






INTERNATIONAL JOURNAL OF PATIENT SAFETY AND QUALITY

<https://e-journal.unair.ac.id/IJPSQ>

Original Research

EVALUATING HOSPITAL READINESS FOR HEALTH EMERGENCIES: A CASE STUDY OF COVID-19 READINESS IN INDONESIA

Ali E M Jarghon , Nyoman Anita Damayanti , Inge Dhamanti 

Department of Health Policy & Administration, Faculty of Public Health, Airlangga University, Surabaya, East Java, Indonesia

*E-mail: ali.jarghon@gmail.com

Abstract

Background

It is important to evaluate the readiness of hospitals in response to health emergencies, focusing on their ability to manage crises effectively. The objective of this study was to assess the hospitals' readiness across multiple key components as defined by the WHO hospital readiness checklist.

Methods

A cross-sectional study design was used to assess the readiness of 59 hospitals over 2021 and 2022. Data were collected through the WHO checklist, evaluating 12 components such as leadership, communication, surveillance, and resource management. The hospitals were evaluated quarterly to track changes in readiness levels over time. Descriptive statistics were used to analyze the overall readiness scores for each hospital.

Results

Leadership, incident management, and infection prevention and control remained consistently strong during the study period. However, notable weaknesses were found in occupational health, mental health support, and the continuity of essential services, which scored the lowest. Although there were minor improvements in maintaining essential services in 2022, these areas still need considerable improvement.

Conclusion

The study concludes that, despite strong leadership and infection control measures, hospitals in the region need targeted interventions to address gaps in mental health support and service continuity. Improving these areas is critical for achieving comprehensive disaster readiness and enhancing hospital resilience to future health crises and natural disasters.

Keywords: Disaster; Readiness; Healthcare; Resilience

Article Info

Received: 3 September 2024

Revised: 21 September 2024

Accepted: 18 October 2024

Online: 24 October 2024



INTRODUCTION

Indonesia, located on the Pacific Ring of Fire, is highly vulnerable to various natural disasters and, more recently, the COVID-19 pandemic (Hargono et al., 2023; Widiyantoro et al., 2020). Since the virus was first identified in late 2019 and subsequently declared a global pandemic in March 2020, its impact has been profound, affecting nearly every facet of life (CDC, 2020; Huy et al., 2021; Seyedin et al., 2021; WHO, 2020). This underscores the critical need to assess and improve the readiness of the country's healthcare facilities to manage such widespread health crises effectively (Khirekar et al., 2023; Murunga et al., 2024; Nouhi et al., 2022). This study focuses on assessing the disaster Readiness of hospitals in Surabaya, the capital city of East Java and one of Indonesia's largest metropolitan areas (Jarghon et al., 2024) is a key economic and cultural hub of the region (Central Bureau of Statistics, 2020). It plays a significant role in Indonesia's urban development and is known for its rapid growth and diverse population.

The WHO has published the rapid hospital readiness checklist for COVID-19 (WHO, 2020) which includes 12 components that hospitals should be aware of and maintain during the ongoing COVID-19 pandemic. To improve hospital readiness for COVID-19, it is crucial to address gaps within the 12 key components identified by the World Health Organization's Hospital Readiness Checklist (Balqis-Ali et al., 2021; COVID-19 National Preparedness Collaborators, 2022). Previous studies have demonstrated the critical role of standardized tools, such as hospital readiness checklists, in identifying gaps and implementing targeted interventions to enhance healthcare system resilience. For instance, a study on hospital readiness for COVID-19 in Indonesia highlighted the necessity for improvement in West Java and North Sumatra (Lestari et al., 2023). In another study, researchers explored the gaps in hospital readiness during the COVID-19 pandemic in Indonesia, hospitals and found readiness needs improvement (Dewi et al., 2021).

In addition to these key components, ensuring patient safety and maintaining high-quality care during emergencies are critical aspects of hospital preparedness (Dhamanti et al., 2022). Disaster situations exert considerable stress on healthcare systems, making it essential for hospitals to uphold the safety of both patients and healthcare workers while delivering effective care (Cao et al., 2021; Klager et al., 2024). Effective disaster readiness extends beyond operational readiness; it requires comprehensive systems that prioritize patient safety, reduce medical errors, and maintain the quality of healthcare services even under crisis conditions (Ahsani-Estahbanati et al., 2021). Robust readiness strategies are necessary to address these

challenges and ensure that healthcare facilities can provide safe and high-quality care during emergencies.

