

Kesiapan Rumah Sakit di Kabupaten Deli Serdang dan Kota Pematang Siantar dalam Merespons Pandemi COVID-19: Implementasi N-Cov Hospital Readiness

Readiness of Hospitals at Deli Serdang Regency and Pematang Siantar City Responding to The Covid-19 Pandemic: Implementation of the N-Cov Hospital Readiness

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Abstrak

Selama pandemi COVID-19, rumah sakit menghadapi tekanan luar biasa dalam menangani lonjakan pasien sambil tetap mempertahankan pelayanan kesehatan esensial, dan banyak di antaranya belum siap menghadapi situasi yang belum pernah terjadi sebelumnya ini. Rumah sakit memiliki peran penting dalam penanggulangan bencana melalui penyediaan layanan medis bagi masyarakat terdampak. Penelitian ini bertujuan untuk menilai tingkat kesiapan rumah sakit di Kabupaten Deli Serdang dan Kota Pematang Siantar, Provinsi Sumatera Utara, dalam merespons pandemi COVID-19 dengan menggunakan WHO Rapid Hospital Readiness Checklist for COVID-19. Penelitian dilakukan secara cross-sectional, melibatkan evaluator dari tiga rumah sakit di Deli Serdang dan dua rumah sakit di Pematang Siantar. Instrumen penilaian terdiri dari 12 elemen utama yang mencakup komponen esensial kesiapsiagaan rumah sakit. Hasil penelitian menunjukkan bahwa rumah sakit di Kabupaten Deli Serdang memiliki tingkat kesiapan tinggi dengan nilai di atas 80% dan dikategorikan sebagai Level A (siap tinggi). Sementara itu, RSUD DJS di Kota Pematang Siantar memperoleh skor kesiapan 59,6% atau Level B (siap sedang), yang menunjukkan perlunya peningkatan dalam upaya pencegahan dan pengendalian. Di sisi lain, RSU HRP mencapai nilai kesiapan sebesar 82% atau Level A (siap tinggi). Kesimpulannya, rumah sakit di Kabupaten Deli Serdang menunjukkan kesiapsiagaan yang kuat dalam menghadapi pandemi COVID-19, sedangkan RSUD DJS di Pematang Siantar perlu meningkatkan perencanaan, koordinasi antarunit, dan pemantauan efektivitas kegiatan untuk memperkuat kesiapan secara keseluruhan. Temuan ini memberikan masukan berharga bagi pembuat kebijakan dan tenaga kesehatan dalam meningkatkan kesiapsiagaan serta ketahanan rumah sakit terhadap keadaan darurat kesehatan di masa mendatang.

Kata kunci: rumah sakit, wabah, kesiapsiagaan, kesiapan, ketahanan

Abstract

During the COVID-19 pandemic, hospitals faced tremendous pressure to handle the surge of patients while maintaining essential health services, and many were unprepared for such an unprecedented situation. Hospitals play a critical role in disaster response by providing medical care to affected populations. This study aims to evaluate the readiness of hospitals in Deli Serdang Regency and Pematang Siantar City, North Sumatra, in responding to the COVID-19 pandemic using the WHO Rapid Hospital Readiness Checklist for COVID-19. A cross-sectional survey was involving evaluators from three hospitals in Deli Serdang and two hospital in Pematang Siantar. The checklist consisted of 12 key elements covering essential components of hospital preparedness. Results showed that hospitals in Deli Serdang demonstrated high levels of readiness, with scores

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above 80%, categorized as Level A (high readiness). In contrast, RSUD DJS in Pematang Siantar achieved a readiness score of 59.6%, categorized as Level B (moderate readiness), indicating the need for improvement in prevention and control efforts. Meanwhile, RSU HRP reached 82%, also categorized as Level A. In conclusion, hospitals in Deli Serdang Regency showed strong preparedness in facing the COVID-19 pandemic, while RSUD DJS in Pematang Siantar requires enhancement in planning, inter-unit coordination, and monitoring to strengthen overall readiness. The findings provide valuable insights for policymakers and healthcare professionals to improve hospital preparedness and resilience in future public health emergencies

