BMJ Open

Impact of hospital readiness on patient safety incidents during the COVID-19 pandemic in Indonesia: health worker perceptions

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To cite: Dhamanti I, Indriani D, Miftahussurur M, *et al*. Impact of hospital readiness on patient safety incidents during the COVID-19 pandemic in Indonesia: health worker perceptions. *BMJ Open* 2022;**12**:e061702. doi:10.1136/bmjopen-2022-061702

► Prepublication history and additional supplemental material for this paper are available online. To view these files, please visit the journal online (http://dx.doi.org/10.1136/bmjopen-2022-061702).

Received 16 February 2022
Accepted 11 July 2022

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ABSTRACT

Objectives This study examined the impact of hospital readiness on patient safety from the healthcare workers' perspective.

Design The study employed a mixed-methods explanatory sequential design, with the quantitative phase taking precedence. We conducted an online survey of 235 healthcare workers at COVID-19 referral hospitals, followed by an interview with 11 participants from various hospital types.

Setting COVID-19 referral hospitals in Indonesia.

Participants Health workers working at COVID-19 referral hospitals.

Measures Hospital ownership; hospital accreditation status; hospital readiness including incident management system, surge capacity, infection control and prevention, and human resource management; patient safety incident.

Results According to the survey, 66.4% of the participants worked at a hospital owned by the provincial or district government, and 69.4% worked at a hospital which had received an excellent status accreditation. More than 80% of the hospitals scored well in the categories of the incident management system (86%), surge capacity (80.9%), infection control and prevention (97.9%), and human resource management (84.7%). However, only 50.6% of the hospitals scored well in managing patient safety incidents. Hospital ownership, accreditation status and hospital readiness all have an impact on patient safety incidents, which were reported in all types of hospitals by both studies.

Conclusions This study provides significant results for Indonesia in terms of hospital preparedness and patient safety for the COVID-19 pandemic. The accreditation and ownership status of the hospital have aided hospital readiness. Despite the fact that no hospital in the world was prepared for the COVID-19 pandemic, hospital readiness has improved a year later; however, patient safety has not improved. Patient safety incidents occurred regardless of hospital status, with the most common occurrence being delayed treatment. Administrative errors were also recorded in COVID-19 field hospitals that were not accredited. Future research should focus on improving pandemic care quality and implementing initiatives that are applicable to all types of hospitals.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ This was the first mixed-methods study in Indonesia to investigate the impact of hospital readiness on patient safety during the COVID-19 pandemic.
⇒ Due to the nature of the pandemic, we were unable to obtain a sufficient and representative sample size.
⇒ Because the questionnaire was self-reported and we only interviewed a small number of people, self-selection bias may have occurred.
⇒ We had small number of interview participants, each hospital's accreditation status and ownership could not be represented.

INTRODUCTION

COVID-19, caused by the SARS-CoV2 virus, is a highly contagious respiratory disease that spreads easily through contact, droplets and airborne transmission.[1] Given that the primary transmission mode is through droplets, the viral load becomes massive. As a result, the number of cases rapidly increased as COVID-19 spread around the world. In Indonesia, the new virus was first detected in March 2020 and has since spread rapidly.[2] As of 15 December 2021, the Indonesian government reported 4 259 644 confirmed COVID-19 cases, 143 969 deaths and 4 110 811 recovered cases from 510 districts across 34 provinces.[3]

The severity of the disease in those infected has overwhelmed healthcare systems and front-line healthcare providers and depleted resources, revealing how ill equipped the world was to deal with this pandemic. However, a number of regions have successfully mitigated the pandemic, including South Korea, Vietnam, Australia, Hong kong and New Zealand.[4] Although Indonesia has striven to tackle the pandemic, its authorities' slow initial response to the pandemic caused avoidable delays in COVID-19 control and prevention efforts, a situation that was

exacerbated by the lack of government enforcement of mobility restrictions, with most restrictions being implemented with the use of confusing jargon.

