

Original Research

MANAGING HUMAN RESOURCES FOR SURGE CAPACITY IN REFERRAL HOSPITALS BASED ON WHO HOSPITAL READINESS CHECKLIST FOR COVID-19

Fitri Dinia¹, Mochamat Helmi², Laksono Trisnantoro¹¹Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada, Indonesia²Faculty of Medicine, Universitas Tarumanegara, Indonesia

ABSTRACT

One of the components of effective disaster response management to deal with surge capacity in referral hospitals in West Kalimantan, Indonesia, was to ensure the adequacy of the number of human resources (health workers). This study was conducted to evaluate three referral hospitals and identify the role of the West Kalimantan Provincial Health Office in managing human resources for health workers facing surge capacity due to the Covid-19 pandemic. This study used Rapid Assessment Procedures with qualitative and quantitative methods. Data were collected through observation and interview by using instruments adopted from the Checklist of WHO Hospital Readiness for Covid-19. Based on the checklist, 51.1% of referral hospitals had implemented HR management regarding staff availability. However, the readiness of referral hospitals in West Kalimantan to face surge capacity had not been optimal in several key components, such as staff availability, staff mobilization and recruitment, division of staff duties, and hospital staff welfare during the Covid-19 pandemic. The role of the Provincial Health Office had not been optimal in managing HR at referral hospitals. The Provincial Health Office only played an active role at the beginning of the Covid-19 pandemic, especially for the provision of volunteers. Meanwhile, in the second year of the Covid-19 pandemic, the role of the Provincial Health Office had decreased, especially in the staff availability and training at the referral hospitals. Therefore, the role of the West Kalimantan Provincial Health Office in HR management at the referral hospitals was highly not dominant (17.78%). The central government should regulate the authority of the Provincial Health Office as the leading sector in all types of referral hospitals to integrate all potencies and human resources of local governments to maximize HR management in referral hospitals to face surge capacity due to the increased cases of Covid-19.

Keywords: Covid-19; surge capacity; health policy; health system; public health; virus

Correspondence: Fitri Dinia, Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia. Email: byan.adzra15@mail.ugm.ac.id

How to cite: Dinia, F., Trisnantoro, L., & Helmi, M. (2022). Managing Human Resources for Surge Capacity in Referral Hospitals Based on WHO Hospital Readiness Checklist for Covid-19. *Folia Medica Indonesiana*, 58(2), 141–149. <https://doi.org/10.20473/fmi.v58i2.32579>

pISSN:2355-8393 • eISSN: 2599-056x • doi: 10.20473/fmi.v58i2.32579 • Fol Med Indones. 2022;58:141-149
 • Submitted 22 Nov 2021 • Revised 2 Jan 2022 • Accepted 21 Apr 2022 • Published 5 Jun 2022
 • Open access under CC-BY-NC-SA license • Available at <https://e-journal.unair.ac.id/FMI/>

H i i j n i j t u

1. Managing human resources for surge capacity in three referral hospital at West Kalimantan was evaluated.
2. Availability, mobilization and recruitment, duties division, and hospital staff welfare are the reasons for referral hospitals in West Kalimantan are not optimal to face surge capacity during the Covid-19 pandemic.
3. Provincial Health Office role had not been optimal in the HR management at referral hospitals during the Covid-19 pandemic.

INTRODUCTION

In December 2019, a new cluster of pneumonia outbreaks was found caused by strains of a newly identified β - coronavirus in Wuhan, China (Adhikari et al. 2020, Alhazzani et al. 2020). The Covid-19 pandemic is included in the biological disaster category because the concept of handling this pandemic is the

same as disaster management (World Health Organization 2020). Effective disaster management can be implemented by improving the intensity of coordination and communication, eliminating ego-sectoral attitudes, and involving competent human resources (Ariyanto 2018, Firmansyah et al. 2020). The

government has made an effort to reduce the rate of the further spread of Covid-19 infection by issuing several guidelines, policies, and regulations to suppress the spread of infection and reduce mortality and morbidity due to Covid-19. The Health Office of the Province of West Kalimantan, Indonesia, to implement the regulation of the Ministry of Health, has set as many as fifteen hospitals as referral hospitals in West Kalimantan to provide Covid-19 services.

