

## Original Research Article

# Mental Health Support Strategies for Skilled and Non-Skilled Workers during and after Disease Outbreaks: A Systematic Review

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**Abstract: Objective:** The study aims to understand the various crisis interventions implemented by HCWs and non-skilled workers in society during outbreaks of immediate public concern. The primary diseases utilised for the study include COVID-19, MERS, SARS, Ebola, and Influenza. **Methods:** The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were followed to identify the papers and write the systematic literature review (SLR). Medline, Pubmed, PsychInfo, and Cochrane databases were used for searching the papers. **Results:** This systematic literature review observed that few countries employed psychological interventions for HCWs during the COVID-19 pandemic. Many stress, trauma, and anxiety are associated with pandemic or epidemic outbreaks in HCWs and other non-skilled workers. This needs to be addressed extensively for successful implementation. **Conclusion:** Crisis-based interventions which address psychological trauma are lacking in many countries though there have been significant outbreaks of pandemics. Various organisations must commit more effectively by setting up committees and making appropriate frameworks for implementing resilience measures, mind-based interventions, and coping strategies for effectively encountering pandemic disease outbreaks.

**Keywords:** COVID-19, Healthcare workers, non-skilled workers, Pandemic, Outbreak.

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## INTRODUCTION

Infectious diseases caused by viruses have been of great public importance. These infections have resulted in the rapid emergence of pandemics, as in the case of COVID-19. Other than COVID-19, significant outbreaks have been seen for the Middle East respiratory syndrome (MERS), severe acute respiratory syndrome (SARS), and Ebola virus. MERS and Ebola are limited to certain geographical regions. SARS and Influenza both have been associated with a pandemic origin. However, no recent outbreaks of Influenza have been reported, and the last pandemic of Influenza was observed in the 1900s (Baker *et al.*, 2022). The spread of pandemic viral diseases has been an intense stressor for humans.

COVID-19 has a massive impact on the mental health of people worldwide. Though COVID-19-based stress was not initially considered for post-traumatic stress disorder (PTSD), many factors have been considered to evaluate the same. The exposure to stress in the case of COVID-19 is mainly attributed to contact

with COVID-19 patients, media coverage related to the infection, and other related events such as loss of job, sudden health problems, or isolation from family members (Bridgland *et al.*, 2021). The main concern is identifying COVID-19 as a stressor responsible for PTSD. A study on individuals across five countries has shown that COVID-19 significantly impacts mental health. Most of the participants experienced anxiety, depression, and stress. They had difficulties in performing day-to-day activities.

Thus, the COVID-19 pandemic triggered symptoms identical to PTSD in the population. COVID-19 triggers a variety of psychological problems which have been established to be associated with PTSD. Studies done on adults in seven Arab countries during the pandemic identified depression, anxiety, and PTSD in most cases. The trauma induced by COVID-19 is highly complex as there are multiple ways by which people can get information regarding COVID-19, making it challenging to identify the exact stressor responsible for the symptoms (Kira *et al.*, 2021). Therefore, a general understanding of public health

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during the ongoing COVID-19 pandemic is crucial as it needs multiple ways to address it. Meta-analysis-based study on stress, anxiety, and depression in the general public showed that 29.6% of participants were stressed, 31.9% were anxious, and 33.7% were depressed. Thus, the ongoing pandemic significantly affects mental health (Salari *et al.*, 2020).

Corona has been widely studied for stress on the population, but other epidemics have significantly affected mental health. For example, the MERS outbreak and its impact on mental health have been assessed in South Korea. The study clearly showed that 42.9% of the recovering participants had PTSD. In addition, 27% of the population had reported depression post-MERS (Janiri *et al.*, 2021). However, another specific stressor for depression or PTSD in post-MERS recovery was associated with the death of a family member. It was observed that death had a significant psychological impact and resulted in the development of PTSD (Park *et al.*, 2020). Psychological stress is a significant aspect of healthcare workers (HCWs) during outbreaks of pandemics or epidemics. Several factors have been associated with the development of mental health problems in patients. Evidence-based studies of the various factors contributing to stress were analyzed to understand the extent to which HCWs are exposed during such emergencies. The evidence was collected for Coronaviruses and the Ebola virus. The study identified five prominent variables: socio-demographic, social, risk of infection, occupational, and psychological factors.