The Indonesian government designated 835 hospitals as referral centres for COVID-19 treatment, including the Ministry of Health's national referral hospitals and the governor's 703 provincial/regency/city referral hospitals.[5] Given that hospitals need to be ready to respond to emergencies, its design must account for disaster readiness and disaster preparedness must be incorporated into the hospital's service system. Hospitals need to establish a disaster-related information network, conduct simulations and monitor the effects of disasters on patients served by the hospital.[6]

The current crisis has impacted all elements of the healthcare system. Healthcare workers are tired, afraid, and anxious and lack the necessary psychological support and medical equipment, particularly personal protective equipment (PPE), to manage such patients.[7] This situation negatively affects decision making, accuracy, vigilance and information exchange, which has the potential to result in negative patient safety outcomes.[8] According to recent data from hospitals worldwide, 1 of every 10 hospitalised patients received insufficient care, resulting in potential adverse events. Each year, 134 million adverse events occur in low-income and middle-income countries as a result of unsafe treatment and are responsible for more than 2.6 million deaths, with 80% of adverse events being avoidable. Diagnostic delays, prescription errors and drug-use errors all contribute to the occurrence of these adverse events.[9]

In contrast, reports on patient safety incidents have shown a decreasing incidence of such events during the pandemic. The UK National Pharmacy Association reported a 14% decrease in the incidence of medication errors in the first quarter of 2020 compared with the same quarter the previous year. This decrease in the incidence could be attributed to healthcare workers' inability to submit reports due to the surge in capacity/overload, changes in error perception as a result of the pandemic situation or the result of workflow changes. A decrease in patient safety also indicates a loss of opportunity to generate learning for anticipating similar incidents in the midst of this uncertain pandemic situation.[10]

Even before the pandemic, healthcare providers in Indonesia had challenges implementing patient safety initiatives. The healthcare system is fragmented since the Ministry of Health operated most tertiary hospitals and a few specialised hospitals, while the regional and district governments ran public hospitals. District health offices (DHOs) oversaw both the public and private sectors.[11] A study identified numerous macrolevel, mesolevel and microlevel issues regarding patient safety and patient safety incident reporting, including inadequate government monitoring and assessment, DHOs and the provincial health office not being involved in incident reporting, a lack of government funding for hospitals, a lack of commitment and priority for patient safety, and a lack of systematic partnership and collaboration between patient safety agencies and DHOs or the provincial health office.[12] Despite identical ownership and accreditation status, the authors discovered disparities in implementation of patient safety projects and activities.

The quality and safety of hospital drug prescriptions is also a major concern. A study in Indonesia discovered 1563 medication errors among the 7662 prescriptions reviewed, representing an error rate of 20.4%.[13] Information on the impact of hospital readiness for patient safety during the pandemic is still limited, emphasising the need to investigate these factors. Healthcare facilities across Indonesia should prepare to implement measures for an efficient hospital-wide approach to managing the impending surge in COVID-19 hospitalised patients.

METHODS

Research design

To examine the impact of hospital readiness on patient safety from the perspective of healthcare workers, we employed a mixed-methods explanatory sequential design for this study. We chose this design because it is relevant for this research topic and provides comprehensive findings that elicit needed interventions. The quantitative phase was the dominant phase, while the interview supplemented the quantitative findings.[14] The study population consisted of 940 COVID-19 referral hospitals' health workers. The primary study included an online survey of 235 healthcare workers, followed by a qualitative phase in which 11 healthcare workers were interviewed to learn about their perceptions of hospital readiness and its impact on patient safety.

Sampling and data collection

Quantitative phase

This research was conducted between November and December 2020, using the WHO Hospital Readiness Checklist for COVID-19.[15] The survey was developed based on previous research[16 17] (a full copy of the survey can be found in online supplemental file 1). We used an online survey approach because it was the most appropriate method given the pandemic. The survey was distributed online via social media platforms such as Facebook, Instagram and WhatsApp and was also distributed to a number of hospital administrators and later disseminated via a WhatsApp group. The survey was completed by 235 healthcare workers.

Qualitative phase

In the first section of the questionnaire, we asked participants if they were 'willing to participate in the follow-up interview.' They were asked to provide their email address if they agreed to participate. We used that information to invite 23 participants selected at random (10% of the total number of survey participants) to a follow-up interview. The invitations were distributed via email and WhatsApp messages. Thirteen people responded to the

invitation; eight interviews were conducted via the Zoom application, one over the phone per the participant's preference, two participants sent written responses and two people did not attend the Zoom meeting. The interviews lasted 15–45 min and were audiorecorded, transcribed and coded for the data analysis. We anonymised all personal and hospital information and assigned initials to the interviewed participants.