The increase in new infection, death, and recovered cases related to Covid-19 is sufficiently essential for local governments and health service providers, including policymakers in the health sector, to develop mitigation strategies in preparing for a possible surge in the number of Covid-19 patients (Kucharski et al. 2020). One of the components for effective disaster response in dealing with surge capacity in the health sector and medical services is to ensure the adequacy of the number of human resources for health workers, proper conditions, and meet the appropriate qualifications (Aziz et al. 2020, Rodriguez-Llanes et al. 2020, Al Mutair et al. 2020, Melnychenko 2020).

In the case of Covid-19 in West Kalimantan, human resources (abbreviated as HR) for health workers were certainly limited when many medical staffs and health workers were infected with the virus, so the need for human resources for health workers was greater. As of October 30, 2020, the West Kalimantan Provincial Health Office reported that as many as 440 health workers in West Kalimantan were exposed to the virus due to fatigue and the large number of patients who had to be treated. This condition has caused the temporary closing of the referral hospitals and the recruitment of volunteers to cover the shortage of human resources.

Effective and efficient health management still becomes a challenge at the local government level, especially at the Health Office. Generally, the West Kalimantan Provincial Health Office plays a significant role in implementing regulations for health sector programs/ activities at the regional level. To support the HR of health workers in overcoming limitations and achieving these targets, the Health Office can provide health programs for staff training and planning along with their main task and function in terms of coping with the pandemic (Djalante et al. 2020).

The experience of Covid-19 pandemic management in 3 countries, i.e., Austria, Italy, and Romania, revealed that weaknesses were found at the level of a human resource management system of health workers in hospitals. No other area has revealed the need for a

European and trans-sectoral governance approach to the policy, management, and HR planning of health workers for migrant situations in getting long-term care due to Covid-19 (Kuhlman et al. 2020). Covid-19 makes the HR management of health workers in hospitals have a highly vital role because it requires considerable human resources care for Covid-19 patients (Chersich et al. 2020).

We noticed that there was a necessity to evaluate and solve problems in the readiness and management of health workers at the West Kalimantan referral hospital through Provincial Health Office policy in facing surge capacity due to Covid-19. Until now, there has been no policy prepared by the West Kalimantan Provincial Health Office to support the readiness to manage human resources for health workers to face potential surge capacity.

Rationale

The Indonesian government has tried to reduce the rate of further spread of Covid-19 infection by issuing several guidelines, policies, and regulations to suppress the spread of infection and reduce mortality and morbidity due to Covid-19. West Kalimantan had a risk category for increasing Covid-19 cases from day to day and had entered the red zone category (especially Pontianak city). In this regard, the Ministry of Health of the Republic of Indonesia has designated 132 hospitals spread throughout Indonesia as referral hospitals for the control of certain emerging infectious diseases, spread across 34 provinces.

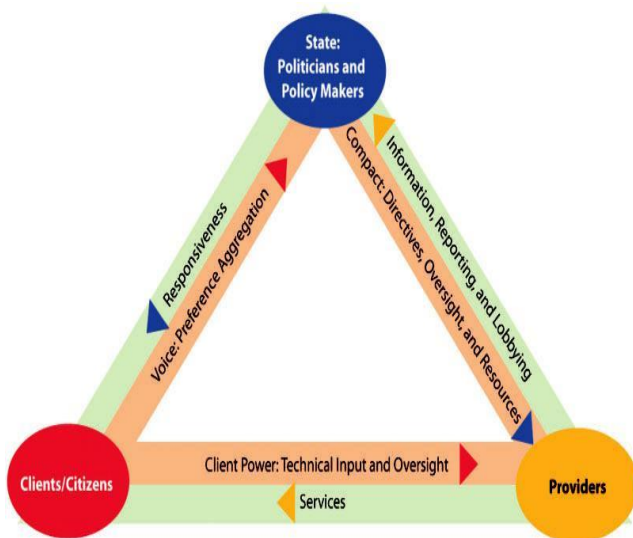
The selection of referral hospitals that the Governor of West Kalimantan had determined was considered to have the capacity and ability to provide care for patients with certain emerging infectious diseases, such as the availability of human resources for health workers for special pulmonary health services with pulmonary disease specialists, internal medicine specialists, and surgeons, as well as appointed visiting doctors for pulmonary services at the hospital. Along with the increasing number of cases, whether it was a new infection, deaths, or recovered cases, some speculations required estimation of when and how many cases would be the turning point of the Covid-19 pandemic in Indonesia (Kucharski et al. 2020, Zulisda 2020). This prediction was important for local government and health service providers, including policymakers in the health sector (especially the West Kalimantan Provincial Health Office), to develop mitigation strategies in preparing for the possible surge in the number of Covid-19 patients in the region (Kucharski et al. 2020).

