# ANALYSIS OF HOSPITAL PREPAREDNESS IN DEALING WITH NATURAL DISASTERS BASED ON THE HOSPITAL SAFETY INDEX (HSI) (CASE STUDY AT CIDERES REGIONAL HOSPITAL)

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## ABSTRACT

***Background:****Indonesia is in the most vulnerable position to disasters. According to the Indonesian Disaster Risk Index (IRBI) of 2022, the West Java Province has a moderate risk index. In emergencies and disasters, the hospital is expected to be ready to maintain a safe environment for patients and hospital staff, as well as to provide the medical needs of victims in the face of disaster. Therefore, hospitals must be guaranteed safe and have a plan of preparedness in response to emergencies and disasters.*
***Methods:****This is a qualitative descriptive study using the Hospital Safety Index (HSI) issued by WHO and PAHO, which is a tool for assessing hospital readiness. Research location at RSUD Cideres district of Majalengka which is a type B hospital in Majalangka district in western Java province. RSUD Cideres is a reference hospital in Majalengka district that receives referral patients from both inside and outside of Majalengka district. With the acceleration of the development of the Rebana area and the western Java area of the south, Majalengka district is one of the districts that must be prepared especially in the health sector.*
***Results****: Based on 3 (three) criteria of evaluation of the Hospital Safety Index, the study obtained a structural safety score of 0.40 including category B, a non-structural safety rating of 0.42 including category B and a safety score for emergency and disaster management of 0.38 including class B. This shows that short-term intervention measures are needed.*
***Conclusion:****The overall readiness of RSUD Cideres District of Majalengka is 0.40 including type B which means that hospitals need intervention in the short term, hospitals can still survive during disaster but remain at risk.*

**Keywords :***disaster, preparedness, Hospital Safety Index*

## 1. INTRODUCTION

Disasters are often identified with something bad. According to Law Number 24 of 2007 concerning disaster management, a disaster is an event or series of events that threaten and disrupt the lives and livelihoods of the community caused by natural factors, non-natural factors or human factors resulting in human casualties, environmental damage, property losses and psychological impacts. (Anies, 2018).

Based on data released by the United Nations International Strategy for Disaster Reduction (UN-ISDR), Indonesia is the most disaster-prone country in the world. Law Number 24 of 2007 concerning disaster management explains that the territory of the Unitary State of the Republic of Indonesia has geographical, biological, hydrological and demographic conditions that allow disasters to occur. Geographically, Indonesia is an archipelagic country located at the meeting of four tectonic plates, namely the Asian Continent, the Australian Continent, the Indian Ocean and the Pacific Ocean. In addition to being surrounded by three of the world's tectonic plates, Indonesia is also on the Pacific Ring of Fire, which is famous for being a series of active volcanoes in the world. This condition has the potential to cause various disasters such as volcanic eruptions, earthquakes, tsunamis, floods and landslides. Most of the natural disasters that occur in Indonesia are dominated by hydrometeorological disasters such as tornadoes, floods and landslides.

Majalengka Regency based on IRBI 2022 has a moderate risk index. The Regional Disaster Management Agency (BPBD) of Majalengka Regency recorded 269 natural disasters throughout 2022. The dominant natural disasters were landslides, extreme weather, floods, erosion and soil movement. Natural disasters in the form of landslides occupied the top position, reaching 109 cases. Furthermore, there were 75 cases of extreme weather, 22 cases of floods, 21 cases of erosion, 10 cases of soil movement, 9 cases of forest and land fires, 2 cases of lightning strikes and 1 case of earthquake. The natural disasters that occurred in Majalengka Regency resulted in 11 deaths, 4 injuries and 3,854 people suffering and 308 people displaced. (BPBD Kab.Majalengka, 2022)

Emergency or disaster conditions that can occur in hospitals are events that can threaten the lives and safety of hospital workers and users, so various efforts are needed to identify risks and preparedness in hospitals. In 2022, based on data from the Central Statistics Agency (BPS), there were 3,072 hospitals in Indonesia. This number increased by 0.99% compared to the previous year, which was 3,042 hospitals. Based on its type, 2,561 units are General Hospitals (RSU), and the remaining 511 units are Special Hospitals (RSK). According to its region, East Java is the province with the most hospitals in 2022, namely 410 hospitals, followed by West Java Province with 399 hospitals.

