

THE CORRELATION BETWEEN EARTHQUAKE SAFETY KNOWLEDGE AND THE ABILITY OF SELF EVACUATION IN ADOLESCENTS AT JUNIOR HIGH SCHOOL 1, PAKEL TULUNGAGUNG

Pria Wahyu Romadhon Girianto¹, Melani Kartika Sari², Distya Afita Yudyawati³

^{1,2,3}Bachelor Nursing Programe STIKES Karya Husada Kediri, priawahyu88@gmail.com, 081232238377

Abstrak

Evakuasi bencana adalah cara orang untuk menyikapi saat terjadi bencana dan tidak panik saat terjadi bencana melainkan dapat memposisikan apa yang akan mereka lakukan demi menekan jumlah korban saat terjadi bencana. Penelitian ini bertujuan untuk mengetahui hubungan pengetahuan keselamatan saat gempa dengan kemampuan evakuasi mandiri. Desain penelitian adalah analitik korelasional dengan pendekatan *cross sectional*. Populasi dalam penelitian ini adalah sebanyak 224 orang dan 67 responden dengan teknik sampling *purposive sampling*. Variabel independen yaitu pengetahuan tentang keselamatan saat gempa dan variabel dependen yaitu kemampuan evakuasi mandiri. Alat ukur menggunakan kuesioner dan analisa data menggunakan uji *spearman rank*. Hasil penelitian responden yang berpengetahuan tentang keselamatan saat gempa kategori baik menunjukkan hampir setengah (37,3%) memiliki kemampuan evakuasi mandiri yang baik, responden berpengetahuan tentang keselamatan saat gempa kategori cukup menunjukkan sebagian kecil (10,4%) memiliki kemampuan evakuasi mandiri yang cukup, dan responden berpengetahuan tentang keselamatan saat gempa kategori kurang menunjukkan sebagian kecil (9%) memiliki kemampuan evakuasi mandiri kategori cukup. Hasil analisa data menggunakan uji Spearman Rank didapatkan hasil nilai signifikan 0,05 ($0,018 < 0,05$) sehingga H1 diterima, berarti ada hubungan pengetahuan tentang keselamatan saat gempa dengan kemampuan evakuasi mandiri. Pengetahuan tentang bencana gempa bumi akan membuat individu mengetahui apa yang akan dilakukan dan diharuskan ketika menghadapi bencana gempa untuk keselamatan pribadi dan orang disekitarnya. Disarankan bagi siswa untuk lebih meningkatkan pengetahuan tentang bencana gempa bumi sehingga dapat meningkatkan kemampuan evakuasi mandiri dalam menghadapi bencana serta mengurangi korban.

Kata kunci: Pengetahuan, Evakuasi, Gempa Bumi

Abstract

Disaster evacuation is a way for people to respond when a disaster occurs and not panic when a disaster occurs but plan what they will do to reduce the number of victims when a disaster occurs. This study aims to determine the relationship between knowledge of safety during an earthquake and the ability to self-evacuate. The research design is correlational analytic with a cross-sectional approach. The population in this study was 224 people, and 67 respondents were chosen with a purposive sampling technique. The independent variable is knowledge about safety during an earthquake, and the dependent variable is the ability to evacuate independently. The measuring instrument uses a questionnaire and data analysis using the Spearman rank test. The results of the study of respondents who are knowledgeable about safety during an earthquake in the good category show that almost half (37.3%) have good self-evacuation abilities. Respondents who are knowledgeable about safety during earthquakes in the moderate category indicate that a small proportion (10.4%) have sufficient self-evacuation capabilities. And respondents who are knowledgeable about safety during an earthquake in the poor category indicate that a small proportion (9%) have sufficient self-evacuation capability. The results of data analysis using the Spearman Rank test showed a significant value of 0.05 ($0.018 < 0.05$), so that H1 was accepted, meaning that there was a relationship between knowledge about safety during an earthquake and the ability to self-evacuate. Knowledge of earthquake disasters will make individuals know what they will do and are required to do when facing an earthquake disaster for their personal safety and those around them. It is recommended for students to further increase their knowledge of earthquake disasters so that they can improve their ability to self-evacuate in the face of disasters and reduce casualties.

Keywords: Knowledge, Evacuation, Earthquake

BACKGROUND

Disaster evacuation is a way for people to respond when a disaster occurs and not panic when a disaster occurs but plan what they will do to reduce the number of victims when a disaster occurs. The role of children is also as a community in terms of

participation in the evacuation process. This requires the role of the community to provide knowledge of disaster risk and evacuation issues. Therefore, children must be instilled in disaster evacuation education so that they are able to respond to every disaster that occurs (Ade, 2019). One of the natural disasters that kills the most is

an earthquake. Earthquakes are earthquakes caused by collisions between the earth's plates, active faults, volcanic activity, and rock collapse (Maharani and Andika, 2020: 34). According to Setyaningrum and Sukma (2020: 69), the earthquake caused various losses, ranging from the physical aspect in the form of many fatalities; the economic aspect in the form of damage to facilities and infrastructure; and the psychological aspect in the form of depression and anxiety.