The West Kalimantan Provincial Health Office appealed to all referral hospitals to be able to handle the surge in patients properly, especially related to the existence of unusual or highly specialized medical service technicalities. This was relevant to the Covid-19 pandemic situation caused by a new Coronavirus strain, which required complex clinical treatment. Another problem was that West Kalimantan has a fairly large area, and the uneven distribution of health workers (only focused on the Pontianak City area) caused fears of a surge in Covid-19 patients in the area outside Pontianak.

Human resource management for health workers is increasingly being recognized as an important factor in the performance of the health system. However, conceptually and practically, it is still poorly understood and often unclear and competing with each other about what its role is and how to overcome its weaknesses (Brinkerhoff & Bossert 2013). In the health sector, HR management of health workers is largely treated more or less explicitly as a set of tasks or functions that are assumed to be carried out by or under the direction of the Ministry of Health (Brinkerhoff & Bossert 2013).

of the Ministry of Health by labeling one of the blocks as 'leadership and governance' (Brinkerhoff & Bossert 2013). The three actors in governance shown in Figure 1 include States, Healthcare Providers, and Clients (citizens) based on the World Bank's work on service delivery and accountability.

The conceptualization of the tasks/functions of HR management for health workers is not sufficient to discuss the number of HR actors in the health system, the distribution of roles and responsibilities among HR health workers, as well as the ability and willingness of health workers to fulfill their roles and responsibilities (Brinkerhoff & Bossert 2013). Good management of human resources for health workers is defined as a system of values, policies, and institutions where the community manages economic, political, and social issues through the government, private and civil sectors (Manafi et al. 2019). Human resource governance for health workers is the most important component of good governance for human resources for health workers because the governance of the health system is committed to protecting and improving human health (Pyone et al. 2020).



Source: World Bank (2004, 2007), Brinkerhoff & Bossert (2013)

Figure 1. The theory of human resource management for health workers of the world bank

The building block model of the World Health Organization (WHO) health system embodies the role

MATERIALS AND METHODS

Design of the study

This study used the Rapid Assessment Procedures (RAP) design developed by Scrimshaw and Hurtado (Scrimshaw & Hurtado 1998). RAP is a qualitative research method as a combination of data collection techniques. This study was conducted from November 2020 to May 2021. Data were obtained from the formal and informal (casual) methods, such as interviews and a checklist adapted from WHO. The subjects in this study were three directors of referral hospitals in West Kalimantan Province, Indonesia, and three policy stakeholders in West Kalimantan Provincial Health Office, which were determined based on the purposive sampling technique. Data analysis was carried out by narratively presenting data from the results of the checklist distribution and the results of interviews. This study was conducted with the approval of the Research Ethics Commission of the Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada under decree Number KE/FK/0084/EC/2021, and the informed consent approved by the informants/research subjects had also been submitted.

Table 1. List of research subjects

No.	Names of hospital	Research subject	Amount	WHO checklist	Deep interview
1.	West Kalimantan Provincial Health Office	Head of Health Office (Stakeholder)	1	√	√
		Head of Health Services (Stakeholder)	1	√	√
		Head of Referral Health Services and Health Crisis (Stakeholder)	1	√	√
2.	Dr. Soedarso Hospital	Director	1	√	√
3.	Sultan Syarif Moh Alkadrie Hospital	Director	1	√	√
4.	Tanjungpura University Hospital	Director	1	√	√

Table 2. Hospital characteristics based on HR data for health workers and availability of beds for covid-19 patients

