KEMAS 20 (2) (2024) 175-186

Jurnal Kesehatan Masyarakat

http://journal.unnes.ac.id/nju/index.php/kemas

Referral Flow for Maternal and Child Health in Central Java Province during Health Crises Management

Novia Handayani[1] ✉, a) Ayun Sriatmi[2, b)] Martini[3, c)] Sutopo Patria Jati[2, d)] Aditya Kusumawati[1, e)] Budiyono Budiyono[4, f)] Armunanto Armunanto[5, g)] Erlin Friska[2, h)] Nissa Atul Asfiya[1, i)]

[1]Department of Health Promotion and Behavioral Science, Faculty of Public Health, Universitas Diponegoro, Semarang, Indonesia

[2]Department of Health Administration and Policy, Faculty of Public Health, Universitas Diponegoro, Semarang, Indonesia.

[3]Department of Epidemiology and Tropical Diseases, Faculty of Public Health, Universitas Diponegoro, Semarang, Indonesia.

[4]Health Specialist of UNICEF Indonesia, Field Office Surabaya, Surabaya, Indonesia

Article Info

Article History:
Submit: November 2023
Accepted:February 2024
Published: October 2024

Keywords:
Referral Flow; Health Crisis; Mother and Child Health; Central Java

DOI
https://doi.org/10.15294/kemas.v20i2.48874

Abstract

Central Java Province is one of the provinces that often experiences disasters. During the period 1 May 2023 – 31 May 2023, 72 incidents of strong winds, 8 incidents of land moving, 107 incidents of flooding, 94 incidents of landslides, 6 volcanic eruptions, and 2 incidents of fire were recorded. In disaster emergencies, the health needs of mothers and children are often overlooked. This study aims to analyze the flow of maternal and child health referrals in health crisis management in the focus location regencies in Central Java Province. This research is descriptive research with a qualitative approach. Data was collected through Focus Group Discussion (FGD) in March 2023. The research locations were Semarang Regency, Brebes Regency, Grobogan Regency, and Klaten Regency. The sample selection technique used was purposive sampling. The integrated referral system is not yet running optimally. The health referral flow carried out is not yet specialized in treating mothers and children. Pentahelix collaboration is carried out in managing health crises. The supporting factors in disaster management are the existence of policies, the availability of infrastructure for evacuating victims, as well as coordination from various sectors. Meanwhile, the inhibiting factors are the lack of trained human resources, limited logistics, and low public awareness regarding disasters. Thus, there is a need to develop a special referral pathway for maternal and child health involving multi-sectors, increase public awareness of disaster management, and strengthen Pentahelix collaboration in health crisis management.

INTRODUCTION

Health crises are increasingly becoming a concern due to unpredictable and uncontrollable risks in global society. The frequency of health crises has increased over the last decade. Health risk management is very important to protect society from emergencies and disasters and build health systems and community resilience (Pan American Health Organization, 2016). Indonesia is located between three large plates in the world, namely the Indo-Australian plate, the Eurasian plate, and the Pacific plate. Data from the Center for Volcanology and Geological Disaster Mitigation records that

✉ Correspondence Address:
Department of Health Promotion and Behavioral Science, Faculty of Public Health, Universitas Diponegoro, Semarang, Indonesia
Email: novia.handayani@live.undip.ac.id

pISSN 1858-1196
eISSN 2355-3596

there are 129 volcanoes, most of which are active and 80 are in the dangerous category. Indonesia's geographical location makes it prone to tectonic and volcanic earthquakes which can be followed by large tsunamis with the presence of the Indian Ocean and Pacific Ocean (Direktorat Pengurangan Risiko Bencana BNPB, 2016). Most of Indonesia's territory is waters consisting of 17,508 islands, with five large islands. Hydrometeorological disasters have the potential to occur with diverse and complex topography, hilly areas, and many river flows accompanied by the influence of climate change. Indonesia's geography, geology, hydrology, demography, climate change, and environmental degradation in Indonesia influence the high frequency of disaster events (Bhaskara & Purwaningsih, 2023).

From 2005 to 2015, the Indonesian Disaster Information Data (DIBI-BNPB) recorded that more than 78% of disaster events were hydrometeorological, such as floods, extreme waves, land and forest fires, drought, and extreme weather. Meanwhile, another 22% are geological disasters, namely earthquakes, tsunamis, volcanic eruptions, and landslides. Ethnic, cultural, and political diversity accompanied by triggers can also give rise to social (Direktorat Pengurangan Risiko Bencana BNPB, 2016). Central Java Province is one of the provinces that frequently experiences disasters. These include landslides, floods, tidal waves, moving land including landslides, strong winds, fires, forest and land fires, earthquakes, volcanic eruptions, and others. According to BPBD data, during the period 1 May 2023 – 31 May 2023, 72 incidents of strong winds, 8 incidents of land moving, 107 incidents of flooding, 94 incidents of landslides, 6 volcanic eruptions, and 2 incidents of fire were recorded (BPBD Jawa Tengah, 2023).