By identifying gaps and challenges in the current readiness levels, the article aims to provide insights into necessary improvements in hospital infrastructure, resource management, and response coordination. Ultimately, the goal is to enhance the resilience of healthcare facilities in Surabaya, thereby strengthening their ability to effectively respond to future health crises and natural disasters.

METHOD

Research design

This study employs a cross-sectional descriptive design to assess the disaster readiness of 59 hospitals in Surabaya, Indonesia. The evaluation is conducted using data collected from the District Health Office (DHO), which compiles information from all hospitals in Surabaya every three months. The study covers the period from 2021 to 2022, capturing quarterly data on various readiness components.

Data Analysis

Data were sourced from the District Health Office, which gathers comprehensive reports from all hospitals in Surabaya on a quarterly basis. The raw data collected from the DHO were organized and cleaned using Microsoft Excel. Radar charts were generated in Excel to visualize the readiness levels of hospitals across 12 components. These radar figures provided a visual representation of the strengths and weaknesses in hospital preparedness, allowing for an easy comparison across different time periods. Descriptive statistics were used to analyze the overall readiness scores for each hospital.

RESULT

The radar figures provided for the years 2021 and 2022 offer a visual representation of the readiness levels across various components in hospitals throughout Surabaya. Each figure assesses the readiness of 59 hospitals based on several key components. The following interpretation summarizes the findings and highlights trends observed over the two-year period (Figure 1 and 2).

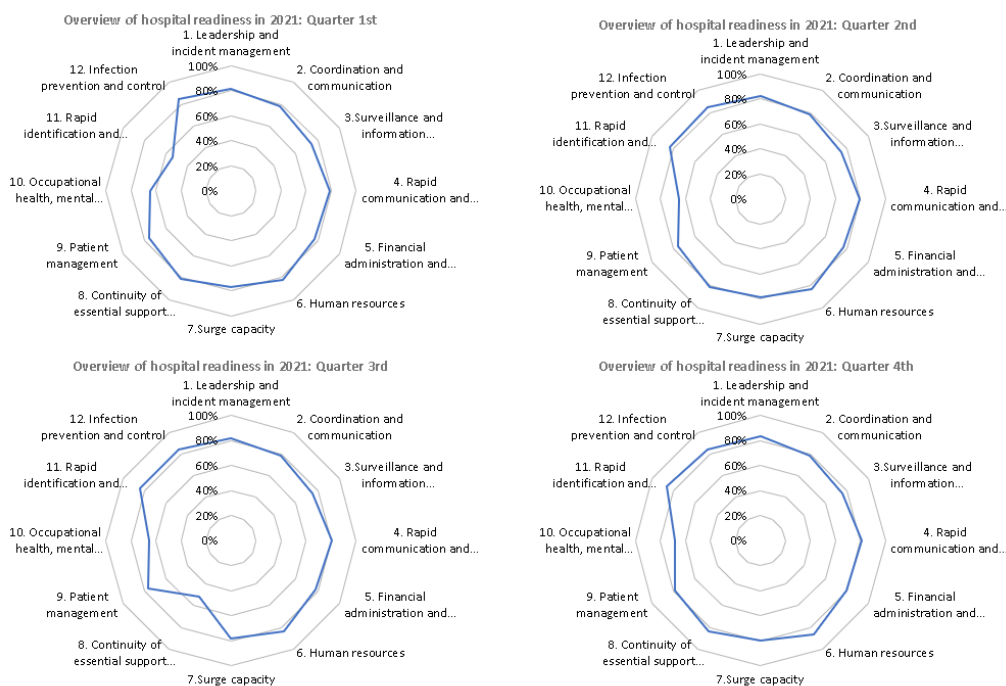


Figure 1 Hospital Readiness 2021

The radar charts provide an overview of hospital readiness in Surabaya across four quarters of 2021, using the 12 components from the WHO Hospital Readiness Checklist. The data show that leadership and incident management, infection prevention and control, coordination and communication, surveillance, rapid communication, financial administration, human resources, surge capacity, were consistently strong areas throughout the year. However, significant weaknesses were observed in Occupational health, mental health, and psychosocial support and continuity of essential support services, which remained the lowest scoring components in all quarters.