Names of hospital	Type	Number of health workers	Availability of ICU beds for Covid-19 + suspect patients	Number of ICU beds filled with Covid-19 positive patients + suspect	ICU drill (%)	Availability of ICU beds for Covid-19 + suspect patients	Number of ICU beds filled with positive Covid-19	Number of bedrooms filled with suspect	Insulation drill (%)
Dr. Soedarso Hospital	A	448 people	12	10	83.33	85	59	8	78.82
Sultan Syarif Moh Alkadrie Hospital	B	314 people	2	1	50	20	9	2	55
Tanjungpura University Hospital	C	210 people	0	0	0	9	9	0	100

Source: Pontianak city COVID-19 handling acceleration task force team in 2021

Research context

The characteristics of referral hospitals in West Kalimantan included several components, namely the number of health workers, the availability and number of ICU beds for Covid-19 and suspected patients, and ICU BOR and isolation BOR.

RESULTS

WHO checklist results on referral hospitals

Based on the WHO checklist on referral hospitals, the total distribution value of the categories "implemented," "in progress," and "not yet implemented" was 45, with a total frequency of 100%. HR management that had been

implemented was 44.4% (20 items/points in the checklist), 4.4% was "in progress" (2 items/points in the checklist), and 51.1% had not been implemented (23 items/points in the checklist). This figure showed that referral hospitals had not been able to fully implement the management of hospital human resources, especially health workers. Thus, referral hospitals in West Kalimantan were not yet ready to face surge capacity due to Covid-19.

In general, as many as 82.2% indicated the absence of the role in terms of recruitment and management of health workers in type A and C referral hospitals in the West Kalimantan Provincial Health Office to face surge capacity. On the other hand, the West Kalimantan Provincial Health Office played a major role in type B referral hospitals with a percentage of 17.8%.

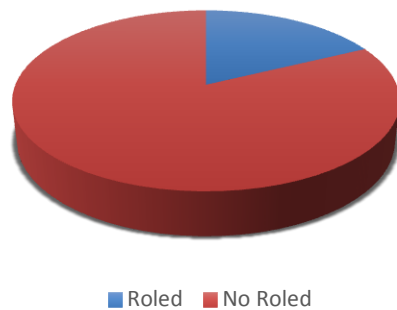


Figure 2. Percentage of evaluation of the role of the West Kalimantan Provincial Health Office in HR management at Covid-19 referral hospitals

The previous data had addressed that referral hospitals could not fully implement HR management based on the 2020 WHO checklist. The West Kalimantan Provincial Health Office also did not play an optimal role in HR management at Covid-19 referral hospitals, especially in facing surge capacity.

WHO checklist results on the role of referral hospitals

Many West Kalimantan Health Office policies had not been implemented, with a cumulative average percentage of 48.8%. This indicated that the influence and role of the West Kalimantan Health Office in referral hospitals were low. However, there were 35.7% of health office policies had been implemented well, including estimating and monitoring the attendance of referral hospital staff on a regular basis and identifying the minimum needs that include health care personnel and other hospital staff to ensure the operational adequacy of a particular hospital department, engaging in the recruitment and training of additional staff (i.e., retired staff, military reserve personnel, affiliates/students, and volunteers) as needed, providing training in areas that could potentially increase clinical demand, including emergency and intensive care to ensure adequate staff capacity and competence, and ensuring the provision of vaccines to all HR (health workers) at the hospital.

DISCUSSION

The role of the health office in hospital HR management to deal with surge capacity

In this study, the hospital readiness checklist for Covid-19 was used to observe the HR management at referral hospitals and the role and policies of the West

Kalimantan Provincial Health Office. Since the beginning of the Covid-19 pandemic, the Provincial Health Office did not have a whole policy on referral hospitals. According to the results of the WHO checklist on staff contact, attendance monitoring, and staff leave policies at referral hospitals, there was no policy from the West Kalimantan Provincial Health Office. Based on the information, staff contact information, attendance, and leave or permission were regarded as internal issues (for the hospital only). The Provincial Health Office could not provide intervention, while the Covid-19 pandemic had caused a surge in the capacity of West Kalimantan Province referral hospitals.

