Resilience of Health Workers in Disaster Crisis Situations in Indonesia: An Economic Based Literature Study

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Abstract

Resilience among health workers refers to their ability to withstand and adapt to pressure. Such pressure can arise in crisis and disaster situations, including pandemics, natural disasters, or conflicts. As the frontline providers of healthcare services, health workers frequently encounter both physical and mental challenges that can affect their performance. Previous research has identified several factors influencing resilience, including mental health, institutional support, and resource availability. However, efforts to enhance resilience still face various research gaps, particularly regarding the implementation of effective strategies, especially in developing countries. This review aims to analyse the factors influencing health worker resilience, evaluate evidence-based strategies for strengthening resilience, and identify challenges and solutions in the Indonesian context. The findings suggest that a holistic approach - encompassing individual, institutional, and policy interventions - is essential to address key challenges, such as burnout, resource disparities, and limitations in training. This study seeks to contribute academically by expanding the literature on health worker resilience, providing a foundation for future research, and offering practical recommendations to improve educational policies and health workforce management. Specifically, the findings of this narrative review can support universities in integrating resilience concepts into health curricula and disaster preparedness training programs.

Keywords: Health Workers; Resilience; Disaster.

Introduction

Indonesia is highly vulnerable to disasters, experiencing both natural and non-natural calamities. Natural disasters such as earthquakes, tsunamis, and volcanic eruptions, as well as non-natural disasters like infectious disease pandemics, have repeatedly impacted the country. According to the National Disaster Management Agency (BNPB, 2013), hundreds to thousands of disasters occur annually, causing not only material losses but also placing significant strain on the healthcare system.

In such crises, health workers play a crucial frontline role in delivering emergency services, managing surges in patient numbers, and ensuring the sustainability of the public health system. However, the physical and psychological stressors they encounter often lead to burnout, fatigue, and decreased performance, making resilience a critical skill for health workers (Tan et al., 2023).

The COVID-19 pandemic has provided a clear illustration of the importance of resilience in prolonged health crises. During the pandemic, healthcare workers faced multiple challenges, including personal health risks, excessive workloads, shortages of personal protective equipment, and emotional burdens from patients and their families (Kuhlmann et al., 2021; Imtiyaz et al., 2024). Nevertheless, many health workers demonstrated remarkable adaptability, engaging in cross-disciplinary collaboration, innovating healthcare services, and implementing effective stress management strategies (Oyama et al., 2023). This experience highlights the urgent need to systematically strengthen resilience to prepare for future crises.

This narrative review aims to analyze the factors influencing health worker resilience, identify effective strategies for enhancing resilience in crisis and disaster situations, and explore context-specific challenges and solutions for Indonesia. A deeper understanding of resilience can help ensure that health workers are better equipped to withstand disasters, thereby maintaining healthcare service continuity even in the most challenging circumstances. Additionally, this effort seeks to provide practical recommendations for enhancing the capacity of health workers and supporting national health policies that are more adaptive to disaster scenarios.

Literature Study

Factors that Influence the Resilience of Health Workers

The main definition of health care resilience comes from Hollnagel et al as 'the ability of a health care system (clinic, ward, hospital, area) to adapt its functions before, during, or after an event, and thereby maintain necessary operations in both expected and unexpected conditions. (Hollnagel et al., 2015). Meanwhile, health worker resilience is defined as an individual's ability to adapt effectively and remain resilient in facing pressure, challenges and situations full of uncertainty during crises and disasters (Palmer et al., 2022). Resilience involves not only physical resilience but also emotional, mental and social abilities in responding to complex situations. In health workers, resilience plays an important role in maintaining the stability of performance and health services, even though they face high workloads and stressful work environments (Melnychuk et al., 2022).

Factors that influence the resilience of health workers can be grouped into internal and external factors. Internal factors include stable mental health, good coping skills, relevant professional experience, and intrinsic motivation to provide health services. For example, health workers with more than five years of professional experience tend to have better adaptability during the COVID-19 pandemic compared to health workers who have just joined. In addition, coping skills such as mindfulness and stress management have been proven to help individuals manage emotional burdens when working in emergency conditions (Kuhlmann et al., 2021).