*Hospital Safety Index*(HSI) is one of the instruments used to assess a hospital or health care facility continues to operate, function and provide services in emergency and/or disaster conditions. The Hospital Safety Index (HSI) helps policy makers to quickly determine the actions taken to improve the safety and ability of hospitals to respond to emergency and/or disaster conditions with a focus on prevention, mitigation, emergency response and recovery. The Hospital Safety Index (HSI) is also a management tool to ensure the readiness of hospital safety when a disaster occurs. Through this HSI, the extent of the hospital's readiness to face a disaster can be assessed. Internal disasters that occur in hospitals include fires and extraordinary cases. External disasters that occur in hospitals include earthquakes, floods, landslides, and so on. Strengthening disaster management in hospitals can minimize the risk of disasters and optimize hospital service capacity.
*Hospital Safety Index* consists of 4 parts, namely the geographical location of health facilities, structural elements of buildings, non-structural safety, and disaster management and hospital emergencies. (Suhariono, 2021). Analysis of the geographical location of the facility allows the hazards to be assessed in relation to previous emergencies and disasters that occurred in the zone, place, and type of land where the health facility has been built. Natural and anthropogenic disasters must be taken into account. This aspect is divided into two categories, namely hazards and geotechnical properties of the land. In this aspect, the risk of natural disasters that may occur in the geography of health services is assessed. In the structural safety aspect of the hospital, the safety of the facility structure will be evaluated, which involves assessing the type of structure, materials, and previous exposure to natural and other disasters. The goal is to find out whether the structure meets the standards to provide services to the population even in the case of a major disaster, or whether it could have an impact by endangering structural integrity and functional capacity in the event of a disaster. Non-structural safety usually does not endanger the stability of the building, but can endanger people and the contents of the building. In this aspect, an evaluation and verification of the stability of non-structural elements will be carried out and whether the equipment can function during and after a disaster. (Hospital Safety Index: Guide for Evaluators, 2015).

According to laws and regulations and the National Program, safe hospitals must continue to operate in emergency and disaster conditions. However, several studies show that health facilities in Indonesia are still not safe from disasters. (Ministry of Health of the Republic of Indonesia, 2020). Several studies related to hospital disaster preparedness include research conducted by Ririn Afrima Yenn, Novrikasari and Yuanita Windusari in 2021 on Analysis of Structural Preparedness in Facing Disasters Based on the Hospital Safety Index. The results of the study

showed a structural preparedness index of 0.75. (level B) which means that the hospital can function in emergencies and disasters, but increased preparedness capacity is still carried out to improve hospital safety during a disaster. In 2022, Krisnawati Gulo conducted a study entitled Analysis of Emergency and Disaster Management Preparedness Based on the PAHO/WHO Hospital Safety Index (HSI) at DKT DR.SOETARTO Hospital, Yogyakarta. The results of the study showed that the hospital had a safety index of 0.43 and a vulnerability index of 0.57, meaning that the health facility was considered able to survive a disaster situation, but other important equipment and services were at risk. This also means that remedial action is needed in the short term. The preparedness status is quite adequate but still has the potential for the hospital to fail in responding to disasters. Ensuring the function of hospitals in Indonesia and making them safe in the event of a natural disaster is a major challenge, not only because of the high number of hospitals and the high costs associated with implementing these improvements, but also because of the limited information on the current level of safety and disaster emergency management.

Cideres Regional General Hospital (RSUD) is a regional general hospital owned by the Majalengka Regency Government and is one of the type B hospitals located in the Majalengka area of West Java Province. This hospital provides health services supported by specialist doctor services and supported by other medical facilities. In addition, Cideres Regional General Hospital is also a referral hospital from first-level health facilities, such as Community Health Centers or clinics. (Profile of Cideres Regional General Hospital, 2022).

Cideres Regional General Hospital (RSUD) has several potential internal hazards, in addition to infectious diseases, there are also other potential hazards that are influenced by the situation and conditions in the hospital, namely explosions, fires, accidents related to electrical installations, radiation, hazardous chemicals, anesthetic gases, psychosocial disorders, and ergonomics. All of these potential hazards can cause disasters in hospitals that threaten the lives and lives of employees, patients and visitors in the hospital environment. External disasters that can also disrupt and paralyze services at Cideres Hospital include earthquakes, strong winds, or disasters due to technological failures. Cideres Hospital has a disaster team and K3RS Committee. This team has attended several trainings regarding disaster management and has conducted several disaster simulations, such as simulations on disaster management for fires and earthquakes. It is important to know about disaster preparedness in hospitals, considering that Cideres Hospital is a referral hospital in Majalengka Regency that accepts referral patients from both within and outside Majalengka Regency. Thus, hospital preparedness is required in terms of structural, non-structural and disaster and emergency management.

