

The Implementation of Earthquake and Tsunami Disaster Mitigation Program in Sekolahalam Minangkabau Kindergarten

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ABSTRACT

Padang City is one of the cities that have the threat of earthquake and tsunami disasters, as happened on September 30, 2009 which killed 1.995 people and caused material losses of 4 trillion. This disaster has a serious impact on society, including early childhood. To rehabilitate the victims of the earthquake and tsunami and provide education to early childhood children were presented to share disaster mitigation programs, especially for kindergartens. Based on these, this article aims to see how the implementation of earthquake and tsunami disaster mitigation programs carried out at the Sekolahalam Minangkabau Kindergarten. The method used in this research is qualitative with case study design and interview data collection techniques and thematic analysis techniques. The result of this research is expected to provide information on the implementation of earthquake and tsunami disaster mitigation programs for early childhood and provide input in the development of this program further.

Keywords: Disaster mitigation, early childhood, teacher's view.

1. INTRODUCTION

Natural disasters such as earthquakes and tsunamis are one of the major disasters that threaten Padang city. Padang City is a lowland area in which many people live and do activities on the coast [1]. The earthquake and tsunami that threatens Padang city come from the Mentawai megathrust, which is starting to detach, but still has as much as 8.9 magnitudes [2]. According to Ashar [3], large earthquakes have frequently hit Padang city. The latest major earthquake disaster occurred in 2009 [4]. Based on data obtained by the National Disaster Management Authority, there were 1,117 people died, 1,214 were injured, 181,665 buildings were destroyed or damaged, and around 451,000 people were evacuated. Psychologically, the impact caused by natural disasters can be felt by all groups, from early childhood to the elderly.

Considering the impacts that can be felt by the victims of natural disasters, it is necessary to do disaster mitigation activities in order to minimize the impacts. According to Article 1 paragraph 6 in Government Regulations No.21 [5] regarding the Implementation of Disaster Management, disaster mitigation is a series of efforts to reduce disaster risks, either through physical

development or awareness and ability building in dealing with disaster threats. The process for awareness and ability in facing a disaster threat needs to be provided or socialized to all groups, including early childhood, because children and adolescents need adults to protect them [6]. Juhadi et al. [7] stated that disaster education or disaster mitigation is vital to teaching students, especially for early childhood who have the best memory and are more likely to imitate what is taught. In line with Kousky's opinion, [8] disaster mitigation needs to be introduced to early childhood because the impacts of disaster felt by children are varied, such as the impact on physical growth and development, on children's education, and children's mental health.

Disaster mitigation is not only socializing about disasters or providing knowledge about natural disasters. However, it is also useful for training skills for children and educators so that they can be appropriately implemented in order to reduce mortality and other unwanted impacts. Disaster mitigation for early childhood needs to be well-programmed so that their understanding and skills can last longer [9]. Therefore, disaster mitigation programs should be implemented in institutions or kindergartens, because education is the

most effective means of providing disaster mitigation activity programs, especially for Kindergartens located in disaster-prone areas. According to Mujiburrahman, et al. [10] PAUD (Early childhood education programs) is an institution that has an essential role in disaster risk reduction activities which can foster understanding and awareness of disaster preparedness to make the nation's generation more educated.

Mujiburrahman et al. [9] also stated that before providing disaster mitigation education to early childhood, it is necessary to first provide knowledge and training to PAUD (Early childhood education programs) teachers on disaster mitigation so that it can be taught to children following the school activities. Several types of research related to the importance of earthquake and tsunami disaster mitigation activities to be introduced from early childhood in Kindergarten institutions are as follows: Mujiburrahman et al. [9] researched the importance of disaster education in early childhood education units using the literature method. The findings stated that due to the many disasters hit Indonesia; it is necessary to introduce disaster education to early childhood after previously educating the teachers so that they can provide disaster education to children following play activities and the principles of early childhood education to foster children's understanding of disasters. It can be realized by integrating the content of disaster education in learning activities at Early Childhood Education institutions.

Furthermore, Susilo et al. [10] stated that the involvement of preschool children regarding the introduction of natural disaster preparedness through simulation methods. The research design used was Pretest Post-test One Group Design. Based on the results of statistical tests that have been done, there was an increase through the simulation method, which means that using simulation techniques helped children to find and solve problems and provide direct experiences to students.