All of these disaster events can cause a Health Crisis. Health Crisis is regulated in the Regulation of the Minister of Health of the Republic of Indonesia Number 75 of 2019 concerning Health Crisis Management. A Health Crisis is an event or series of events that results in casualties, injuries/illness, displacement, and/or potential dangers that impact public health that require a rapid response outside of normal practice and inadequate health capacity. Health crisis management is carried out through three stages, namely before a health crisis occurs (pre-health crisis), during a health crisis emergency, and after a health crisis occurs (post-health crisis). Health Crisis Management aims to implement coordinated, planned, integrated, and comprehensive Health Crisis Management to protect the community from threats, risks, and impacts of health problems (Pusat Krisis Kesehatan Kemenkes RI, 2023). The health crisis causes deaths, injuries, illnesses, refugees, paralysis of health services, infectious diseases, environmental sanitation, mental disorders, and other health problems. And without exception, the victims are mothers and children.

In disaster emergencies, the health needs of mothers and children are often overlooked. Risk of complications for women during pregnancy or childbirth because they are forced to give birth without the help of trained health personnel. Risks of unwanted pregnancy, sexual violence, and psychological disorders can also occur in disaster situations. A study conducted in India showed the likelihood of an increase in acute illnesses in children by 9–18%, an increase in malnutrition by 7%, and a decrease in complete immunization in children in disaster-affected areas by 18% in crises (Datar *et al*., 2013). The availability of maternal and child health services in disaster situations will save lives. Post-disaster maternal and child health services are very necessary. The implementation of maternal and child health services is 2 antenatal care, 1 post-natal care, 1 neonatal care, 2 family planning consultations, and trauma healing for children (Nurtyas, 2019). Capacity in disaster management must refer to the national disaster management system contained in the Law on Disaster Management and its derivative regulations. However, challenges in efforts to manage the Health Crisis still exist, especially in creating referral channels for maternal and child health in health crisis management. In carrying out health management in crises, a clear flow of health services is needed to minimize casualties. This research aimed to analyze the flow of maternal and child health referrals in health crisis management in the focus location regencies in Central Java Province.

METHOD

This research is descriptive research with a qualitative approach with a focus on the referral flow of maternal and children during health crisis management in each regency. Primary data was obtained through Focus Group Discussion (FGD) activity carried out in March 2023. The selected research locations were Semarang Regency, Brebes Regency, Grobogan Regency, and Klaten Regency. Sampling was carried out using a purposive sampling technique based on areas with a risk of disaster in Central Java Province. The research informants involved were representatives from the District Health Office (2 people) and the Regional Disaster Management Agency (1 person) from each Regency. Total informants were 8 informants from District Health Offices and 4 informants from Regional Disaster Management Agencies. Informed consent had been approved by all informants before the FGD started. The dimensions as the focus of this research were the referral flow of maternal and child health, the Pentahelix collaboration, support, and inhibiting factors during health crisis management. Data were analyzed using the content analysis method (Martha and Kresno, 2017). This research has obtained ethical approval from the Health Research Ethics Committee Faculty of Public Health Universitas Diponegoro number 666/EA/KEPK-FKM/2023.

RESULT AND DISCUSSION

The preparation of Disaster Crisis Guidelines is being carried out by each region referring to the Minister of Health Regulation No. 75 of 2019 regarding Health Crisis Management, which includes neonatal emergencies and referral systems. Apart from local governments, in this case, the Health Service, hospitals are required to have a Hospital Disaster Plan (HDP) as a plan for facing disasters. So that a referral flow can be arranged in dealing with disasters that occur in the area and there will be no difficulties in referring disaster victims.

"We refer to PMK No. 75, the SOP covers neo emergencies, as well as a referral system. We strengthen PSC to support Magneto emergencies from pre to post. The output can be a draft preparation." … (DK.M)

"We have just reminded you of the HDP again because hospitals are required to have an HDP, namely a plan for dealing with disasters. We still do light concepts like fire, etc. From now on, hospitals will have HDPs for their areas too, hospitals must be prepared to create referral channels if there is a disaster in their area. This is what we will gradually develop further. This is the provincial SPM." … (BPBD.S)

The integrated referral system is not yet running optimally, in some cases independent referrals are still made from Public Health Centers, including in maternal and neonatal cases. More massive collaboration from various sectors such as the Health Service, FKTP, hospitals, BPBD, and representatives from the community regarding referral flow is needed so that disaster victims can be treated quickly and precisely. Integration in the referral system for several sectors from pre- to post-disaster simplifies the process of handling disaster victims. Currently, coordination is carried out in disaster management in several areas, namely through WhatsApp groups, consisting of representatives from various OPD sectors, health centers, hospitals, and other organizations.