In most cases, the nurses were females with intense fear regarding handling the infection and exposure to the virus as significant contributors to the development of mental health problems (Sirois FM *et al.*, 2021). Thus, pandemic or epidemic outbreaks have been responsible for extensive mental health trauma for HCWs and the general public (Teshome *et al.*, 2020; Robillard *et al.*, 2020; Pokhrel *et al.*, 2021; Ayalew *et al.*, 2021). The present systematic review has extensively considered COVID-19, Ebola, SARS, MERS, and Influenza.

### Objective

HCWs and other non-skilled workers experience psychological trauma in society due to epidemics or pandemics. Therefore, addressing the interventions to reduce the psychological trauma and helping the workers to cope with the pandemic is a major concern that needs to be understood. The present systematic literature review addresses this point by examining various crisis interventions developed and utilized for reducing psychological trauma.

## METHODS

### Inclusion criteria

Psychological intervention studies for workers, including healthcare and low or non-skilled workers in

society, will be only considered. The COVID-19 pandemic, SARS and MERS, Ebola, and Influenza have been considered mainly for the study. Studies involving crisis intervention associated with psychological health improvement have been only considered for the study. Studies between 2000–2022 time frame have been considered. The time frame is fixed arbitrarily as SARS, MERS, and COVID-19 were seen. Primary articles published in the English language only are included.

### Exclusion criteria

Articles not associated with psychological intervention will be excluded. The review will not consider crisis interventions unrelated to the psychological domain.

### Search strategy

Specific search strings were developed using Boolean operators by combining various keywords. The systematic literature search was conducted from 2000 to 2022, using the search strings primarily in databases that include PubMed, Medline, and Psych Info, as shown in Table 1. These two databases gave the required results; no related results were obtained on the Cochrane database.

### Study selection

The papers were assimilated based on the studies using the abovementioned keywords. Then, other papers were refined manually to see if any crisis interventions had been mentioned. Once the obtained papers were assessed, the final list of papers for SLR was prepared.

### Quality assessment

The Mixed methods assessment tool (MMAT) was used for the quality assessment of the papers identified for the systematic literature review. MMAT methods were proposed for qualitative and quantitative studies. However, this method does not apply to assessing reviews and theoretical papers (Hong *et al.*, 2018). Therefore, of the 24 papers, only 12 were used for MMAT-based assessment. The remaining papers were systematic reviews, theoretical papers, and those without data for evaluation using MMAT. The MMAT summarizing the various aspects for consideration has been attached at the end of the document as supplementary (S1).

### Data synthesis

Studies justifying the inclusion criteria were used for processing the related articles for data extraction. The review's primary focus was determining the role of various crisis intervention methods for healthcare workers and other workers in society during outbreaks of public health importance. The articles were independently extracted from Pubmed and Google Scholar. It included the data on the study characteristics, including nature, geographical area of study, type of intervention, and outcomes. These

characteristics were extracted based on which the review was compiled.

## RESULTS AND DESCRIPTION OF THE STUDIES

### PRISMA flow and the summary of final studies that have been used for the review

Medline, PubMed, and Psych info were used for searching the papers. The search "psychological interventions in health care workers and COVID-19" yielded 190 articles from 2020-2022. Of these, only 183 were full texts. Two of the RCTs in these were removed. So, the final 181 references were checked for eligibility. Most of these were associated with stress and trauma during COVID-19. Only those references which have psychological interventions were considered for the study. This gave a final of 17 articles for study. A similar search in Psych info gave 2327 articles. Using the filter for psychology gave 429 papers

for consideration. Of the 429 papers, 7 were book chapters, and 19 were encyclopedias. The remaining 403 articles were screened for eligibility. It was found that only 5 of them had interventions to be addressed.

