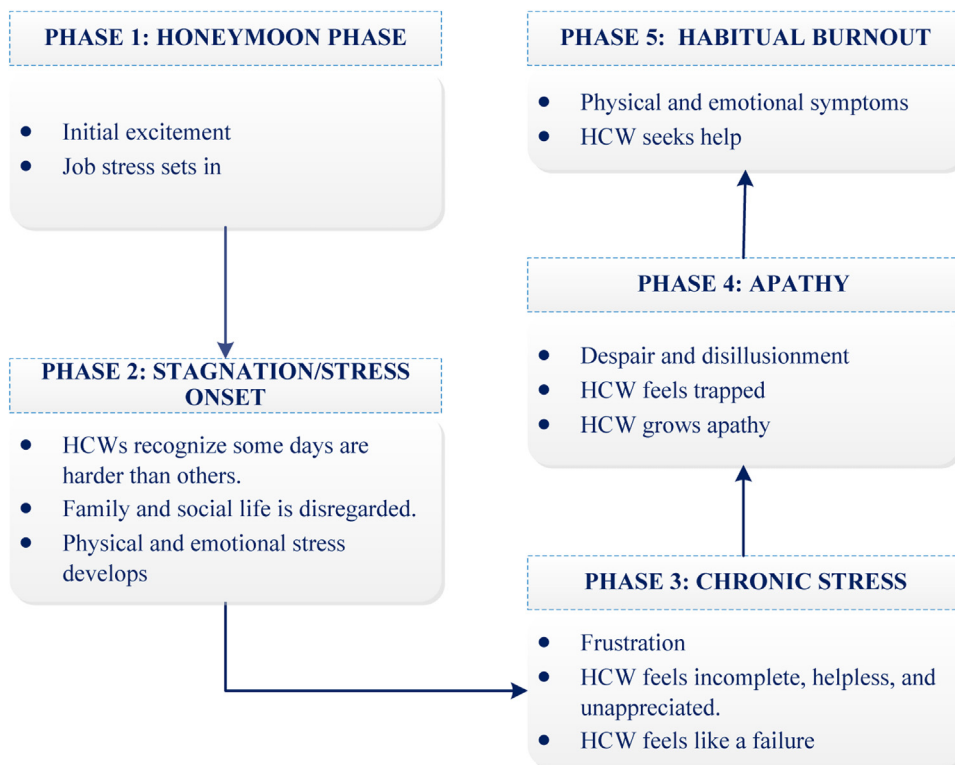


Fig. 1. Phases of burnout development.

lack of HCWs, inadequate essential medicines and technology, and limited funding (Okoroafor et al., 2022). It is projected that the PHEs will increase the workload for the HCWs because there is a scarcity of HCWs in SSA, which subsequently will lead to rises in the incidence of burnout (Shah et al., 2021). Considering this, we explore the causes of burnout among HCWs during PHEs, its effects, and preventative steps that can be taken to reduce its burden in this narrative review with a focus on SSA.

## 2. Methodology

### 2.1. Study design

This narrative review loosely followed the guidelines provided in the Preferred Reporting Items for Systematic Reviews and Meta-Analysis Protocols (PRISMA-P) statement (8).

### 2.2. Research question and study eligibility

The problem-interest-context (PICo) framework was used to determine the eligibility criteria for the review question. In this framework, we defined the problem as burnout among HCWs, interest as public health emergencies, and context as sub-Saharan Africa (SSA). This review sought to answer the following research questions:

- What are the risk factors for burnout among HCWs during public health emergencies in sub-Saharan Africa?
- What are the effects of burnout among HCWs?
- What prevention measures can be put in place to reduce burnout among HCWs during PHEs?

### 2.3. Inclusion criteria

Studies were eligible if they were original qualitative and quantitative studies published in English and reported on the risk factors, the effects, and the prevention measures of burnout among HCWs, and were

conducted in sub-Saharan Africa. Review articles, systematic reviews, meta-synthesis, editorials, and letters to the editor were excluded.

### 2.4. Literature sources and search strategy

We searched for peer-reviewed articles published in English from 2017 to 2022 on Google Scholar, ScienceDirect, and PubMed databases. The keywords we used for the literature search were ‘burnout’, ‘HCWs’, ‘sub-Saharan Africa’, ‘public health emergencies’, ‘outbreaks’, ‘epidemics’, ‘risk factors’, ‘causes’, ‘contributing factors’, and ‘prevention measures.’ Boolean operators ‘AND’ and ‘OR’ were used to retrieve articles that have both terms or either term. To expand a search term to include all forms of a root word, we used wildcard symbols and truncation symbols. Full-text versions of all the studies that potentially met the inclusion criteria were retrieved and evaluated. The reference lists of all the retrieved articles were searched for other relevant articles that were not retrieved through the database searches. Two reviewers assessed the titles and abstracts of all identified articles independently and compared their results thereafter. Where discrepancies were identified, these were resolved by discussion or adjudication by a third reviewer.