Instruments

Quantitative phase

The questionnaire included 45 questions divided into 3 categories: hospital details, hospital readiness (incident management system, surge capacity, infection prevention, and human resources management) and patient safety incidents. The options for each question in the 'hospital readiness' and 'patient safety incidents' categories were 'yes' (3 points), 'no' (2 points) and 'don't know' (1 point). We did not collect the participants' demographic information because we focused on hospital details.

The questionnaire was tested on a small group of healthcare workers in a hospital in Surabaya. The instrument passed the validity and reliability tests using Cronbach's alpha and had good internal consistency, with a Cronbach's alpha of 0.929–0.933. The participation in the survey was deemed to be implied consent.

Qualitative phase

During the qualitative phase, the participants were asked to respond to four questions regarding hospital readiness, patient safety incidents and recommendations for improving the hospital's current situation. The interview questions are included in online supplemental file 2. We used semistructured questions because they allowed the interviewer to ask for additional explanation or clarification, as well as to explore and discuss various topics identified by the participants. All interview participants provided written consent.

Data analysis and synthesis

Quantitative phase

We used IBM SPSS AMOS for the statistical analysis and presented the hospital variables using descriptive statistics. We calculated the total scores for all questions and classified each variable as poor, average, or good to determine the level of hospital readiness and confirmatory factor analysis (CFA) was used to calculate the final score. The stages of the data analysis were (1) a CFA to form a latent variable (hospital readiness) (figure 1) given that hospital readiness consists of four variables (incident management system, surge capacity, infection prevention and control, and human resources) and (2) we used a path analysis to test the hypothesis whether hospital ownership and accreditation affect hospital readiness for COVID-19 and patient safety incidents. A path analysis is a type of structural equation modelling that measures the relationship between observed measurements or indicators and latent variables or factors.[18] Last stage was to test whether the equation modelling considered appropriate for this study.

Qualitative phase

The interviews were transcribed, coded and categorised using NVivo V.12, a software application that aids researchers in searching for patterns in codes and identifies and visualises the links between codes across a variety of data sets.[19] We used a thematic analysis approach that included familiarisation with the data, generation of initial codes, identification of themes, definition and naming of themes, and writing the data analysis section of the manuscript.[20]

The discussion included integrating and interpreting both phases in determining whether the findings were similar and consistent, whether the data broadened the understanding, and whether the results were inconsistent.[21]

	Coefficient	Standard Error	t-value	p-value
Incident Management System	1.000			
Surge Capacity	0.371	0.182	2.038	0.042
Infection Prevention and Control	0.531	0.103	5.002	***
Human Resources	1.274	0.251	5.081	***

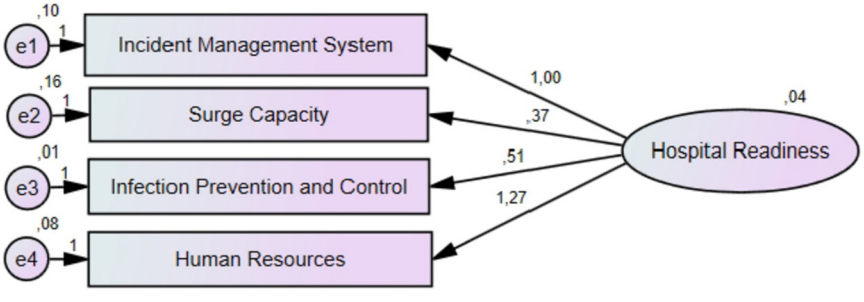

Figure 1 Standardised coefficient of hospital readiness. ***P<0.001.

Standardised reporting guidelines

We used the Good Reporting of a Mixed Methods Study[22] to report the quality of mixed-methods study for health services research.

Patient and public involvement

This study did not include patients as participant.

RESULTS

Quantitative phase

We calculated descriptive statistics for each item based on the questionnaires. Table 1 shows the distribution of the participants based on hospital ownership, accreditation status and COVID-19-related services.

Approximately 66.4% of the participants worked in provincial or district government-owned hospitals, 69.4% worked in hospitals with excellent accreditation status and 69% worked in medium-sized hospitals with 100–200 beds. In addition, 54% of the hospitals had more than 10 ICU beds set aside for COVID-19 patients. Most of the participants (88.1%) are currently or have previously worked in COVID-19-related units. The number of COVID-19 patients treated ranged from fewer than 5 to more than 10.