During this emergency condition, the Provincial Health Office could not take part in setting an emergency plan to provide food, drink, and shelter/space for referral hospital personnel. The Provincial Health Office did have an emergency plan to deal with surge capacity due to Covid-19. However, the emergency plan was only in the form of providing food for referral hospital personnel, although not routinely. In addition, the Provincial Health Office did not play a role in prioritizing staffing requirements and distributing personnel at referral hospitals during the Covid-19 pandemic. The policy was internal to the hospital, and the Provincial Health Office could not regulate hospital personnel management. The staffing requirements were adjusted to the needs and regulations of the hospital, while the Provincial Health Office only provided an appeal.

The absence of involvement of the Provincial Health Officer in the management of health workers in referral hospitals was due to the existence of a law issued by the central government. Supposedly, the West Kalimantan Provincial Health Office, as the government's organizer in the regional health sector, can also help referral hospitals face surge capacity together with the Provincial and Regional Governments. The need for support and coordination between the central and local governments in handling Covid-19 was evidenced by a study, where the hospital services that the Ministry of Health appointed were not still sufficient to serve the increasing number of patients (Dewi & Setiyaningsih 2020).

Management of human resources for health workers at referral hospitals in West Kalimantan Province to face surge capacity

The availability of staff is an essential factor to complement the limited number of health workers in dealing with the situation of a surge in the number of patients due to Covid-19 at the West Kalimantan referral hospital. This conception also followed the

findings in the study of Utami et al. (2021). However, the study used the concept of surge capacity and ICS (Incident Command Systems) to deal with and anticipate the surge in Covid-19 patients. In this study, we recommended that staff contact in referral hospitals should also be the one who holds the critical information in mitigating HR management in referral hospitals. 66.7% of contact renewals had been carried out in type A and B hospitals, while 33.3% were in the process of being implemented in some type C hospitals.

Furthermore, referral hospitals in West Kalimantan had never identified the minimum need for health service personnel in other hospitals. The referral hospital only calculates its HR needs to ensure the adequacy of staff operations and never asks for help from other hospitals if there is a staff shortage. The shortage of health workers was also caused by some of the staff being infected with Covid-19. We highlighted the importance of maintaining and stabilizing the availability of health workers in the hospitals, especially the referral hospitals because health workers are prominent elements in all types of health events (Akbar et al. 2020, Rosita & Simamora 2021). According to Hersche et al. (1999), this is included in the hospital's preparedness phase in dealing with disasters.

Based on the theory of hospital preparedness (Russo et al. 2015), hospitals also need to ensure the appropriateness of the plan to the state regulations and its accordance with the standards set by accrediting organizations, such as the Joint Commission on Accreditation of Healthcare Organizations (JCAHO). Comprehensive Covid-19 planning can also help the hospital plan for other emergency situations. Similarly, some possible treatments, such as preparing more wards and medical facilities, medicine, diagnostic tools, and Personal Protective Equipment, are other ways of facilitating hospitals to face emergencies (Djalante et al. 2020).

In disaster management, hospitals need adequate human resources, including personnel who are trained in emergency and disaster preparedness and have the relevant management skills (Wahyuni et al. 2020). Volunteers' increased knowledge and skills are beneficial for themselves and the process of interacting with the environment related to disaster management (Quyumi & Alimansur 2020), especially in handling and treating Covid-19 patients, which have different treatment characteristics from other patients (Pashar et al. 2020). Disaster emergency preparedness in the health sector involves a logical process, with activities ranging from policy formulation to ongoing monitoring and evaluation (Wahyuni et al. 2020).

In managing human resources in hospitals, task shifting or task sharing is one of the strategies related to the redistribution and stabilization of human resources. Task transfer is the transfer of autonomy in carrying out clinical actions from someone with higher qualifications to someone with lower qualifications. In contrast, the division of tasks is a form of cooperation and collaboration between several people with the same or lower qualifications to share clinical responsibilities while prioritizing communication, education, and training to maintain the quality of service provided. Moreover, patients who are already in the ICU who need equipment and prompt handling, especially patients with Covid-19 who are admitted into the ICU, are in more critical condition and greater need of extreme supportive treatment, such as mechanical ventilation, compared to patients in other hospital locations (Sen-Crowe et al. 2020). Certainly, competence and level of knowledge are important. However, in conditions of limited medical specialist resources, task division methods are preferable to ensure patient safety (Rosen et al. 2018). The ideal task-sharing process includes the training, implementation, monitoring, and evaluation phases (Figure 4).

