

OVERVIEW OF THE DISASTER MANAGEMENT SYSTEM AT COMMUNITY HEALTH CENTERS THROUGHOUT TASIKMALAYA CITY

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Abstrak

Bencana adalah kejadian yang tidak bisa diprediksi yang merampas kehidupan dan mata pencaharian masyarakat. Kerusakan fasilitas fisik bersamaan dengan korban jiwa adalah dampak utama ketika sistem manajemen darurat tidak diterapkan. Sistem manajemen bencana diukur dari pemetaan kesehatan, layanan darurat harian, pemberdayaan masyarakat, pelatihan kesiapsiagaan, pemantauan (surveilans), dan koordinasi lintas sektor yang didistribusikan sesuai dengan tujuan penelitian. Tujuan dari penelitian ini adalah untuk mengetahui gambaran sistem manajemen bencana selama pra-bencana, bencana, dan pasca-bencana di puskesmas di Kota Tasikmalaya. Pendekatan kuantitatif dengan desain deskriptif diterapkan, mengumpulkan data melalui kuesioner terstruktur. Teknik pengambilan sampel dilakukan dengan total sampling, dengan data sampel dari ketua tim atau pengelola bencana di 22 puskesmas. Tahapan untuk memproses data meliputi pengeditan, pengkodean, pemrosesan, pembersihan, dan tabulasi. Hasil penelitian mencakup manajemen sebelum bencana, saat bencana, dan setelah bencana. Secara keseluruhan, manajemen bencana sebelum bencana mencakup 12 puskesmas (54,5%) dalam kategori tidak siap. Secara keseluruhan, manajemen bencana saat bencana mencakup 15 puskesmas (68,2%) dalam kategori siap. Secara keseluruhan, manajemen bencana setelah bencana mencakup 14 puskesmas (63,6%) dalam kategori siap. Sistem manajemen bencana secara keseluruhan di puskesmas Kota Tasikmalaya berada dalam kategori siap.

Kata Kunci: Bencana, Manajemen, Puskesmas, Sistem Tanggap.

Abstract

Disasters are unpredictable incidents that deprive communities of their lives and means of sustenance. The destruction of physical facilities alongside human casualties are primary impacts when an emergency management system remains unimplemented. The disaster management system is measured from health mapping, daily emergency services, community empowerment, preparedness training, monitoring (surveillance), and cross-sector coordination distributed according to research objectives. The purpose of this research is to determine the description of the disaster management system during pre-disaster, disaster, and post-disaster in puskesmas at Tasikmalaya City. A quantitative approach utilizing a descriptive design was applied, gathering data through structured questionnaires. The sampling technique is carried out with total sampling, with sample data from team leaders or disaster managers in 22 puskesmas. The stages for processing data are editing, coding, processing, cleaning, and tabulation. The results of the study include pre-disaster management, during disasters, and post-disaster management. Overall, pre-disaster disaster management included 12 puskesmas (54.5%) in the unprepared category. Overall, disaster management during disasters included 15 puskesmas (68.2%) in the ready category. Overall, post-disaster disaster management included 14 puskesmas (63.6%) in the ready category.

The overall disaster management system in puskesmas at Tasikmalaya City is in the ready category.

Keywords: *Disaster, Management, Community Health Center, Response System.*

A. INTRODUCTION

Disaster is an unexpected event that has a major impact and disrupts various aspects of community activities. Based on data from the (Ritchie et al., 2022) at Our World in Data website accessed on October 31, 2024, hundreds of thousands of fatalities resulted from disasters worldwide in these last two decades. The losses incurred are also enormous, reaching more than 0.40% of global Gross Domestic Product (GDP) or equivalent to 326.2 billion rupiah.

As stated by (The United Nations Office for Disaster Risk Reduction (UNISDR), 2015), disaster management measures must be taken to minimize losses due to disasters. Priority disaster management actions include studying disaster risks, strengthening disaster risk management, safety culture and resilience at all levels, reducing disaster risk factors, and effective preparedness responses.