The hospital's readiness was assessed using four criteria: incident management system, surge capacity, infection control and prevention, and human resource management. More than 80% of the hospitals scored well in the categories of the incident management system (86%), surge capacity (80.9%), infection control and prevention (97.9%), and human resource management (84.7%). However, only 50.6% of the hospitals scored well in terms of patient safety incidents.

Concerning the CFA results, hospital readiness for COVID-19 has been deemed a latent variable formed by observed variables (patient safety incidents, human resources, infection prevention, surge capacity and management system). The results of testing the empirical model's null hypothesis in the population were the same as the estimation model (figure 1); the result was a $p<0.095$, or to accept the null hypothesis, which means that the empirical model stated that the observed variable as estimated compiled the patient's hospital readiness safety (figure 1). The value of the loading factor coefficient will result in a linear combination of hospital readiness and its constituent variables. Figures 2 and 3 show the results of the path analysis of the factors influencing patient safety. A linear combination of hospital readiness and its constituent variables resulted in hospital readiness (figure 1). Model 2 was a better-fitting model with a pattern of relationships between the variables of influence (figure 3). Patient safety incidents are directly affected by hospital ownership, accreditation status and hospital readiness ($p=0.05$). With the fitness shown in table 2, model 2 was better suited than model 1. When viewed through the cut-off value for the model fit, all

Table 1 Hospital details, hospital readiness and patient safety incident

Variables	n (%)
Hospital details	
Hospital ownership	
Government (provincial or district)	156 (66.4)
Private	50 (21.3)
University	12 (5.1)
Social/religion-based organisation	1 (0.4)
Military managed	11 (4.7)
Ministry of Health	1 (0.4)
Others	4 (1.7)
Total	235 (100)
Hospital accreditation status	
Not yet accredited	9 (3.8)
Prime (Perdana)	25(10.6)
Basic (Dasar)	6 (2.6)
Middle (Madya)	18 (7.7)
Prime (Utama)	14 (6.0)
Excellent (Paripurna)	163 (69.4)
Total	235 (100)
Hospital bed	
Less than 100	28 (11.9)
100–200	143 (60.9)
More than 200	63 (26.8)
Hospital ICU bed allocated for COVID-19 patients	
Less than 10	108 (46.0)
More than 10	127 (54.0)
Working in COVID-19-related unit	
Yes	207 (88.1)
No	17 (7.2)
Average no of COVID-19 patients treated in a day	
Less than 5 people	59 (25.1)
5–10 people	71 (30.2)
More than 10 people	89 (37.9)
Missing	16 (6.8)
Hospital readiness	
Incident management system	
Poor	5 (2.1)
Average	28 (11.9)
Good	202 (86)
Surge capacity	
Poor	4 (1.7)
Average	41 (17.4)
Good	190 (80.9)
Infection control and prevention	
Poor	5 (2.1)
Good	230 (97.9)

Continued

Table 1 Continued

Variables	n (%)
Human resources management	
Poor	5 (2.1)
Average	31 (13.2)
Good	199 (84.7)
Patient safety incident	
Poor	12 (5.1)
Average	119 (50.6)
Good	104 (44.3)

ICU, Intensive Care Unit.

indicators in table 2 showed that model 2 was more fit than model 1.

Qualitative phase

The qualitative phase intended to explore the impact of hospital ownership and accreditation status, hospital readiness and patient safety. Of the 11 interviewed participants, 7 (64%) worked at hospitals with excellent accreditation status, 2 (18%) worked at COVID-19 temporary hospitals that had not yet been accredited, 1 (9%) worked at a first-time accredited hospital, and one (9%) worked at a hospital with prime-accreditation status. Online supplemental file 3 contains information about the participants. We further examined the results in the qualitative analysis because the CFA confirmed the significant impact of hospital ownership, accreditation status and hospital readiness on patient safety.

Hospital readiness

An incident management system is a healthcare facility's ability to operate during an emergency event by activating a comprehensive set of protocols to resume normal operations.[23] This system was critical at the start of the pandemic, given that hospitals experienced a shortage of healthcare personnel. The majority of participants stated that their hospitals had reconciled the hospital service flow, improved their infrastructure, performed screening in the emergency department, created zoning areas and cohorted COVID-19 patients. Each hospital had a unique approach for managing human resources during the pandemic. For example, the district government hospital, which received accreditation for the first time indicated that the hospital employed medical, nursing and midwifery apprentices to manage the surge. Other hospitals recruited volunteers from the Nusantara Sehat Team-based Deployment Programme, a programme by the Ministry of Health. Healthcare personnel in temporary COVID-19 hospitals in Jakarta and Surabaya were hired by the Ministry of Health or dispatched by organisations such as state-owned enterprises and the Indonesian police.

