

# OCCUPATIONAL HAZARDS AND INTERVENTIONS FOR HEALTHCARE WORKERS: A REVIEW OF THE LITERATURE

**SOAD MOHAMED ABDULLA ALNASSRY**

Nursing college, Jazan University, Jazan, Saudi Arabia. Email: hibasoaad10@gmail.com

## Abstract

Healthcare workers (HCWs) are exposed to a variety of occupational hazards, including physical, chemical, biological, and psychosocial risks. The recent COVID-19 pandemic has further highlighted the vulnerability of HCWs to these hazards, particularly psychosocial risks such as stress, anxiety, depression, and post-traumatic stress symptoms. This narrative review synthesizes the current literature on occupational hazards faced by HCWs and the interventions designed to mitigate these risks. The review covers a wide range of topics, including risk assessment, risk management, and occurrence rates of occupational hazards. It also discusses the impact of these hazards on HCWs' mental health, with a particular focus on the psychological burden of frontline healthcare workers during epidemics and pandemics. The review highlights the need for urgent interventions to protect HCWs from the psychological impact of traumatic events related to their work. It also emphasizes the importance of implementing preventive policies and management strategies to reduce the risk of occupational hazards and improve the mental health of HCWs. The review concludes with recommendations for future research and policy development in this area.

**Keywords:** Occupational Hazards, Healthcare Workers, Interventions, Literature Review, Risk Assessment, Risk Management.

## 1. INTRODUCTION

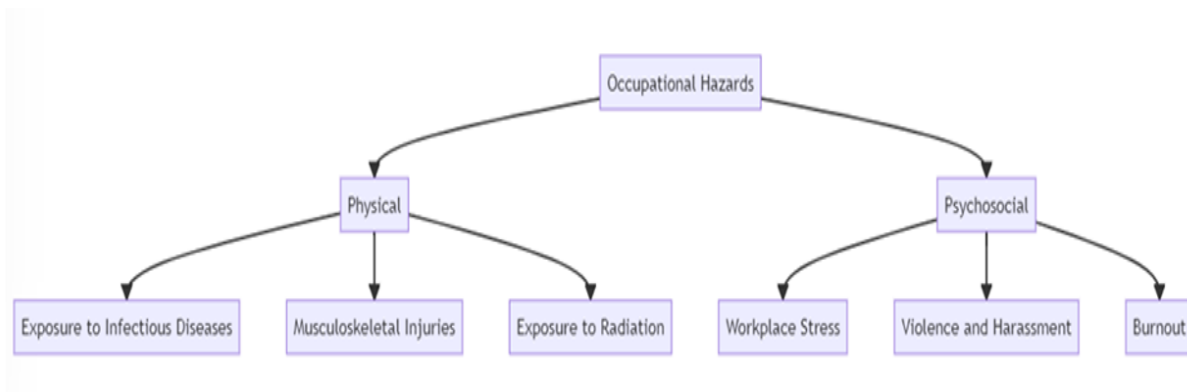
Healthcare workers (HCWs) are the backbone of the health system and play a critical role in ensuring the delivery of high-quality care to patients. However, their work often exposes them to a variety of occupational hazards, which can have significant implications for their physical and mental health. These hazards can range from physical risks such as needlestick injuries and exposure to infectious diseases, to psychosocial risks such as stress, burnout, and post-traumatic stress symptoms [1, 2].

The recent COVID-19 pandemic has further underscored the vulnerability of HCWs to these occupational hazards. As frontline responders in the fight against the pandemic, HCWs have faced unprecedented levels of stress and anxiety, with many experiencing symptoms of depression and post-traumatic stress disorder (PTSD). These mental health issues not only affect the well-being of HCWs but can also have serious implications for the quality of care they provide [3, 4].

Despite the significant risks associated with their work, HCWs often lack the necessary support and resources to manage these hazards effectively. This has led to calls for the development and implementation of interventions aimed at mitigating the occupational hazards faced by HCWs and improving their mental health. Such interventions can range from individual-level strategies such as stress management and resilience training, to organizational-level approaches such as improving working conditions and providing psychological support services [5].

This narrative review aims to synthesize the current literature on the occupational hazards faced by HCWs and the interventions designed to mitigate these risks. By bringing together the findings from various studies, this review seeks to provide a comprehensive overview of the current state of knowledge in this area, and to identify gaps in the literature that could be addressed in future research. The ultimate goal is to inform the development of policies and practices that can help protect HCWs from occupational hazards and improve their mental health and well-being [6].