The remaining articles were on COVID-19-specific stress and trauma. The search using "psychological interventions in healthcare workers and SARS" OR "psychological interventions in healthcare workers and Ebola" gave only one article each. For MERS with the same terms, no interventions were found. For "Psychological interventions in healthcare workers and influenza," only one article was found. Similar keywords for low-skilled or non-skilled workers were found in one to two articles in the 16 articles identified. So based on the searches, a final 21 articles were obtained for COVID, one each for SARS, Ebola, and Influenza, making a final 24 articles used for the review. PRISMA flow diagram as in Figure 1. Results of the study characteristics of the identified studies as in Table 1.

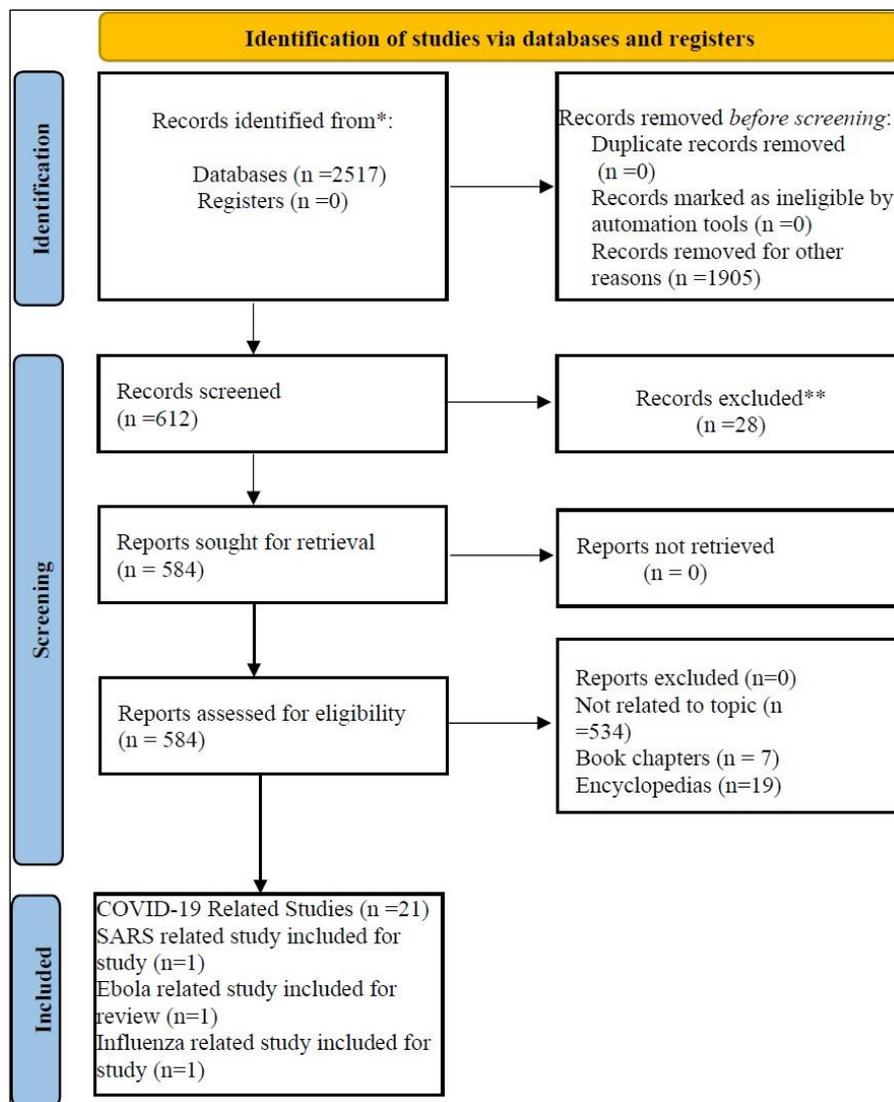


Figure 1: PRISMA flow diagram summarising the inclusions of the studies

**Table 1: Summarising the study characteristics of the identified studies**

Nature of study	Strategies	Characteristics	Reference
Systematic review	Resilience strategies	16 studies were considered, which included two studies for SARS, 9 for Ebola, 1 for MERS and 4 for COVID-19	Pollock et al.,2020
Systematic review	Various interventions utilised	24 studies were considered for Ebola, Influenza, COVID-19, SARS	Zace et al., 2021
Systematic review	Organisational intervention	The intervention has been done in seven countries	Busselli et al., 2021
Systematic review	Resilience and coping behaviour	The positive outcome associated with resilience and coping during the pandemic	Labrague 2021
Systematic review	The outcome of psychological interventions	Limited evidence of intervention; however, Cognitive therapy is the better option	Ottisova et al., 2022
Observation	Psychological interventions	Gendered health intervention in Spain during COVID-19	Lopez-Atanes et al., 2020
Observation	Psychosocial intervention	Social workers used intervention to address the COVID-19-associated stress in families of HCWs	Khoshnami et al., 2022
Observation	End-of-life intervention	Social workers and clinicians were involved	Beneria et al., 2021
Observation	Psychological intervention	Five hundred fifty-three interventions were performed. Mean satisfaction rate was 96.4%	Galvez-Herrer et al.,2021
Observation-based	Yoga and music-based intervention	Two hundred forty HCWs were tested who had anxiety and depression. There was a positive outcome	Vajpeyee et al.,2022

Nature of study	Strategies	Characteristics	Reference
ERNST study	Nature of intervention across countries	56 professionals from 35 countries were analysed for intervention approaches in different countries during COVID-19 exposure	Lopez Pineda et al., 2022
Hospital-based study in Italy	Promotion of resilience	Resilience strategy was applied to HCWs	Lissoni et al., 2020
Cross-sectional survey	Resilience strategies and reduction of compassion fatigue	Resilience-promoting interventions helped reduce fatigue	Labrague et al., 2021a