Keywords: *Hospital, Outbreak, Preparedness, Readiness, Resilience*

1. INTRODUCTION

In 2019, a non-natural disaster occurred, namely the severe respiratory illness outbreak, the well-known Corona Virus Disease 2019 (COVID-19). The World Health Organization's 2019 Novel Coronavirus (COVID-19) Strategic Preparedness and Response Strategy offers a comprehensive framework for countries to adopt public health measures to prevent, prepare for, and respond to the COVID-19 pandemic [1]. The strategy is consistent with existing national action plans for health security and pandemic influenza, enabling countries to swiftly identify and implement relevant measures. By incorporating evolving knowledge about COVID-19, the strategy provides a dynamic approach to managing the pandemic. Furthermore, it serves as a valuable tool for guiding and coordinating national and international efforts, fostering collaboration and ensuring a unified response. The COVID-19 Strategic Plan outlines nine key strategies to address various aspects of the pandemic. These strategies aim to help countries improve their ability to manage the crisis, primarily by strengthening their healthcare systems. Specialized healthcare services, particularly those available in hospitals, will play a crucial role in providing care to the affected population. On January 30, 2020, the World Health Organization's Director-General declared the COVID-19 outbreak a global health emergency of international concern, following the guidelines of the International Health Regulations. In response to the widespread spread of COVID-19 cases across continents, the Director-General subsequently declared COVID-19 a pandemic on March 11, 2020, based on the recommendation of the International Health Regulations Emergency Committee. [2]. Given the dynamic and rapidly evolving nature of the COVID-19 pandemic, healthcare services must be prepared with appropriate measures. These measures may vary depending on each hospital's specific role and how it aligns with the nation's overall plan for managing the outbreak while simultaneously providing essential services to other patients in need of care.

Hospitals play a crucial role in providing healthcare services to people affected by disasters such as the COVID-19 pandemic [1]. The responsibilities of healthcare providers during the COVID-19 pandemic are likely to encompass the following: (a) conducting COVID-19 testing and initiating early investigations to identify patients requiring hospitalization, (b) treating individuals with COVID-19, (c) maintaining the provision of essential healthcare services, (d) implementing measures to prevent nosocomial transmission of COVID-19, and (e) disseminating COVID-19 information as part of the national and institutional risk communication strategy in collaboration with the central health authority [1,3]. Hospitals need to be prepared to function effectively during and after such events to ensure the safety and security of the affected population. This concern has been addressed in the UNDDR Framework 2022–2025 and the Sendai Framework for Disaster Risk Reduction 2015–2030, emphasizing the importance of safe and effective operation of COVID-19 referral hospitals [4,5]. Any faults or damages in such hospitals can lead to disruptions in healthcare services, which can directly impact the safety and security of the disaster-affected population. It is imperative to conduct a thorough analysis and evaluation of the preparedness of COVID-19 referral hospitals in Indonesia to effectively address the ongoing COVID-19 pandemic.

The National Disaster Management Agency reported a non-natural disaster in the form of the COVID-19 epidemic in the world with a total of 3,233,838 confirmed positive cases, 1,997,349 people undergoing treatment with 59,766 critical patients, a total death toll of 228,525 people. America 19%, Italy 10%, Malaysia 5.8%, China 1,716 positive cases were health workers and 989 (health workers) died. In Indonesia, there were 17,514 COVID-19 cases, 1,148 people died and 4,129 people recovered. [6] Indonesia recorded the first patient of COVID-19 on March 2, 2020, and by April 10, 2020, it had spread to 34 provinces. On May 16, 2021, COVID-19 in Indonesia reached 1,736,670 cases. At Dr. Hospital. Djasamen Saragih saw an increase in cases until July 2021 there were