Although emergency management systems are specialized and sophisticated, ordinary people tend to be the first to arrive at the disaster site. Formal institutional structures alongside arrangements significantly determine the level of citizen participation within emergency and disaster management (Whittaker et al., 2015). Another issue in disaster management is collaboration or cooperation between institutions. What kind of collaborative approach is effective in problem solving (Bodin & Nohrstedt, 2016).

Indonesia is an archipelagic country surrounded by a volcanic belt and located on the equator, making it prone to geological and hydrometeorological disasters. The BNPB's data and communication center recorded 5,400 disaster occurrences across Indonesia in 2023. Based on statistics published by the National Disaster Management Agency (BNPB), disasters caused 275 deaths, 33 people were reported missing, and 5,795 people were injured in 2023 (Badan Nasional Penanggulangan Bencana (BNPB), 2024). In addition, disasters also caused damage to 47,214 houses, 680 educational facilities, 506 places of worship, and 105 health facilities.

Risks of geological, hydrometeorological, alongside non-natural disasters accompany this Indonesian region, including the city of Tasikmalaya. According to the Tasikmalaya City Open Data website accessed on October 31, 2024, there are nine (9) types of disasters that occur in Tasikmalaya City. These disasters include floods, landslides, ground movements, tornadoes, earthquakes, extreme weather, lightning strikes, land fires, and fires (Badan Penanggulangan Bencana Daerah (BPBD) Kota Tasikmalaya, 2024).

Referring to the Minister of Health Regulation (Permenkes) No.43 of 2019, the Community Health Center (Puskesmas) serve as a health institution entrusted with organizing public alongside personal health initiatives with a priority on promotive and preventive actions (Kementerian Kesehatan Indonesia, 2019). Puskesmas has an important role in disaster management, especially in the field of disasters. (Atika, 2020) research shows that Puskesmas can play a role before, during, and after a disaster.

Puskesmas Kahuripan is one of the Puskesmas located in Tawang District. This Puskesmas covers Kahuripan and Cikalang sub-districts with a population of 31,469 people in 2022. Preliminary study results on December 22, 2024, showed that the Kahuripan Community Health Center did not yet have an optimal disaster management system. Meanwhile, flooding during the rainy season caused damage to the archives and computer equipment owned by the community health center.

Considering the identified problems, it is necessary to analyze the disaster management system not only at the Kahuripan Community Health Center but also at every other local health center across Tasikmalaya City area. Therefore, the researcher was motivated to conduct research entitled “Overview of the Disaster Management System at Community Health Centers throughout Tasikmalaya City.” This study aims to determine the description of the disaster management system before, during, and after a disaster at health centers in Tasikmalaya City.

B. METHOD

A quantitative approach utilizing a descriptive framework was applied in this research. The study was conducted in 22 community health centers in Tasikmalaya City and was carried out from March to April 2025. The population in this study consisted of the persons in charge or heads of disaster management teams at community health centers. The sample consisted of 22 respondents representing 22 persons in charge (PIC) or heads of disaster management teams at local health facilities. The applied sampling approach was total population sampling.

This study uses a questionnaire from (Dian et al., 2017), so validity and reliability tests are not necessary. The questionnaire uses a closed model and a Guttman scale. The research variables include pre-disaster management (health mapping, preparedness exercises, and cross-sector coordination), disaster management during disasters (daily emergency services), and post-disaster management (community empowerment and monitoring (surveillance)) at health centers in Tasikmalaya City.

The analytical process applies univariate with mean and median values as cut-off points to produce ready and not ready categories. If the data is normally distributed, the mean is used as the cut-off point. If the data is not normally distributed, the median is used as the cut-off point. A normal distribution is assumed provided the significance value is >0.05 .

This study successfully cleared the ethics review of the ethical review board at Muhammadiyah University Purwokerto (UMP) bearing the registration code: KEPK/UMP/353/II/2025. Each respondent was given an explanation and consent form before the research was conducted.