Cross-sectional survey	Psychological intervention	Hospital workers in Vietnam were exposed to the intervention and found a positive effect	Nguyen et al., 2021
Randomised control trial	Digital intervention	Digital based psychological intervention was found to have a positive outcome	De kock et al., 2022
Theoretical approach	Psychological intervention in crisis	The psychological intervention has the betterment	Fadhel, 2021
Survey	Analysis of coping strategies	Migrant workers were assessed for coping	Yee et al., 2021
Survey	Mobile health app-based intervention	HCWs were analysed for mobile health app-based intervention	Yoon et al., 2021
Narrative review	Resilience strategies	HCWs and the effect of the intervention	Heath et al., 2021

## DISCUSSION ON THE STUDIES

### IDENTIFIED

#### Crisis interventions during outbreaks of public health emergency

Pollock *et al.*, (2020) performed a mixed-method systematic review to understand the stress associated with the outbreak of SARS, MERS, COVID-19, and Ebola. The primary observation of the study was that there is a lack of evidence during and after the outbreak of pandemics or epidemics regarding the psychological resilience strategies or interventions that could be framed. For framing such strategies, it is essential to consider a multitude of factors, including social, organizational, psychological, and personal (Pollock *et al.*, 2020). A similar systematic review was performed to evaluate the crisis response during an outbreak of public emergency. The review identified that interventions must be addressed at four levels: support in providing accurate information, proper support in providing instruments for protection, support from the organisation, and emotional and psychological support (Zaçe *et al.*, 2021).

#### Impact of COVID-19 on Mental Health and Crisis Interventions During COVID-19

COVID-19 has caused extensive stress, anxiety, and trauma in people. This exposure to stress is different for genders. In one such study in Spain, gender-specific stress evaluation was done. Of the total participants, 74% were females. The analysis of the participants showed that females had very high scores on the perceived stress scale, indicating that they were highly prone to trauma due to COVID-19 (López-Atanes *et al.*, 2020). Social workers utilized Psychological interventions as a strategy to handle individuals affected by COVID-19. Various interventions were used, such as counseling, training, and working with family members. It helped them understand and appreciate the trauma HCWs and other members observed and assisted them during the pandemic (Sabzi-Khoshtami *et al.*, 2022). There was severe psychological stress during the COVID-19 pandemic. The utilisation of emergency intervention during this process positively impacts the working of the HCWs (Gálvez-Herrer *et al.*, 2021).

