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Study of Preparedness for the Aceh Disaster Management Agency in the of the Tsunami Disaster in Aceh Province

Muhammad Harits[1]; Rini Safitri; Nizamuddin[2]

[1]Masters in Disaster Science Postgraduate Program; Syiah Kuala University; Banda Aceh; Indonesia

[2]Faculty of Mathematics and Natural Sciences; Syiah Kuala University; Banda Aceh; Indonesia

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Abstract

After the 2004 earthquake and tsunami in Aceh it changed the Indonesian government's perspective on disaster management in this country. In the past the government only reacted during emergency response and rehabilitation. However, after the tsunami in Aceh 2004, the government changed its mindset in terms of disaster management in Indonesia. After the issuance of Law Number 24 of 2007 concerning Disaster Management, the government then issued Presidential Regulation Number 8 of 2008 concerning the National Disaster Management Agency (BNPB). With the issuance of the Law and PERPRES it is hoped that disaster management activities in Indonesia can be carried out effectively and efficiently. BPBA is a working unit of Aceh that is formed to carry out tasks and functions in the context of disaster management in Aceh. BPBA with all its limited capacities starting from its establishment on June 22, 2010 has made every effort to carry out its main tasks and functions in carrying out disaster management services. This research was carried out in the Aceh Province with the scope of this research focused on analyzing human resource preparedness at the Aceh Disaster Management Agency(BPBA). This study uses descriptive research methods with qualitative and quantitative approaches. Data obtained through questionnaires and interviews will be used to explain the results obtained in this study. The population involved in this study were all human resources at the Aceh Disaster Management Agency, which amounted to 108 people. Of the total population, the number of respondents involved in data collection amounted to 52 people. Preparedness of BPBA employees in tsunami disaster management activities is ready, the results are based on measurements of variables of knowledge, attitudes, policies and guidelines, emergency response plans, tsunami early warnings and the level of preparedness of employees who are very ready to tackle tsunami disasters need to increase intensity and training continuously.

Keywords: Aceh Disaster Management Agency; Preparedness; Tsunami

1. Introduction

Indonesia is the largest archipelagic country in the world and is at the confluence of three active tectonic plates, namely the Indo-Australian plate in the south, the Eurasian plate in the north and the Pacific plate in the East. The three plates move and collide with each other so that the Indo-Australian plate dips beneath the Eurasian plate and causes earthquakes, volcanic pathways, and faults or faults.

Indonesia's location in the*ring of fire*makes Indonesia a country prone to disasters such as earthquakes, tsunamis, floods and volcanic eruptions.

The province of Aceh is on the tip of the island of Sumatra which is also the westernmost region of Indonesia. Most of the area borders the South China Sea and the Indonesian Ocean. Such a position causes Aceh to have great potential for natural disasters such as tsunamis, robes, typhoons, and storms. Aceh also has a series of active volcanoes both on the islands and in the ranks of the hill ranges. The events of the 2004 great earthquake and tsunami occurred as a result of the location of Aceh on the coast. The effect of these events continues, it is thought that shifting plates on the seabed also has the potential to cause earthquakes and increase volcanic activity on volcanoes (Sugito, 2008).

Indonesia still has major problems in terms of disaster, the first is still a lack of disaster management performance and the second is still a lack of attention to the importance of disaster risk reduction. In addition, people who panic at the time of evacuation are also one indicator of the low understanding of community preparedness in the face of disasters, this is very closely related to knowledge of disasters that should be increasing (Soetadi, 1987).

Learning from the experience of the Aceh earthquake and tsunami disaster of December 26, 2004 ago in general has opened the eyes of the world and Indonesia in particular. The Aceh earthquake and tsunami in 2004 claimed many lives, this was due to the lack of government knowledge and preparedness in disaster management in Indonesia (Sampagita, 2010).

Thus the old paradigm of seeing disasters with responsive patterns must be changed, it should be done through a different approach or with a new paradigm, namely seeing disasters starting from pre-disaster (before), during disasters and post-disaster (after). Before a disaster can occur a prevention and preparedness program can be carried out, when a disaster occurs an emergency response program can be carried out with the applicable SOP and post-disaster can be carried out with a rehabilitation and reconstruction program (Puspito, 2005).

