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Community Perception of Activation Sirine Tsunami in Banda Aceh and Aceh Besar

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Abstract

After the earthquake and tsunami in Aceh on December 26, 2004, the government has developed an early warning system calledInaTEWS (Indonesia Tsunami Early Warning System) using a tsunami siren that aims to build community capacity to prepare and take action on tsunami hazards. The purpose of this study was to determine public knowledge, the benefits of siren activation, sound range and public perception of tsunami siren activation. Data collection uses descriptive qualitative and quantitative methods with instruments in the form of a validated questionnaire. Respondents involved were people who lived within a radius of 1 km, 2 km, and 3 km from the tsunami siren point. H asyl research shows that people's perceptions of tsunami siren activation vary , with the level of community knowledge being classified as good (with an average value of 77 , 25 %), as well as the benefits of tsunami siren activation being considered good by the community (with an average rating of 76 , 05%). The range of siren sounds is still quite sufficient (with an average value of 74 , 44 %) and the average public perception of siren activation as a whole is 76% with a good category. Even though the category is good, the average score is not maximal yet. Therefore, to increase knowledge and benefit from tsunami siren activation, awareness and care from the community must be raised. The government must also continue to deliver disaster information on an ongoing basis so that the community can fully understand the function of the tsunami siren.

Keywords: Public Perception; Community Knowledge; The Benefits of Sirens; Siren Sound Range

Introduction

The earthquake and tsunami disaster caused many people who suffered losses of property and psychology due to lack of preparedness in dealing with disasters. Preparedness in the face of this disaster is one of the efforts to overcome the disaster that is not only done by government agencies or the community, but also requires cooperation between the two. This form of preparedness can take the form of facilities and infrastructure as well as increasing knowledge, behavior, attitudes and governance of institutions in dealing with the tsunami disaster (Anam et al. , 2018 : 17).

Before a disaster occurs, various preparedness activities should be carried out in dealing with disasters, for example such as the tsunami early warning system developed by the government

called *InaTEWS (Indonesia Tsunami Early Warning System)* which aims to build community capacity to prepare and take action on potential tsunami hazards . How to deliver appropriate information to the public in tsunami emergency conditions is to use tsunami sirens, which have been installed at 6 points in the Banda Aceh and Aceh Besar areas, namely in the Aceh Governor's Office, Lampulo, Blang Oi, Lam Awee, Kajhu and Lhoknga (Anwar, 2011 : 78).

On the 26th of the month the sirens are checked and turned on by the BMKG to ensure that the equipment is functioning properly. Various information about the earthquake and tsunami also been conveyed through the medium of internet, TV, radio and mail news by the government, so that people can easily obtain accurate information about the earthquake and tsunami disaster. However, even though the community has received a lot of information for tsunami disaster preparedness, they still complain that the small volume of tsunami sirens that cannot reach large areas does not affect their knowledge and preparedness (Syahputra, 2015 : 30).

Therefore, this study will examine the community's perception of the activation of the tsunami sirens, so that people who hear, rarely hear and have never even heard a tsunami warning through the siren sound are no longer panicked if at any time the siren loudspeakers are turned on because there is a potential for tsunami disaster as well as reviewing the benefits that have been gained by the community since the tsunami sirens started being turned on by loudspeakers.

Community Perception

Understanding community perception is the response or environmental knowledge of a group of individuals who interact with each other because they have values, norms, ways and procedures are a shared need in the form of a custom system that is continuous and bound by a shared identity obtained through the interpretation of sensory data. When combined between perception and society, the authors provide a definition that community perception is a process in which a group of individuals who live and live together in a particular area, responding to things that are considered attractive from their neighborhood.

Community Perceptions About Disasters

According to Sabir and Phil (2016 : 317), some people assume that disasters are not caused by nature, but because of the fate that befell them. This disaster is also considered a disaster that befell because of adzab, trials and tests from God for mistakes made by humans. Then only repentance is the path that humans must take to deal with the disaster (calamity).

Tsunami Early Warning System

According to Pribadi(2012: 212)BMKG tsunami early warning is still based on the determination of the earthquake magnitude. A tsunami alarm will automatically turn on if an earthquake analysis system detects large-scale earthquakes with magnitudes above 6 , 5 SR, located at sea at a depth of the sea surface less than 60 km from the bottom. Subsequently the tsunami warning decision was issued through an information dissemination system and conveyed to central and regional government officials of the tsunami earthquake disaster, related agencies, mass media , and the earthquake information user community.