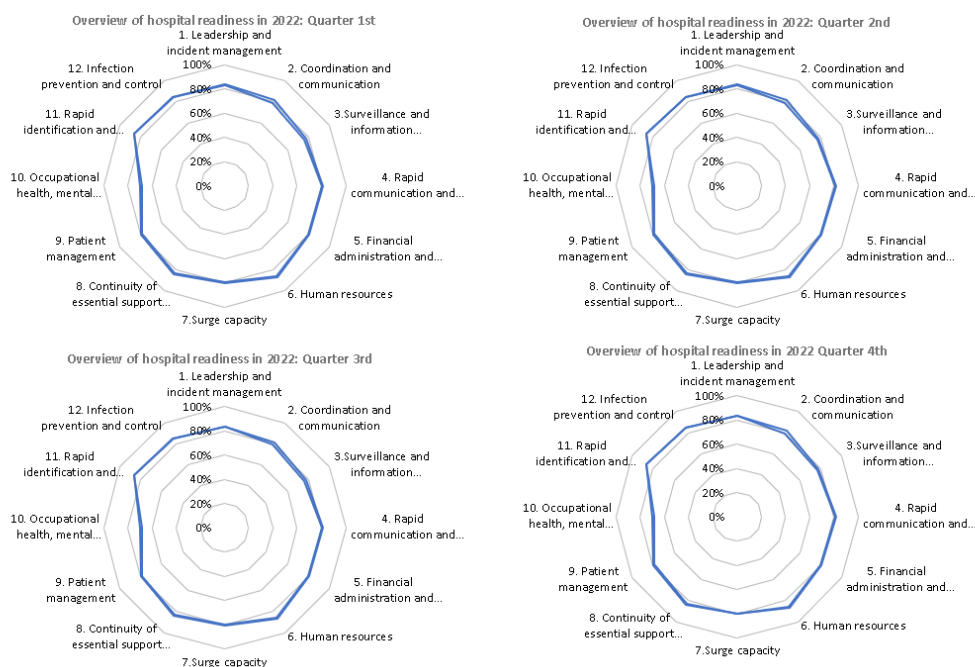


Figure 2 Hospital Readiness 2022

The radar charts (figure 2) provide an overview of hospital readiness in Surabaya across four quarters of 2021, using the 12 components from the WHO Hospital Readiness Checklist. The data show that leadership and incident management, as well as infection prevention and control, were consistently strong areas throughout the year. However, there's slight improvement was observed in continuity of essential support services. Occupational health, mental health, and psychosocial support remained the lowest scoring components in all quarters.

DISCUSSION

The results of this study provide a comprehensive overview of hospital readiness in Surabaya over the years 2021 and 2022, based on the 12 components outlined in the WHO Hospital Readiness Checklist. The data indicates that certain aspects of hospital preparedness, such as leadership and incident management, as well as infection prevention and control, were consistently strong throughout both years. these strengths include well-established leadership structures, which facilitated swift decision-making during emergencies, and the presence of clearly defined incident management systems that ensured coordinated responses. The continuous investment in infection control infrastructure, such as adequate PPE supplies and training for healthcare workers, was another key factor. Regular drills, effective communication channels, and strong government support further enabled these hospitals to

maintain a high standard of preparedness. Additionally, collaboration with international health organizations, adherence to WHO guidelines, and the integration of lessons learned from previous health crises significantly contributed to strengthening these components. This suggests that hospitals in Surabaya have established robust frameworks for managing crises and maintaining infection control protocols, which are crucial for effective pandemic response.

However, significant weaknesses were observed in the areas of occupational health, mental health, and psychosocial support, which remained the lowest scoring components across all quarters of both years. These weaknesses include insufficient resource allocation to mental health services and a lack of specialized training for healthcare workers in psychosocial support. Dragioti E. et al., 2022, Vizheh M. et al., 2022. Chigwedere. et al., 2021. This highlights a critical gap in addressing the well-being of healthcare workers and patients, an aspect that is vital for sustaining healthcare operations during prolonged crises. The lack of adequate support in these areas can lead to burnout among healthcare workers and potentially compromise the quality of care provided to patients. It is essential to develop targeted interventions that prioritize mental health support and occupational safety to enhance the overall resilience of the healthcare system.