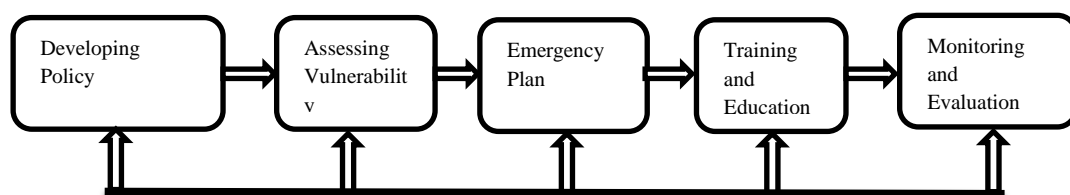


Figure 3. Process in health sector disaster emergency preparedness (WHO-WPR, 2006)

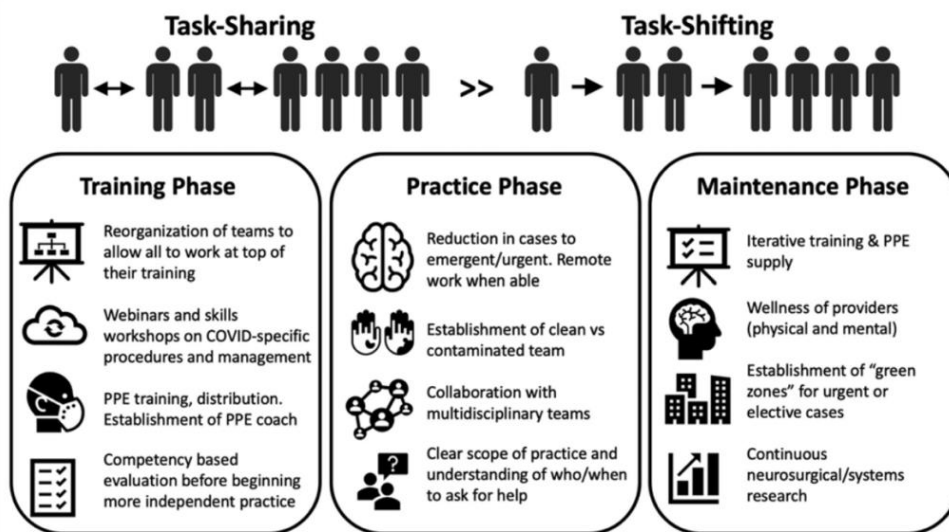


Figure 4. Task shifting process (Raams et al. 2018)



Figure 5. Disaster management cycle (World Health Organization 2020)

The previous management of human resources is expected to be in accordance with the disaster management cycle. When a disaster occurs, there will always be a chaotic situation that can disrupt the patient handling process and result in non-optimal results. With a good disaster plan, chaos will still occur, but efforts can be made to keep the time as short as possible, so services can still be carried out according to the standards set. In addition, mortality and morbidity can be reduced to a minimum (Garcia et al. 2017), especially during a pandemic (Figure 4).

The WHO restructuring in March 2019 recognized the need to strengthen critical health security responsibilities in responding to health crises and helping other countries prepare for health security. This issue is considered very important, so there is a new structural pillar in the organization, the emergency

preparedness division, which reports directly to the Director-General. This will support countries in preventing and mitigating the impact of epidemics and other health crises (Simatupang 2017). In this study, we found systematic and strategic disaster management to handle and control the emergency situation in health cases. The human resource was the major factor that should receive an evaluation, and the hospital managers need to regularly evaluate the ratio of hospital staff and number of patients (Figure 5).

Strength and limitation

The study does not provide a detailed analysis of the reasons for the suboptimal readiness of referral hospitals and the limited role of the Provincial Health Office.



Further studies may be needed to investigate these issues in more detail. The study addresses an important issue related to disaster response management in West Kalimantan, Indonesia, during the Covid-19 pandemic. The study utilizes a checklist adopted from the WHO Hospital Readiness for Covid-19, which ensures the validity and reliability of the data. The study highlights the role of the Provincial Health Office in managing human resources in referral hospitals and provides recommendations for improvement.