Typically, the healthcare workers treated either COVID-19 patients or non-COVID-19 patients. In a number of hospitals, however, the healthcare workers treated all types of patients, and therefore, had specific schedules. In terms of training, most of the hospitals either provided adequate pandemic preparedness training or sent DHO healthcare worker training to major cities throughout the regions for training. The training lasted anywhere from 3 days to 2 weeks. Participants in only one privately owned, prime-accreditation hospital reported that no training was provided to healthcare workers during the pandemic; however, the hospital established standard operating procedures and expected the healthcare workers to learn and understand these procedures.

Most of the hospitals have an effective infection prevention and control programme; however, the availability and quality of PPE has become a major issue in certain hospitals, particularly in the early stages of the pandemic. For the district government hospital that received accreditation for the first time reported using three-layer fabric masks and raincoats as a substitute for PPE. The hospitals with an excellent status have used various techniques

			Coefficient	Standard Error	t-value	p-value
Hospital Readiness	←	Ownership	−0.057	0.039	−1,474	0.141
Hospital Readiness	←	Accreditation Status	−0.050	0.040	−1,239	0.215
Patient Safety Incidents	←	Hospital Readiness	0.136	0.050	2,738	0.006

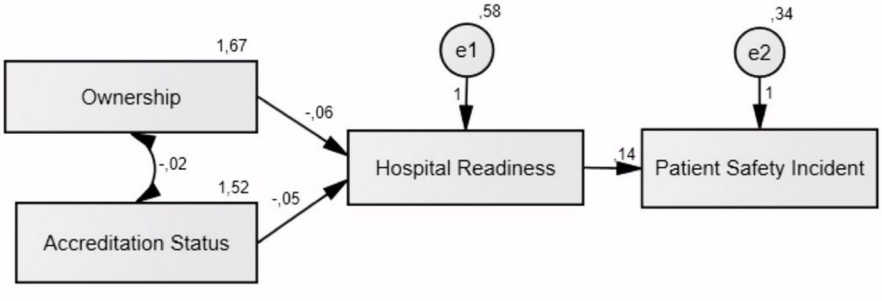

Figure 2 Standardised coefficient of patient safety in path analysis model (1).

			Coefficient	Standard Error	t-value	p-value
Hospital Readiness	←	Ownership	−0.057	0.039	−1,474	0.141
Hospital Readiness	←	Accreditation Status	−0.050	0.040	−1,239	0.215
Patient Safety Incidents	←	Hospital Readiness	0.132	0.048	2,749	0.006
Patient Safety Incidents	←	Accreditation Status	−0.104	0.030	−3.482	***
Patient Safety Incidents	←	Ownership	0.063	0.029	2.202	0.028

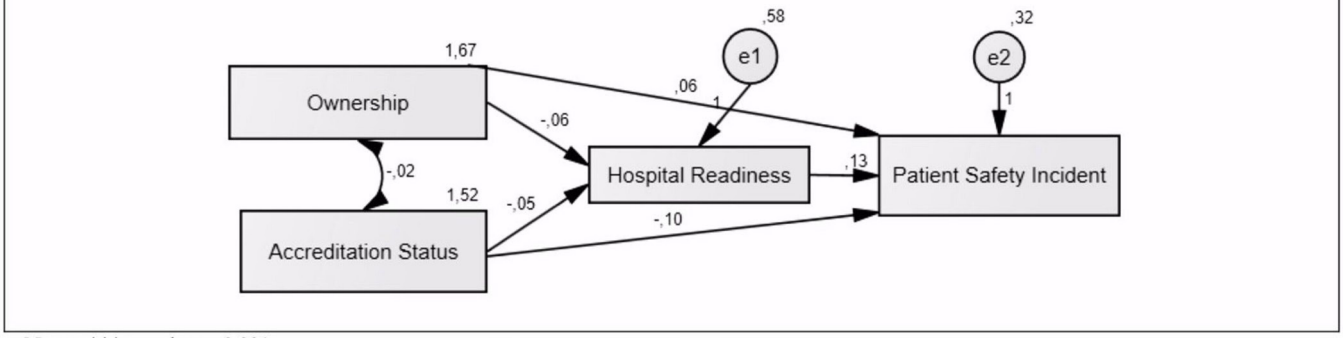

Figure 3 Standardised coefficient of patient safety in the path analysis model (2). ***P<0.001.

to increase PPE utilisation. For example, a shift might be divided into two periods, with healthcare workers required to wear full PPE during only one of those periods. In another hospital, healthcare workers wore PPE only when visiting patients in isolation rooms. The workers spent most of their time at the nurse station, where they monitored the patients' condition via close-circuit television.