Based on these two research results, it is essential to introduce earthquake and tsunami disaster mitigation activities to PAUD (Early childhood education programs) institutions. One way to perform earthquake and tsunami disaster mitigation activities is through simulation activities. However, the previous researches have not yet explained how the implementation of earthquake and tsunami disaster mitigation activities that have been implemented in Kindergartens. Therefore, the researcher wanted to know how the implementation of earthquake and tsunami disaster mitigation activities that have been performed by Sekolahalam Minangkabau Kindergarten. This was because Sekolahalam Minangkabau Kindergarten was the only one Kindergarten conducted earthquake and tsunami disaster mitigation activities regularly in North Padang District, and Sekolahalam Minangkabau

Kindergarten received the second-best award in Padang city in implementing a simulation of earthquake and tsunami disaster mitigation activities.

By conducting research on the implementation of earthquake and tsunami disaster mitigation activities at Sekolahalam Minangkabau Kindergarten, it is expected that it can raise awareness of Kindergartens in Padang city to implement earthquake and tsunami disaster mitigation activities, especially for kindergartens located on the coast and beach. It can encourage teachers to apply disaster mitigation activities to children in Kindergarten or their environment. So that early childhood can contribute to reducing the risk of earthquake and tsunami disasters.

2. LITERATURE REVIEW

2.1. Earthquake Disaster

Earthquakes are a shake that can be felt on the surface as a result of the shifting of earth's plates. According to the Meteorology, Meteorology Climatology and Geophysics Council (MCGC), [11] an earthquake is an event of the shaking of the earth caused by the sudden release of energy in the earth marked by fractures of the earth's crust. Earthquakes are one of the disasters that cannot be predicted and can cause many casualties and material losses [12].

The following are groups of earthquakes based on their causes [13]:

a. Tectonic Earthquake

Tectonic earthquake is the strongest earthquake and is more dangerous than volcanic earthquake because tectonic plates are always moving so that energy accumulates. From the accumulated energy, there is a release of energy.

b. Volcanic Earthquake

This volcanic earthquake is an earthquake caused by magma activity located in the bag of the mountain that gets pressure and releases energy so that a shake occurs on the earth's surface.

c. Collapse Earthquake

Collapse earthquake is a small earthquake that occurs due to landslide or collapse in a cavern in a topographic area or mines.

d. Human-Induced Earthquake

It is an earthquake caused by human activities. This earthquake is a small and weak one that causes no harm to humans.

2.2. Tsunami Disaster

Tsunamis are large sea waves that occur due to impulsive disturbance on the seabed [14]. Anggarasari & Dewi [15] revealed that Tsunami is high waves generated by tectonic earthquake or volcanic eruption in the ocean. In Indonesia, there are 21 tsunami-prone areas [16]. The risk caused by a tsunami can be detected using an early warning system that observes the powerful earthquake occurring and analyzes the changes in the sea water that are often marked by the receding water in the ocean. If there are any signs of the risk of tsunami, an evacuation can to a safe place be carried out.

Tsunami causes damage to houses or institutions and even it causes large numbers of deaths. The risk of damage can be overcome by constructing substantial earthquake-resistant buildings that are tall and wide. Besides, a further action can be done by providing counselling or training to all communities and institutions settled near the coast in particular.

2.3. Activities to Reduce the Risk of Disaster

The risks caused by a disaster can harm everyone. It starts from the loss of work, institutions and houses, and even to loss of life. Therefore, one of the activities that can be done to reduce the risk of disaster is conducting disaster mitigation activities [17]. According to the government regulation Article 1 section 6 No. 21 [5] regarding the Implementation of Disaster Management, disaster mitigation is a series of attempts to reduce disaster risk, either through physical development or awareness and capacity building in dealing with disaster threats. There are four essential things in disaster mitigation according to [15]:

- a. The availability of maps covering each area that is prone to disasters.
- b. Conducting socialization to increase understanding and awareness.
- c. Recognizing what must be done to keep safe when a disaster occurs.
- d. Arranging disaster-prone areas.

One of the places to carry out disaster mitigation activities is education since it never is separated from school [18]. This is in line with Surmika [19] who stated that education is one of the right places to reduce disaster risk by including disaster mitigation material in the learning activities and, if it is possible, to make it compulsory for all students at any levels of education; especially for the institutions located in disaster risk areas. It is because education is the place to introduce disaster education in schools that includes [20]:

Building children's awareness about disasters and recognition of the disaster phenomenon since an early age.

- a. Creating a strong foundation to shape the community awareness of disasters.
- b. Educating children about the importance of disaster education so that they can be prepared in facing the event of a sudden disaster.
- c. Embedding awareness on the psychological impact of disasters.
- d. Identifying the areas that prone to disasters and the areas that safe from disaster.
- e. Creating a community that has a social solidarity and responsibility.