**Figure 1: Occupational hazards faced by healthcare workers**



## 2. OCCUPATIONAL HAZARDS FACED BY HEALTHCARE WORKERS

### 2.1 Physical Hazards

Healthcare workers (HCWs) are exposed to a variety of physical hazards in their line of work. These include needlestick injuries, exposure to harmful substances, and the risk of contracting infectious diseases. The COVID-19 pandemic has significantly heightened these risks, with HCWs being at the forefront of the fight against the virus. They face a high risk of being infected and, consequently, of spreading the virus to others. This exposure to physical hazards can lead to serious health consequences, including physical illness, long-term health complications, and in some cases, death [7, 8].

### 2.2 Psychosocial Hazards

In addition to physical hazards, HCWs also face a range of psychosocial hazards. These include stress, burnout, and post-traumatic stress symptoms (PTSS). The nature of their work, which often involves dealing with critically ill patients, long working hours, and high levels of responsibility, can lead to significant psychological distress. The COVID-19 pandemic has further exacerbated these psychosocial risks, with HCWs facing unprecedented levels of stress and anxiety. This can lead to a range of mental health issues, including depression and post-traumatic stress disorder (PTSD) [9, 10].

### **2.3 Impact of these Hazards on Healthcare Workers' Physical and Mental Health**

The physical and psychosocial hazards faced by HCWs can have significant implications for their physical and mental health. Physical hazards can lead to immediate health issues, such as injuries or infections, as well as long-term health complications. Psychosocial hazards can lead to a range of mental health issues, including stress, anxiety, depression, and PTSD. These mental health issues can have serious implications for the well-being of HCWs and can also affect their ability to provide high-quality care to patients [11, 12].

### **2.4 Differences in Exposure to these Hazards among Different Groups of Healthcare Workers**

The exposure to these occupational hazards can vary among different groups of HCWs. For example, frontline workers, such as those working in intensive care units or treating patients with COVID-19, may be at a higher risk of exposure to both physical and psychosocial hazards compared to non-frontline workers. Similarly, HCWs in different geographical regions may face different levels of risk, depending on factors such as the prevalence of COVID-19 in the region, the resources available in the healthcare system, and the policies in place to protect HCWs [13, 14].

## **3. INTERVENTIONS TO MITIGATE OCCUPATIONAL HAZARDS**

### **3.1 Individual-Level Interventions**

Individual-level interventions primarily focus on equipping healthcare workers (HCWs) with the necessary skills and knowledge to manage the occupational hazards they face. This includes training on infectious disease control measures, psychological support, and stress management techniques. For instance, Chew et al. found that passive training through educational pamphlets, emails, or websites was effective in minimizing post-traumatic stress symptoms (PTSS) in HCWs experiencing psychological distress. Moreover, education on the natural history of the virus and the appropriate use of infection control measures, especially for non-medically trained HCWs, was a predictor of lower risk of PTSS compared to that for non-trained HCWs who received no such education [15, 16].

### **3.2 Organizational-Level Interventions**

Organizational-level interventions involve changes in the work environment and policies to reduce the occupational hazards faced by HCWs. This includes improving working conditions, providing adequate personal protective equipment (PPE), and implementing supportive work policies. For instance, the availability of effective barrier devices whose quality inspires trust is crucial to reduce the perception of danger of HCWs in the setting of transmissible diseases. Management should also be proactive in and supportive of improving working conditions to avoid burnout risks: implementation of training and technical updates on COVID-19 for HCWs, adequate supply of PPE, ban of prolonged

working hours, and availability of counseling services have been proposed as possible responses [17, 18].

### **3.3 Effectiveness of Interventions**

The effectiveness of these interventions in mitigating occupational hazards and improving the mental health of HCWs has been demonstrated in several studies. For instance, some studies observed a reverse dose-response relationship between lack of PPE provision and PTSS scores: the severity of PTSS was significantly lower as PPE provision frequency increased. Moreover, a supportive work environment is a buffering factor of negative psychological health among HCWs and protects them from PTSS during the COVID-19 pandemic [19, 20]. In fact, low and moderate levels of social support were associated with a higher risk of PTSD compared to high levels of social support. These findings highlight the importance of both individual and organizational-level interventions in protecting HCWs from occupational hazards and improving their mental health [21].

## **CONCLUSIONS**

This review underscores the significant occupational hazards faced by healthcare workers, exacerbated by the COVID-19 pandemic. It highlights the effectiveness of individual and organizational-level interventions in mitigating these risks. The findings emphasize the urgent need for healthcare organizations to implement these interventions, providing adequate training, resources, and supportive work policies. Future research should focus on addressing the identified gaps and exploring the long-term impacts of occupational hazards on healthcare workers' health.

### **Conflict of Interest**

The Author Declares no Conflict Of Interest.

### **Funding Resource**

The Author Declares No Fund Received For This Review.