### 2.5. Data extraction

The data extraction form developed by the authors captured information on the names of the authors, publication year, country, publication type, study design, key findings on risk factors, and effects of burnout, as well as prevention measures among HCWs during PHEs. After extraction, we presented a narrative account of the main findings from the included articles.

## 3. Results

The initial search retrieved 542 articles from all the databases used. A total of 130 articles remained after removing duplicates. Fol-

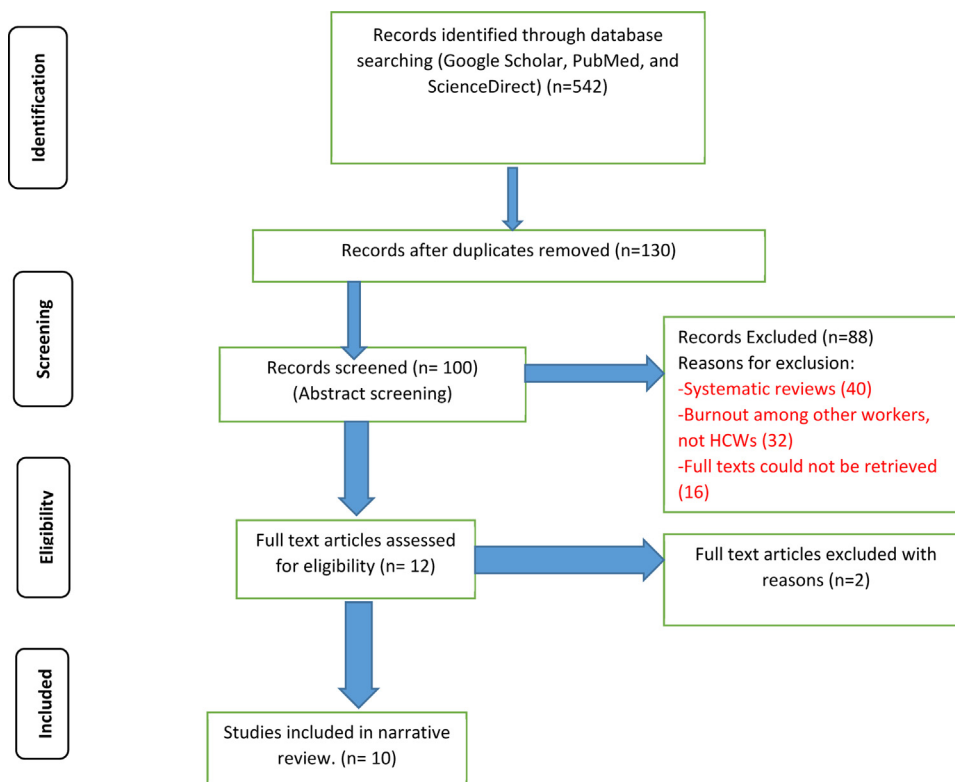


Fig. 2. PRISMA Flowchart.

lowing title screening, 100 were eligible for abstract screening. At the conceptual screening stage, reviewers checked whether the articles retrieved reported on burnout among HCWs in SSA. The reviewers also checked the date of publication of the articles and whether they reported on original research or not. Eighty-eight articles were excluded at the conceptual screening stage, leaving 12 for full-text screening. Two articles were excluded at the full-text screening stage because they did not report on burnout in PHEs. A total of 10 articles were included in this review. More details are presented in Fig. 2.

### 3.1. Characteristics of included studies

A total of ten articles were included in this review. All the articles were published journal articles. The authors used the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) 22 items checklist (Cuschieri, 2019) to assess the quality of the included quantitative studies while qualitative studies were assessed for credibility, dependability, confirmability, and transferability (Stenfors et al., 2020). The reviewers agreed that all the included articles were of good quality. Two studies were conducted in Zimbabwe (Chingono et al., 2022; Moyo et al., 2022), two in Nigeria (Nwosu et al., 2021; Kwaghe et al., 2021), two in Sierra Leone (Raven et al., 2018; Jones et al., 2020), and one each in Kenya (Shah et al., 2021), Ghana (Konlan et al., 2022), South Africa (Lee et al., 2022), and Ghana and Kenya (Afulani et al., 2021). Six of the studies used a cross-sectional study design (Shah et al., 2021; Nwosu et al., 2021; Jones et al., 2020; Konlan et al., 2022; Lee et al., 2022; Afulani et al., 2021), three a qualitative design (Moyo et al., 2022; Kwaghe et al., 2021; Raven et al., 2018), and one a mixed methods design (Chingono et al., 2022). Only two of the studies conducted in Sierra Leone studied burnout among HCWs during the Ebola virus disease outbreak (EVD) (Raven et al., 2018; Jones et al., 2020), while the rest were conducted during the COVID-19 outbreak. More details are presented in Table 1.