92 cases recorded with details of 14 people dying, 71 recovering and 7 people being referred. The peak of the spike occurred in August 2021 with 118 cases, 19 people died, 8 people were referred, 4 people went home at their request and 87 people recovered. Hospitals' ability to handle COVID-19 is crucial for service quality. To support and measure this preparedness program, RSUD DJS must form an early alert team for extraordinary events. Data on confirmed positive cases of COVID-19 as of January 12, 2022, in Indonesia was 4,268,097 cases, recovered cases were 4,116,962, and deaths were 144,150. North Sumatra confirmed positive cases of Covid-19 106,143, 2,896 deaths. Deli Serdang Regency confirmed positive cases of COVID-19 7,458, 76 died, and 4,152 recovered [6–8]. The text emphasizes the critical role of hospitals in providing healthcare services during and after disasters, particularly in the context of the COVID-19 pandemic. It highlights the importance of hospital preparedness in disaster response, as outlined in the UNDDR Framework 2022-2025 [4] and the Sendai Framework for Disaster Risk Reduction 2015-2030 [5,8]. The text underscores the potential disruption of essential health services when hospitals, considered vital assets in disasters, experience structural damage or malfunctions. Therefore, it is essential to assess the level of preparedness of COVID-19 referral hospitals in Indonesia to ensure their effective functioning during and after the ongoing COVID-19 pandemic. WHO has published a rapid hospital readiness checklist for COVID-19 to evaluate the preparedness of referral hospitals during the ongoing pandemic. The provided checklist outlines twelve comprehensive components that hospitals should prioritize and maintain. Furthermore, hospitals can assess any deficiencies in these twelve components of COVID-19 Hospital Preparedness to identify areas requiring improvement [9,10].

The research sought to assess a hospital's capacity to effectively manage COVID-19 risks by identifying gaps in its preparedness for the pandemic, evaluating its business continuity plans, and examining the existing hospital emergency response plan. This assessment was carried out by the circular of Menkes No.HK.02.01/Menkes/455/2020 Concerning the licensing and accreditation of healthcare facilities and the designation of educational hospitals during the pandemic.

2. METHODS

Research design

This research used a quantitative method using a cross-sectional approach. This study was carried out at 3 selected hospitals in Deli Serdang (DS Hospital, SEM Hospital, GLT Hospital) and two hospitals in Pematang Siantar City (RSUD DJS, RSU HRP). The study included both public and private hospitals designated as COVID-19 patient referral hospitals in Indonesia. All participating hospitals obtained necessary authorization to participate in the research. The study participants included up to five individuals from the following roles: infectious disease prevention staff, occupational safety and health staff, hospital directors, disaster management personnel, and COVID-19 task force members.

Data collection

The research utilized the Rapid Hospital Readiness Checklist for COVID-19, developed by the World Health Organization in 2020, to assess the critical capabilities necessary for hospital preparedness in managing COVID-19. [10,11]. The hospital context requires the management of COVID-19, and the checklist comprises 12 crucial elements, such as the incident management system and leadership, synchronisation and dialogue, information management and surveillance, community involvement and risk communication, business continuity, finance, and administration Personnel, availability of critical support services, capacity for surges, handling of patients, mental health, psychosocial support, and occupational health, quick detection and diagnosis, controlling and preventing infections. Collecting data by computing the hospital safety index during the COVID-19 pandemic. The Checklist includes recommended actions for each component, which can be rated using the color-coded ratings below:

not available	0	either planned but not yet implemented or does not exist
partially functional	0.5	i.e. exists but is incomplete or insufficient to achieve its intended purpose; or
fully functional	1	i.e. fully functional, operating effectively and efficiently in accordance with established standards

An additional feature of the checklist is a verification method, a description of the verification methods should be included with every assessment, and comments should be placed in the relevant Excel tool column to support the assessment, documents such as rules, procedures, plans, lists, inventories, guidelines, manuals, information, education, and communication materials, or films can serve as verification tools, "None" ought to be typed if there

are no ways to verify, the researcher can add further comments to go into more detail about the state of the suggested action, such as the reasons for the assessment's "partially functional" rating. A list of the most important tasks, this column needs to provide a detailed inventory of the steps required to close the gaps found, the suggested activities under discussion for each component that is required to build capacity or carry out the recommended action should serve as the basis for the priority actions.