CONCLUSION

Based on the study, almost all referral hospitals had implemented human resource management for health workers. Some managerial points had not been fully implemented, such as identification of minimum staff requirements for operational adequacy, insurance issues, temporary licensing related to additional staff and volunteers, cross-sectional health services and training, identifying domestic support for staff, and not yet providing staff with psychosocial support teams. This study recommended that the local government quickly build a system of providing health workers with an integrated data information system with all existing health organizations and health education institutions in West Kalimantan. Besides, the Provincial Health Office was expected to recruit human resources to carry out special supervision in each referral hospital to monitor and ensure the hospital's readiness for a health disaster such as Covid-19.

Acknowledgement

We would like to thank the stakeholders of the West Kalimantan Provincial Health Office and the Director of RSUD. Soedarso, RSUD. Sultan Syarif Alkadrie, Tanjungpura University Hospital, Pontianak, and the West Kalimantan Provincial Health Office for their readiness to be interviewed and to provide any required data.

Conflict of interest

None0

Funding disclosure

P one0

Author contribution

FÖ- conceptualized, collected and analyzed the data, T H- wrote, and revised the manuscript.

FÖ and Š- reviewed, finalized check analysis data and grammar.

REFERENCES

- Adhikari SPS, Meng YJ, Wu YP, et al (2020). Epidemiology, causes, clinical manifestation and diagnosis, prevention and control of coronavirus disease (covid-19) during the early outbreak period: A scoping review. *Infect Dis Poverty* 9, 1-12.
- Akbar F, Islam F, Ashari AE, et al (2020). Tindakan tenaga kesehatan dalam menerapkan protokol kesehatan saat berangkat kerja pada era kebiasaan baru. *Jurnal Kesehatan Manarang* 6(Special Edition), 41-46.
- Al Mutair A, Amr A, Ambani Z, et al (2020). Nursing surge capacity strategies for management of critically ill adults with covid-19. *Nursing Reports* 10, 23-32.
- Alhazzani W, Moller MH, Arabi YM, et al (2020). Surviving sepsis campaign: Guidelines on the management of critically ill adults with Coronavirus Disease 2019 (COVID-19). *Intensive Care Med* 2020, 1-34.
- Ariyanto D (2018). Koordinasi kelembagaan dalam meningkatkan efektivitas badan penanggulangan bencana daerah. *Journal of Management Review* 2, 161-172.
- Aziz S, Arabi YM, Alhazzani W, et al (2020). Managing ICU surge during the COVID-19 crisis: Rapid guidelines. *Intensive Care Med* 8, 1-23.
- Brinkerhoff DW, Bossert Tj (2013). Health governance: Principal-agent linkages and health system strengthening. *Health Policy and Planning* 29, 685-693.
- Chersich MF, Gray G, Fairlie L, et al (2020). COVID-19 in Africa: Care and protection for frontline healthcare workers. *Globalization and Health* 16, 1-6.
- Dewi SL, Setyaningsih H (2020). Peran sektor swasta dalam respon terhadap covid-19: Studi kasus di Yogyakarta. *JKKI: Jurnal Kebijakan Kesehatan Indonesia* 09, 218-224.
- Djalante R, Lassa J, Setiamarga D, et al (2020). Review and analysis of current responses to COVID-19 in Indonesia: Period of January to March 2020. *Progress in Disaster Science* 6, 1-9.
- Firmansyah MI, Rahmanto F, Setyawan D (2020). Hpreparedness for the covid-19 pandemic management in Indonesia. *Jurnal Administrasi Kesehatan Indonesia* 8, 188-201.
- Garcia MC, Faul M, Massetti G, et al (2017). Reducing potentially excess deaths from the five leading causes of death in the Rural United States. *Morbidity and Mortality Weekly Report (MMWR)* 66, 1-7.