One of the natural disasters that we must be aware of is the tsunami disaster. Tsunami disasters can occur if an earthquake begins, followed by a large wave and leads to the land, when there will be an earthquake until now, no one has found out, even earthquake experts around the world have not been able to predict when an earthquake will happened with certainty. But with the knowledge of preparedness that is owned if it can minimize the risks and losses that can occur (Puspito, 2005).

After the 2004 Aceh earthquake and tsunami, the Indonesian government changed its perspective on disaster management activities in this country. In the past the government only reacted during emergency response and rehabilitation. However, after the tsunami in Aceh in 2004, it has changed the thinking pattern of the government in disaster management activities in Indonesia. In responding to the disaster management system at that time the Indonesian government was very serious about building legalization, institutions, and *budgeting*. After the issuance of Law Number 24 of 2007 concerning Disaster Management, the government then issued Presidential Regulation Number 8 of 2008 concerning the National Disaster Management Agency (BNPB). With the issuance of the law and PERPRES it is hoped that disaster management activities in Indonesia can be carried out effectively and efficiently.

Until now, the number of BPBA employees currently is 108, consisting of 76 male employees and 32 female employees. With an employee capacity of 108 people, if there are activities related to BPBA operations, both disaster mitigation, emergency response and recovery, all employees assigned to the field must be ready at any time. Because with limited staff, the leadership can assign anyone who is prepared to the field without any difference in educational background or work in any field and is expected to work optimally in disaster management activities in Aceh province (BPBA, 2018).

Based on the conditions described above, the authors convey in this paper the title Study of Preparedness for the Aceh Disaster Management Agency in the Face of the Tsunami Disaster in Aceh Province.

2. Area descriptions, methods and material studied

This research was conducted in the Aceh Province region with the scope of this research focused on analyzing human resource preparedness at the Aceh Disaster Management Agency. This study uses descriptive research methods with qualitative and quantitative approaches. Data obtained through questionnaires and interviews will be used to explain the results obtained in this study. This research was conducted at several government institutions, namely BPBA, Banda Aceh BPBD, Pidie BPBD and South Aceh BPBD with the consideration that the agency is fully authorized towards disaster management activities in the province of Aceh, especially the tsunami disaster. Based on these considerations there must be special preparation of human resources assigned to the agencies mentioned above when exercising authority in the event of a tsunami threat in the province of Aceh.

The population involved in this study were all human resources at the Aceh Disaster Management Agency, which amounted to 108 people.

Based on the total population, the sample collection in this study can be carried out based on the Slovin formula (Sevilla at al, 2008, 161), namely:

$$n = \frac{N}{1+Ne^2}$$ Press …… .1

Description:

n : Samples

N : Number of population

e : Critical value (limit of accuracy) desired (percent of allowance for inaccuracy due to population sampling errors)

With an employee population of 108 people and "e" (level of accuracy) 10 percent. This result is obtained through the following calculation:

$$n = \frac{108}{1+108\ (0.1)^2}$$ Press …… .. 2

$$n = \frac{108}{1+1.08} \quad n = \frac{108}{2.08} \quad n = 52$$

With these results it can be concluded that the number of respondents involved in data collection amounted to 52 people. The number of respondents is expected to be able to answer the problems and needs of this study.

3. Results

Understanding Tsunamis

The word tsunami became popular after the earthquake which was followed by a tsunami wave on December 26, 2004 in the Indian Ocean region. Which caused a loss of life to reach 283,100 people and harmed a lot of property and damaged public infrastructure. Countries that affected the earthquake and tsunami events on December 26, 2004 included Indonesia (Aceh and Nias), Sri Lanka, India, Thailand, Malaysia, Maldives, Bangladesh, Kenya, Somalia and Tanzania (Subandono, 2010).

According to Subandono (2005) in general a tsunami is interpreted as a large tide in the port. We can freely describe tsunamis as long-term ocean waves caused by impulsive disturbances that occur in the marine medium. Impulsive disturbance that can be a tectonic earthquake, volcanic eruption, or landslide(land-slides).

Number of Deaths Due to the 2004 Tsunami in Aceh

On December 26, 2004, a 9.2SR earthquake had shaken the earth of Nanggroe Aceh Darussalam, which was followed by a Tsunami at a distance of 150 km from the coast, causing enormous damage to all areas of Aceh's life. The World Bank reports that compared to the damage that occurred in other tsunami areas, such as Sri Lanka, Thailand, India and Maldives. Indonesia is a country that has the most severe damage (Zulfaqar, 2008).