"The integrated referral system is at maternal and child health. We at the Public Health Center level often wait but there is no answer for referrals. For neonatal mothers, we went directly to a private doctor because the referral system was still working on their own." ... (DK.S)

"We are encouraging strengthening PONED, and early detection of risk factors in hospitals and FKTP. Strengthening referral system too. Collaboration between hospitals, the private sector, and government is needed. We evaluate BDLS and DLS for blood availability. Because there are often maternal deaths because there is a need for blood for mothers to give birth but the blood is scarce..." ... (DK.S)

"We created a WAG that we have to coordinate referrals, within the group there are many related agencies and also other organizations. This makes coordination easier and speeds up referrals." …. (DK.K1)

Humanitarian emergencies, such as pandemics and disasters, will have impacts that

cannot be predicted in advance, including on the provision of routine health services (Park *et al.*, 2020; Pati *et al.*, 2021). The occurrence of an emergency in an area can disrupt health services, including for the most vulnerable groups such as children and pregnant women (Chen *et al.*, 2020; Rasmussen *et al.*, 2020). Identifying vulnerable groups in disaster situations is one of the important things to do. Problems are often found in vulnerable groups, namely toddlers and pregnant women, while the main conditions that require attention are vulnerable groups, new mothers, injury victims, and residents who are in unhealthy conditions. In general, women have been identified as a vulnerable group during disasters, which is supported by reports that women and children tend to die more often during disasters and are more vulnerable to mental disorders than men (Nour, 2011). During the COVID-19 pandemic, women and children had direct effects such as serious illness and even death. Both of these groups also have dramatic indirect effects such as undernutrition and mortality due to the disruptions to health and food systems caused by the pandemic (Osendarp *et al.*, 2021). In managing a health crisis, an appropriate flow or road map is needed that can be understood by all parties. So that evacuation actions can be carried out quickly and precisely. Every resident has the right to receive basic services at a minimum in a health emergency, including vulnerable groups of mothers and children. The referral flow for maternal and child health services has been prepared as follows.

The maternal and child health referral flow from Grobogan Regency and Klaten Regency has the same scheme. The handling flow starts from (1) Relief actions at the disaster location. This action has an important role in determining life safety and reducing the risk of disability in victims; (2) Field triage and coordination. Pre-healthcare facility emergency management includes triage, initial stabilization, and evacuation. In providing emergency services, multi-party coordination is carried out, such as field command, victim search and rescue command (BASARNAS), TNI, Polri, and stakeholders from government and non-government. The success of this handling is determined by continued preparedness and coordination during the pre-disaster period. Arrangements for the flow of handling victims must be carried out to avoid a second disaster that could happen to the rescuer; (3) Referral to health service facilities. The emergency service area acts as the main gate for patients to enter. Patients from emergency services can be sent to another room or can be referred to another health service facility.

"When a disaster occurs at a location, coordinate at the location. BPBD and hospitals