### 3.2. Review findings

The findings of this narrative review are presented below. More details are presented in Table 2.

#### 3.2.1. Burnout risk factors/contributing factors

All the included articles reported on burnout risk factors/contributing factors. We categorized the factors into individual, institutional, and community-level factors. The individual factors that were identified in the review include inadequate training (Shah et al., 2021; Moyo et al., 2022; Jones et al., 2020; Konlan et al., 2022; Lee et al., 2022; Afulani et al., 2021), isolation from families (Chingono et al., 2022; Kwaghe et al., 2021; Raven et al., 2018), fear of infection (Chingono et al., 2022; Kwaghe et al., 2021; Raven et al., 2018; Lee et al., 2022; Afulani et al., 2021), the stress of watching patients and colleagues dying (Moyo et al., 2022; Raven et al., 2018), reduced earning (Chingono et al., 2022; Raven et al., 2018), and job dissatisfaction (Konlan et al., 2022; Afulani et al., 2021). In addition, other individual factors include poor self-rated health (Nwosu et al., 2021), years of experience (Nwosu et al., 2021; Konlan et al., 2022), and scepticism about the future (Kwaghe et al., 2021). While one study reported that younger age was a risk factor for burnout (Konlan et al., 2022), another one reported that long years in professional service were a risk factor for burnout (Nwosu et al., 2021). Several institutional risk factors for burnout were identified in the included studies. These factors include inadequate resources and PPE (Shah et al., 2021; Chingono et al., 2022; Moyo et al., 2022), lack of a formal mental health response (Shah et al., 2021), increased workload (Chingono et al., 2022; Raven et al., 2018; Jones et al., 2020; Konlan et al., 2022; Lee et al., 2022), staff shortage (Chingono et al., 2022; Konlan et al., 2022), stressful work environments (Jones et al., 2020; Konlan et al., 2022), and a lack of support from supervisors and institutions (Moyo et al., 2022; Konlan et al., 2022; Afulani et al., 2021). The identified stressful environments were the Intensive Care Units (ICU) and Emergency Units

**Table 1**  
Characteristics of included studies.

Authors, publication year	Country where study was conducted	PHE	Reference	Publication type	Study design
Shah J, Monroe-Wise A, Talib Z, Nabiswa A, Said M, Abeid A, et al., 2021	Kenya	COVID-19	De Hert, 2020	Journal article	Cross-sectional study
Raven J, Wurie H, Witter S., 2018	Sierra Leone	EVD	Leo et al., 2021	Journal article	Qualitative study
Konlan KD, Asampong E, Dako-Gyeke P, Glozah FN., 2022	Ghana	COVID-19	Maslach & Jackson, 1981	Journal article	Cross-sectional study
Chingono RM, Nzvere FP, Marambire ET, Makwembere M, Mhembere N, Herbert T, et al., 2022	Zimbabwe	COVID-19	Konlan et al., 2022	Journal article	Mixed-methods study
Afulani PA, Nutor JJ, Agbadi P, Gyamerah AO, Musana J, Aborigo RA, et al., 2021	Ghana and Kenya	COVID-19	Muller et al., 2022	Journal article	Cross-sectional study
Moyo I, Mavhandu-Mudzusi AH, Haruzivishe C.	Zimbabwe	COVID-19	Kwaghe et al., 2021	Journal article	Qualitative study
Lee H, Wilson KS, Bernstein C, Naicker A, Yassi A, Spiegel JM., 2022	South Africa	COVID-19	Moyo et al., 2022	Journal article	Cross-sectional study
Jones S, White S, Ormrod J, Sam B, Bull F, Pieh S, et al., 2020	Sierra Leone	EVD	Madewell et al., 2022	Journal article	Cross-sectional study
Nwosu AD, Ossai E, Onwuasoigwe O, Ezeigweneme M, Okpamen J., 2021	Nigeria	COVID-19	Lam et al., 2022	Journal article	Cross-sectional study
Kwaghe AV, Kwaghe VG, Habib ZG, Kwaghe GV, Ilesani OS, Ekele BA, et al., 2021	Nigeria	COVID-19	Lee et al., 2022	Journal article	Qualitative study

(Jones et al., 2020; Konlan et al., 2022). A lack of control over the work environment was noted to contribute to stress (Jones et al., 2020). Community-level factors included the breakdown of trust between communities and HCWs (Raven et al., 2018), societal stigma and discrimination (Chingono et al., 2022; Moyo et al., 2022; Kwaghe et al., 2021), a lack of social support (Chingono et al., 2022; Kwaghe et al., 2021), and movement restrictions brought about by lockdowns (Kwaghe et al., 2021).