Meanwhile, external factors include institutional support, availability of resources, harmonious team relationships, and the influence of the work environment. Institutional support, such as the provision of disaster preparedness training and mental health programs, can increase health workers' sense of security and self-confidence. For example, case studies from the COVID-19 pandemic in Indonesia show that health workers working in facilities with good management - including the provision of adequate personal protective equipment (PPE) and access to psychosocial services - show lower levels of burnout compared to those working in facilities with less than optimal management. Strong team relationships also play a key role in building resilience, where good cooperation can reduce the emotional burden on individuals when facing emergency situations. (Adiyoso, 2018; Kuhlmann et al., 2021)

Work culture and health policies have a significant impact in shaping resilience. A work culture that values the well-being of health workers, for example through reasonable working hours policies and recognition of their contributions, can increase job satisfaction and intrinsic motivation. Supportive health policies, such as disaster response training programs and equitable resource allocation, can also increase the preparedness of health workers in facing disasters. By understanding these factors, health institutions can design more effective interventions to build health workforce resilience, both through individual and institutional approaches. (Adiyoso, 2018; Mohtady Ali et al., 2022)

Strategy for Strengthening Resilience in Crisis and Disaster

Strengthening the resilience of health workers in crisis and disaster situations requires a comprehensive approach, including institutional and individual interventions. Institutional interventions act as a foundation for creating a supportive work environment, while individual interventions aim to increase the personal adaptability of health workers. An integrated strategy between institutions and individuals is very important to ensure health workers remain resilient in providing services, even in the midst of extreme pressure.

One effective institutional intervention is disaster preparedness training. This training not only includes technical simulations, such as emergency patient management and evacuation, but also teaches non-technical skills, such as quick decision making and communication in emergency situations. The evaluation results showed a significant increase in health workers' confidence in their ability to deal with the crisis. (Welby-Everard et al., 2020). In addition, institution-based mental health and stress management programs, such as psychological counseling and group support, can help health workers cope with the emotional stress of heavy workloads. For example, several health facilities in Jakarta provided counseling services during the COVID-19 pandemic to help health workers manage the anxiety and fatigue they experienced. (Tan et al., 2023)

At the individual level, developing adaptive skills is an important component in strengthening resilience. Mindfulness, or the ability to stay focused on the present moment without getting bogged down by emotional stress, has been shown to be effective in increasing the mental resilience of health workers. Studies show that health workers who regularly practice mindfulness have a lower risk of burnout than those who don't. (Imtiyaz et al., 2024). In addition, stress management skills through techniques such as progressive muscle relaxation and deep breathing can help individuals relieve physical and mental tension during crisis situations. Emotional recovery, such as managing negative emotions and building a healthy sense of empathy towards patients, is also an integral part of maintaining the psychological stability of health workers (Ambrose et al., 2022).

Integration between institutional and individual interventions provides a more optimal impact in strengthening resilience. For example, health workers who have been trained through disaster preparedness programs can more effectively use the mindfulness and stress management skills they learn to deal with stress in the field. In addition, consistent institutional support, such as recognition of health workers' hard work, can increase their intrinsic motivation to continue developing (Melnychuk et al., 2022).

By implementing this strategy in a structured manner, health institutions can create health workers who are more prepared and resilient in facing various challenges of crises and disasters. This approach can also be a model for developing national health policies that are more oriented towards the welfare of health workers, thereby ensuring the sustainability of quality health services in Indonesia. (Tan et al., 2023)

Resilience of Health Workers and Its Impact on the Economy

The resilience of health workers in disaster crisis situations in Indonesia can be studied from an economic perspective by highlighting several important aspects related to the efficiency of health services, the economic impact on the health system, and the direct relationship between the capacity of health workers and post-disaster economic recovery. Here are some points of economic analysis:

Economic Costs of Health Care Disruptions

In disaster crisis situations (earthquakes, floods, or volcanic eruptions), health services are often disrupted. If health workers do not have good resilience, access to health services will be hampered, thereby slowing down the recovery of public health. This will of course have an economic impact on reducing work productivity due to longer recovery times due to suboptimal health services.

Resource Allocation Efficiency

Health workers with high resilience are able to work efficiently even though they face limited medical equipment and damaged health facilities. This reduces the need for additional expenditure to bring in health workers from outside the region or mobilize other large resources. Economically, this will have an impact on reducing the burden on the government budget in supporting health service operations in affected areas.

Reducing Morbidity and Mortality Costs

Health workers who are able to survive and remain productive in crisis conditions can prevent an increase in morbidity (disease) and mortality (death) rates which are usually soar after a disaster. Economically, this will have an impact on reducing long-term medical costs and increasing economic potential because people remain healthy and productive.

Health System Resilience and Local Economic Stability

Health workers with good resilience support the resilience of the local health system. This helps stabilize the economy of disaster-affected areas by ensuring continued access to health services. The economic impact that can be felt is accelerating regional economic recovery because people can return to work more quickly.