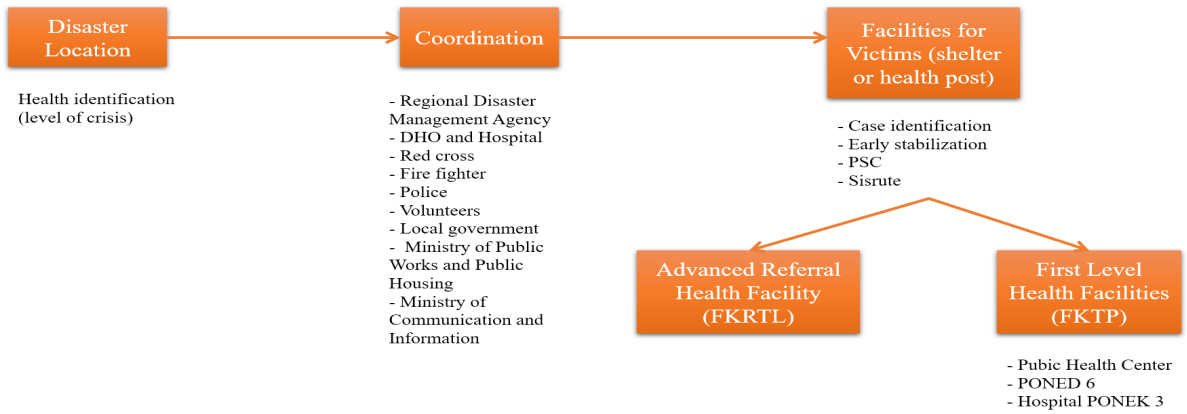

FIGURE 1. Maternal and Child Health Referral Flow in Grobogan Regency

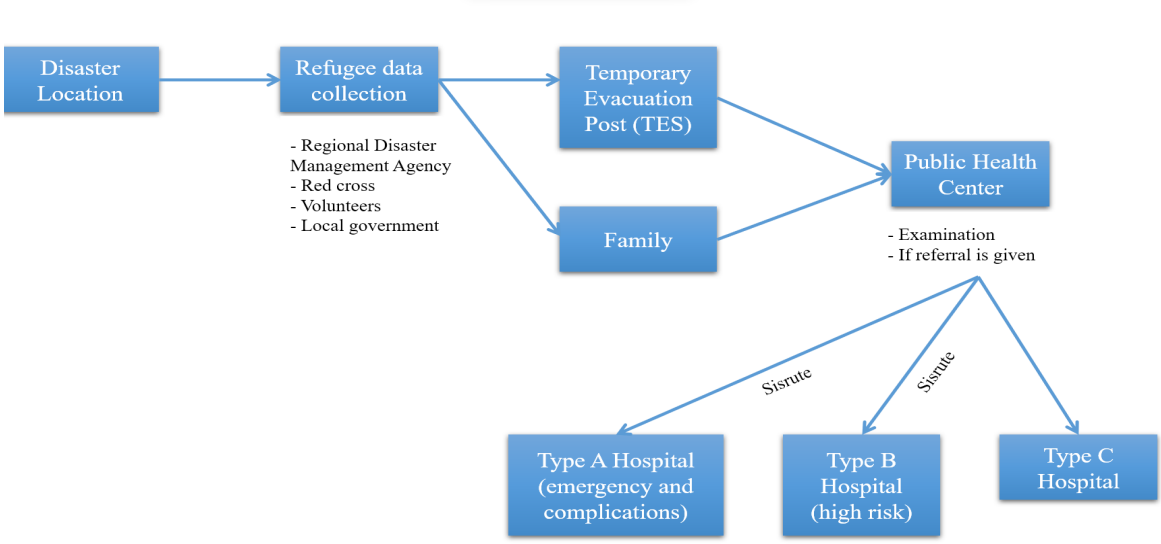

FIGURE 2. Maternal and Child Health Referral Flow in Klaten Regency

must be alert, including volunteers, TNI, village government, Polri, PUPR, and Kominfo who have already collected data. If maternal and child health occurs in a refugee camp when the health center is submerged, an evacuation will be carried out assisted by BPBD if the service center is paralyzed and if services cannot be provided, then they will be referred to the nearest service center. If the case can be handled at the health facility, it will be resolved at the health facility. If not, a referral can be made to the hospital in Grobogan. Refugee health posts can go directly to the hospital if the Public Health Center is not available. There are 6 PONEDs." … (DK.G)

"Regarding disasters, sometimes we are in areas that cannot be reached, when a disaster occurs the BPBD and volunteers collect data. "Then BPBD used a temporary evacuation site and collected data which we then separated according to inspection needs." … (DK.K)

Policies related to disaster management in Grobogan Regency already exist, namely the stipulation of the Emergency Command Decree (SK) which explains the reference points for disaster victims. In Klaten Regency, all cases resulting from disasters are served by Public Health Centers, including maternal and neonatal care. When paralysis occurs at a Public Health Center, a referral will be made to the non-PONED Public Health Center or the nearest hospital. There are 7 hospitals with NICU/PICU services that provide maternal neonatal services. The Regional Secretary of Klaten Regency issued a decree for "paseduluran villages" where if the shelter in the village experiencing a disaster is not fulfilled then it can be moved to a neighboring village.

"In *the Regency, there is already an emergency command decree, and the nearest referral point has also been determined."… (DK.G)*

"Matneo cases are carried out by non-PONED health centers, then if they are not PONED they don't stop by, then they are immediately referred to the nearest hospital. NICU/PICU Hospitals in 7 hospitals represent points following the decree and directions from the regent." … (DK.K)

The results of the research carried out obtained an overview of the flow of maternal and child health referrals in Brebes Regency and Semarang Regency. The flow of handling disaster victims starts from (1) the Submission of initial information, where all parties assist the BASARNAS team in evacuating victims. At this stage the community also plays a role in reporting disaster events to health service facilities; (2) Carrying out Rapid Assessments such as triage, resuscitation, and initial stabilization. This treatment can be carried out by health workers and can involve special lay people. Apart from that, the public can also contact the Public Safety Center (PSC) 119 call center; (3) Refer the victim to the nearest health