### 3.2.2. Effects of burnout

Only three of the included studies reported on the effects of burnout (Nwosu et al., 2021; Jones et al., 2020; Konlan et al., 2022). One study reported that burnout caused medication errors and physical health conditions among HCWs (Konlan et al., 2022), one reported poor quality of care resulting from burnout (Jones et al., 2020), and another reported low productivity among HCWs as a result of burnout (Nwosu et al., 2021).

### 3.2.3. Burnout prevention measures

Only one study included in this review did not report on burnout prevention measures (Nwosu et al., 2021). We categorized the prevention measures into individual, institutional, and community-level factors. Personal measures reported in the included articles for this review include building individual resilience (Konlan et al., 2022), exercising (Chingono et al., 2022), and turning to religion (Raven et al., 2018). Institutional measures include having a mental health response plan in place (Shah et al., 2021), training HCWs on disease outbreaks (Shah et al., 2021; Nwosu et al., 2021; Raven et al., 2018; Lee et al., 2022), providing toll-free mental health helplines (Shah et al., 2021), providing risk allowances (Shah et al., 2021; Kwaghe et al., 2021; Raven et al., 2018), providing adequate equipment for the disease outbreaks (Jones et al., 2020), and ensuring that the institutions are adequately staffed (Kwaghe et al., 2021). Community measures include developing social media platforms for HCWs where they can support each other (Raven et al., 2018), and colleagues, friends, and family support (Moyo et al., 2022; Raven et al., 2018; Jones et al., 2020; Lee et al., 2022; Afulani et al., 2021).

## 4. Discussion

### 4.1. Burnout risk factors/contributing factors

Risk factors identified in this review concur with those of an earlier narrative review (De Hert, 2020). The worry of contracting the disease and being quarantined, especially for HCWs who have children at home,

the fear of infecting family members, repressing personal needs, substituting social life with work, and the belief that someone is irreplaceable were some of the personal factors reported in the earlier narrative review (De Hert, 2020). The worry of becoming sick is not unjustified. HCW infection rates during the EVD outbreak in Sierra Leone between 2014 and 2016 were quite high with one study estimating that HCWs had a 21–32 times higher risk of contracting EVD compared to the general population (Selvaraj et al., 2018). A study conducted in 11 African nations found that among HCWs, COVID-19 seroprevalence might reach about 45% (Muller et al., 2022). This review revealed that HCWs may experience distress if their co-workers contract an infectious disease and are usually worried about spreading the infectious disease to family members. These findings agree with those of a scoping review which also revealed that HCWs were afraid of transmitting COVID-19 to their family members (Chemali et al., 2022). As a result of this fear, some HCWs opted to stay separately from their families, which worsened their distress (Chemali et al., 2022). The number of people in the household, the type of infectious disease, the type of variant of the causative organism, and in some cases the number of people sharing a bedroom are all factors that affect the household secondary attack rate (HSAR) of infectious diseases (Caleo et al., 2018). Other factors include the immunity of the household members, household hygiene practices, the vaccination status of the household members, the number of people in the household, and the type of infectious disease (Glynn et al., 2018). A systematic review was conducted to assess COVID-19's HSAR, and it was found that the HSAR varied by variant, with the Omicron variant having the greatest HSAR at 42.7%, followed by the Alpha variant at 36.4%, and the Delta variant at 29.7% (Madewell et al., 2022). A study conducted in the Democratic Republic of Congo to determine the HSAR of EVD revealed that it was 18% and was determined by the severity of illness of the primary case and the number and age of people in the household (Glynn et al., 2018).

This review revealed that several institutional factors also contribute to HCW burnout. One of the identified factors is increased workload. This finding concurs with findings from previous studies (Chemali et al., 2022; Billings et al., 2021; Oyat et al., 2022). The previous studies reported that a lot of effort was involved during the COVID-19 pandemic since a lot of people contracted the disease and needed hospital treatment. The countries distributed this increased workload to HCWs who were already understaffed, and this led to stress which could cause burnout (Chemali et al., 2022; Billings et al., 2021; Oyat et al., 2022). The increased workload, obligations, and pressure from superiors during PHEs on HCWs raise the likelihood of burnout (Robertson et al., 2020). HCWs may be reassigned to work in the regions most impacted by the PHEs, occasionally without the required training or understanding of their responsibilities. Role ambiguity may lead to poor task coordination