It is important to know the hospital's preparedness considering the development of the Rebana area as stated in Presidential Regulation of the Republic of Indonesia Number 87 of 2021 concerning the Acceleration of Development of the Rebana Area and the Southern West Java Area. Majalengka Regency is one of the regencies that must prepare itself. The plan to develop the Rebana area will clearly have an impact on the health sector. Cideres Regional Hospital, Majalengka Regency should be able to prepare itself to face health problems and disasters that may occur in Majalengka Regency. Thus, an analysis of hospital preparedness is needed in terms of structural, non-structural and emergency management for disasters. Based on the statement that has been stated above, the author is interested in conducting a study on "Analysis of Hospital Preparedness in Facing Natural Disasters Based on the Hospital Safety Index (HSI) (Case Study at Cideres Regional Hospital). The assessment of the hospital's preparedness response can be an input for improving the hospital in terms of preparedness in facing disasters, which this assessment has never been done before at Cideres Regional Hospital. In addition, the results of this research analysis can be detailed input regarding hospital preparedness in facing disasters, and become an evaluation material for all management and the K3RS team at Cideres Regional Hospital. Actions and policies before a disaster occurs must be taken by the hospital to reduce damage and casualties due to disasters, and be ready to handle disasters and plan actions after a disaster occurs.

### 1.1 Problem Identification

Hospitals are critical infrastructure that must always remain safe and operational. Measuring the level of hospital safety in disaster situations is important to reduce health risks. A safe hospital is a facility whose services are accessible and functioning at maximum capacity, with the same infrastructure before, during, and after a disaster. The hospital's preparedness response is highly dependent on a series of activities that have been carried out long before. These disaster preparation activities are often a problem in Indonesia that are not carried out for various reasons. Thus, there is a need to assess the readiness and resilience of hospitals.

Disaster preparedness assessment is also one of the standards in SNARS in Indonesia. According to the MFK standard in SNARS edition 1, a key element in developing a safe hospital is the development and implementation of HSI, a rapid and inexpensive diagnostic tool to assess the likelihood that a hospital will remain operational in emergencies and disasters.

Cideres Regional General Hospital (RSUD) is a type B hospital owned by the Majalengka Regency Government. RSUD Cideres is located in Bojong Cideres Village, Dawuan District, Majalengka Regency. The coverage area of RSUD Cideres includes Region III Cirebon and part of Sumedang Regency. RSUD Cideres is surrounded by densely populated housing and potential industrial environments including the activation of the West Java International Airport (BIJB) located in Kertajati District and directly adjacent to Dawuan District. RSUD Cideres already has a disaster team and K3RS Committee, but the assessment of RSUD Cideres' readiness in dealing with disasters using HSI has never been carried out at RSUD Cideres.
Based on the above, the following problems can be identified:

1. What are the types and levels of danger at Cideres Regional Hospital based on the Hospital Safety Index (HSI)?
2. How prepared is Cideres Regional Hospital in facing natural disasters based on the Hospital Safety Index (HSI).
3. What are the obstacles in implementing Cideres Regional Hospital's preparedness in facing natural disasters based on the Hospital Safety Index (HSI).
4. How is the next strategic planning of Cideres Regional Hospital in implementing preparedness for natural disasters based on the results of the Hospital Safety Index (HSI).

### 1.2 Research Objectives

The objectives to be achieved from this research are:

1. Analyze the types and levels of hazards at Cideres Regional Hospital based on the Hospital Safety Index (HSI).
2. Analyzing the preparedness of Cideres Regional Hospital in facing natural disasters based on the Hospital Safety Index (HSI).
3. To analyze the obstacles in implementing Cideres Regional Hospital's preparedness in facing natural disasters based on the Hospital Safety Index (HSI).
4. Analyzing how Cideres Regional Hospital's next strategic planning is in implementing disaster preparedness based on the results of the Hospital Safety Index (HSI).