The earthquake and tsunami that hit the Aceh and other Indian Ocean regions on December 26, 2004 was recognized as the biggest natural disaster and the biggest damage to the Asian region. This is the fifth largest earthquake for a century and is the biggest after Prince William Sound eruption in Alaska in 1964 with an earthquake strength of 9.2 on the Richter scale (Arthuloka and Budi, 2005).

In Nanggroe Aceh Darussalam damage occurred in 15 districts so that 500,000 people had to evacuate to other places and claimed 167,000 lives, 130,000 died and 37,000 lost (BRR, 2006), while estimated material losses amounted to 4,747 million US dollars (Doocy, 2007). The highest number of casualties in the city of Banda Aceh, amounted to 22.2% of the total death toll.

Preparedness of the Aceh Disaster Management Agency in the Face of the Tsunami Disaster

The Tragedy of the earthquake and tsunami that hit Aceh and its surroundings in 2004 has prompted serious attention from the Indonesian government in disaster management in Indonesia. In the framework of implementing *theMemorandum of Understanding* Helsinki(MoU) on 15 August 2005, Law Number 11 of 2006 concerning Aceh Government and Law Number 24 of 2007 concerning Disaster Management, and supported by Aceh Qanun Number 5 of 2010 concerning Disaster Management and Aceh Qanun No. 6 of 2010 concerning the Establishment of the Organizational Structure and Work Procedure of the Aceh Disaster Management Agency, the Aceh Government has established the Aceh Disaster Management Agency (BPBA).

BPBA is a working unit of Aceh that is formed to carry out tasks and functions in the context of disaster management in Aceh. BPBA with all its limited capacities starting from its establishment on June 22,2010 has made every effort to carry out its main tasks and functions in carrying out disaster management services in Aceh province.

Understanding Preparedness

In the Republic of Indonesia Law Number 24 of 2007 concerning Disaster Management, it was explained that the notion of Preparedness is a series of activities carried out to anticipate disasters through organizing and through appropriate and efficient measures.

National Disaster Management Agency (BNPB) said, there are 9 stages in preparedness activities that must be met, namely:

1. assessment of risk *(risk assessment)*
2. Standby Planning *(contingency planning)*
3. Resource mobilization *(mobilization)*

disasterthat can occur anytime and anywhere at any time.

4. Education and training *(training & education)*

5. Coordination *(coordination)*
6. Emergency management *(response mechanism)*
7. Early *warningwarning)*
8. Information management *(information(information systems)*
9. Rehearsal / simulation *(drilling / simulation)*

Preparedness Needs in Disaster Mitigation

Events of natural disasters are irregular events in 3 (three) things: (a) Frequency (When?); (b) Location (Where?); (c) Intensity (How?). This irregular event causes natural disasters to be complicated to predict, so that to prevent, reduce, avoid and recover from the effects of disasters need a series of activities both before, during and after a disaster called disaster management (Purwanto, 2012).

In general, the activities carried out in disaster management are as follows: prevention, mitigation of hazards, preparedness,emergency response, recovery (rehabilitation and reconstruction),and sustainable development that reduces disaster risk.

4. Discussion

In this study the number of respondents who participated was 52 people plus 6 respondents who were interviewed from several agencies mentioned above. The questionnaire was distributed to all respondents who met the criteria for this study, then carried out observations and in-depth interviews with the guidelines according to the questionnaire. From the data obtained, the following are presented the demographic data of respondents who participated in the study (Table 4.1).

Table 4.1 Demographic Data Respondents to BPBA staff preparedness in facing the threat of a tsunami disaster (n = 52)

No	Demographic Data	Number of Respondent	Percentage (%)
1.	Educational background of		
	1. High School	19	36,5
	2. Diploma III	4	7.6
	3. S1	22	42, 3
	4. S2	7	13.4
2.	Age		
	1. <21	1	1,9
	2. 21-35 years old	27	51,92
	3. > 35 years	24	46,15
3.	Gender		
	1. Female	27	51,92
	2. Male	25	48,07
4.	Work Period		
	1. 1 - 5 years	25	48.07
	2. 5 - 10 years	27	51.92

Based on Table 4.1, it can be seen that the age of BPBA employees under 21 years is 1.9%, the age of BPBA employees ranges from 21 - 35 years 51.92% and the age of BPBA employees is above 35 year 46.15%. Education of high school level respondents amounted to 36.5%, Education respondents Diploma level numbered 7.6%, Education respondents Bachelor level 42.3% and Education level Master respondents 13.4%. The sex of the respondents was 48.07% men and 51.92 women. While the working period of 1-5 years is 48.07% and 5-10 years is 51.92%. Based on the graph below, age-related age is more dominated by age between 21-35 years, if education is dominated by undergraduate education and if seen by sex it is dominated by male sex.