**Table 2**  
Findings from included studies.

Author, year of publication	Reference	Findings Burnout risk factors/contributing factors	Effects of burnout	Prevention measures
Shah J, Monroe-Wise A, Talib Z, Nabiswa A, Said M, Abeid A, et al., 2021	<a href="#">De Hert, 2020</a>	-Lack of adequate resources and PPE to care for patients with COVID-19. -Inadequate HCW training. -Lack of a formal mental health response to COVID-19.	-None mentioned	-Having a dynamic mental health response plan -Training HCWs on COVID-19 management -Establish toll-free mental health helplines for HCWs -Providing daily allowances to HCWs to boost their morale.
Raven J, Wurie H, Witter S., 2018	<a href="#">Khasne et al., 2020</a>	-Breakdown of trust between communities and HCWs. -Isolation from families -Fear of being infected -Trauma from watching colleagues die. -Economic hardship due to reduced earning -Increased stress and workload	-None mentioned	-Risk allowance -Training and workshops -Peer and family support -Social media platform where HCWs can discuss challenges they face -Religious beliefs
Konlan KD, Asampong E, Dako-Gyeke P, Glozah FN., 2022	<a href="#">Lee et al., 2022</a>	-Night shifts -Additional jobs -High workload -Harbouring intentions to leave the current job -Fewer years of work experience -Low level of resilience -Inadequate preparedness to handle emerging diseases -Staff shortage -Lack of a structured mentorship program -Young age -Working at primary care level -Working in Intensive Care Units and/or Emergency Units -Job dissatisfaction	-Medication errors -Physical health conditions	-Resilience building
Chingono RM, Nzvere FP, Marambire ET, Makwembere M, Mhembe N, Herbert T, et al., 2022	<a href="#">Leo et al., 2021</a>	-Long working hours -Inadequate resources -Societal stigma and discrimination -Living separately from family -Limited socialization due to lockdowns. -Shortage of staff -Financial constraints due to low salaries -Fear for the lives and wellbeing of themselves and their loved ones	-None mentioned	-Spending more time exercising -Counselling
Afulani PA, Nutor JJ, Agbadi P, Gyamerah AO, Musana J, Aborigo RA, et al., 2021	<a href="#">Moyo et al., 2022</a>	-Fear of infection -Perceived low preparedness -Job dissatisfaction -Less appreciation by management -Suboptimal staff preparation	-None mentioned	-Family support
Moyo I, Mavhandu-Mudzusi AH, Haruzivishe C.	<a href="#">Okoroafor et al., 2022</a>	-Lack of institutional support -Inadequate PPE -Limited medical supplies -Community stigma and discrimination -Losing patients and colleagues	-None mentioned	-Support from colleagues and peers -Support from family
Lee H, Wilson KS, Bernstein C, Naicker A, Yassi A, Spiegel JM., 2022	<a href="#">Ong et al., 2021</a>	-Heavy workload -Lack of skills -Perceived risk of infection	-None mentioned	-Training -Supportive workplace relationships
Jones S, White S, Ormrod J, Sam B, Bull F, Pieh S, et al., 2020	<a href="#">Oyat et al., 2022</a>	-Increased workload -Lack of control over work environment -A lack of training -Working at a facility offering emergency care	-Poor quality of care	-Good peer support -Understanding roles at work -Provision of PPE, other equipment, and institutional support
Nwosu AD, Ossai E, Onwuasoigwe O, Ezeigweneme M, Okpamen J., 2021	<a href="#">Raven et al., 2018</a>	-Poor self-rated health -Longer years in professional service	-Low productivity	-None mentioned
Kwaghe AV, Kwaghe VG, Habib ZG, Kwaghe GV, Ilesani OS, Ekele BA, et al., 2021	<a href="#">Robertson et al., 2020</a>	-Scepticism about the future -Lack of emotional support and motivation -Fear of being infected -Movement restrictions -Separation from family and loved ones -Long duration of wearing PPE -Community stigma and discrimination	-None mentioned	-Education and awareness creation about infection, prevention, and control measures -Increasing manpower -Motivating staff

and ineffective teamwork (Chemali et al., 2022). The cost of the redeployment may be borne by the HCWs, who may have to move their properties and find new housing. HCWs may still be underpaid despite the additional workload, which further compounds their dissatisfaction with the working environment (Chemali et al., 2022). Additionally, leadership issues that result in poor internal communication, conflicting instructions, a lack of positive feedback, and a lack of HCW engagement in decision-making during PHEs may demoralize HCWs and cause burnout (Chemali et al., 2022). HCWs may experience anxiety and stress as a result, and if these issues are not resolved, burnout may result. Due to the weak health systems in SSA, HCWs also witness an exceptional number of patient suffering and deaths during PHEs (Billings et al., 2021). In some instances, HCWs are faced with the choice of removing an individual from life support as has happened during the COVID-19 pandemic. HCWs are traumatized as a result of these choices and events, which put them at risk for burnout (Chemali et al., 2022).

Lack of resources, such as PPE, can hinder HCWs' ability to do their jobs during PHEs, raising their risk of contracting infectious diseases. Even when personal protective equipment (PPE) is accessible, it may still make the HCWs uncomfortable and interfere with their ability to communicate with patients and with one another (Oyat et al., 2022). The added time needed to manage PPE and the associated paperwork also contributes to the workload. Furthermore, a lack of social support for HCWs due to poor organizational management may further raise their risk of suffering from burnout (Billings et al., 2021). Communities may make matters worse by stigmatizing and discriminating HCWs during PHEs because of their ignorance about the diseases (Billings et al., 2021).