## 2. LITERATURE REVIEW

### 2.1 Hospital Management

Management is seen as an activity of utilizing resources, to achieve certain goals and tends to be seen as an activity related to the functions carried out by managers, consisting of planning, organizing, actuating and controlling functions. Management resources needed to support management activities so that organizational goals are achieved consist of:

1. Human Resources (HR), namely people who carry out various activities or jobs that are categorized into manager groups and employee groups.
2. Financial resources, namely the financial model needed to finance activities, supply material resources, and pay labor wages.
3. Techniques, methods, regulations and/or conceptual thinking created to develop programs, strategies and policies to achieve efficiency and effectiveness in achieving goals.
4. Material resources, whether in the form of technical, physical and equipment, namely all facilities needed to support work efficiency and effectiveness, for example buildings, office equipment and so on.

Hospital management refers to the process of managing and coordinating resources, activities, and personnel in a hospital to achieve a predetermined vision. As with the general understanding of management, hospital management is also needed to provide quality, safe, and efficient health services to patients. In hospital management, there are several important aspects that need to be considered, including organizational structure, service standards, accreditation, human resources, finance and budget management, information technology, and relationships with stakeholders. (Febri Endra Setyawan & Stefanus Supriyanto, 2019).

### 2.2 Disaster Management

Disaster management is all activities that include aspects of disaster planning and response, before, during and after a disaster, known as the disaster management cycle. Disaster management is a dynamic process of how management functions work. Disaster management activities are activities that do not stand alone, but are related to various aspects of community life and require a multidisciplinary approach. In general, disaster management aims to prevent and limit the number of human casualties and damage to property and the environment, eliminate misery and difficulties in the lives and livelihoods of victims and provide information to the community and authorities about risks.

The concept of disaster management in Law Number 24 of 2007 Article 1 paragraph 5 is a series of efforts including the determination of development policies that are at risk of disasters, prevention activities, mitigation, emergency response and rehabilitation. Disaster management is divided based on a four-stage approach of mitigation, preparedness, emergency response and recovery reconstruction. The four stages of disaster management in its implementation are divided into several levels, namely pre-disaster, during disaster and post-disaster. Disaster management is known as four stages or areas of disaster management work as described as follows:

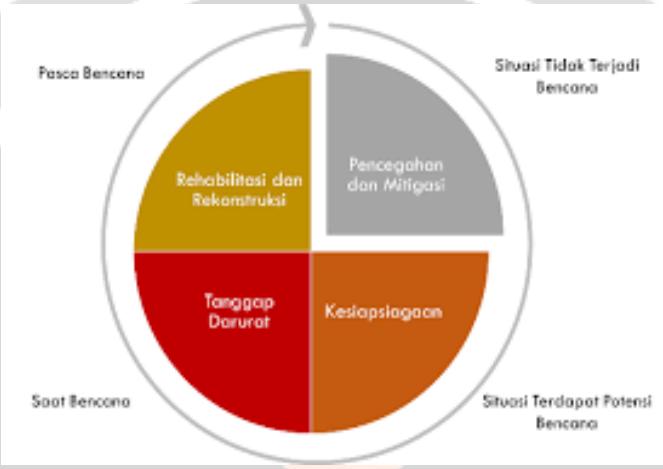


**Figure 1 Stages of Disaster Management in Disaster Management**
Source: Nurjanah, Sugiharto, et al. Disaster Management, 2019

**2.3 Crisis and Disaster Risk Management**

Disaster management can be divided into crisis management and risk management. Disaster risk management is a systematic process using administrative direction, organization and operational skills and capacity to implement strategies, policies and capacity building to reduce the adverse impacts of hazards and the possibility of disasters. Disaster risk management is in the pre-disaster phase which is carried out through prevention, mitigation and preparedness. Risk and crisis management in the disaster management cycle can be seen in the figure below:

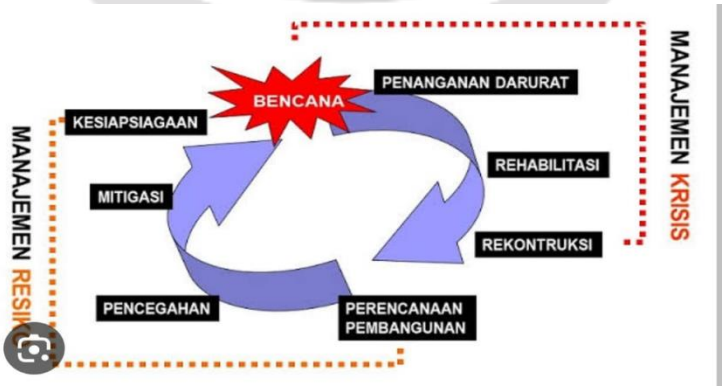


**Figure 2 Risk and Crisis Management Cycle in Disaster Management**
Source: Nurjanah, Sugiharto, et al. Disaster Management, 2019