Data analysis

Data were analyzed by calculating the readiness index, as the following equation:

$$\text{Component score} = \Sigma \text{Subcomponent score}$$

The component score is determined by calculating the average of the scores assigned to its individual sub-components, as following equation:

$$\text{Achievement percentage} = \frac{\text{subcomponet score}}{\Sigma \text{sub component}}$$

The research analyzed the achievement percentage of hospitals in managing the COVID-19 pandemic using the World Health Organization's three-tiered scoring system to evaluate hospital preparedness:

Less than or equal to 50%	C	“Not Ready”
Between 50% and 79%	B	“Moderate / Medium Readiness Level”
80% or higher	A	“Adequate / High Readiness Level”

The research was conducted based on the research ethics guideline and has been approved under approval letter No. Ket-552/UN2.F10.D11/PPM.00.02/2020 issued by the Research and Community Engagement ethics committees, Faculty of Public Health, Universitas Indonesia. Informed consent was obtained from the subject participants involved in the study. Informed consent was obtained from the subject participants involved in the study.

3. RESULT

Deli Serdang Regional Public Hospital (RSUD DS) is in Lubuk Pakam City which belongs to the district government and is also a referral hospital for treating COVID-19 patients. GLT Hospital (RSU GLT) is in Tanjung Morawa district which belongs to a state-owned enterprise that was prepared and used as one of the COVID-19 referral hospitals. The three hospitals were designated as referral hospitals for COVID-19 patients based on the Decree of the Minister of Health of the Republic of Indonesia number HK.01.07/MENKES/169/2020 regarding the determination of referral hospitals for the management of certain emerging infections. [12]. The SEM Hospital, located in Deli Tua district, is a private institution that provides treatment for COVID-19 patients. While it was not initially designated as a COVID-19 referral hospital, in response to the increasing number of cases and the North Sumatra Governor's Instruction Number 188.54/3/INST/2020, all hospitals in the province were mandated to accept and treat COVID-19 patients. This ensured that no patient with suspected COVID-19 would be denied care. RSUD DJS, a type B hospital in Pematang Siantar City, is a referral hospital for COVID-19 treatment, as determined by Permenkes RI No. HK.01.07/MENKES/169/2020. [13]. RSU HRP is a type C private hospital belonging to the Roman Catholic Archdiocese of Medan, located at Pematang Siantar City. Initially, RSU HRP was not a COVID-19 referral hospital, otherwise based on the North Sumatra Governor's Instruction Number 188.54/3/INST/2020 concerning Procedures for Handling COVID-19 patients in Hospitals in North Sumatra Province and the mayor of the number of patients If confirmed that the Covid-19 is increasing, all hospitals are required and ready to accept COVID-19 patients and ensure that there is no rejection of patients who are indicated to be COVID-19 in North Sumatra.

The analysis reveals that all hospitals under investigation achieved an adequate or high level of readiness for COVID-19, with achievement percentages exceeding 80%. The results of the assessment are detailed in Table 1 and Figure 1.:

Table 1. Hospital Readiness Achievement for COVID-19

No	Components	Max Score	Score (%)	Deli Serdang	Pematang Siantar
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			RSUD DS	RSU GLT	RSU SEM	RSUD DJS	RSU HRP
1	Incident management system and leadership	7	6.5 (93%)	6.5 (93%)	6.5 (93%)	5 (71%)	4.5 (64%)
2	Communication and coordination	6	5.5 (92%)	6 (100%)	5.5 (92%)	3.5 (58%)	5 (83%)
3	Information management and surveillance	6	5.5 (92%)	6 (100%)	5 (83%)	4.5 (75%)	5 (83%)
4	Community engagement and risk communication	4	4 (100%)	4 (100%)	4 (100%)	2 (50%)	2.5 (63%)
5	Business continuity, finance, and administration	8	5.5 (69%)	7.5 (94%)	7.5 (94%)	3.5 (44%)	6 (75%)
6	Human resources	6	4.5 (75%)	6 (100%)	6 (100%)	3 (50%)	6 (100%)
7	Surge capacity	5	4.5 (80%)	5 (100%)	4.5 (90%)	2 (40%)	4.5 (90%)
8	Essential support services continuing	6	5 (83%)	6 (100%)	6 (100%)	3 (50%)	4.5 (75%)
9	Management of patient	4	2.5 (63%)	3.5 (88%)	3.5 (88%)	2 (50%)	4 (100%)
10	Psychosocial support, mental health, and occupational health	5	3.5 (70%)	4.5 (90%)	4.5 (90%)	2.5 (50%)	4 (80%)
11	Identification and diagnosis rapidly	6	5.5 (92%)	5 (83%)	5.5 (92%)	5.5 (92%)	5 (83%)
12	Prevention and control of infections	16	13.5 (84%)	16 (100%)	15.5 (97%)	13.5 (84%)	14 (88%)
Achievement Average		79	66 (83%)	76 (96%)	74 (93%)	50 (59,6%)	65 (82%)
Classification			A	A	A	B	A