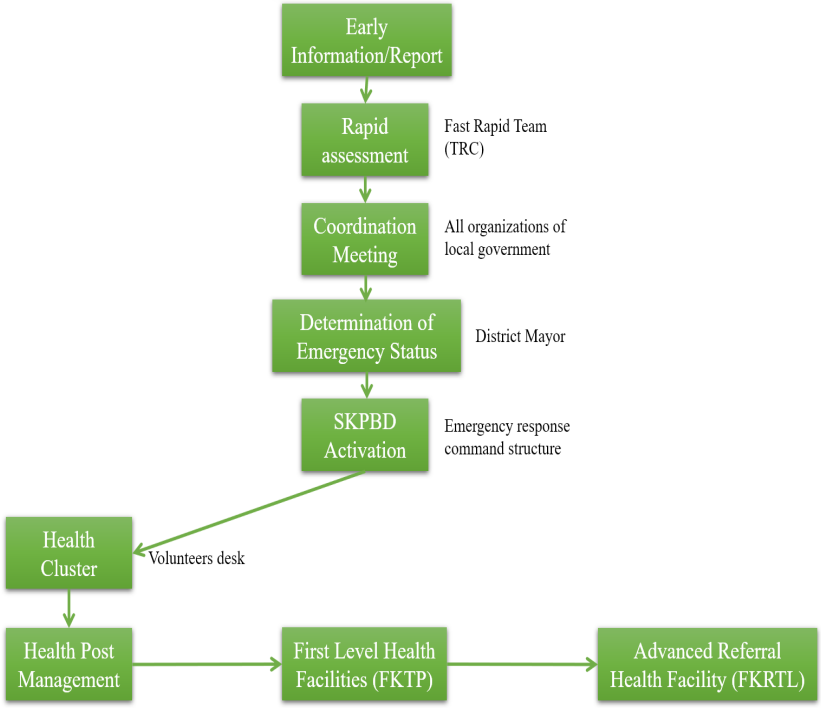

FIGURE 3. Maternal and Child Health Referral Flow in Brebes Regency

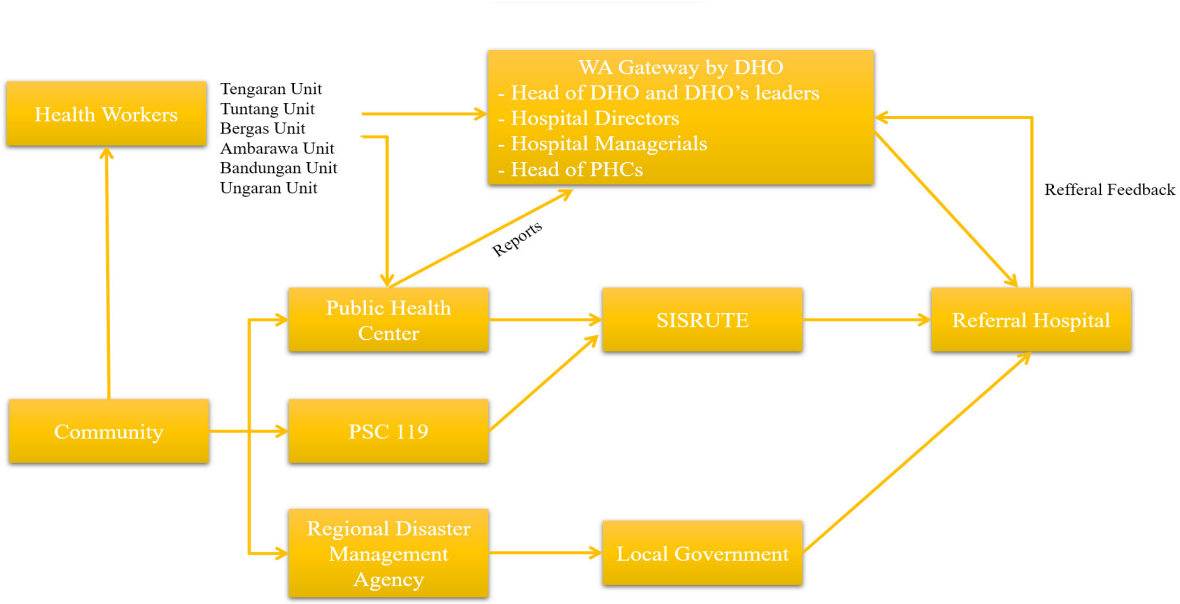

FIGURE 4. Maternal and Child Health Referral Flow in Semarang Regency

service facility. The services provided to victims are emergency services. Furthermore, patients can be transferred or referred according to the results of the examination; (4) Cross-sector and OPD coordination. Coordination can be done using the Health Service WA Gateway (in Semarang Regency). Then the status is determined by the OPD and continued with the construction of a disaster post.

"The Brebes area is the westernmost region in Central Java and is an area prone to disasters. When initial information from the village community enters the BPBD, there is a rapid reaction team to carry out a rapid

assessment that already has a decree, which then identifies the risk of disaster, and the type of disaster, which is then reported to the BPBD and then the disaster status is determined by the regent. Following the main duties and functions, there is a health cluster which is overseen by the health service. There is a base of volunteers who will determine which sub-cluster you fall into (nutrition, health, etc.) and there are also posts set up in the field. "One of them is a health post where there was a disaster in one of the areas." …. (DK.B)

"For Regency level disaster emergency response, the flow is the same. Maternal and child health referral flow and case reports can be made by the community or by the health worker who finds them. The Key Performance Index must have a presentation reported, in the PMB it must also be reported on the WA Gateway. 600 midwives are divided into 6 branches. The branch WA gateway is included in the Health Office's WA gateway which consists of Kadin, and structural officials, as well as the director and management team at the hospital."... (DK.S)

Handling of disaster victims in Brebes Regency, in the health cluster, only general health services are provided, there are no special differences for maternal and neonatal care. The Health Service coordinates the needs of medical personnel, medicines, ambulances, and others. There is a disaster crisis emergency team in the field of Disease Control and Environmental Health at the Health Service.

"What is already running, health posts in general health services, we at DKK coordinate the needs of medical personnel, and others including medicines, ambulances. Currently, it's still general health, there are midwives and doctors." …. (DK.B)

Based on the results, it is stated that there is no specific referral flow for maternal and child health in health crisis management, health services are still provided in general. This is a common challenge in managing the health crisis for mothers and children. A study in Malaysia showed that the COVID-19 pandemic significantly impacted health services for maternal and child health (Ujang *et al*., 2023). The severity of the impact of disasters and pandemics related to maternal and child health is very significant (Sahoo *et al*., 2021). Allocation of maternity rooms at flood posts, distribution of birthing equipment to midwives, and training of pregnant women in self-care, especially in disaster-prone areas are very important. Obstetricians and gynecologists should be involved in disaster relief, as they can handle pregnancy and delivery complications (Fredricks *et al*., 2017). In disaster preparedness, it is necessary to build cooperation between hospitals and develop a medical information management system (Miki & Ito, 2022). In crises, many victims are found due to disasters, and hospitals and health facilities face big challenges and need to provide more services (Takahashi *et al*., 2007). Therefore, hospital capacity in responding to the impact of disasters needs to be increased, including the allocation of health facility service resources during and after a disaster (Yi *et al*., 2010). Low access to healthcare was also one of the biggest challenges during the pandemic which led to high mortality, not only mortality related to the pandemic but also mortality on other diseases that were impacted due to the low access to healthcare (Sochas *et al*., 2017; Komasawa *et al*, 2023). Coordination of health facilities is one of the medical emergency response strategies to ensure the continued provision of medical services during a disaster (Tippong *et al*., 2022).