Risk management is an effort to identify, analyze and control risks in every company activity with the aim of achieving effectiveness and efficiency. Based on a literature review conducted by Abbassabadi et al, the disaster risk management model in hospitals has eight main constructs consisting of leadership and management, risk assessment, planning, prevention and mitigation, preparedness, response, recovery and key performance. The eight constructs consist of subconstructs which also include staff management, patient management, resource management and safety security. (Abbasabadi A, Khankeh HR, 2019).

### 2.4 Hospital Preparedness in Facing Disasters

Hospital preparedness assessment in facing disasters is one way to improve hospital resilience in facing disasters, with the assessment intended so that hospital management can be more aware of the shortcomings of the hospital so that they can improve these shortcomings. For the government, the assessment can be used for mapping hospitals that are vulnerable to disasters or hospitals that are in areas that are considered safe. For the community, the assessment can help the community to determine where they should seek health services when an emergency or disaster occurs around them.

Some emergency conditions that occur in hospitals include safety and security emergencies, spills of Hazardous and Toxic Materials (B3) and waste, failure of medical and non-medical equipment, hospital utility emergencies including electrical failures, water supply failures, information technology or IT failures, and air conditioning system failures and outbreaks or pandemics of disease. Emergency conditions in hospitals can develop into disasters if they cannot be handled by the hospital's internal resources. (Directorate General of Public Health, Ministry of Health of the Republic of Indonesia, 2020)

The disaster emergency risk management program in hospitals aims to increase positive opportunities and impacts, and reduce negative opportunities and impacts, such as reducing the quality of hospital services or disrupting the operational functions of the hospital during emergencies and/or disasters. The risk management process in disaster and emergency situations can be seen in the image below:

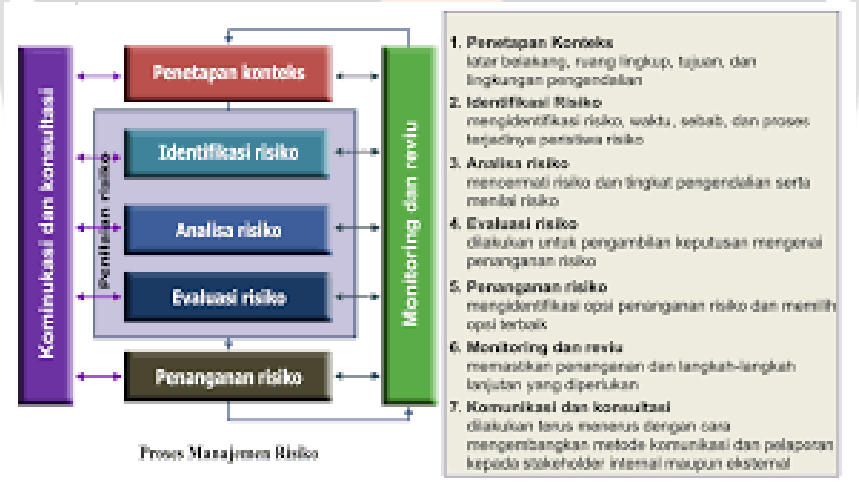


**Figure 3 Risk Management Process in Disaster and Emergency Situations**
Source: Directorate General of Public Health, Ministry of Health, 2020

Emergency risk management in hospitals is carried out through several stages. It begins with determining the scope of the type of emergency and/or disaster conditions to be controlled, then risk identification, risk assessment, risk analysis, risk evaluation, risk handling, monitoring and review and risk communication. Risk assessment is an activity to assess the level of possibility and severity or damage or cessation of hospital service processes due to emergency disaster conditions. There are several risk assessment methods, including using HSI.