Table 1 shows that hospitals in Deli Serdang Regency demonstrated a high level of preparedness, with average achievement scores ranging from 83% to 96%, classified as Level A (high readiness), while hospitals in Pematang Siantar City showed varied results, with RSUD DJS achieving 59.6% (Level B – moderate readiness) and RSU HRP reaching 82% (Level A – high readiness). Deli Serdang hospitals consistently performed well across all components, particularly in incident management and leadership (93%), communication and coordination (92–100%), and infection prevention and control (84–100%), indicating strong institutional structures and operational responsiveness. Conversely, RSUD DJS recorded lower scores in key domains such as communication and coordination (58%), surge capacity (40%), business continuity (44%), and psychosocial support (50%), suggesting gaps in human resources, coordination, and continuity planning. Although RSU HRP achieved higher overall readiness, certain components such as community engagement and business continuity still require improvement.

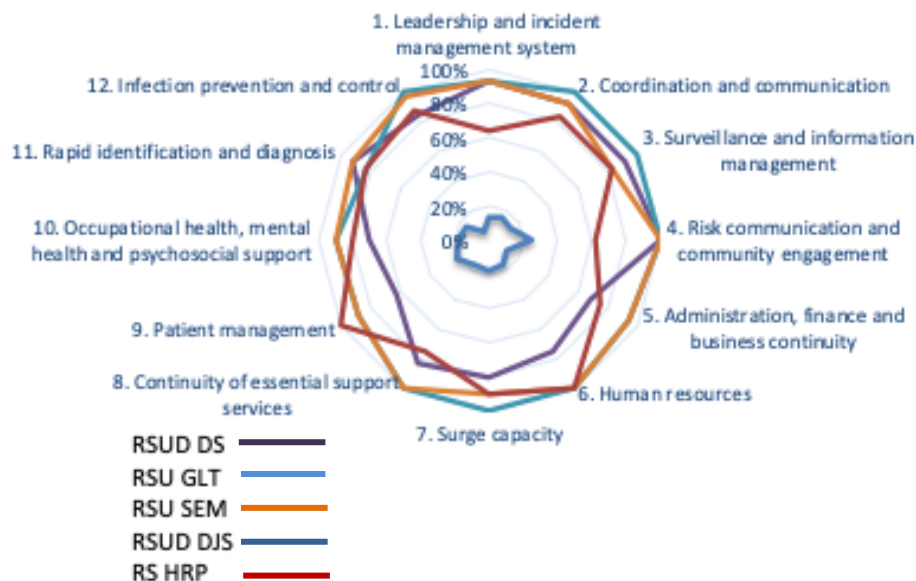


Figure 2 Radar Chart of Hospital Readiness

Figure 2 shows the radar chart compares hospital preparedness across five health facilities RSUD DS, RSU GLT, RSU SEM, RSUD DJS, and RS HRP based on 12 key components. RSU GLT and RS HRP show the highest readiness, particularly in leadership, coordination, infection control, and diagnosis. RSUD DS and RSU SEM display moderate performance with some gaps in surge capacity and service continuity, while RSUD DJS records the lowest scores across most areas. Overall, the chart indicates strong preparedness in some hospitals but highlights the need for capacity strengthening in others, especially in human resources and psychosocial support.