Pentahelixis a model of stakeholder collaboration between government, business, academics, society, and the media or non-governmental organizations (NGOs) (Latif, Isrofah and Priharwanti, 2020). Efforts to handle disasters in the regions are impossible without good collaboration between stakeholders. The collaboration concept is intended so that parties outside the government, such as the community and the business sector, can participate in the accelerator of set goals, and determine policy direction and program development. Apart from that, the disaster problems that arise are certainly not problems that can only be managed by the government. The following is the role of the Pentahelix elements in handling health crises at the research location.

Managing the health crisis cannot be handled by the government alone but requires cooperation from various sectors. Pentahelix Collaboration is a reference for developing

TABLE 1. The Role of the Pentahelix Elements in Crisis Situations

Element	Grobogan Regency	Klaten Regency	Brebes Regency	Semarang Regency
Government	Develop policies/ SOPs Provide a budget Carrying out program monitoring and evaluation	Carrying out monitoring and evaluation Issuance of SK PONEK and creation of SOP Role in budgeting	Providing support in the form of policies	Providing comprehensive health service facilities, from health centers and hospitals
Public	-	Assist in collecting data on refugees	Formation of disaster-resilient villages	Assist in reporting disaster victims Assist in evacuating disaster victims
Business world	Assisting disaster victims	Sending aid (food and production kits)	CSR from companies, BUMD, Baznas → Natura	Emergency transportation support from the business world (CSR company ambulance)
Academics	-	Trauma healing	There is UNDIP assistance The existence of a Student Activity Unit regarding disasters (pre-, during)	Assistance from LPPM UNDIP in implementing AMP-SR
Media	-	Conduct outreach to the community regarding the conditions/disaster crises that occur	Provide information related to disaster events	Information about disaster events is provided via Suara Serasi Radio and Social Media

Source: Primary Data, 2023

collaboration between agencies. Each element has a function or role in achieving a goal. Academics are an element that has a role in conducting research, mapping potential hazards resulting from disasters, as well as providing education, and increasing community capacity in dealing with disasters (Bhaskara & Purwaningsih, 2023). With technological developments, the media plays an important role in disseminating disaster information to the wider community. Apart from that, the media can provide information to the wider community so they can participate in evacuation, mitigation, and rehabilitation.

Elements of the business world play a role in helping communities affected by disasters (Arfani, 2022). The assistance provided includes logistics for evacuating disaster victims, such as providing rubber tires and ambulances. Logistics for affected communities can include providing food, medical supplies, and medicines.

Health crisis management will run optimally if it is supported by adequate facilities and infrastructure as well as resources. The success of disaster management can be supported by many factors. The supporting and inhibiting factors in health crisis management are as follows.

Preparation is the most crucial thing during disaster management (Gudi & Tiwari, 2020). Success in managing a health crisis is influenced by various things. The existence of policies from the local government such as SK and SOP can increase commitment and collaboration from various sectors in disaster management. Research found that the existence

TABLE 2. Supporting and Inhibiting Factors in Disaster Management

	Supporting factors	Obstacle factor
Policy	Existence of SOPs and SKs for disaster management	There is no SK/SOP regarding the maternal and child health referral flow at the Regency level
Human Resources	The existence of a special disaster management team (along with SK) and a disaster risk reduction forum	Health workers have not been trained in disaster mitigation Limited human resources for services at the PONED Public Health Center There are not enough health workers trained in PONED due to promotions or transfers
Budget	Availability of budget for disaster management from the Regency government	Limited budget for disaster management
Health Facilities	Adequate health facility services in each Regency (Pukesmas and hospitals)	Large area, so there are areas where access to a referral hospital takes a long time (long distance) Access to the disaster location is difficult to reach
Infrastructure	There are evacuation places when a disaster occurs in each village Availability of supporting infrastructure for disaster management such as united ambulances, tents, heavy equipment, blood banks, and WA groups for coordination	Logistical limitations Infrastructure for pre-referral neonatal procedures is still lacking
Public	There is a community of volunteers who help during and after a disaster	Public awareness of evacuation in disaster areas is still low Referral information from the community is incomplete

Source: Primary Data, 2023

of policy will improve the caring quality environment in crisis management (Suroso, Yuliarti, Mardiyaningsih, 2017). Coordination carried out in the regions via WhatsApp groups makes the disaster management process easier. Apart from that, facilities and infrastructure must be provided, especially in areas prone to disasters. Community preparedness is also an important thing that can minimize the impact of disasters. The main inhibiting factor that is often faced in disaster management is the problem of the limited budget, human resources, facilities, and infrastructure. Other research also found that the obstacles during health crisis management were the lack of PPE and health support tools (Merlin & Vanchapo, 2021). Research during the COVID-19 pandemic showed that China built two hospitals to increase health facilities during the pandemic, however, the UK experienced conversely that they were short on general practitioners, beds, and PPE (Wang *et al*., 2020; Hunter, 2020). A study on 76 countries showed that higher levels of healthcare professionals will impact to lower death rate, even though the country has a high rate of infection during the pandemic (Guha & Niyogi, 2024). However, a study found that community empowerment such as volunteer groups is a strength factor that could help impacted victims to survive during a disaster (Mensah & Johnson, 2024). The challenges that exist can be overcome by optimizing good collaboration with the private sector, community, CSR, and media (Choi *et al*., 2020; Abbas *et al*., 2021; Shamshiri *et al*., 2023). The government also needs to have long-term strategic planning to prepare the future pandemics or health crises (Moncada & Nguyen, 2024).