## 3. RESEARCH METHODS

This research was conducted at Cideres Regional Hospital, Majalengka Regency. Cideres Regional Hospital is located at Jalan Raya Cideres-Kadipaten Number 180, Bojong Cideres Village, Dawuan District, Majalengka Regency. This research was conducted in November 2023. This research is a qualitative descriptive study regarding the structural, non-structural, disaster and emergency management preparedness of Cideres Regional Hospital, Majalengka Regency in dealing with natural disasters. The research was conducted by collecting data and analyzing data qualitatively. Qualitative methods were used to determine the structural, non-structural and disaster and emergency management preparedness of hospitals in dealing with disasters where the measurement results were in the form of descriptive data. This method was chosen to produce information through a series of processes consisting of collecting data, compiling data, processing data, to drawing conclusions regarding the preparedness of Cideres Regional Hospital in facing natural disasters using HSI. The data collection techniques used in this study were interviews with informants regarding the preparedness of Cideres Regional Hospital in facing disasters and direct field observations related to hospital preparedness both structurally, non-structurally or disaster management and hospital emergencies referring to HSI.

## 4. DISCUSSION

### 4.1 Hazard Identification in Hospitals

Based on the assessment results regarding the level of danger using the HSI assessment, Cideres Regional Hospital is not in an earthquake-prone area. Even so, Cideres Regional Hospital still prepares SOPs related to earthquake management and educates patients and employees on how to deal with earthquakes. Therefore, the calculation of the HSI weight at Cideres Regional Hospital uses model 2, namely each component has a weight of 33.3%. Hospital readiness in anticipating disasters must be divided into external and internal disasters. External disasters are disasters that occur in the community, while internal disasters are disasters that occur inside the hospital building. If the hospital only focuses on external disasters, it will threaten the safety of patients who are being treated if a disaster occurs internally in the hospital. This is actually contrary to the patient's right to obtain security and safety during the treatment process in the hospital.

Based on the hazard variables that affect hospital safety, the main focus of the emergency and disaster response work program based on the HSI RSUD Cideres is to anticipate and improve hospital preparedness, especially in preventing disaster risks. Identifying the impact of an emergency and disaster is as important as identifying the type of emergency and disaster. This will help in planning the strategies needed when a disaster occurs.

### 4.2 Structural Safety of Hospitals

Structural safety assessment of the structural safety of the hospital building in this study was conducted by direct observation of all parts of the hospital building. The assessment of structural safety focuses on events that can affect hospital safety and the integrity of the hospital building, especially in the event of a disaster or emergency. From the results of direct observation, it was found that there were several minor damages on several sides of the hospital building. The repairs that will be carried out by Cideres Regional Hospital based on the results of the structural safety analysis include repairs to minor cracks that will be patched and repainted.

### 4.3 Non-Structural Safety of Hospitals

Based on the Regulation of the Minister of Health of the Republic of Indonesia Number 7 of 2019 concerning hospital environmental health, it is stated that hospitals must have a backup water source to meet water needs in emergencies and hospitals must prepare backup water source facilities in addition to the main source. The problem related to water supply at Cideres Regional Hospital is that the alternative water supply is only around 30-80%, there is an additional pumping system but it cannot meet the needs for more than 3 days so the step that must be taken is to prepare backup water source facilities that can last more than 3 days. To meet daily water needs, the hospital uses groundwater, but in an emergency the hospital cooperates with the Regional Drinking Water Company (PDAM).

The possibility of fire is something that must be anticipated and addressed. An active fire system is required for hospital buildings. Cideres Regional Hospital has APAR and hydrants on every floor of the hospital building, but the hospital does not have a special fire officer and the fire system is not always tested regularly. In the waste management system based on the HSI assessment, Cideres Regional Hospital has a high level of security. This is in accordance with the Regulation of the Minister of Environment and Forestry No. P.56 / menlhk / setjen / kum.1 / 4/2015 of 2016 concerning Procedures and Technical Requirements for the Management of Hazardous and Toxic Waste from Health Service Facilities. Storage of B3 waste at Cideres Regional Hospital uses containers with colors according to the type of waste. B3 solid waste is stored in the B3 Temporary Storage Place (TPS) available at Cideres Regional Hospital. The TPS in the Cideres Regional Hospital environment has a permit issued by the Investment and One-Stop Integrated Service Office of Majalengka Regency. Every solid waste and sharp objects taken from each room are transported every day to be recorded, weighed and temporarily stored at the B3 waste TPS. For the transportation of B3 waste, RSUD Cideres collaborates with a company that has a transporter permit from the Ministry of Environment, namely PT Trisna as the transporter and PT Srikandi as the manager. By routinely monitoring the management of B3 medical waste, the hospital can find out the important impacts of B3 medical waste so that the hospital can anticipate so that medical waste does not interfere with the comfort and health of patients and hospital employees.