## References

- 1) J. Epping-Jordan, S. Pruitt, R. Bengoa, and E. H. Wagner, "Improving the quality of health care for chronic conditions," *BMJ Quality & Safety*, vol. 13, no. 4, pp. 299-305, 2004.
- 2) M. T. Kim *et al.*, "Health literacy and outcomes of a community-based self-help intervention: a case of Korean Americans with type 2 diabetes," *Nursing research*, vol. 69, no. 3, p. 210, 2020.
- 3) M. Rahman *et al.*, "Mental distress and human rights violations during COVID-19: a rapid review of the evidence informing rights, mental health needs, and public policy around vulnerable populations," *Frontiers in psychiatry*, vol. 11, p. 603875, 2021.
- 4) V. Alfonsi *et al.*, "Healthcare workers after two years of COVID-19: The consequences of the pandemic on psychological health and sleep among nurses and physicians," *International Journal of Environmental Research and Public Health*, vol. 20, no. 2, p. 1410, 2023.
- 5) S. Gupta and S. Sahoo, "Pandemic and mental health of the front-line healthcare workers: a review and implications in the Indian context amidst COVID-19," *General psychiatry*, vol. 33, no. 5, 2020.
- 6) K. M. Mussie, C. Gradmann, S. A. Yimer, and T. Manyazewal, "Pragmatic Management of Drug-Resistant Tuberculosis: A Qualitative Analysis of Human Resource Constraints in a Resource-Limited Country context—Ethiopia," *International Journal of Public Health*, vol. 66, p. 633917, 2021.
- 7) N. S. Ghareeb, D. A. El-Shafei, and A. M. Eladl, "Workplace violence among healthcare workers during COVID-19 pandemic in a Jordanian governmental hospital: the tip of the iceberg," *Environmental Science and Pollution Research*, vol. 28, no. 43, pp. 61441-61449, 2021.
- 8) F. Somville, G. Vanspringel, H. De Cauwer, E. Franck, and P. Van Bogaert, "Work stress-related problems in physicians in the time of COVID-19," *International journal of occupational medicine and environmental health*, vol. 34, no. 3, pp. 373-383, 2021.
- 9) Q. Li *et al.*, "Prevalence and risk factors of post-traumatic stress disorder symptoms among Chinese health care workers following the COVID-19 pandemic," *Heliyon*, vol. 9, no. 4, 2023.
- 10) O. A. M. Hassan, E. Algamar, and H. A. Fadlalmola, "Stress among Undergraduate Nursing Students at Governmental Nursing Faculties in Sudan," *International Journal of Nursing Education*, vol. 15, no. 2, pp. 48-52, 2023.
- 11) N. Shaukat, D. M. Ali, and J. Razzak, "Physical and mental health impacts of COVID-19 on healthcare workers: a scoping review," *International journal of emergency medicine*, vol. 13, pp. 1-8, 2020.
- 12) M. D. Braquehais *et al.*, "The impact of the COVID-19 pandemic on the mental health of healthcare professionals," ed: Oxford University Press, 2020.
- 13) J. Liu *et al.*, "Prevalence of workplace violence against healthcare workers: a systematic review and meta-analysis," *Occupational and environmental medicine*, vol. 76, no. 12, pp. 927-937, 2019.
- 14) M. A. Abdelmalik *et al.*, "Global prevalence of needle stick injuries among nurses: A comprehensive systematic review and meta-analysis," *Journal of Clinical Nursing*, 2023.
- 15) S. Baral *et al.*, "The disconnect between individual-level and population-level HIV prevention benefits of antiretroviral treatment," *The lancet HIV*, vol. 6, no. 9, pp. e632-e638, 2019.
- 16) A. F. Brown *et al.*, "Structural interventions to reduce and eliminate health disparities," *American journal of public health*, vol. 109, no. S1, pp. S72-S78, 2019.
- 17) A. Sriharan *et al.*, "Occupational stress, burnout, and depression in women in healthcare during COVID-19 pandemic: rapid scoping review," *Frontiers in global women's health*, vol. 1, p. 596690, 2020.

- 18) H. A. Fadlalmola *et al.*, "Anxiety and Depression Among Sudanese Nurses During the COVID-19 Pandemic: A Cross-sectional Study," *Sudan Journal of Medical Sciences*, vol. 17, no. 4, pp. 539–555-539–555, 2022.
- 19) G. d'Etorre *et al.*, "Post-traumatic stress symptoms in healthcare workers dealing with the COVID-19 pandemic: a systematic review," *International Journal of Environmental Research and Public Health*, vol. 18, no. 2, p. 601, 2021.
- 20) C. A. Melbourne *et al.*, "Mental health in a diverse sample of healthcare workers during the COVID-19 pandemic: cross-sectional analysis of the UK-REACH study," *medRxiv*, p. 2022.02. 03.22270306, 2022.
- 21) A. Major and F. J. Hlubocky, "Mental health of health care workers during the COVID-19 pandemic and evidence-based frameworks for mitigation: A rapid review," *MedRxiv*, p. 2021.01. 03.21249166, 2021.