BPBA Employee Knowledge of Tsunami Disaster Threats

More knowledge parameters to measure basic knowledge about natural disasters such as characteristics, causes and impacts due to earthquakes, knowledge that is owned can usually influence people's attitudes and concerns to be ready and alert in anticipating disasters (LIPI- UNESCO / ISDR, 2010). As for respondents' opinions about knowledge and attitudes facing the threat of a tsunami disaster, the percentage that answers "yes", "no" or "do not know" is:

$$Index = \frac{Total\ real\ value\ of\ parameters}{Maximum\ value\ of\ parameter} x\ 100$$

$$Index = \frac{1503}{1664} x\ 100 = 90.32$$

The results of data analysis for knowledge parameters are in the index value of 90.32 with the category very prepared. As for the indicator analysis, it was found that the respondents' knowledge of the meaning of the disaster was 64.53%, 30.6% of the respondents answered that they did not understand the meaning of the disaster and 10.47% of the respondents did not know anything about the meaning of disaster. If viewed in an index the respondent's knowledge of the notion of disaster is in the category of almost ready.

The second indicator about natural events that caused disasters 98.68% of respondents answered knowing about natural events that caused disasters and 1.92% of respondents answered they did not understand about natural events that caused disasters, meaning that indicators of knowledge of natural events that caused disasters were categorized as very ready. The third indicator that can cause a tsunami 88.94% of respondents answered knowing about the cause of the tsunami and 13.84% did not understand and 2.4% of the respondents said they did not know anything about the cause of the tsunami. Therefore the category that can cause a tsunami to enter into the category is very ready.

The fourth indicator, the signs of a tsunami happening 84.6% of respondents knew about signs of a tsunami, 15.3% of respondents did not understand the signs of a tsunami and no respondent answered that they did not know at all. Based on the results of the percentage it was found that the signs of a tsunami going into the category were very prepared even though 15.3% of the respondents still did not know the signs of a tsunami. The fifth indicator of activity when sea water recedes 100% of respondents answered immediately to evacuate to the nearest rescue building. This can be learned from the experience of the tsunami in Aceh in 2004 that before the tsunami waves of sea water receded from the coast to the middle of the sea and turned into high waves, namely the tsunami waves. The sixth indicator about the function of the *Tsunami Early Warning System* 96.1% of respondents knew their function, 3.84% of respondents did not understand the functions of the *Tsunami Early Warning System* and zero percent of respondents' answers did not know the function of the tsunami *early warning system*. Based on the percentage obtained that the tsunamiindicator *early warningsystem* entered the category is very ready, although there are still 3.84% do not understand.

Seventh indicator about knowledge of tsunami prone areas in Aceh 90.3% of respondents answered knowing tsunami prone areas in Aceh and 9.61% of respondents answered not understanding about tsunami prone areas in Aceh. The eighth and ninth indicators of knowledge of tsunami disaster prone areas in Aceh province 90.3% of respondents answered that tsunami prone areas in Aceh, 32% did not understand tsunami prone areas in Aceh and 19.2% of respondents gave answers did not know anything about tsunami-prone areas in Aceh. Based on the percentage results there were still statements of respondents who did not know the residential areas of the respondents about the area prone to tsunami threats and also the respondents did not know tsunami-prone areas in Aceh province. Tenth indicator about disaster management 100% of respondents answered knowing about disaster management and 100% of respondents answered knowing about BPBA's role in disaster management in Aceh province. Twelfth indicator about knowledge of getting information related to the tsunami disaster 88.94% of respondents answered knowing that they had received information about the tsunami disaster, 10.09% of respondents answered that they did not understand about the origin of tsunami disaster information and 0.96% of respondents answered that they did not know the origin of disaster information tsunami.