In overcoming fuel reserves, emergency maintenance and restoration of fuel reserves are required. In addition, there are procedural and maintenance documents that must be continuously updated. Fuel reserve resources must be able to survive up to 3 days after a disaster. The fuel reserve crisis system at Cideres Hospital is still limited and less than 3 days. To overcome this, Cideres Hospital should cooperate with a generator vendor that is ready 24 hours if needed in an emergency. For other critical systems, namely medical gas and HVAC, they function quite well, but regular monitoring and inspection are still needed. Alternative sources of medical gas at Cideres Hospital are still limited and delivery of supplies takes quite a long time, therefore Cideres Hospital should cooperate with a vendor that can quickly send medical gas reserves if needed, especially during a disaster.

**4.4 Disaster and Emergency Management**

Disaster and emergency management assessment and analysis consists of coordination of emergency and disaster management activities, hospital disaster response planning, information and communication management, human resources, logistics and finance, patient services and support services, evacuation and decontamination processes and security systems.

The external and internal communication system of Cideres Regional Hospital starts from the room or unit or installation to the security section then to the information center then to the disaster management coordinator during working hours. Meanwhile, if a disaster occurs outside of working hours, the hospital security section will remain at the information center. The hospital must improve internal and external communication in emergencies and disasters and must be tested periodically. An emergency response team is formed to strengthen the response and recovery from disasters, the hospital incident management system, EOC, coordination mechanisms and cooperative planning with local disaster management agencies, and coordination mechanisms and cooperative planning with the health service network. Emergency Operation Center (EOC) or in Indonesian known as the emergency operations center is a physical space that functions as a centralized location for coordinating all emergency response activities. The EOC can be a temporary facility or a permanent structure that is established, and contributes to effective resource mobilization, information management and coordination and control of emergency operations and activities related to health. Hospital recovery is the process of the hospital to minimize the impact on hospital operations so that it can operate normally. (PAHO, 2015)

Cideres Regional General Hospital (RSUD) has a decontamination area to decontaminate patients before they enter the hospital and prepare themselves to face chemical and radioactive hazards. Workers who work in high-risk areas for infectious diseases are given PPE in the form of masks, head coverings, disposable coveralls and gloves. The hospital also has an isolation area for infectious diseases. Hospitals that do not carry out decontamination in the

hospital can increase the risk of infection. Hospitals must prepare and train decontamination teams and create decontamination areas equipped with showers and their own ventilation. Each hospital also requires various antidotes for materials and already has suppliers during a disaster. This is necessary because the impact of a hazmat incident on a hospital is very significant. Hospital staff can be injured while treating patients and hospital facilities can be disrupted due to secondary infections.

In facing danger and risk, RSUD Cideres has created a disaster guideline containing disasters such as fire, earthquake, child abduction, flood, and riot. Meanwhile, technology failure and tsunami are not included in the guideline. Of all these disasters, RSUD Cideres has only ever held evacuation simulations and drills for earthquake and fire disasters.

In an emergency or disaster, hospital staff are required to go beyond their routine roles and responsibilities. To meet this demand, all staff members need to be involved in the emergency planning process so that they can distinguish between their routine responsibilities and those required in an emergency or disaster. Staff also need training in implementing risk reduction measures and the procedures and protocols required in the hospital's emergency response plan. (Mangindara, et al., 2021). In disaster management, there are four main phases, namely prevention, a series of efforts to prevent and reduce disaster risks, both through and increasing the ability to face disaster threats, preparedness which is a series of activities carried out to anticipate disasters through organizing and through appropriate and effective steps, for example, preparing communication facilities, command posts, preparing evacuation locations, contingency plans and socialization of disaster management guidelines. Response is a series of activities carried out immediately at the time of a disaster to deal with the negative impacts caused, including rescue and evacuation of victims, property, fulfillment of basic needs, protection, management of refugees, rescue and restoration of facilities and infrastructure, and restoration of facilities and infrastructure to their original state.