Investment in Training and Strengthening Resilience of Health Workers

Investing in training health workers to deal with disaster situations is an economic measure that has a long-term positive impact. With the ability of health workers to be ready to face disasters, the government can reduce large emergency expenditures in the future.

Support for Post-Disaster Economic Growth

Health workers with high resilience are able to handle people's physical and mental trauma quickly. This supports the acceleration of local economic activity and regrowth of affected sectors.

By relating the resilience of health workers in disaster crisis situations from an economic perspective, it is clear that investment in increasing the resilience of health workers provides great benefits in supporting stability and faster economic growth in disaster-affected areas.

Challenges and Solutions in Increasing the Resilience of Health Workers

Increasing the resilience of health workers faces various challenges, both general and specific, that affect the effectiveness and sustainability of interventions. Common challenges often faced include limited resources, such as personal protective equipment (PPE), inadequate health facilities, and labor shortages. In crisis situations such as the COVID-19 pandemic, these

limitations not only increase the risk of health workers' exposure to disease, but also cause significant mental stress. (Kuhlmann et al., 2021). In addition, high workloads often make it difficult for health workers to maintain a balance between professional duties and personal needs. The uncertainty of the situation during a disaster, such as rapid protocol changes and inconsistent information, is also a major challenge that can disrupt the emotional stability of health workers. The accumulation of this pressure often leads to burnout, which is characterized by physical, emotional and mental exhaustion. (Oyama et al., 2023)

Another specific challenge is the inequality in resilience between urban and remote areas. Health workers in remote areas often face limited access to training, psychosocial support and logistical resources. For example, during natural disasters such as the earthquake in Sulawesi or floods in Kalimantan, health workers in remote areas must work with minimal equipment and long distances from referral facilities. (Ali et al., 2022). In contrast, health workers in urban areas often have better access to training and infrastructure, although they face pressure due to high patient volumes. This inequality shows the need for a more targeted approach to strengthening resilience in areas that are geographically and logistically more difficult to reach (Adiyoso, 2018).

In addition, there are differences in readiness between health workers in primary and tertiary facilities. Primary facilities, such as community health centers, are often the front line in responding to disaster situations but lack adequate resources and training compared to tertiary hospitals. For example, health workers at community health centers rarely receive special training regarding disaster preparedness or crisis management. In contrast, health workers in tertiary hospitals are generally better prepared because they are supported by greater resources and structured training. However, reliance on tertiary hospitals to handle heavier patient loads can also be a challenge, especially in situations where referrals are difficult due to infrastructure disruption (Ali et al., 2022).

Solutions to address these challenges involve a holistic approach that includes policy, institutional, and individual-based interventions. Policies that encourage equal distribution of resources and training across regions, including remote areas, are critical to reducing disparities. In addition, providing local needs-based training in primary facilities can increase the readiness of frontline health workers. The use of digital technology, such as telemedicine and online training platforms, can also be a solution to reach health workers in remote areas. (Tan et al., 2023)

Institution-based approaches, such as strengthening stress management and team support, can help reduce the risk of burnout. In addition, building a collaborative network between primary and tertiary facilities can ensure the sustainability of the referral system during a crisis. At the individual level, improving coping skills and awareness of the importance of self-care can help health workers maintain their physical and mental balance. By addressing these challenges in an integrated manner, efforts to increase the resilience of health workers can have a broader impact in ensuring the sustainability of health services, even in the midst of crisis and disaster situations. (Palmer et al., 2022)

Conclusion

Resilience of health workers is the main foundation in ensuring the continuity of health services during crises and disasters. The ability of health workers to remain resilient in the face of physical, mental and emotional stress contributes significantly to the success of the health

system in responding to various emergency situations. This resilience not only supports the stability of health services but also maintains the welfare of health workers as a vital element in the national health system.

To create a strong health workforce, strong synergy between policies, institutions and individuals is needed. Policies that support equitable distribution of resources and preparedness training, accompanied by institutional interventions that provide psychological and logistical support, will strengthen the foundations of resilience. On the other hand, individual efforts in developing adaptive skills such as mindfulness and stress management are also key to strengthening the resilience of health workers in facing complex challenges. This collaboration must run in an integrated manner to create a conducive work environment and support long-term resilience.

However, there is still a research gap regarding how best to address health workforce resilience challenges, especially in regions with diverse geographic conditions, resources and needs. Further research is needed to develop more specific, measurable and evidence-based strategies, so that the resulting solutions can be applied effectively in various crisis and disaster contexts in the future.

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