Surge management techniques have been implemented in a number of hospitals. The key activities included the addition of facilities such as isolation rooms, COVID-19 emergency rooms, COVID-19 intensive care unit (ICUs) and ventilators. The hospitals use a variety of methods, including recruitment of new healthcare personnel, volunteers, new graduates and staff on loan from other hospitals.

Table 2 Goodness of fit index model

Goodness of fit index	Value (Model 1)	Value (Model 2)	Cut-off value[39]
$\chi 2$	16.720	0.000	Less than chi-square critical value (chi-square table) ≤5.991
P value	0.000	1.000	≥0.05
RMSEA	0.177	0.125	≤0.08
GFI	0.967	1.000	≥0.90
AGFI	0.833	NA	≥0.90
$\chi 2$/df	8.360	NA	≥2.00
AIC	32.720	20.000	The lowest is better
BIC	60.396	54.596	The lowest is better

AGFI, Adjusted Goodness of Fit Index; AIC, Akaike's information criterion; BIC, Bayesian information criterion; GFI, Goodness of Fit Index; NA, not available; RMSEA, root mean square error.

Patient safety incidents

The participants were asked to categorise the most commonly observed events during the pandemic and to explain the various types of incidents, including administrative errors, delayed referrals, delayed treatment, medication errors, misdiagnoses and incorrect identification. Delayed treatment was more easily identified than other incidents. The participants indicated that numerous administrative errors had been made by field hospitals and temporary hospitals and several hospitals had delayed treatment. The participants' comments are listed in the code book (see online supplemental file 4).

DISCUSSION

The study's findings provide important insights into the significant impact of hospital ownership, accreditation status and hospital readiness on patient safety incidents.

Previous research has found that hospital ownership has a direct impact on the ability to focus on strategic goals such as major hospital improvements, financial expenditures and management decisions such as the proper use of human resources and the conduct of clinical and non-clinical processes,[24] which are relevant in the context of the COVID-19 pandemic.

This ownership has frequently affected the availability of funding and other services, with different hospital owners reacting differently to internal and external forces. One of the surveyed hospitals was part of a private hospital network that operates nearly 40 hospitals in Indonesia. The hospital had a better-prepared and well-managed incident management system, which included infection control and prevention, as well as human resource management during the pandemic. The policy of allowing hospitals to borrow healthcare workers from other hospitals in the network was extremely beneficial because healthcare worker skills were standardised.

Another example was the military-run temporary hospital, where volunteers from the Nusantara Sehat Team-based Deployment Programme have been deployed. Their concerns included the need for standardised training for all healthcare workers. A study conducted in the first month of the pandemic discovered a lack of COVID-19-related training for healthcare workers in Indonesia.[25]

Through the Board for Development and Empowerment of Human Resources in Health, the Ministry of Health subsequently held several virtual training sessions for volunteers to be deployed in COVID-19 temporary hospitals across Indonesia.[26] The DOH at the regional and district level also provided healthcare workers in the regions with the necessary training, but this support was limited to primary healthcare centres, leaving many hospitals to provide training for healthcare workers and other staff on their own.[27] However, there were differences in the training. For example, one participant from a privately owned, prime-accreditation hospital reported that no training was provided at all in the hospital, whereas training of varying duration was provided at other types of hospitals.