CONCLUSION

The integrated referral system in disaster management in the 4 locus regency is not yet running optimally. Referrals are still made individually and the response from health service facilities is not fast enough, so sometimes new problems arise in treating victims. The health referral flow implemented is still general, there are no special services for maternal neonates. Pentahelix collaboration has been carried out in all regions, thereby creating cooperation between various elements in managing the health crisis. Supporting factors in handling disasters in the locus area are the existence of policies related to disaster control, the availability of a budget, the existence of a special disaster management team, the availability of adequate health facilities in each area, and the existence of a volunteer community that assists in evacuation and disaster mitigation. Meanwhile, inhibiting factors include the absence of a special policy for maternal and neonatal services in disaster control, the limited number of human resources trained in disaster mitigation, access to disaster locations that are difficult to reach, limited logistics, and public awareness of evacuation is still lacking. Thus, there is a need to develop a special referral pathway for maternal and child health involving multi-sectors, a need to increase public awareness of disaster management, and strengthen Pentahelix collaboration in health crisis management. Logistical limitations and public awareness regarding evacuation are still lacking. Thus, there is a need to develop a special referral pathway for maternal and child health involving multi-sectors, a need to increase public awareness of disaster management, and strengthen Pentahelix collaboration in health crisis management. Logistical limitations and public awareness regarding evacuation are still lacking. Thus, there is a need to develop a special referral pathway for maternal and child health involving multi-sectors, a need to increase public awareness of disaster management, and strengthen Pentahelix collaboration in health crisis management.

REFERENCES

Arfani, M., 2022. Kolaborasi Pentahelix dalam Upaya Pengurangan Risiko Bencana pada Destinasi Wisata Di Desa Kalanganyar Sidoarjo. *Jurnal Syntax Transformation*, 3(1), pp.104–120.

Bhaskara, J.A., & Purwaningsih, T., 2023. Pentahelix Approach in The Implementation of Disaster Resilient Village (Destana) Sumber Village Magelang Regency. *Jurnal Administrasi Publik*, 9(2), pp.233–252.

BPBD Jawa Tengah., 2023. *Data Bencana Bulan Mei 2023 di Jawa Tengah*.

Chen, Y., Li, Z., Zhang, Y.Y., Zhao, W.H., & Yu, Z.Y., 2020. Maternal Health Care Management During the Outbreak of Coronavirus Disease

2019. *Journal of Medical Virology,* 92(7), pp.731–739.

Choi, H., Cho, W., Kim, M.H., & Hur, J.Y., 2020. Public Health Emergency and Crisis Management: Case Study of SARS-CoV-2 Outbreak. *International Journal of Environmental Research and Public Health*, 17(11), pp.3984.

Datar, A., Liu, J., Linnemayr, S., & Stecher, C., 2013. The Impact of Natural Disasters on Child Health and Investments in Rural India. *Social Science and Medicine*, 76(1), pp.83–91.

Direktorat Pengurangan Risiko Bencana BNPB., 2016. *Risiko Bencana Indonesia (RBI) BNPB*.

Fredricks, K., Dinh, H., Kusi, M., Yogal, C., Karmacharya, B.M., Burke, T.F., & Nelson, B.D., 2017. Community Health Workers and Disasters: Lessons Learned from the 2015 Earthquake in Nepal. *Prehospital and Disaster Medicine*, 32(6), pp.604–609.

Gudi, S.K., & Tiwari, K.K., 2020. Preparedness and Lessons Learned from the Novel Coronavirus Disease. *Int J Occup Environ Med*, 11(2), pp.108-112.

Guha, S.K., & Niyogi, S., 2024. Higher Frequency of Healthcare Professionals is Associated with a Low Incidence of COVID-19-Related Death. *Inquiry: The Journal of Health Care Organization, Provision, and Financing*, 61.

Hunter D.J., 2020. Covid-19 and the Stiff Upper Lip - The Pandemic Response in the United Kingdom. *N Engl J Med*, 382(16), pp.e31.

Komasawa, M., Aung, M.N., Sekitoleko, R., Saito, K., Shirayama, Y., Makimoto, S., & Yuasa, M., 2023. Factors Associated with Hospital Service Access During COVID-19: A Longitudinal Study in Uganda. *European Journal of Public Health*, 33(Supp.2).

Mensah, G.A., & Johnson, L.E., 2024. Community Engagement Alliance (CEAL): Leveraging the Power of Communities During Public Health Emergencies. *American Journal of Public Health*, 114(S1), pp.S18-S21.