#### Organizational Intervention

The extent of trauma and psychological stress exhibited by HCWs during COVID-19 has been extensive. Several methods have been suggested to reduce the stress experienced by HCWs. Many healthcare organizations have been working on reducing stress in HCWs during the pandemic. An extensive study has been conducted to understand the organizational interventions implemented to control stress and trauma in HCWs efficiently. Such programs exist in China, Malaysia, the USA, Italy, and France. Such organizational interventions and protocols were existent in the analysed countries.

In most cases, online courses were provided for HCWs to help them deal with psychological problems. A structured framework was available to handle HCWs suffering from psychological trauma and distress. Intervention therapies such as massage and strength training were provided in France to overcome the stress. Peer support groups and focus group discussions were well-established and supported in the USA. A multilevel approach was established to provide resilience interventions and mental health resources. Telepsychiatry via WhatsApp was adopted in Malaysia to help HCWs during the pandemic (Buselli *et al.*, 2021). However, an ERNST study in ten countries showed no specific intervention programs launched during the COVID-19 pandemic (López-Pineda *et al.*, 2022). Alternatively, end-of-life intervention programs were organized by hospitals for clinicians and patients during the COVID-19 pandemic in Spain to reduce trauma and stress (Beneria *et al.*, 2021).

#### Resilience Strategies and Interventions Mediated by Organisations

Clinicians working continuously during the pandemic have been experiencing severe psychological trauma. This must be addressed at different levels so hospitals do not lose a productive workforce. Resilience is one such strategy that needs to be adopted by workers so that they are adapted to the trends associated with the epidemic. Resilience involves developing behavioural and coping strategies to adapt to the situation quickly. Several methods to enhance resilience include self-care, mindfulness practice, organisational justice involving the proper distribution of work, and individual strategies that could help overcome fear, stigma, and social barriers. Educational programs targeting psychological resilience development have been successfully implemented over time. At the organisational level, it is essential to have committees that overlook the resilience programs, and such committees have been set up at Mount Sinai Hospital in Toronto to address these issues (Heath *et al.*, 2020).

A systematic review conducted on various studies associated with resilience in COVID-19 showed that utilization of hospital interventions enhances nurses' overall coping strategy. A positive outcome is associated with the social support offered to nurses, and they have enhanced coping and resilience during the pandemic outbreak. The study thus reiterates that such proactive measures need to be implemented to overcome the problems associated with resilience and coping in nurses working on the frontline handling COVID-19 infections (Labrague *et al.*, 2021). On similar lines, resilience improvement was tested in nurses handling COVID-19 cases. These nurses experienced severe forms of compassion fatigue. Analysis of the compassion fatigue scale showed that these nurses were experiencing severe fatigue, and resilience utilization was one of the better options to

overcome this problem. The resilience enhancement in these nurses improved the overall quality of care (Labrague LJ, 2021). Resilience development to cope with COVID-19 has been proposed in another study done in Italy (Lissoni *et al.*, 2020).

A systematic review was conducted to understand the effect of psychosocial interventions on reducing mental health conditions. The review concluded that workshops on psychological improvement and debriefing sessions have minimal effect on overall improvement. However, cognitive behavioural therapy (CBT) has more impact (Ottisova *et al.*, 2022). Interventions such as Yoga and music have effectively reduced anxiety, stress, and depression in HCWs associated with COVID-19 patients (Vajpeyee *et al.*, 2022).

### **Digital intervention based strategies**

Implementing coping strategies when workers are quarantined was shown to help overcome the stress associated with handling COVID-19-related cases. A randomized controlled trial was performed in the UK for digital intervention-based strategies to support the hospital staff during COVID-19. These trials had positive outcomes and showed that staff offered support based on digital intervention had better psychological well-being (De Kock *et al.*, 2022). In addition, a theoretical approach was followed to understand the psychological interventions for HCWs exposed to COVID-19. This study identified the establishment of hotline facilities for psychological intervention, counseling, and psychotherapy services as the better method for coping during an outbreak (Fadhel *et al.*, 2021).