#### 4.2. The effects of burnout

This review revealed that burnout has detrimental effects on HCWs and patients. These findings concur with those of a previous review (Leo et al., 2021). HCWs may experience unhappiness, anxiety, depression, and loneliness translating to job dissatisfaction (Leo et al., 2021). Some of the consequences of burnout among HCWs are substance use leading to addiction, strained or broken relationships, divorce, and suicidal attempts (Leo et al., 2021). Also, burnout among HCWs may lead to occupational injuries like needle stick injuries, increasing the likelihood of acquiring infectious illnesses like hepatitis B and HIV (Khasne et al., 2020). Burnout among HCWs may lead to less-than-ideal patient treatment and hence low patient satisfaction. Additionally, it may cause more medical mistakes, which might endanger patients. Litigation and subsequent malpractice claims may result from this (Khasne et al., 2020). Patients who receive suboptimal care from burnt-out HCWs are prone to lose faith in them and may stop showing up for follow-up appointments. Poor patient outcomes could arise from this, which would worsen the population's health (Khasne et al., 2020). Burnout may cause healthcare organizations to experience decreased production because of presenteeism and absenteeism. In addition, they can incur higher operational costs because of litigation, a high turnover rate among HCWs, and early retirements. Early retirements could make the region's HCW shortage worse (Leo et al., 2021).

#### 4.3. Prevention measures

This narrative review revealed that personal measures to reduce burnout include resilience building, exercising, and turning to religion (Chingono et al., 2022; Raven et al., 2018; Konlan et al., 2022). These findings concur with those of a previous scoping review which revealed that HCW self-care activities and spiritual support may prevent burnout (Chemali et al., 2022). Even though HCWs put in longer hours during PHEs, they should still engage in some physical activity whenever they have downtime because it will lower stress (Leo et al., 2021). HCWs should also practice good sleep hygiene and a balanced diet to prevent burnout. To avoid burnout, HCWs must also be encouraged to

seek professional assistance anytime they have psychological symptoms (Leo et al., 2021).

Healthcare institutions should make sure HCWs are involved in management decisions, especially during PHEs, to lessen burnout among HCWs. HCWs will feel respected and appreciated by the organizations as a result (Robertson et al., 2020). Healthcare institutions should make sure HCWs are adequately resourced, like having enough PPE, because doing so will relieve their anxieties about contracting infectious diseases from patients and other staff members, which mitigates burnout (Oyat et al., 2022). Institutions should provide training on the management of the specific infectious disease causing the PHE and their unique tasks to lessen HCW anxiety associated with being deployed in unfamiliar work environments (Robertson et al., 2020). Institutions should also provide a risk allowance to HCWs as an incentive for the work they undertake because they have a higher risk of contracting infectious diseases than the general population (Chemali et al., 2022). This can be provided in the form of a monetary bonus or in-person benefits like family medical insurance, life insurance, or other benefits that their loved ones can use if they die from diseases they contracted at work (Leo et al., 2021). Task shifting is another strategy that healthcare institutions should use to prevent overworking any one HCW group during epidemics. Some tasks usually done by registered nurses such as giving patients parenteral medications can be shifted to enrolled nurses after they have received proper training (Chemali et al., 2022). To prevent any HCW from being compelled to make life-or-death decisions that may later only affect them, healthcare institutions should establish committees that deal with ethical concerns (Robertson et al., 2020). Additionally, organizations ought to provide social media channels for HCWs to communicate difficulties they encounter during PHEs since this can lessen their stress at work and lower the number of people who experience burnout (Leo et al., 2021).

Communities must be informed about the diseases during PHEs to lessen the stigma associated with working in hospitals. This will give them knowledge about the diseases' modes of transmission, effective methods for preventing transmission, and the crucial function that HCWs do during PHEs. Education can be provided by organizing workshops, or by mass media (Nashwan et al., 2022). Another effective way of providing education to communities is through distributing information, education, and communication (IEC) material through different platforms in different languages. The IEC materials should be placed at strategic points in the communities such as schools, shopping centers, churches, and community boreholes (Wang et al., 2022).

This review had some limitations. One of the limitations is that only three databases were used to retrieve relevant articles, making it possible that some relevant literature might have been missed. Another limitation is that only articles published in English were included in this review, which might have resulted in language bias. However, the fact that two reviewers extracted and synthesized that data make the results believable. Furthermore, the review followed PRISMA-P guidelines, which makes the study reproducible. Future longitudinal studies should, however, be carried out during PHEs to determine their dynamic effects on HCW burnout.