The Attitudes of BPBA Employees in The Assignment

Attitude of employees is an important factor in contributing to productivity and the introduction of high commitment in management practices (Rodwell, et.al, 1998). The attitude of employees at BPBA is very important to improve preparedness in anticipating the possibility of a tsunami disaster and influencing preparedness including: maintaining cohesiveness with other employees, ready to be assigned to areas that have an impact on the tsunami disaster, ready to be assigned at any time during the tsunami disaster, working wholeheartedly in the event of a disaster, organizing the community to share knowledge about the tsunami disaster, the task is not to distinguish ethnic groups, religions and victims, want to practice and work in the field in the effort and rescue of disaster victims, always controlling anger and panic when working in the field.

$$Index = \frac{Total\ real\ value\ of\ parameters}{Maximum\ value\ of\ parameter} x\ 100$$

$$Index = \frac{414}{416} x\ 100 = 99.51\ The$$

Attitude of BPBA employees in serving preparedness in the face of tsunami disasters is 99.51% with a very prepared category. It can be seen that 100% of respondents said BPBA employees maintain cohesiveness with other employees on duty. The second indicator 100% of respondents are ready to be assigned to areas that have an impact on the tsunami disaster. The third indicator of 100% of respondents stated that they were ready to be assigned at any time during the tsunami disaster.

Fourth indicator 100% of respondents stated that they are ready to work wholeheartedly when a disaster strikes. The fifth indicator 100% of respondents are ready to organize the community to share knowledge about the tsunami disaster. The sixth indicator 98.07% of respondents agreed in their duties did not differentiate ethnicity, religion and race of victims and 1.9% of respondents distinguished ethnicity, religion and race in the task force.

The seventh indicator of 100% of respondents stated that they are ready to practice and work in the field in an effort to save disaster victims. The eighth indicator 98.07% of respondents said they did not agree if they always control their anger and panic while working in the field and 1.9% of respondents stated that they agreed to always control their anger and panic when working in the field. Only 3.84% of respondents who answered did not agree on duty did not differentiate ethnicity, religion and race of the victim and the respondent also gave the member an answer that did not agree if he always controlled anger and panic when working in the field.

Policies and Guidelines

Policies and guidelines are very important to improve BPBA employee preparedness in anticipating the possibility of a tsunami disaster. Preparedness policies and guidelines include: Disaster Response Team (TRC), head decree for the establishment of Disaster Management TRCs (PB), disaster management SOPs have been socialized to all staff, this PB TRC has functioned in the following matters, for example:coordination, planning preparedness activities and implementation of preparedness activities, BPBA has funds / budgets for implementing tsunami simulations and disaster management in Aceh province.

$$Index = \frac{Total\ parameter\ real}{value\ Maximum\ parameter\ value} x\ 100$$

$$Index = \frac{390}{416} x\ 100 = 93.75$$

Policy and guidance for tsunami disaster preparedness for BPBA employees is 93.75% with a very prepared category. It can be seen that 100% of respondents said that BPBA has a disaster response team (TRC). The second indicator 96.15% of respondents said that there was a decree establishing the disaster management team. The third indicator 92.30% of respondents said that BPBA already had a Standard Operating Procedure (SOP). The fourth indicator 78.84% of respondents said that the disaster management SOP had been socialized to all BPBA employees. The fifth indicator 94.87% of respondents said that the PB Team had functioned in matters of coordination, preparedness activities planning, and implementation of preparedness activities. The sixth indicator 98.07% of respondents said that BPBA had funds / budgets for the implementation of tsunami simulation and disaster management activities in Aceh province.

Emergency Response Plans Emergency

Response plans are also another parameter made by LIPI-UNESCO / ISDR (2006) to measure the level of preparedness in anticipating a tsunami disaster. An understanding of the tsunami disaster must be followed by concrete actions in anticipating it such as saving themselves from the tsunami disaster. Preparation of pictures / posters of actions that must be taken in the event of an earthquake and followed by a tsunami, agree on an evacuation place for employees, prepare maps / evacuation routes, prepare important / valuable documents, prepare alternative communication tools, prepare important telephone addresses / exercises and do exercises / simulations evacuation.