C. RESULT AND DISCUSSION

The pre-disaster management sub-health mapping provides an overview of the distribution of health-related preparedness conditions before a disaster occurs. The frequency distribution presented in Table 1 illustrates the existing conditions across the observed indicators and serves as a basis for identifying the level of preparedness and potential gaps in pre-disaster health management. The results are presented in the following table:

Table 1. Frequency Distribution of Pre-Disaster Management sub-Health Mapping

Pre-Disaster Management sub-Health Mapping	f	%
Ready	12	54,5
Not Ready	10	45,5
Total	22	100

Source: Primary Data (2025)

Table 1 presents the breakdown of health sub-mapping categories with a significance value of 0.067, so that the mean is applied in the categorization. Health sub-mapping includes disaster-prone maps, health resource maps, disaster risk maps, vulnerability maps, and community and environmental potential maps. The table above illustrates that health center mitigation efforts are not yet optimal. This is because mapping focuses on disasters without the active involvement of the community in disaster management efforts.

Table 2. Frequency Distribution of Pre-Disaster Management sub-Preparedness Drill

Pre-Disaster Management sub-Preparedness Drill	f	%
Ready	14	63,4
Not Ready	8	36,4
Total	22	100

Source: Primary Data (2025)

Table 2 illustrates the spread of preparedness sub-exercise categories with a significance value of 0.00, so the median was applied in the categorization. Preparedness sub-exercises include task force simulations, health center simulations, and contingency plans. Simulations are divided into those conducted by disaster task forces and health centers in general. Although they have been implemented, existing simulations are not conducted routinely, and simulations are general in nature, such as the use of fire extinguishers and floods. In addition, some health centers do not yet have contingency plans due to a lack of available data.

Table 3. Frequency Distribution of Pre-Disaster Management sub-Cross-Sector Coordination

Pre-Disaster Management sub-Cross-Sector Coordination	f	%
Ready	21	95,5
Not Ready	1	4,5
Total	22	100

Source: Primary Data (2025)

Table 3 details the frequencies of cross-sector sub-coordination categories with a significance value of 0.00, so the median value was applied in the categorization. Cross-sector sub-coordination includes disaster management teams, policy, and coordination. Disaster management teams have been formed in all health centers. The teams consist of various professions so that disaster management can be handled properly. There are health centers that face obstacles in terms of policy and coordination.

Table 4. Frequency Distribution of Disaster Management sub-Daily Emergency Services

Disaster Management sub-Daily Emergency Services	f	%
Ready	15	68,2
Not Ready	7	31,8
Total	22	100

Source: Primary Data (2025)

Table 4 displays the categorization of daily emergency sub-service categories with a significance value of 0.00, so the median value was applied in the categorization. Daily emergency sub-services include emergency and referral procedures, emergency facilities and infrastructure preparedness, and capacity building for health center personnel related to disasters. Community health centers face obstacles in terms of preparedness of facilities and infrastructure and capacity building for community health center personnel. These obstacles are related to funding support for the procurement of facilities and infrastructure and the implementation of capacity building for community health center personnel.

Table 5. Frequency Distribution of Post-Disaster Management Sub Community Empowerment

Post-Disaster Management Sub Community Empowerment	f	%
Ready	10	45,5
Not Ready	12	54,5
Total	22	100

Source: Primary Data (2025)

Table 5 outlines the statistical summary of community empowerment subcategories with a significance value of 0.00, so the median was applied in the categorization. Community empowerment includes environmental health training, communicable disease eradication, health promotion for clean and healthy living, emergency response for the public, nutrition management, and mental and reproductive health management. Community health centers face obstacles in environmental health training and emergency response for the general public. Environmental health training is constrained by the level of funding support provided, while emergency response for the general public is constrained by the limited number of personnel available.

Table 6. Frequency Distribution of Post-Disaster Management Sub-Monitoring (Surveillance)

Post-Disaster Management Sub-Monitoring (Surveillance)	f	%
Ready	14	63,6
Not Ready	8	36,4
Total	22	100

Source: Primary Data (2025)

Table 6 provides an overview concerning sub-variable monitoring categories with a significance value of 0.00, so the median value was applied in the categorization. Sub-monitoring (surveillance) includes monitoring of disaster-prone locations, early disaster detection, and cooperation with relevant parties. The table above shows that monitoring has been carried out but is not yet optimal. Monitoring of disaster-prone locations has not been carried out optimally. Community health centers are also limited in terms of facilities and infrastructure for early disaster detection. In addition, there are still community health centers that have not collaborated with relevant parties.