## 5. Conclusion

More PHEs are anticipated in SSA countries in the near future. As was the case with the COVID-19 pandemic, responses to these outbreaks may be slow and ineffective due to the fragile health systems resulting from poor health governance, inadequate infrastructure, a lack of healthcare workers, inadequate essential medicines and technology, and limited funding. These PHEs will raise the burden for HCWs, which is likely to increase the likelihood that they may experience burnout. Burnout among HCWs is a result of a variety of individual, institutional, and community-level factors. The HCWs, patients, and healthcare institutions may all be affected by burnout. Countries in SSA should implement plans to stop and handle HCW burnout if they want to be better

equipped to handle future PHEs. These tactics fall into three categories: HCW-level, institutional-level, and community-level.

### Authors' contributions

**Enos Moyo** – Conceptualization; Data extraction and synthesis; Writing original draft

**Perseverance Moyo** – Conceptualization, Data extraction and synthesis; Writing original draft

**Mathias Dzobo** – Writing review and editing

**Grant Murewanhema** – Writing review and editing

**Itai Chitungo** – Writing review and editing

**Tafadzwa Dzinamarira** – Supervision; Writing review and editing

### Funding

This study was not funded.

### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

### References

- Afulani, P. A., Nutor, J. J., Agbadi, P., Gyamerah, A. O., Musana, J., Aborigo, R. A., et al., (2021). Job satisfaction among healthcare workers in Ghana and Kenya during the COVID-19 pandemic: Role of perceived preparedness, stress, and burnout. *PLoS Global Public Health*, 1, Article e0000022.
- Billings, J., Ching, B. C., Gkofa, V., Greene, T., & Bloomfield, M. (2021). Experiences of frontline healthcare workers and their views about support during COVID-19 and previous pandemics: A systematic review and qualitative meta-synthesis. *BMC Health Services Research*, 21(923). doi:10.1186/s12913-021-06917-z.
- Caleo, G., Duncombe, J., Jephcott, F., Lokuge, K., Mills, C., Looijen, E., et al., (2018). The factors affecting household transmission dynamics and community compliance with Ebola control measures: A mixed-methods study in a rural village in Sierra Leone. *BMC Public Health*, 18. doi:10.1186/s12889-018-5158-6.
- Chemali, S., Mari-Saez, A., El-Bcheraoui, C., & Weishaar, H. (2022). Health care workers' experiences during the COVID-19 pandemic: A scoping review. *Human Resources for Health*, 20. doi:10.1186/s12960-022-00724-1.
- Chingono, R. M., Nzvere, F. P., Marambare, E. T., Makwembere, M., Mhembere, N., Herbert, T., et al., (2022). Psychological distress among healthcare workers accessing occupational health services during the COVID-19 pandemic in Zimbabwe. *Comprehensive Psychiatry*, 116. doi:10.1016/j.comppsych.2022.152321.
- Cuschieri, S. (2019). The STROBE guidelines. *Saudi Journal of Anaesthesia*, 13(Suppl 1), S31–S34. doi:10.4103/sja.SJA\_543\_18.
- De Hert, S. (2020). Burnout in healthcare workers: Prevalence, impact and preventative strategies. *Local and Regional Anesthesia*, 13, 171–183.
- Glynn, J. R., Bower, H., Johnson, S., Turay, C., Sesay, D., Mansaray, S. H., et al., (2018). Variability in intrahousehold transmission of ebola virus, and estimation of the household secondary attack rate. *The Journal of Infectious Diseases*, 217, 232–237.
- Jones, S., White, S., Ormrod, J., Sam, B., Bull, F., Pieh, S., et al., (2020). Work-based risk factors and quality of life in health care workers providing maternal and newborn care during the Sierra Leone Ebola epidemic: Findings using the WHOQOL-BREF and HSE Management Standards Tool. *BMJ open*, 10, Article e032929. doi:10.1136/bmjopen-2019-032929.
- Khasne, R. W., Dhakulkar, B. S., Mahajan, H. C., & Kulkarni, A. P. (2020). Burnout among Healthcare Workers during COVID-19 Pandemic in India: Results of a Questionnaire-based Survey. *Indian Journal of Critical Care Medicine: Peer-Reviewed, Official Publication of Indian Society of Critical Care Medicine*, 24, 664–671.
- Konlan, K. D., Asampong, E., Dako-Gyeke, P., & Glozah, F. N. (2022). Burnout syndrome among healthcare workers during COVID-19 Pandemic in Accra, Ghana. *PLoS one*, 17, Article e0268404.
- Kwaghe, A. V., Kwaghe, V. G., Habib, Z. G., Kwaghe, G. V., Ilesani, O. S., Ekele, B. A., et al., (2021). Stigmatization and psychological impact of COVID-19 pandemic on frontline healthcare workers in Nigeria: A qualitative study. *BMC Psychiatry*, 21(518). doi:10.1186/s12888-021-03540-4.