4. DISCUSSION

A safe hospital is a facility whose services remain accessible and function at maximum capacity during the COVID-19 pandemic disaster. The findings of this study reveal significant variation in hospital readiness between Deli Serdang Regency and Pematang Siantar City in responding to the COVID-19 pandemic. Hospitals in Deli Serdang demonstrated high levels of preparedness across most assessment domains, particularly in leadership, coordination, infection prevention, and essential service continuity, with readiness scores ranging from 83% to 96%. These results indicate that Deli Serdang hospitals had effectively implemented the WHO Rapid Hospital Readiness Checklist, suggesting strong institutional governance and proactive planning in emergency response. In contrast, RSUD DJS in Pematang Siantar achieved a moderate readiness level (59.6%), reflecting weaknesses in human resources, surge capacity, and administrative continuity. Limited availability of trained personnel, inadequate coordination among units, and insufficient contingency planning may have contributed to these findings. Meanwhile, RSU HRP achieved high readiness (82%) but still required improvement in areas related to community engagement and communication strategies. The differences observed between hospitals may be attributed to variations in management systems, financial capacity, and prior disaster preparedness experience. This supports previous research emphasizing that effective leadership, structured coordination, and sustained investment in emergency preparedness significantly enhance hospital resilience. Strengthening these components through continuous training, evaluation, and integration of preparedness into routine hospital operations is essential to achieve sustainable readiness. Furthermore, the use of standardized tools, such as the WHO Hospital Readiness Checklist, proved valuable in identifying gaps and facilitating comparative analysis across institutions. Future studies should expand the sample size and incorporate qualitative methods to explore contextual factors influencing hospital preparedness, including policy implementation, staff motivation, and resource allocation. Overall, the findings underscore the critical role of systematic preparedness assessment in guiding health system strengthening and improving hospital resilience against future pandemics or other public health emergencies.

During emergencies and disasters, hospital personnel are often required to undertake duties beyond their usual roles and responsibilities. These additional tasks are typically performed under highly challenging conditions. To effectively meet these new demands, staff members should be actively involved in the development of the hospital's emergency preparedness plan, irrespective of their department, position, or individual responsibilities. Such involvement allows them to clearly distinguish between routine and emergency functions and enhances their capacity to contribute effectively during crisis situations. Furthermore, staff should receive comprehensive training in risk reduction strategies, emergency response procedures, and epidemic contingency plans, as well as participate regularly in simulation exercises to maintain operational readiness for emergency assignments.. [14–16]. Healthcare services place a primary emphasis on ensuring the safety of both patients and healthcare personnel. To uphold this priority, hospitals implement stringent infection prevention and control (IPC) protocols, which encompass universal mask usage, systematic screening procedures, scheduled visitation, restrictions on visitors, and the segregation of services for COVID-19 and non-COVID-19 patients. [13,17,18]. Implementing appropriate measures such as the use of personal protective equipment (PPE) and maintaining adequate water, sanitation, and hygiene (WASH) standards is essential to prevent the transmission of infections among healthcare workers, patients, and visitors. Hospital infection prevention and control (IPC) protocols should be regularly evaluated and updated when necessary. Given the specific challenges posed by the COVID-19 pandemic, supplementary IPC strategies may also be required. Consistent application of these measures enhances a healthcare facility's capacity to effectively manage infection risks in complex pandemic conditions. [10,11,14,15,19–23] During an outbreak, epidemic, or pandemic, hospitals must maintain the delivery of routine healthcare services to address the ongoing needs of non-infected patients while simultaneously implementing and reinforcing additional measures to control infectious diseases. Ensuring service continuity requires effective management of all available resources,

including financial, human, material, and technological assets. The hospital referral system should be regularly assessed and maintained to minimize the risk of infection transmission among both incoming and outgoing patients, including those transported by ambulance. Business continuity planning must be prioritized at the onset of any emergency situation. Healthcare personnel, especially in hospitals, should be adequately prepared to manage patients presenting with sudden onset of moderate to severe respiratory symptoms. To optimize hospital functionality during the COVID-19 pandemic, essential equipment and supplies such as mechanical ventilators and oxygen systems must be readily available, alongside efficient communication and information management systems. [18,24–28]