- Hersche B, Olivier C, Wenker MD, et al (1999). Principles of hospital disaster planning. *The Internet Journal of Rescue and Disaster Medicine* 1, 1-6.
- Kucharski AJ, Russell TW, Diamond C, et al. (2020). Early dynamics of transmission and control of COVID-19: A mathematical modeling study. *Lancet Infect Dis* 20, 553-558.
- Kuhlman S, Bouckaert G, Galli D, et al (2020). Opportunity management of the COVID-19 pandemic: Testing the crisis from a global perspective. *International Review of Administrative Sciences* 86, 1-21.
- Manafi F, Takian AH, Sari AA (2019). Assessing the governance of human resources for health in Iran: A qualitative study. *J Educ Health Promot* 8, 1-22.
- Melnychenko O. (2020). The energy of finance in refining of medical surge capacity. *Energies* 14, 1-14.
- Munandar A, Wardaningsih S (2018). Kesiapsiagaan perawat dalam penatalaksanaan aspek psikologis akibat bencana alam: A literature review. *Keperawatan* 9, 72-81.
- Pashar I, Ismail S, Edward I, et al (2020). Tantangan etik pada perawat dalam penanganan pasien di masa pandemik covid-19: Scoping review. *Jurnal Perawat Indonesia* 4, 467-479.
- Pyone T, Aung TT, Endericks T, et al (2020). Health system governance in strengthening International Health Regulations (IHR) compliance in Myanmar. *BMJ Global Health* 5, 1-20.
- Quyumi ER, Alimansur M (2020). Upaya pencegahan dengan kepatuhan dalam pencegahan penularan covid-19 pada relawan covid. *JPH RECODE* 4, 81-87.
- Raams TM, Browne JL, Vjmm Festen-Schrier K, et al (2018). Task shifting in active management of the third stage of labor: A systematic review. *BMC Pregnancy Childbirth* 18, 47.
- Rodriguez-Llanes JM, Delgado RC, Pedersen MG, et al (2020). Surging critical care capacity for covid-19: Key now and in the future. *Progress in Disaster Science* 8, 1-4.
- Rosen MA, DiazGranados D, Dietz AS, et al (2018). Teamwork in healthcare: Key discoveries enabling safer, high-quality care. *Am Psychol* 73, 433-450.
- Rosita R, Simamora TM (2021). Penyelenggaraan pelayanan kesehatan ibu dan anak di puskesmas terpencil dan sangat terpencil di masa pandemi covid-19. *An-Nur: Jurnal Kajian dan Pengembangan Kesehatan Masyarakat* 1, 225-238.
- Russo RM, Galante JM, Jacoby RC, et al (2015). Mass casualty disasters: who should run the show?. *Journal of Emergency Medicine* 48, 685-692.
- Scrimshaw S, Hurtado E (1998). Rapid assessment procedures for nutrition and primary health care: Anthropological approaches to improving programme effectiveness. University of California, Los Angeles.
- Sen-Crowe B, Sutherland M, McKenney M, et al (2020). A closer look into global hospital beds capacity and resource shortages during the covid-19 pandemic. *Journal of Surgical Research* 260, 56-63.
- Simatupang RB (2017). Kesiapsiagaan RSPAD Gatot Soebroto dalam penanggulangan bencana pandemi influenza untuk mengantisipasi ancaman bioterorisme. *Jurnal Prodi Manajemen Bencana* 3, 49-80.
- Utami YPD, Pinzon RT, Meliala A (2021). Evaluasi kesiapan rumah sakit menghadapi bencana non-alam: Studi kasus covid-19 di rumah sakit Bethesda Yogyakarta. *JKKI: Jurnal Kebijakan Kesehatan Indonesia* 10, 100-106.
- Wahyuni RD, Mutiarasari D, Demak IP, et al (2020). Analysis of hospital preparedness provincial government post-disaster Central Sulawesi, Indonesia. *Ann Trop Med & Public Health* 23, 1-10.
- World Bank (2004). Making services work for poor people. *World Development Report 2004*. World Bank, Washington, DC.
- World Bank (2007). Healthy development: The world bank strategy for health, nutrition, and population results. World Bank, Washington, DC.
- World Health Organization (2020). Getting your workplace ready for COVID-19. World Health Organization, Swiss.
- Zulisda Z (2020). Karakteristik kasus covid-19 kluster reaktif di lokasi non fasilitas kesehatan (Wisma Asrama Haji). *Wellness and Healthy Magazine* 2, 349-359.