Tsunami Siren

Sirens are a medium that is used in open space which is very instrumental to deliver tsunami warnings. The sound of sirens is very big influence on the community so that they immediately take action against the threatening danger. Therefore, the decision to sound the siren must be ensured supported by accurate and official information from the Meteorology, Climatology and Geophysics Agency (BMKG). Currently the siren control system is in the Central BMKG and in several local governments (BMKG, 2012 : 101).

Disaster Preparedness

And Tierney Sutton (2006) explains that preparedness is one of the efforts that must be made in order to anticipate the possibility would be a disaster to avoid loss of life, loss of property and changing patterns of life of the community in the future.

Research Methods

This research uses descriptive research method with quantitative and quantitative approaches, with research variables namely people's perception of tsunami activation every month. This research data through a qualitative approach results obtained from the interviews and questionnaires distribution in the form of 30 items on perceptions m asyarakat the importance of activation of the siren tsunami preparedness and knowledge of the community in the face of the earthquake and tsunami. Then, quantitative data obtained from the interview questionnaire results are described based on additional data in the form of observations during the study and are associated with appropriate prior research.

The population in this study are all people around the tsunami sirens in the Banda Aceh and Aceh Besar region. The sampling technique in this study uses *purposive sampling*. In accordance with the opinion of Sugi y ono (2009 : 124) which states that " *purposive sampling* is a *sampling* technique with certain considerations". M aka the samples in this study are the people who are around the tsunami sirens in the Banda Aceh and Aceh Besar area, every 1 siren is selected by 1 5 people with a range of 1 km , 2 km and 3 km. Respondents per kilometer are 5 people. The total sample is 9 0 people around 6 tsunami sirens in the Banda Aceh and Aceh Besar areas. The data source in this study uses primary data. Primary data were obtained from related installations such as BMKG and BPBA and the community around the tsunami siren.

The questionnaire to be distributed to respondents amounted to 30 items, with three indicators namely public knowledge, the benefits of siren activation and the range of siren sounds. A technique nali sa Data in pene l itian is used to obtain answers about the knowledge and preparedness of communities around the tsunami siren . Then the data were analyzed using level categorization, Azwar (2010: 106) with the aim to get the level of participation as follows:

Table 1. Level of Knowledge and Preparedness of Communities Around the Tsunami Sirens of the Banda Aceh and Aceh Besar Areas.

Percentage of Perception (score)	Category
0 -50	Less
5 1 -75	Enough
76-100	Well

(Source: Azwar 2010: 106)

Furthermore, calculating the percentage using Sudijono's formula (2005: 43) is as follows:

$P = \frac{f}{N}$ x 100%

Information:
P : Percentage
F : Frequency
N : Number of Respondents
100% : Fixed Numbers

The questionnaire was tested for eligibility by two experts, namely two lecturers from Syiah Kuala University who understood the questionnaire of the community's perception of tsunami sirens. Based on expert opinion, there are many improvements that must be made to the questionnaire in order to obtain a questionnaire that is appropriate to ask the community. The results of the instrument feasibility test are the questionnaires that researchers are currently using to obtain community answers on the activation of the siren.

Discussion

Based on answers to a questionnaire that has been collected, it can be analyzed and processed by calculating the frequency of each alternati f contained in the questionnaire and then calculate the percentage. The results of the percentage calculation will be the basis for drawing conclusions in the study.

H acyl research shows that the public perception of the tsunami siren activation is very diverse. The community does not yet fully have the knowledge and understand the benefits of the importance of tsunami siren activation which is carried out every month in several areas of Banda Aceh and Aceh Besar. Based on the formulation of the problem and the purpose of the study which is to know the public's perception of the siren activation test, the range of the sound of the siren and the benefits obtained by the community in the form of knowledge and preparedness in dealing with disasters, the following conclusions are obtained:

Community Knowledge

The level of public knowledge about the earthquake and tsunami disasters is included in the good category, but there is still a need for improvement and a desire from oneself to obtain information, especially related to the tsunami early warning system. Only some people know the purpose of activating the siren, even some people still listen to the siren but do not know when the routine activation of the siren is carried out.

Table 2. Recapitulation of Percentage Results of Community Perceptions of Siren Activation Tsunamis Based on Community Knowledge

NO	Kat E Gori	Respondents	Percentage
1	Less	14	0-50%
2	Enough	16	51-75%
3	Well	60	76-100%
total		**90**	**-**

Benefits of Siren Activation

So far, there have been many benefits derived from tsunami siren activation, such as increasing community preparedness in the face of disasters. The government has tried to spread disaster information and siren activation through mass media , internet and radio, it's just that there are still many people who are less concerned with the information. The community knows that there will be siren activation from announcements made at the mosque / menasah but some do not know when routine activation will take place.