To ensure comprehensive preparedness for emergencies, including pandemics, epidemics, and outbreaks, hospitals should: (1) integrate preparedness measures into a unified emergency risk management framework; (2) conduct continuous risk assessments considering potential hazards, community vulnerabilities, and health system capacities; (3) implement emergency response plans (ERPs), training programs, and simulation exercises; (4) establish mechanisms for early detection and activation of outbreak sub-plans; (5) engage communities to strengthen response capacity; (6) enhance coordination among governmental bodies, healthcare institutions, media, and community stakeholders; (7) update emergency and epidemic response plans to ensure continuity of essential healthcare services; (8) periodically review and revise emergency management strategies to incorporate lessons learned; and (9) build institutional capacity to manage concurrent internal and external emergencies through an integrated management system. In maintaining healthcare quality during the COVID-19 pandemic, KepMenKes No. HK.02.02/I/4405/2020 (issued on November 27, 2020) outlines guidelines for assessing hospital readiness. This regulation serves as a framework to support hospital preparedness, optimize service delivery, and ensure patient safety. Periodic monitoring and evaluation are conducted by independent assessors either online or offline through document reviews, field data collection, observations, and interviews to ensure sustained operational readiness and quality improvement.

Psychosocial and mental health support for staff, staff's families and patients infected with COVID-19 has also not been implemented. This needs attention because based on the results of a survey by the Association of Indonesian Mental Medicine Specialists (PDSKJI) COVID-19 can disrupt mental health and data was found that 68% could cause depression, 77% psychological trauma and 68% anxiety disorders [29,30]. The providing healthcare services during the COVID-19 pandemic has increased the risk of mental health problems among healthcare workers. Stressors include extreme stress, fear of contracting the disease, feelings of helplessness, and witnessing the deaths of COVID-19 patients alone. These stressors have been linked to an increased risk of suicide among healthcare workers. A survey conducted by researchers from the Faculty of Nursing Universitas Indonesia, in collaboration with the Research Division of the Indonesian Mental Health Nurses Association, revealed that a significant portion of healthcare workers in Indonesia were experiencing symptoms of anxiety and depression during the COVID-19 pandemic. Moreover, some participants reported contemplating suicidal ideation. [29]. In response to the growing concern over the mental health implications of the COVID-19 pandemic, a collaborative initiative was undertaken by various Indonesian government agencies, including the Presidential Staff Office, the Ministry of Communication and Information, the Ministry of Women's and Children's Empowerment, the Ministry of Health, the Task Force for the Acceleration of Handling COVID-19, PT. Telkom, Infomedia, and the Indonesian Psychological Association. This initiative resulted in the launch of a mental health psychology consultation service named "Sejiwa," designed to provide support for individuals experiencing psychological distress related to the pandemic. [30]. As a proactive measure to address the mental health challenges arising from the COVID-19 pandemic, the Indonesian government, via the Ministry of Health, has implemented a comprehensive Guidebook for Mental Health and Psychosocial Support. This resource aims to provide guidance and support to individuals and communities during this challenging time. This guidebook is based on World Health Organization policies and serves as a reference for central and regional governments in implementing measures to prevent, manage, and follow up on mental and psychosocial health issues during the COVID-19 pandemic. [30].

The other research conducted in four Indonesian provinces found that hospitals in Jakarta and Yogyakarta have adequate levels of preparedness for COVID-19, with achievement percentages exceeding 80%. However, the readiness levels of hospitals in West Java and North Sumatra vary, with some hospitals demonstrating adequate