BPBA has prepared special equipment for first aid. Follow the exercise using equipment related to handling the tsunami disaster. Take part in exercises that test the tsunami disaster emergency response procedures. Take part in training that fosters BPBA officers when responding to a tsunami disaster. Following individual training related to handling tsunami disasters. Following training between teams related to handling the tsunami disaster. Join joint training with relevant elements / agencies in handling the tsunami disaster. Attend individualtraining *emergency response.*

$$Index = \frac{Total\ real\ value\ of\ parameters}{Maximum\ value\ of\ parameter} x\ 100$$

$$Index = \frac{836}{1028} x\ 100 = 81.32\%$$

Based on the above results it can be seen that the emergency response plan in the face of the tsunami disaster in BPBA employees is included in the category of highly prepared with an index of 81.32%. The first indicator of action taken by BPBA to save itself from the tsunami disaster 90.86% of respondents answered yes and 8.17% of respondents answered no. The second indicator of preparedness in the face of tsunamis, BPBA has prepared a picture that must be done in the event of an earthquake and followed by a tsunami, agreed on an employee evacuation site, prepared maps, prepared important and valuable documents, prepared alternative communication tools, prepared important address / telephone numbers and followed training and simulation 84.89% of respondents answered yes and 15.11% of respondents answered no. The third indicator is that BPBA prepares special equipment for first aid. 75% of respondents answered yes and 25% of respondents answered no.

Indicator of the four BPBA employees following the tsunami disaster training / simulation 67.13% of respondents answered yes and 32.69% of respondents answered no. Indicators of the five BPBA employees taking part in training related to the handling of the tsunami disaster, namely 50% of respondents answered yes and 50% of respondents answered no. The indicators of the six BPBA employees participated in a training that tested tsunami disaster emergency procedures, 71.15% of respondents answered yes and 28.84 % of respondents answered no. The indicators of the seven BPBA employees attended training that fostered when the tsunami disaster response was 67.30% of respondents answered yes and 32.69% of respondents answered no.

The indicators of the eight BPBA employees participated in individual training related to the handling of the tsunami disaster, namely 67.30% of respondents answered yes and 32.69% of respondents answered no. Indicators of the nine BPBA employees took part in the training between teams related to the handling of the tsunami disaster, namely 78.84% of respondents answered yes and 21.15% of respondents answered no. Indicators of the ten BPBA employees participated in joint exercises with related elements / agencies in handling the tsunami disaster, namely 80.76% of respondents answered yes and 19.23% of respondents answered no. Indicators of the eleven BPBA employees attending individualtraining *emergency response* were 61.53% of respondents answered yes and 38.96% of respondents answered no.

Tsunami Early Warning System

Warning systems*(warningsystem)*is an important part of preparedness in the face of a tsunami. Signs given from the warning system will be delivered to BPBA employees either directly or indirectly, then can respond to the warning. The tsunami early warning system is in the form of the availability of sources of information for warnings of tsunami waves, both from traditional sources and traditional local agreements and tsunami warning systems. If you hear a warning or danger sign, you will do the following things such as saving important documents, disseminating information on danger / warning signs in the surrounding environment and other agencies, contacting the family to be alert and helping colleagues / people around to the temporary evacuation site. In the event of a disaster emergency while on duty, actions to be taken such as continuing to carry out tasks according to applicable procedures, go home to save the family and save themselves.

$$Index = \frac{Total\ real\ value\ parameter}{Maximum\ value\ of\ parameter} x\ 100$$

$$Index = \frac{378}{520} x\ 100 = 72.69$$

Early warning is a series of activities to give warning to the community as soon as possible about the possibility of a disaster occurring somewhere by the authorized institution. The index of the tsunami early warning system in the face of the threat of a tsunami disaster at BPBA employees is 72.62 included in the ready category. From this value it can be explained 64.10% for indicators of knowledge of the

system / way of warning or disaster danger signs in the Aceh region, including in the category of almost ready.

The second indicator 85.84% of BPBA employees hear warnings or alarms will do the following things such as saving important documents, disseminating warning / warning information to the surrounding environment and other agencies, contacting families to be alert and helping colleagues / people around to get to temporary evacuation sites included in the category are very ready. Overall the respondents thought that they were alert when they heard a warning or alarm. Most respondents already knew what actions they should take immediately.

The third indicator 61.53% of the actions that will be taken during an emergency event during the duty period such as continuing to carry out tasks in accordance with applicable procedures, returning home to save the family and saving themselves, each of which is almost ready in the category. It means that most BPBA employees are not really ready to take action in an emergency.