3. METHOD

This research was conducted for four months, starting from May 2020 until August 2020 at Sekolahalam Minangkabau Kindergarten. The research was conducted during the time of COVID-19 Pandemic, so the research focused on re-exploring the activities of earthquake and tsunami disaster mitigation that has been done by the students and teachers at Sekolahalam Minangkabau Kindergarten. The participants of the research were Ulfa Hartina (24 years old) as the teacher and Revi Jazilah (31 years old) as the principle of Sekolahalam Minangkabau Kindergarten. They were actively involved in the research together with all of the students. Besides, the participants were also all people around Sekolahalam Minangkabau Kindergarten environment.

The method used was a qualitative approach with case study design. The use of a qualitative approach aimed to get the preview of the condition or phenomenon that naturally occurs without any manipulation in the activities of earthquake and tsunami disaster mitigation in the school. As stated by Darmadi [21], the qualitative method is naturalistic. Moreover, the use of case study design was intended to explore how the disaster mitigation activities that had been conducted at Sekolahalam Minangkabau Kindergarten. By having the design, it is believed that various good aspects, both individual or in a group can be explained [22].

In collecting the data, the researcher conducted a direct interview by implementing the health protocol of COVID-19. The interview was intended to obtain information and to know how the activities of earthquake and tsunami disaster mitigation had been done at Sekolahalam Minangkabau Kindergarten. Through the interview, the researcher proposed some questions to the participants to exchange information and get some new ideas [23]. Then, the result of the

interview was analyzed using thematic analysis. Freeday & Muir-Chocrane [23] explained that by using thematic analysis technique, the researcher could have in-depth exploration toward the qualitative data gathered as effective as possible so the researcher can get the themes based on the proposed questions about the activities of earthquake and tsunami disaster mitigation at Sekolahalam Minangkabau Kindergarten.

The implementation of the re-exploration of the activities of earthquake and tsunami disaster mitigation at Sekolahalam Minangkabau Kindergarten can be seen in the following diagram:

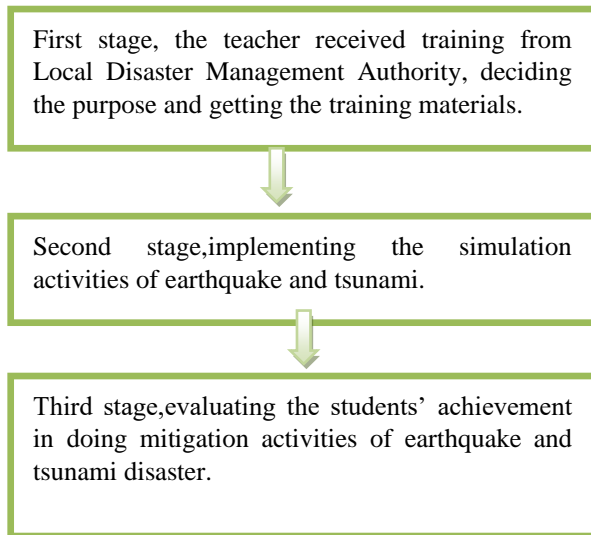


Figure 1. Stages of Implementation of Disaster Mitigation Activities in Sekolahalam Minangkabau Kindergarten.

4. RESULTS AND DISCUSSION

4.1. The Activities of Disaster Mitigation

The activities of earthquake and tsunami disaster mitigation in Sekolahalam Minangkabau Kindergarten done in a collaboration with the Disaster Management Authority or Badan Penanggulangan Bencana Daerah (BPBD) of Padang City in 2019 because Sekolahalam Minangkabau Kindergarten is one of the schools that is in the red zone or is prone to disasters. The activities of earthquake and tsunami disaster mitigation were attended by all residents of Sekolahalam Minangkabau Kindergarten, Elementary School, and Special School. By doing this activity, Sekolahalam Minangkabau Kindergarten ranked in the second place throughout Padang City.

The following are the stages of disaster mitigation activities that have been carried out in Sekolahalam Minangkabau Kindergarten:

- a. The Material Distribution of Earthquake and Tsunami Disaster Mitigation.

The training activities were accompanied by 2 parties of BPBD Padang city along with all facilitators of Minangkabau Nature Kindergarten. It was held at Sekolahalam Minangkabau Kindergarten for 3 months. The teachers were prepared with the knowledge and understanding of disasters, in accordance with the disaster mitigation activities, constructing the regular procedures with *Cerdas Bencana* School Team at Sekolahalam Minangkabau Kindergarten, and mapping the area which was prone to disaster.