### **Crisis intervention in case of non-skilled workers**

This study was done on migrant workers in Singapore who were quarantined for protection from COVID-19. The primary stressor was the lack of money to feed the family, which resulted in these workers developing stress and trauma (Yee *et al.*, 2021). In Singapore, to consider the mental health of HCWs, organisations have developed mobile health apps that help provide workers with psychosocial support. The study showed that mobile health apps were feasible; however, further modification needs to be done to improve the apps in terms of support (Yoon *et al.*, 2021). In addition, a cross-sectional study performed in Vietnam to identify mental health status in both social and HCWs observed that workers were experiencing fear of contracting COVID-19 due to exposure and had a low self-image. Therefore, a web-based psychological intervention was suggested to be a better option for coping with the pandemic (Nguyen *et al.*, 2019).

### **Crisis Interventions during the SARS Outbreak**

An observational study was conducted in Singapore to understand the effect of the outbreak of the SARS virus. The study observed that there is

significant trauma associated with the outbreak. The HCWs were having issues focusing on problems and controlling their emotions. In conclusion, coping measures that could address these problems would help the HCWs in the emergency department deal with the situation better (Phua *et al.*, 2005).

### **Crisis Interventions during the Ebola Outbreak**

The 2014 outbreak of Ebola has been a public health emergency. A systematic review was performed to understand the health sector's preparedness in handling this. The study observed that there was preparation in place as per international standards. The HCWs were trained to cope with emotional stress and willing to accept handling Ebola patients, and a psychological support program was in place to address issues for HCWs (Pincha Baduge *et al.*, 2018).

### **Crisis intervention and Preparedness for Influenza Outbreak**

Resilience-based strategies are essential for preparing the HCWs for a potential pandemic outbreak. In one such scenario, HCWs at Mt. Sinai Hospital, Toronto, were given intervention training programmes for preparedness during an influenza outbreak. The training helped HCWs to better cope with future pandemics (Aiello *et al.*, 2011). The majority of discussed psychological interventions have been employed in developed countries. However, there is little progress regarding the same in low and middle-income countries. This is mainly due to the lack of methods for accurate diagnosis of psychiatric problems, acute shortage of human resources for detecting and analysing psychiatric problems, social factors associated with mental health, stigma, perception, and lack of dedicated facilities to address the same (De Sousa *et al.*, 2020). A systematic review of interventions for mental health during COVID-19 has observed that there is still a lack of evidence corresponding to the risks associated with the psychological problem, approaching the problem, and the kind of intervention that needs to be provided (Muller *et al.*, 2020).

## **DISCUSSION**

Healthcare workers face a distinct challenge with the spread of epidemics or pandemics. There is intense pressure to handle many cases and provide proper support. The outbreak of pandemics such as COVID-19, SARS, or MERS has put the health of these workers at risk. The psychological status of these workers needs a thorough analysis as they are subjected to severe stress. An evidence-based review assessed the psychological impact of this pandemic on HCWs. In the review, data pertaining to all the diseases that have been considered for the present systematic review have been utilised for evaluation. Overall the study found that HCW had shown severe depression, high levels of stress, and fear related to contracting the disease. This was true not only for COVID-19 but also for other

diseases such as Ebola, Influenza, SARS, and MERS (Preti *et al.*, 2020).

The psychological impact of COVID-19 and other viral epidemics or pandemics on HCW has been analysed extensively. A systematic review showed that HCWs feared contracting the infection, loneliness, depression, stress, and PTSD (Cabarkapa *et al.*, 2020). MERS and SARS infections in public had a limited extent up to which they caused depression and anxiety in workers and the general public. However, COVID-19 has been the major stress factor to induce various psychological symptoms, including PTSD and depression (Delanerolle *et al.*, 2022). SARS and COVID-19 have caused extensive damage to the health infrastructure and humans.