Merlin, N.M., & Vanchapo, A.R., 2021. Readiness Management in Handling COVID-19 Pandemic and Early Detection in The Referral Hospital in East Nusa Tenggara Province. *KEMAS: Jurnal Kesehatan Masyarakat*, 17(2), pp.279-286.

Miki, Y., & Ito, K., 2022. Appropriate Health Management Considering the Vulnerability of Women during Disasters. *Tohoku Journal of Experimental Medicine,* 256(3), pp.187–195.

Moncada, S., & Nguyen, L., 2024. Improving Sustainability, Climate Resilience and Pandemic Preparedness in Small Islands: A Systematic Literature Review. *Sustainability*, 16(2), pp.550.

Nour, N.N., 2011. Maternal Health Considerations During Disaster Relief. *Reviews in Obstetrics & Gynecology*, 4(1), pp.22–27.

Nurtyas, M., 2019. Pelayanan Kesehatan Ibu dan Anak Pascabencana (Studi Kasus Gempa dan Tsunami di Huntara Balaroa, Palu, Sulawesi Tengah). *Prosiding Seminar Nasional Multidisiplin Ilmu*, 1(1), pp.1-5.

Osendarp, S., Akuoku, J.K., Black, R.E., Headey, D., Ruel, M., Scott, N., Shekar, M., Walker, N., Flory, A., Haddad, L., Laborde, D., Stegmuller, A., Thomas, M., & Heidkamp, R., 2021. The COVID-19 Crisis Will Exacerbate Maternal and Child Undernutrition and Child Mortality in Low- and Middle-Income Countries. *Nature Food,* 2, pp.476–484.

Pan American Health Organization., 2016. *Plan of Action for Disaster Risk Reduction 2016–2021*.

Park, M., Cook, A.R., Lim, J.T., Sun, Y., & Dickens, B.L., 2020. A Systematic Review of COVID-19 Epidemiology Based on Current Evidence. *Journal of Clinical Medicine,* 9(4), pp.1-13.

Pati, S., Mahapatra, P., Kanungo, S., Uddin, A., & Sahoo, K.C., 2021. Managing Multimorbidity (Multiple Chronic Diseases) Amid COVID-19 Pandemic: A Community Based Study from Odisha, India. *Frontiers in Public Health*, 8, pp.1-9.

Pusat Krisis Kesehatan Kemenkes RI., 2023. *Pedoman Nasional Penanggulangan Krisis Kesehatan*.

Rasmussen, S.A., Smulian, J.C., Lednicky, J.A., Wen, T.S., & Jamieson, D.J., 2020. Coronavirus Disease 2019 (COVID-19) and Pregnancy: what Obstetricians Need to Know. *American Journal of Obstetrics and Gynecology*, 222(5), pp.415–426.

Sahoo, K.C., Pati, S., Negi, S., Patel, K., Mishra, B.K., & Palo, S.K., 2021. Challenges in Maternal and Child Health Services Delivery and Access During Pandemics or Public Health Disasters in Low-and Middle-Income Countries: A Systematic Review. *Healthcare (Switzerland),* 9(828).

Shamshiri, M., Ajri-Khameslou, M., Dashti-Kalantar, R., & Molaei, B., 2023. Management Strategies During the COVID-19 Pandemic Crisis: the Experiences of Health Managers from Iran, Ardabil province. *Disaster Medicine and Public Health Preparedness*, 17, pp.e140.

Sochas, L., Channon, A.A., & Nam, S., 2017. Counting

Indirect Crisis-Related Deaths in the Context of a Low-Resilience Health System: the Case of Maternal and Neonatal Health During the Ebola epidemic in Sierra Leone. *Health policy and planning*, 32(suppl_3).

Suroso, J., Yuliarti, Y., & Mardiyaningsih, E., 2017. Caring Environment Model in Emergency Services of Hospitals by Banyumas Public Perception. *KEMAS: Jurnal Kesehatan Masyarakat,* 13(1), pp.88-95.

Takahashi, A., Ishii, N., Kawashima, T., & Nakao, H., 2007. Assessment of Medical Response Capacity in the time of Disaster: the Estimated Formula of Hospital Treatment Capacity (HTC), the Maximum Receivable Number of Patients in Hospital. *Kobe J. Med. Sci,* 53(5), pp.189-198.

Tippong, D., Petrovic, S., & Akbari, V., 2022. A Review of Applications of Operational Research in Healthcare Coordination in Disaster Management. *European Journal of Operational Research,* 301(1), pp.1–17.

Ujang, I.R.M., Hamidi, N., Ab Hamid, J., Awang, S., Zulkifli, N. W., Supadi, R., Mohamed, N.E., & Sooryanarayana, R., 2023. The COVID-19 Pandemic and Disruptions to Maternal and Child Health Services in Public Primary Care Malaysia: A Retrospective Time-Series Analysis. *BMJ Global Health*, 8(11), pp.e013397.

Wang, J., Zhu, E., Umlauf, T., 2020. How China Built Two Coronavirus Hospitals in Just Over a Week. *The Wall Street Journal*, 2020.

Yi, P., George, S.K., Paul, J.A., & Lin, L., 2010. Hospital Capacity Planning for Disaster Emergency Management. *Socio-Economic Planning Sciences*, 44(3), pp.151–160.