- b. The Earthquake and Tsunami Disaster Mitigation Simulation Activities.

Before carrying out the simulation, the teacher explained about disasters every day to make it a habit by giving the knowledge and playing videos as the reminder, songs about disasters and doing the disaster mitigation simulation activities according to the procedures. The following was a figure of the simulation activities of earthquake and tsunami disaster mitigation done at the Sekolahalam Minangkabau Kindergarten in 2019.

4.2. The Earthquake and Tsunami Disaster Mitigation Simulation Activities

Before carrying out the simulation, the teacher explained about disasters every day to make it a habit by giving the knowledge and playing videos as the reminder, songs about disasters and doing the disaster mitigation simulation activities according to the procedures. Figure 2. shows of the simulation activities of earthquake and tsunami disaster mitigation done at the Sekolahalam Minangkabau Kindergarten in 2019.

The initial condition before the simulation activities were carried out, and the children had no idea at all about this. They enjoyed their break by playing with friends as they usually did. A few minutes after this figure was taken, the siren as the danger sign of earthquake and tsunami was played.



Figure 2. Children save themselves from the earthquake to the open space (Admin of Sekolahalam Minangkabau Kindergarten).

In figure 2, after listening to the siren sound which signalled the danger of earthquake and tsunami, the children ran towards the centre of the field to get themselves away from large and tall buildings and trees. Once they reached the location, they crouched down and protected their heads by using the disaster survival kit they brought.

Before moving to a safer place, the facilitator checked the presence of the children participating in the earthquake and tsunami disaster mitigation activities whether or not they were complete so that none was left behind. Then, the facilitators and children walked quickly to the building in a safe higher ground where they could evacuate themselves from the tsunami. After they reached a safe and higher ground, the children took a break. The facilitators then checked the presence of the children. They provided PSP (Psychological Support Program) to divert their attention to the ongoing disaster so that their mental state was not disturbed. This program was implemented by asking them to do fun activities such as playing, singing, telling stories and so on.

4.3. The Obstacles

During the implementation of the earthquake and tsunami disaster mitigation activities, the facilitators found that there were still some children who were less sensitive to the disaster warning sign of siren, they acted as nothing happened during the simulation. Hence, the facilitators had to help and direct them.

Some children were not too sensitive to the danger sign earthquake and tsunami as they took it easy to sit and put-on shoes or sandals when the siren was played. Hence, the assistance of the facilitator was needed to hurry them up.

4.4. The Achievements

Based on the earthquake and tsunami disaster mitigation activities which were done routinely by Sekolahahalam Minangkabau Kindergarten, the achievements obtained were that the children grasped the knowledge about earthquake and tsunami, understood and were aware of participating in the earthquake and tsunami disaster mitigation simulation. An overview of the children's achievements can be seen in the following explanation:

The children's knowledge about earthquake and tsunami. At the initial stage, the children already understand the types of natural disasters, but they had no in depth understanding about the earthquake and tsunami, and did not realize the importance of disaster mitigation activities. After explaining about disaster and its song every day, the children already grasped the understanding about the earthquake and tsunami; hence,

they would not be crybabies as soon as the disasters hit them. They also know that the disaster mitigation activities were needed to decrease the risks of disaster.

The children's understanding and awareness in doing the earthquake and tsunami disaster mitigation simulation. At the initial condition, the children did not know about the earthquake and tsunami disaster simulation activities. After being given the understanding on the importance of simulation activities and how the earthquake and tsunami disaster mitigation simulation activities were like, the children were able to do it well.

5. CONCLUSION

According to the research results, the earthquake and tsunami disaster mitigation activities at Sekolahahalam Minangkabau Kindergarten were conducted very well; every activity attracted the children's interests. These activities fostered their knowledge and understanding of earthquake and tsunami as well as their awareness in doing the earthquake and tsunami disaster mitigation simulation. Thus, all kindergartens should be able to implement the earthquake and tsunami disaster mitigation activities so that the young children were no longer anxious and afraid as soon as sudden earthquake and tsunami hit them, they were independently safe as they did not rely on the adults, even the children were able to be the saviours of parents who did not know how to save themselves during the disasters. By making the children understand how to do the disaster mitigation activities in right and proper ways, the fatalities might be reduced. The future researchers are suggested to construct the guidelines of understanding the procedures in implementing the proper and correct earthquake and tsunami mitigation activities for early childhood. The training on how to implement the earthquake and tsunami disaster mitigation activities by having the simulation should be given to all kindergarten educators, so that all kindergartens, especially in Padang city, can implement the simulation of earthquake and tsunami disaster mitigation activities.

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