levels, others exhibiting moderate levels, and some being deemed not ready. [31] The assessment results indicate that hospitals in Jakarta and Yogyakarta are generally better prepared for COVID-19 in comparison to those located in West Java and North Sumatra. This advantage is evident across several key areas, including coordination and communication, risk communication and community engagement, administrative and financial management, business continuity planning, human resource management, surge capacity planning, ensuring the continuity of essential support services, and effective patient management. [31]. The research conducted at Haji Abdoel Madjid Hospital (HAMBAMA) in Jambi, Indonesia, revealed a high level of preparedness for the COVID-19 pandemic, with an achievement score of 95.6%. This indicates that HAMBAMA Hospital is well-equipped to handle the challenges posed by the pandemic. The hospital has implemented preparedness measures in accordance with the guidelines established by the World Health Organization. [32]. Responses to this component are intended to increase the hospital's capacity to handle an emergency-related surge in demand for hospital services that may occur suddenly or quickly over time. Demand may increase quickly and steadily because of COVID-19 (i.e. a rising tide as opposed to the big bang of a sudden-onset disaster). The equipment and materials required to provide high-quality medical treatment, particularly for patients with severe COVID-19 cases, are among the important services and products required to manage the hazards posed by COVID-19. In addition, a bigger workload should be expected [1,10,21].

The importance of maintaining business continuity in hospitals during the COVID-19 pandemic, despite the increased focus on emergency preparedness and operational readiness for COVID-19 cases. It highlights the ongoing need for essential medical and surgical services to ensure uninterrupted healthcare delivery. The text suggests that hospitals must carefully consider strategies to sustain their health services, including supply chain management, logistics, and pharmacy services, while simultaneously addressing the demands of COVID-19 case management. [10,14,18,28].

The core elements of patient management within a hospital setting. These components encompass admission or referral protocols, triage procedures, diagnostic evaluation, treatment plans, patient flow and tracking systems, discharge planning, and follow-up measures. Furthermore, it addresses the management of ancillary support services, including pharmacy operations, logistics, and supply chain management. The overarching goal is to ensure that the hospital can effectively and safely handle patients under both normal circumstances and during times of increased demand, such as the COVID-19 pandemic. In the event of a new communicable disease outbreak, hospitals must take necessary measures to accommodate triage and segregate patients based on their suspected, probable, or confirmed status of COVID-19 infection. It is critical and imperative that patients with COVID-19 have appropriate case or clinical care. It could be beneficial to establish a treatment facility for those with severe acute respiratory infections [10,27,33–37]. The critical role of an operational IPC program in mitigating the risk of transmission and ultimately halting the spread of COVID-19 within hospitals. To meet the increasing demand for IPC services and ensure effective waste management and cleaning, hospitals should carefully consider scaling up their staff. [3,10,17,18,20,34,38].

5. CONCLUSION

The assessment revealed that hospitals in Deli Serdang Regency exhibited a high level of readiness in responding to the COVID-19 pandemic, with achievement scores ranging from 83% to 96%, classified as Category A. These hospitals demonstrated strong performance in leadership, coordination, infection prevention, and continuity of essential services. Conversely, RSUD DJS in Pematang Siantar achieved a moderate readiness level (59.6%, Category B), indicating limitations in human resources, surge capacity, communication, and administrative continuity. Meanwhile, RSU HRP attained a high readiness score (82%, Category A), although further improvement is needed in community engagement and financial management. Overall, the findings highlight the importance of strengthening hospital governance, inter-sectoral coordination, and human resource capacity to ensure a more resilient and sustainable hospital preparedness system for future public health emergencies.

Based on the results of this study, several key recommendations are proposed to strengthen hospital preparedness and response capacity. First, hospitals, particularly RSUD DJS, should enhance institutional leadership and coordination mechanisms to improve operational efficiency during health emergencies. Second, continuous training and capacity building for health workers are essential to strengthen surge capacity and ensure adequate human resource mobilization during crisis situations. Third, hospitals should develop comprehensive business continuity and financial management plans to maintain essential services even under resource constraints.

Strengthening communication systems and community engagement strategies is also critical to promote public awareness and trust during pandemics. Furthermore, regular monitoring and evaluation using standardized readiness assessment tools, such as the WHO Hospital Readiness Checklist, should be institutionalized to track progress and identify areas requiring improvement. Finally, collaboration between hospital management, local health authorities, and policymakers is vital to establish an integrated disaster preparedness framework that enhances resilience and responsiveness to future public health emergencies.

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