Additionally, the continuity of essential support services was another component that showed consistent underperformance in 2021. However, slight improvements were observed in 2022, indicating some progress in maintaining these services during health emergencies. Despite this progress, the persistent low scores suggest that hospitals still struggle to ensure the availability of critical resources and services during periods of high demand. This could be due to supply chain disruptions, inadequate resource planning, or a lack of contingency measures. Enhancing the continuity of support services, such as logistics, supplies, and human resources, is crucial for maintaining healthcare operations during emergencies.

The findings demonstrate that hospitals in Surabaya have made strides in certain areas of preparedness, significant gaps remain, particularly in mental health support and the continuity of essential services. Addressing these gaps through targeted policies and interventions is critical for enhancing the overall readiness and resilience of healthcare facilities in Surabaya. Future efforts should focus on developing a balanced Readiness plan that not only strengthens operational readiness but also supports the well-being of healthcare personnel and ensures the uninterrupted provision of essential services during health emergencies.

Patient safety and the quality of care are fundamental aspects of hospital Readiness and should be prioritized in all disaster management plans. The findings of this study suggest that while hospitals have

made progress in some areas, there are still critical gaps that need to be addressed to ensure that patient safety is not compromised during emergencies. Critical gaps remain in the domains of occupational health, mental health support, and the continuity of essential services. These areas consistently scored the lowest across all quarters, indicating a lack of adequate support for healthcare workers' mental and physical well-being, which is vital for maintaining patient safety during prolonged crises.

LIMITATION

The study is limited to hospitals within Surabaya and may not be generalizable to other regions of Indonesia.

CONCLUSION

This study assessed the disaster readiness of hospitals in Surabaya over 2021 and 2022 using the WHO Hospital Readiness Checklist. While significant progress was made in leadership, incident management, and infection prevention, gaps remain in occupational health, mental health, and continuity of essential services. These findings highlight the need for targeted interventions to address these critical areas, advancing current understanding of hospital readiness and providing a foundation for future improvements to strengthen healthcare resilience.

ACKNOWLEDGMENT

We sincerely thank the District Health Office (DHO) in Surabaya for their invaluable support and cooperation in providing essential data and resources for this study.

CONFLICT OF INTEREST

The author(s) confirm(s) there are no conflicts of interest.

REFERENCES

- Hargono, A., Artanti, K. D., Astutik, E., Widodo, P. P., Trisnawati, A. N., Wardani, D. K., and Lioni, E. (2023). Relationship between disaster awareness and disaster preparedness: Online survey of the community in Indonesia. *Journal of Public Health in Africa*, 14(9), 2376. <https://doi.org/10.4081/jphia.2023.2376>
- World Health Organization. (2020). Timeline of WHO's response to COVID-19. Retrieved from <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/interactive-timeline>
- Centers for Disease Control and Prevention. (2020). Coronavirus disease 2019 (COVID-19) timeline. Retrieved from <https://www.cdc.gov/museum/timeline/covid19.html>