- Lam, L. T., Lam, M. K., Reddy, P., & Wong, P. (2022). Factors Associated with Work-Related Burnout among Corporate Employees Amidst COVID-19 Pandemic. *International Journal of Environmental Research and Public Health*, 19, 1295.
- Lee, H., Wilson, K. S., Bernstein, C., Naicker, A., Yassi, A., & Spiegel, J. M. (2022). Psychological Distress in South African Healthcare Workers Early in the COVID-19 Pandemic: An Analysis of Associations and Mitigating Factors. *International Journal of Environmental Research and Public Health*, 19(15), 9722. doi:10.3390/ijerph19159722.
- Leo, C. G., Sabina, S., Tumolo, M. R., Bodini, A., Ponzini, G., Sabato, E., et al., (2021). Burnout among healthcare workers in the COVID 19 era: A review of the existing literature. *Frontiers in Public Health*, 9. doi:10.3389/fpubh.2021.750529.
- Madewell, Z. J., Yang, Y., Longini, I. M., Halloran, E., & Dean, N. E. (2022). Household secondary attack rates of SARS-CoV-2 by variant and vaccination status: An updated systematic review and meta-analysis. *JAMA Network Open*, 5, Article e229317.
- Maslach, C., & Jackson, S. E. (1981). The measurement of experienced burnout. *Journal of Occupational Behaviour*, 2, 99–113.
- Moyo, I., Mavhandu-Mudzusi, A. H., & Haruzivishe, C. (2022). Frontline healthcare workers' experiences of providing care during the COVID-19 pandemic at a COVID-19 centre in Bulawayo, Zimbabwe: A phenomenological study. *Curationis*, 45(1), a2292.
- Muller, S. A., Wood, R. R., Hanefeld, J., & El-Bcheraoui, C. (2022). Seroprevalence and risk factors of COVID-19 in healthcare workers from 11 African countries: A scoping review and appraisal of existing evidence. *Health Policy and Planning*, 37, 505–513.
- Nashwan, A. J., Korkmaz, M., & Avci, I. A. (2022). Stigma against health care providers caring for COVID-19 patients in Turkey. *Cogent Public Health*, 9(1). doi:10.1080/27707571.2022.2110191.
- Nwosu, A. D. G., Ossai, E., Onwuasoigwe, O., Ezeigweneme, M., & Okpamen, J. (2021). Burnout and presenteeism among healthcare workers in Nigeria: Implications for patient care, occupational health and workforce productivity. *Journal of Public Health Research*, 10(1). doi:10.4081/jphr.2021.1900.
- Okoroafor, S. C., Asamani, J. A., Kabego, L., Ahmat, A., Nyoni, J., Salvador, J. J., et al., (2022). Preparing the health workforce for future public health emergencies in Africa. *BMJ Global Health*, 7, Article e008327.
- Ong, J., Lim, W. Y., Doshi, K., Zhou, M., Sng, B. L., & Tan, L. H. (2021). An evaluation of the performance of five burnout screening tools: A multicentre study in anaesthesiology, intensive care, and ancillary staff. *Journal of Clinical Medicine*, 10, 4836.
- Oyat, F. W., Oloya, J. N., Atim, P., Ikoona, E. N., Aloyo, J., & Kitara, D. L. (2022). The psychological impact, risk factors and coping strategies to COVID-19 pandemic on healthcare workers in the sub-Saharan Africa: A narrative review of existing literature. *BMC Psychology*, 10(284). doi:10.1186/s40359-022-00998-z.
- Raven, J., Wurie, H., & Witter, S. (2018). Health workers' experiences of coping with the Ebola epidemic in Sierra Leone's health system: A qualitative study. *BMC Health Services Research*, 18. doi:10.1186/s12913-018-3072-3.
- Robertson, L. J., Maposa, I., Somaroo, H., & Johnson, O. (2020). Mental health of healthcare workers during the COVID-19 outbreak: A rapid scoping review to inform provincial guidelines in South Africa. *South African Medical Journal*, 110, 1010–1019.
- Selvaraj, S. A., Lee, K. E., Harrell, M., Ivanov, I., & Allegranzi, B. (2018). Infection rates and risk factors for infection among health workers during Ebola and Marburg virus outbreaks: A systematic review. *The Journal of Infectious Diseases*, 218, S679–S689.
- Shah, J., Monroe-Wise, A., Talib, Z., Nabiswa, A., Said, M., Abeid, A., et al., (2021). Mental health disorders among healthcare workers during the COVID-19 pandemic: A cross-sectional survey from three major hospitals in Kenya. *BMJ Open*, 11, Article e050316.
- Stenfors, T., Kajamaa, A., & Bennett, D. (2020). How to assess the quality of qualitative research. *The Clinical Teacher*, 17(6), 596–599.
- Wang, H., Liao, R., Chen, X., Yu, J., Zhu, T., Liao, Q., et al., (2022). How to improve the COVID-19 health education strategy in impoverished regions: A pilot study. *Infectious Diseases of Poverty*, 11(38). doi:10.1186/s40249-022-00963-3.