This section is dedicated to answering the research objectives, emphasizing the parallels, contrasts, and unique elements of the gathered outcomes. Furthermore, it clarifies why the investigation into disaster management during pre-disaster situations in health centers throughout Tasikmalaya City shows that there is a total of 12 health centers that are not ready. Health centers are advised to review health mapping and prepare contingency plans with relevant parties as part of disaster management efforts. Disaster management during disasters in health centers throughout Tasikmalaya City shows that there is a total of 15 health centers categorized as prepared. Health centers are advised to routinely conduct disaster preparedness drills and collaborate with multiple parties to organize capacity building for health center personnel in the field of disaster management. Post-disaster management in health centers throughout Tasikmalaya City: there are a total of 14 health centers categorized as ready. Health centers are advised to continue to improve cooperation and coordination with multiple parties, mobilize their networks to monitor disaster-prone locations, and transfer knowledge and skills to the general public.

Pre-Disaster Management at Community Health Centers in Tasikmalaya City

Based on Table 1, 95.5% of community health centers are ready and 4.5% are not ready. According to BNPB Regulation No. 2 of 2012 concerning General Guidelines for Disaster Risk Assessment, vulnerability falls into four categories: social, economic, physical, and environmental. The preparation of vulnerability assessments can be sourced from reports by the Central Statistics Agency (BPS) and the Geospatial Information Authority (BIG). The Ministry of Health (2006) describes community and environmental potential maps as detailed descriptions of the community and environment of an area (Dirjen Bina Kesehatan Masyarakat, 2006). The research findings indicate that 13 out of the 22 health centers do not yet have such maps. (Pradhita et al., 2022) state that mapping is intended as a basis for developing disaster mitigation plans.

Based on Table 2, 63.6% of health centers are prepared, while 36.4% are not. The research outcomes reveal that contingency plans are the highest element, at 27.3%, that health centers do not have. (Koenti, 2016) explains that contingency plans are important for mitigating the impact and losses of disasters because they have a single hazard nature and the possibility of collateral impact or secondary disasters. The preparation of contingency plans aims to prevent disasters, reduce the impact of disasters, respond to disasters effectively, and recover from their impact (Kardi et al., 2022).

Dewi (2010) in (Kardi et al., 2022) explains that the purpose of training is to develop abilities that enable behavioral change through cognitive aspects, attitudes, and skills. (Kardi et al., 2022) also states that officers who undergo training are 116 times more prepared in disaster management. To enhance the effectiveness and readiness of disaster response, (Akhir et al., 2020) suggest the need for psychological training, particularly in emotion management. This is related to the burden and challenges that affect the psychology of officers. (Akhir et al., 2020) explain that training must be carried out regularly and continuously to ensure the readiness of officers.

Based on Table 3, 95.5% of health centers are prepared, while 4.5% are not. The health center disaster management team involves doctors, nurses, sanitation/environmental workers, midwives, nutritionists, doctors/nurses related to mental health, non-health workers, and community members who have been specially trained in disaster management. Darim (2020) in (Welnita et al., 2024) states that human resources are a fundamental element of an organization and control other factors within an organization. The formation of disaster management teams is in line with the disaster management guidelines of the Ministry of Health (Dirjen Bina Kesehatan Masyarakat, 2006).

Meanwhile, funding for community health centers is not yet optimal. This is related to the funding pattern outlined in Minister of Health Decree No. 145/MENKES/SK/1/2007 concerning Guidelines for Disaster Management in the Health Sector, 2007 (Kepmenkes Nomor 145/MENKES/SK/1/2007 tentang Pedoman Penanggulangan Bencana Bidang Kesehatan, 2007). The funding pattern is still reactive or only occurs during disaster emergency response. (Shalih & Nugroho, 2021) have outlined the importance of funding support during pre-disaster, emergency response, and post-disaster periods. The weakness in budget realization during emergency response is the lack of support from local governments in the allocation of Contingency Expenditures (BTT) as well as being considered inflexible and prone to irregularities. (Shalih & Nugroho, 2021) propose improvements to funding, including strengthening pro-risk investment funding policies, strengthening a more flexible Contingency Expenditure (BTT) scheme, and seeking alternative funding for post-disaster development.