Regardless of accreditation or hospital ownership, the government should encourage the implementation of formal healthcare staff training. Unfortunately, the Ministry of Health has not developed standardised training for healthcare workers, nor has it provided access to and support for standard training for all healthcare workers in Indonesian hospitals. This is a critical issue because Indonesia is an archipelago nation, and access to training is problematic because a number of hospitals are in rural or remote areas. In contrast, the Australian Ministry of Health had implemented a web-based structured healthcare worker infection management training programme for healthcare workers in all settings since the early stages of the pandemic.[28] Establishing accelerated training pathways, defining high-impact clinical approaches for rapid training, and implementing a web-based platform are critical support steps for healthcare workers to provide efficient and safe treatment with maximum worker protection.[29]

During the early stages of the pandemic, Indonesia faced a shortage of PPE. Appropriate PPE for specific risk areas was required for healthcare personnel. Due to incompatibility issues, however, staff are sometimes forced to wear inappropriate PPE. As a result, the hospital has received a large number of donations for the production of PPE, such as masks, hazmat suits, gloves and face shields from community movements involving domestic workers, disabled communities, students and villagers.[30–32] Many home industries have developed PPE and donated it as a gift or sold it on the market to address the PPE shortage. However, these well-intentioned acts have resulted in product standardisation issues because some PPE does not meet the WHO's mandatory standard and yet were provided directly to healthcare personnel. There was no central or regional quality management system in place at the time to regulate the quality of PPE. As a result, the comfort of the PPE was questionable, as was the effectiveness of the PPE in preventing the spread of disease. Another problem was the delay in decision making by task force teams, which resulted in delayed PPE supply. The healthcare workers reported that non-governmental organisations and healthcare volunteer associations responded more quickly to provide PPE. These organisations have a better communication system and are more experienced in dealing with a wide range of critical issues during the COVID-19 outbreak.[33]

Patient safety incidents have been reported in all hospitals, regardless of accreditation and ownership. There has been an ongoing debate as to whether hospital accreditation and ownership status affects the standard of care, owing to disparities in the results of previous studies.[34–36] However, this study discovered that cases of administrative error were more prevalent in field and temporary non-accredited military hospitals. Administrative errors are defined as failures to take the intended action as part of the systems and processes involved in delivering care, including errors related to records, tests, patient identification, incorrect patient discharge information and inadequate patient follow-up after diagnostic tests.[37] These types of errors are easily prevented by implementing standard operating procedures.

Temporary hospitals were the solution to the shortage of hospital beds, thanks to their lower cost and easier construction and management[38] and have significantly improved the diagnosis, hospitalisation, isolation and treatment of COVID-19 patients.[25] Protocols and procedures need to be developed quickly within the temporary hospitals as soon as they are operational. Healthcare workers and auxiliary personnel need to be trained in infection control to ensure safe, high-quality and efficient service.[25] This study, however, revealed a lack of policies and protocols for facilitating the transfer of patients from one bed to another during their hospital stay. The study also revealed mistakes in interpreting the results of swabs, resulting in patients with negative swabs being admitted to isolation rooms, indicating a lack of processing and organisation. In response to this pandemic, Indonesian hospitals, regardless of their accreditation and ownership status, have implemented numerous changes and strengthened their incident management systems; however, their readiness is still uneven.

The study has a number of limitations. We were unable to obtain a sufficient and representative sample size due to the pandemic condition. Despite the fact that the study's focus was on hospital accreditation and ownership, we were unable to interview every participant for each hospital accreditation status and ownership throughout data collection, especially during the qualitative phase. Furthermore, we had a small number of interview participants, which could have resulted in self-selection bias because the individuals' viewpoints could not be presumed to reflect those of their particular organisations. Because other potential participants may have had

more familiarity with the issues, the interviewees chosen to represent their organisations may have been biased.

CONCLUSION

For the COVID-19 pandemic, this study provides significant results for Indonesia regarding hospital preparedness and patient safety. The hospital accreditation and ownership status have helped hospital readiness. Although no hospital in the world was prepared for the COVID-19 pandemic, hospital readiness has improved a year later; however, patient safety has not. Patient safety incidents occurred regardless of hospital status, with delayed treatment being the most common occurrence. Administrative errors were also recorded in non-accredited COVID-19 field hospitals. Future research should concentrate on improving the quality of care during the pandemic and implementing initiatives that are applicable to all types of hospitals. Policy-makers should prioritise the operationalisation of temporary field hospitals focusing on patient safety; otherwise, patient safety incidents will continue to occur.

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Funding This study was funded by Universitas Airlangga.

Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not applicable.

Ethics approval This study involves human participants and was approved by the Ethical Approval Committee of the Faculty of Nursing, Universitas Airlangga with the ID number 2124-KEPK. Participants gave informed consent to participate in the study before taking part.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data are available on reasonable request. All data relevant to the study are included in the article or uploaded as online supplemental information.

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