The mortality associated with COVID-19 has been a significant factor in inducing public trauma. In the case of SARS and COVID-19, there is a stigma associated with the disease. In fact, with all the pandemics, stigma is associated, which prevents people from freely interacting with others. The outbreak of SARS in Taiwan was the first example of how trauma was induced in people. Though the SARS outbreak lasted for a limited time, it still showed the stress on hospital staff and the public's negative perceptions of handling the pandemic. SARS and COVID-19 have a massive impact on the mental health of HCWs.

Post-pandemic, workers find it difficult to cope with stress and need intervention programmes or support to assist them in becoming normal (Hsieh *et al.*, 2021). Coronavirus-associated pandemics have created different challenges in society. The pandemic has been responsible for stressing out the healthcare infrastructure and giving the public psychological problems at an unimaginable scale. A Meta-analysis was performed for the incidence of psychological illness after the COVID-19 pandemic. This Meta-analysis analysed the extent to which the pandemic has caused the problem. SARS and MERS induced PTSD and depression in patients. They also found similar observations with COVID-19. Thus, all three Corona viruses induced the same psychological symptoms in post-infection patients. HCWs and other staff associated with treatment had psychological issues due to handling so many cases (Fan *et al.*, 2021).

The impact of Ebola outbreaks on the mental health of patients and workers has been studied extensively. A cross-sectional study was performed in Sierra Leone on patients who survived Ebola to understand how the disease impacts mental health. The study found that patients who recovered from Ebola infection had depression, anxiety, and PTSD as the leading mental health challenges (Bah *et al.*, 2020). The 2014 Ebola outbreak has been one of the significant challenges faced by the healthcare system. The outbreak has resulted in extensive stress and trauma to HCWs

and patients who recovered post-infection. The main problem observed was fear of the pandemic, which increased the risk of death in patients suffering from the disease. This fear of the pandemic has further induced depression and other mental health-related issues in the general public. HCW also had issues handling the infection as it was highly contagious, and the spread risk was high. Thus, more psychological interventions are needed to support people and staff. Programmes pertaining to the education of HCWs and the public regarding the outbreak are equally important (Shultz *et al.*, 2015). In a similar study post, Ebola, the people's experiences were summarised as a review. This review also highlighted that Ebola survivors had severe psychological problems that needed to be addressed systematically (James *et al.*, 2019). A nationwide survey to analyse the psychological impact of Ebola observed that people who survived, HCWs, and the public all had fear and anxiety. Depression and PTSD were seen in patients who survived Ebola and HCWs (Jalloh *et al.*, 2018).

The SARS outbreak was the first true pandemic; it did not continue for a long time like COVID-19. As a result, SARS was the first example of a pandemic virus that helped hospitals understand the stress and trauma workers and patients face. Although SARS did not cause extensive psychological challenges, it helped in probable preparation for the onset of other highly infectious diseases wherein coping strategies are required (Maunder *et al.*, 2009). Thus, as observed, the pandemic has immensely affected the mental health of HCWs and the general public. It is essential to have appropriate coping strategies in place to address workers' overall health and performance adequately.

## CONCLUSION

This systematic review has identified significant aspects associated with psychological trauma and distress during the outbreak of pandemics or epidemics. The review has observed that most low- and middle-income countries lack appropriate crisis management for psychological interventions. A regulatory framework, resilience strategies, and psychological intervention programs are well established only in developed countries with sufficient human resources and technology to tackle such issues. Digital intervention-based programs are effective; however, they must be upgraded further. In addition, the evidence about intervention during and after the epidemic is not appropriately recorded in most cases, resulting in a lack of understanding about the intervention programs in low- and middle-income countries. So, it is essential to adopt the models of psychological intervention for crisis management from developed countries and implement those training programs in low- and middle-income countries such that skilled and poorly-skilled workers can get sufficient time to cope with outbreaks of public

emergency. The present review has analyzed HCW and non-skilled workers only. However, the effect on the general public and its perceptions has not been considered as it is beyond the scope of review.

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- Animal Studies: N/A.
- Conflict of Interest: The authors declare no conflicts of interest.

### Author contributions

David conceived the ideas; All author(s) has been involved in the article screening process (MMAT tool and PRISMA flow), and David led the writing

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