In addition to funding support, disaster management also needs to be supported by multiple sectors. The results of the study show that coordination has been carried out by community health centers. (Shalih & Nugroho, 2021) explain that the disaster management approach has developed into a multi-stakeholder (penta helix) approach, involving academics, government, business, community, and media. The results of (Lase, 2022) study describe how poor coordination will result in ineffective and inefficient outputs.

Disaster Management at Community Health Centers in Tasikmalaya City

Based on Table 4, 68.2% of health centers were ready and 31.8% were not ready. Standard operating procedures (SOPs) have been implemented well, as has the optimal referral system. This is in line with (Aritonang, 2024) research, which found that the effective and efficient implementation of SOPs can improve service quality and patient safety in emergency situations. (Ose, 2019) highlights the constraints of the referral system, such as

the distance between patients and referral health services to obtain more comprehensive treatment, the competence of health center staff, and the limited availability of ambulances.

(Marlina et al., 2024) explain the importance of the availability of ready-to-use facilities and infrastructure. Emergency disaster conditions require well-organized supply distribution with sufficient facility and logistical capacity support. Trisnawati (2019) in (Marlina et al., 2024) reinforces that management commitment, demonstrated by increased staff capacity and the necessary facilities and infrastructure, affects the preparedness of health centers. (Marlina et al., 2024) in their research stated that personnel who have been given training are 173 times more prepared in disaster management. Emergency training, disaster management, and other training are among the exercises that have an impact on the healthcare staff readiness.

Post-Disaster Management at Community Health Centers in Tasikmalaya City

Based on Table 5, there are 10 health centers that are ready and 12 health centers that are not ready. Community involvement in disaster management efforts plays a vital role in decreasing catastrophe risks. (Whittaker et al., 2015) state that communities or volunteers are usually the first to arrive at the scene. The involved community can spur innovation and improvisation as an immediate response after an emergency or disaster occurs. The community also often has knowledge related to issues and problems in the area, so the response provided is more optimal.

Based on Table 6, 63.6% of health centers are ready and 36.4% are not ready. Monitoring disaster-prone areas aims to prevent the outbreak of disease after a disaster. (Tumenggung, 2017) explains that the outbreak of disease begins with a lack of clean water, followed by a decline in personal hygiene and poor environmental sanitation. Monitoring involves implementing all public health efforts, designing a reliable disease reporting system, and investigating all reports of health problems.

Early detection is an important component in disaster mitigation efforts. (Sagay & Pangemanan, 2023) explain factors affecting the efficacy of preliminary identification for disaster mitigation include how precise the alerts are, the time gap separating the warning release and the onset of the hazard, the level of prior planning, along with public readiness (Ritonga, 2024).

(Shalih & Nugroho, 2021) explain that mitigation efforts are multi-stakeholder (penta helix) in nature, involving the participation of all parties.¹⁸ The results of (Ritonga, 2024) research show the importance of multisectoral cooperation in disaster management. Cooperation is needed to respond quickly and effectively to emergency situations and to build better preparedness at the community level. Cooperation from various parties can ensure the smooth provision of assistance. Good cooperation also has an impact on increasing preparedness and emergency response to disasters and creating a disaster-responsive environment.

D. CONCLUSION

Disaster management during pre-disaster situations in health centers throughout Tasikmalaya City shows that there is a total of 12 health centers that are not ready. Health centers are advised to review health mapping and prepare contingency plans with relevant parties as part of disaster management efforts. Disaster management during disasters in health centers throughout Tasikmalaya City shows that there is a total of 15 health centers categorized as prepared. Health centers are advised to routinely conduct disaster preparedness drills and collaborate with multiple parties to organize capacity building for health center personnel in the field of disaster management. Post-disaster management in health centers throughout Tasikmalaya City: there are a total of 14 health centers categorized as ready.

Health centers are advised to continue to improve cooperation and coordination with multiple parties, mobilize their networks to monitor disaster-prone locations, and transfer knowledge and skills to the general public.

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