**4.5 Obstacles in Implementing the Hospital Safety Index (HSI)**

Based on the results of research conducted at Cideres Hospital regarding hospital preparedness in facing disasters, there are eight types of obstacles faced by Cideres Hospital in the process of implementing HSI in the hospital, including the commitment of hospital leaders, the number of human resources owned, funding sources, uneven human resource competencies, cooperation with cross-sectors and third parties, changes in policies and employee transfers within Cideres Hospital. To overcome this, Cideres Hospital has issued Decree of the Director of Cideres Hospital number 64.1 of 2022 concerning the establishment of the Cideres Hospital K3RS Committee. Cideres Hospital has also sent some K3RS members to attend emergency training. In the future, it is hoped that all members of the K3RS Committee can receive emergency training so that they can strengthen the potential of the hospital.

**4.6 Hospital Strategic Planning**

From the results of the research conducted and the results of the identification of obstacles faced by the hospital, Cideres Regional Hospital can maximize the strengths and opportunities owned by Cideres Regional Hospital. All things that become obstacles and barriers can be included in the planning of the hospital's Strategic Plan (Renstra) whose output is various hospital programs including those related to K3RS.

From the results of the SWOT analysis, it was found that the strategy that must be implemented by RSUD Cideres is a growth-oriented strategy or aggressive growth policy. This strategy includes implementing professional systems and procedures. RSUD Cideres must be able to create and improve services in accordance with applicable SOPs, improve education or training programs for HR owned by RSUD Cideres and expand the reach of services and strengthen cooperation with cross-sectors.

## 4.7 Triangulation Test

Credibility testing is a test of the trustworthiness of data that has been produced during the qualitative research process. The credibility test used in the study is by triangulating the data. Triangulation in testing the credibility of this study uses triangulation of data sources, techniques, and time.

Triangulation of data sources is to explore the truth of certain information through various sources of data acquisition. In this study, it was conducted by comparing interview data obtained from informants with observation results seen directly by the author. In the results of interviews with Informants 3 and 4 regarding the presence or absence of an Emergency Operation Center (EOC) room, the informant said "there is no fixed EOC room, because the EOC room

is determined after a disaster occurs" this is proven by direct observation conducted by the researcher that there is indeed no special EOC room at Cideres Hospital.

The triangulation technique used in this study is by checking the data obtained from the same source using different techniques. The technique used to test the credibility of this study is the Focus Group Discussion (FGD) conducted with informants. The results of the triangulation test found that "every year Cideres Regional Hospital always budgets funds for the maintenance and repair of hospital buildings." This is in line with the results of the interview conducted with informant 1 previously.

The time triangulation used in this study was to recheck the results of interviews with the same informant at different times and situations. The time used by the researcher was 1 week after the first interview. From the results of time triangulation on informant 5, the same answer was obtained as the results of the first interview, namely "the hospital has conducted simulations of fire and earthquake disasters, only the simulations are not routinely carried out".

## 5. CONCLUSION

From the results of the research that has been conducted, the following conclusions can be drawn:

1. Cideres Regional General Hospital (RSUD) Majalengka Regency is a hospital with a low disaster level. Although the disaster level in the hospital is low, the hospital still has the potential for earthquakes, tornadoes, floods, food epidemics, industrial hazards, fires, and transportation incidents.
2. The overall Safety Index based on the Hospital Safety Index (HSI) for Cideres Regional Hospital, Majalengka Regency is 0.40 and the vulnerability index is 0.60 so that Cideres Regional Hospital is included in the category or level B hospital. This shows that health facilities are considered to be able to survive in disaster situations but other important equipment and services are at risk so that short-term intervention steps are needed, the level of hospital preparedness can still survive during a disaster but remains at risk. Of the 151 HSI assessment points, 18 points are included in the high safety category, 129 points are included in the medium safety category, and 4 points are not filled in because they do not match the conditions and situations of Cideres Regional Hospital.
3. The obstacles faced by RSUD Cideres related to disaster preparedness come from internal factors and external factors of the hospital itself. Internal factors include hospital leadership policies, human resource fulfillment, human resource competency and funding factors. While external factors consist of cooperation with cross-sectors and third parties, policy changes and employee mutations within RSUD Cideres.
4. Cideres Hospital has greater strengths than its weaknesses. In addition, Cideres Hospital has greater opportunities than its threats. Therefore, Cideres Hospital has opportunities and strengths so that it can take advantage of existing opportunities. The strategy that must be implemented in this condition is to support an aggressive growth policy (growth oriented strategy).

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