Table 3. Recapitulation of Percentage Results of Community Perceptions of Siren Activation Tsunami Based on Benefits of Siren Activation

NO	Kat E Gori	Frequency	Percentage
1	Less	5	0-50%
2	Enough	29	51-75%
3	Well	56	76-100%
total		**90**	**-**

Range of Siren Sounds

There are still many people who rarely hear the sound of the siren during activation every 26th of each month. Some people do not agree if the sound (volume) of sirens is enlarged to reach a greater distance, because those who live in a radius of 1 km feel very disturbed by the volume of sirens that are too large .

Table 4. Recapitulation of Calculation Results Percentage of Community Perceptions of Activation Tsunami Sirens Based on Sound Range

NO	Kat E Gori	Frequency	Percentage
1	Less	6	0-50%
2	Enough	36	51-75%
3	Well	48	76-100%
Total		**90**	**-**

Community Perception of Tsunami Siren Activation

Many people give positive perceptions of tsunami siren activation based on the knowledge and benefits gained, then the range of siren sounds is still considered sufficient, because the number of sirens is still lacking, so there are still many people who rarely listen to the siren sound during trials.

Table 5. Community Perception of Tsunami Siren Activation

No	Indicator	Average Value	Category
1	Community Knowledge	77.25%	Well
2	Benefits of Siren activation	76.05%	Well
3	Range of Siren Sounds	74.44%	Enough
Average Perception		**76%**	**Well**

Based on a questionnaire about people's perceptions of tsunami siren activation as a whole, an average value of all community responses was obtained, which is good with a score of 76%. With the breakdown of the average value of community answers to the questionnaire given to community knowledge about disaster and siren activation is 77.25% classified in the good category, the average benefit for siren activation is 76.05% with a good category and the average value the average range for the sound of sirens is 74.44% with enough categories.

Conclusion

Public perception of the activation of tsunami sirens has so far been good, this can be seen in the level of community awareness around the siren monument that has received and supported the government in implementing or testing tsunami sirens on the 26th of each month. However, at first many people who lived around the siren monument had complained and were angry because of the very large volume of sirens that disturbed their hearing. The volume of the tsunami siren above is large enough to be able to reach a radius of 2 km, as a result the people who are within a radius of 1 km feel tremendous hearing loss.

But now the community has responded positively to the tsunami siren system, because the village head has also been involved so that they can jointly be responsible for maintaining the siren monument and the equipment inside. This concern is thought to have occurred because of the community's knowledge gained through disaster socialization and mass media about the importance of the siren for mutual safety in the face of the threat of the tsunami disaster.

Suggestion

Based on research that has been done, there are some suggestions that researchers want to make as a form of recommendation for the tsunami siren activation test, namely:

1) It is necessary to increase public knowledge and awareness of disasters and early warning systems such as tsunami sirens, because this will also affect other aspects. This was done in order to be able to save and reduce fatalities and property losses caused by the earthquake and tsunami.

2) The government should continue to provide insight or information on an ongoing basis to the public in the form of socialization and tsunami simulation so that all levels of society to know and are accustomed to going to the tsunami siren activation routine trials conducted in Banda Aceh and Aceh Besar.

3) Information on siren activation and tsunami simulation must also be conveyed at school, so that children are accustomed and alert when sirens are sounded when they are at home or at school. Because by providing disaster education to children from an early age can foster children's preparedness when not with their parents. The role of teachers and parents is needed to form a child who is prepared for disasters.

4) The community should not only depend on the tsunami siren as an early warning system, but the community can try to make other early warnings to anticipate if a tsunami siren is not active when a tsunami occurs, then the community can use loudspeakers installed in mosques or at the crossroads of their village roads to provide information to other communities that a tsunami will occur.

5) The government should have added sirens in several locations that are at risk of a tsunami disaster, given that Aceh is one of the areas that was hit by a large earthquake and tsunami. More sirens are needed to reach other areas, so that even when a disaster occurs the community is not close to the siren location, they can still listen to the early warning.

6) The government should also prepare a special fund for the repair and maintenance of sirens, because the cost of spare parts is expensive and not produced domestically. And if the siren device cannot function because it is damaged, the siren monument which is located between the community settlements will only be a useless building.

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