- Seyedin H; Moslehi S; Sakhaei F; Dowlati M. Developing a hospital preparedness checklist to assess the ability to respond to the COVID-19 pandemic. *East Mediterr Health J.* 2021(2):131-141 <https://doi.org/10.26719/2021.27.2.131>
- Jarghon AEM, Damayanti NA, Dhamanti I *et al.* Mapping Vulnerability to Potential Crisis Events in Surabaya City: A GIS-Based Approach [version 2; peer review: 2 approved]. *F1000Research* 2024, **13**:465 (<https://doi.org/10.12688/f1000research.145182.2>)
- Khirekar, J., Badge, A., Bandre, G. R., and Shahu, S. (2023). Disaster preparedness in hospitals. *Cureus*, 15(12), e50073. <https://doi.org/10.7759/cureus.50073>
- Murunga AA, Ngoye B, Wafula FP, Kokwaro GO. Short-term health system responses to epidemics across hard to reach areas in sub-Saharan Africa: A scoping review protocol. *PLoS One*. 2024 Sep 18;19(9):e0285916. doi: 10.1371/journal.pone.0285916. PMID: 39292657; PMCID: PMC11410208.
- Nouhi, M., Heydari, M., Goudarzi, Z., Shahtaheri, R. S., Ahmadzaeh, A., and Olyaeemanesh, A. (2022). The Future Effects of COVID-19 on the Health System: Applying the Futures Wheel Method. *Medical Journal of the Islamic Republic of Iran*, 36, 164. <https://doi.org/10.47176/mjiri.36.164>
- Central Bureau of Statistics. (2020). Surabaya in Figures. *Badan Pusat Statistik Kota Surabaya*. Retrieved from <https://surabayakota.bps.go.id/publication.html>
- World Health Organization (WHO). (2020). Hospital readiness checklist for COVID-19 Interim Document-Version 1. Available from: <https://apps.who.int/iris/handle/10665/333972> (Accessed March 13, 2023).
- Balqis-Ali, N. Z., Fun, W. H., Ismail, M., et al. (2021). Addressing gaps for health systems strengthening: A public perspective on health systems' response towards COVID-19. *International Journal of Environmental Research and Public Health*, 18(9), 9047. This article emphasizes the need for addressing gaps in the 12 components of hospital preparedness for better health system response. Available at: [DOI: 10.3390/ijerph18179047](https://doi.org/10.3390/ijerph18179047).
- COVID-19 National Preparedness Collaborators. (2022). Pandemic preparedness and COVID-19: An exploratory analysis of infection and fatality rates, and contextual factors associated with preparedness in 177 countries. *The Lancet*, 399(10334), 1489-512. [https://doi.org/10.1016/S0140-6736\(22\)00172-6](https://doi.org/10.1016/S0140-6736(22)00172-6).
- Dewi, K., Chalidyanto, D., and Laksono, A. D. (2021). Hospital preparedness for COVID-19 in Indonesia: A case study in three types of hospitals. *Journal of Public Health in Africa*, 14(9), 2376. <https://doi.org/10.4081/jphia.2023.2376>
- Klager, E., Teufel, A., Eitenberger, M., Bukowski, N., Lintschinger, J. M., Manschein, V., Metelka, P., Willschke, H., Schaden, E., Frimmel, C., Renner, R., and Hafner, C. (2024). Expectations of healthcare professionals of community-based telemedicine in emergency medical service. *PLOS ONE*. <https://doi.org/10.1371/journal.pone.0310895>
- Cao, Y., Shan, J., Gong, Z., Kuang, J., and Gao, Y. (2020). Status and Challenges of Public Health Emergency Management in China Related to COVID-19. *Frontiers in Public Health*. <https://doi.org/10.3389/fpubh.2021.680486>.

- Ahsani-Estahbanati, E., Gordeev, V. S., and Doshmangir, L. (2022). Interventions to reduce the incidence of medical error and its financial burden in health care systems: A systematic review of systematic reviews. *Frontiers in Public Health*. <https://doi.org/10.3389/fpubh.2021.661359>.
- Dhamanti, I., Indriani, D., Miftahussurur, M., Kurniawati, E., and Engineer, C. Y. (2023). Impact of hospital readiness on patient safety incidents during the COVID-19 pandemic in Indonesia: Health worker perceptions. *Journal of Patient Safety and Risk Management*.
- Dragioti E, Tsartsalis D, Mentis M, Mantzoukas S, Gouva M. Impact of the COVID-19(2022). pandemic on the mental health of hospital staff: An umbrella review of 44 meta-analyses. *Int J Nurs Stud*. Jul; 131:104272. doi: 10.1016/j.ijnurstu.2022.104272.
- Vizheh M, Qorbani M, Arzaghi SM, Muhidin S, Javanmard Z, Esmaeili M. The mental health of healthcare workers in the COVID-19 pandemic: A systematic review. *J Diabetes Metab Disord*. 2020 Oct 26;19(2):1967-1978. doi: 10.1007/s40200-020-00643-9. PMID: 33134211; PMCID: PMC7586202.
- Chigwedere, Otilia Cassandra, Anvar Sadath, Zubair Kabir, and Ella Arensman. 2021. "The Impact of Epidemics and Pandemics on the Mental Health of Healthcare Workers: A Systematic Review" *International Journal of Environmental Research and Public Health* 18, no. 13: 6695. <https://doi.org/10.3390/ijerph18136695>