Mobilization of Resources

One of the preparations that can be made before a disaster comes is to prepare Human Resources well, which is one of them by developing HR owned. Likewise, the development of Human Resources at BPBA is important to do. Given that natural disasters cannot be known exactly when and where it will occur.

$$Index = \frac{Total\ real\ value\ of\ parameters}{Maximum\ value\ of\ parameter} x\ 100$$

$$Index = \frac{397}{468} x\ 100 = 84.82$$

Based on the above results, the index value of resource mobilization in the face of the tsunami disaster at BPBA is 84.82% or the category is very prepared. In the mobilization of these resources, only one indicator was unprepared, namely BPBA vigilance towards disasters such as life / property / property insurance, namely 5.76%, meaning it was not ready.

The special budget for disaster preparedness is very well prepared, namely 96.1% and building locations in other regions are 59.6% included in the category of almost ready. The third indicator about the preparation of the BPBA in the face of the tsunami disaster is that 90.3% is included in the very prepared category. The fourth indicator regarding the monitoring of BPBA on disaster prepared equipment and equipment is regularly 96.1%. The fifth indicator about the influence of age while serving on BPBA is 94.2% with a very prepared category which means there is no influence on age in serving at BPBA. The sixth indicator of employment does not prevent the contribution of disaster management 94.2% is included in the highly prepared category, meaning that the working period of the old BPBA employees and the new ones have no influence. The seventh indicator about education does not affect the tasks at BPBA 94.2%, including in the very prepared category. It means that the level of education between SMA, Diploma, Bachelor and Masters has no influence at all depending on placement in the bureaucracy.

Preparedness Index

After analyzing the overall level of preparedness of BPBA employees starting from analyzing tsunami disaster knowledge, the attitude of BPBA employees in their duties, BPBA policies and guidelines, emergency response plans, tsunami early warning and resource mobilization, to determine BPBA employee preparedness, calculated with the parameter index formula of the UNESCO LIPI. To calculate it, the overall value of each variable from the research questionnaire results that have been

recapitulated on the master table attached to the appendix, is combined into the parameter index formula summarized as follows.

Table 4.8 Preparedness index value

Variable	Index Value Parameter
Knowledge	$Index = \frac{1503}{1664} x\ 100 = 90.32$
attitude	$Index = \frac{414}{416} x\ 100 = 99.51$
Policy and guidelines	$Index = \frac{390}{416} x\ 100 = 93.75$
emergency response plan	$Index = \frac{836}{1028} x\ 100 = 81.32\%$
Tsunami early warning	$Index = \frac{378}{520} x\ 100 = 72.69$
resource mobilization	$Index = \frac{397}{468} x\ 100 = 84.2$

Based on the preparedness index formula above, then the weight values to obtain the most important indicators between knowledge, attitudes, policies and guidelines, emergency response plans, disaster warnings and resource mobilization, we can conclude the weight values as follows:

Table 4.9 weight

Variable	valuesValue
Knowledge	0.36
Attitude	0.09
Policy and guideline	0.09
Emergency response plan	0.22
Tsunami early warning	0.11
Resource mobilization	0.10

Based on the preparedness index formula and previous information, the level of preparedness of BPBA employees can be calculated as follows:

IK = (0.36 x 91) + (0.09 x 99) + (0.09 x 94) + (0.22 x 82) + (0.11 x 73) + (0.10 x 84)

= (33 + 9 + 9 + 18 + 8 + 9)

= 86

Conclusions

Based on the research that has been done, it can be concluded that :

1) Based on the results of the preparedness index, the overall average score is 86. If this index is categorized as the LIPI preparedness level of 80-100 can be categorized as preparedness BPBA employees are very prepared in disaster management activities in Prov Aceh.
2) The complexity of the tsunami disaster problems requires careful planning in its response, so that it can be implemented in a directed and integrated manner. Disaster recovery activities also cannot be carried out suddenly but need preparation to be done long before the disaster comes through a process called disaster mitigation. Therefore BPBA employee preparedness must continue to be increased gradually.

Preparedness of BPBA employees in dealing with the threat of a tsunami disaster is very well prepared, it is based on measurements of variables of knowledge, attitudes, policies and guidelines, emergency response plans, tsunami early warning and resource mobilization.

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