Tulungagung Regency is one of the areas in Indonesia that is prone to earthquakes. PLT Kalaksa BPBD, East Java Yanuar Rachmadi explained that Tulungagung Regency is one of the areas in East Java that is very at risk of earthquake impacts (Akhmadi, 2022). The following is data on earthquake events in Tulungagung Regency for the period 2021 to June 2022. Based on data from The World Risk Index in 2021, Indonesia is ranked 37 out of 180 countries most vulnerable to natural disasters (Ministry of Finance of the Republic of Indonesia, 2022). According to Husein (2018:1), the reason Indonesia is prone to disasters is because of Indonesia's geographical location at the confluence of three earth's plates, namely Eurasia, the Pacific, and Indo-Australia, which causes the country's position to be unstable and easy to shift. The following is data on natural disasters that occurred in Indonesia in the period 2018 to 2021. In 2018, there were 3,397 cases of natural disasters. In 2019, there was an increase in cases from 417 cases to 3,814 cases in 2019. In 2020, there was an increase in cases by 836 cases to 4,650 cases. And in 2021, there was an increase in cases from 752 to 5,402 cases. This means that data on natural disasters in Indonesia in the period 2018 to 2021 continues to increase every year.

In 2018, there were 19 cases of earthquakes that occurred in Tulungagung Regency. In 2019, there was a decrease in cases from 9 cases to 10 cases. However, the number of cases increased from one to eleven in 2020. And in 2021, there will be an increase of 7 cases to 18 cases. This means that data on earthquake events in Tulungagung Regency in the period 2018 to 2021 continues to fluctuate up and down. The high potential for earthquakes in Tulungagung Regency is certainly a threat to the community, so it is very important for the community to have an understanding of the importance of self-evacuating when in a disaster situation. This is intended so that the loss of life due to natural disasters can be minimized. According to Banendro (2017:4), self-evacuation is the ability and action of individuals or groups to be independent, fast, precise, and directed based on work steps in self-rescue from disasters. The factor that can affect a person's self-evacuation ability is knowledge. According to Pahleviannur (2019: 49),

someone who has good knowledge will create a generation of disaster responsibility and have good preparedness for disasters. In line with the opinion of Rosyadi and Adi (2017: 2), which explains that knowledge is the main factor and is the key to preparedness, The knowledge possessed can usually influence attitudes and concerns to be prepared for disasters so that they are proactive before a disaster occurs. If someone has low knowledge of disasters, it will cause huge casualties and losses due to lack of understanding of the characteristics of hazards, lack of early warning information that results in unpreparedness, and powerlessness or inability to deal with disaster situations.

Based on the results of a preliminary study conducted by researchers on June 15, 2022, data obtained with interviews from 15 students, 12 of whom stated that no one knew about safety during an earthquake, and 3 others said they knew about safety during an earthquake. Students' knowledge of the importance of self-evacuating when in a disaster situation is still very minimal. This is because there is no special program related to disaster preparedness from parties that are relevant in their field. So far, students only get information when there are seminars related to disaster management held by the government. To strengthen the initial information, the researcher also conducted interviews with several eighth grade students at SMP Negeri 1 Pakel. Based on the results of interviews with several students, researchers explained that their knowledge related to disasters was still minimal. They only knew the importance of going outside during an earthquake by finding empty fields and protecting their heads. Based on the previous explanation, it is very important to examine more deeply the importance of increasing the self-evacuation ability of adolescents, considering that this is one of the first steps that can be taken to minimize the number of casualties when natural disasters occur.

METHOD

The research design is comparative with a cross-sectional approach. The sample in this study were teenagers at SMP Negeri 1 Pakel Tulungagung who were selected by a purposive sampling technique. The research is located in SMP Negeri 1 Pakel Tulungagung. Respondents are students of SMP Negeri 1 Pakel and class VII SMP students who are willing to become respondents after receiving information about what will be done and signing informed consent. The exclusion criteria were students who were sick. Data collection techniques were carried out by observing the results of the questionnaires that

had been distributed to the respondents. The general data that has been obtained was analyzed with univariate statistics, and specific data was analyzed with multivariate statistics using the Spearman Rank test to determine the relationship between knowledge about safety during an earthquake and the ability to evacuate. The significant level (α) is 0.05.

RESULT AND DISCUSS

The presentation of respondent characteristic data includes age, gender, class, education about safety during earthquakes and sources of information.

Table 1 Frequency distribution of respondents based on age, gender, class, education about safety during an earthquake and sources of information at SMP Negeri 1 Pakel Tulungagung

Characteristics or respondents	n	(%)
Age		
13 years	18	28,9
14 years	49	73,1
Gender		
Male	16	23,9
Female	51	76,1
Earthquake Information		
Yes	49	73,1
Never	18	26,9
Informatio resource		
Health workers	6	9,0
School	15	22,4
Social Media	13	19,4
Print Media	6	9,0
Electronic Media	9	13,4
None	18	26,9
Total	67	100

Based on table 1 shows the characteristics of respondents, based on age, most (73.1%) are 14 years old. Based on gender, most (76.1%) are female. Based on overall class (100%) grade 8 junior high school. Based on education, about Most of the people safe during earthquakes (73.1%) have received education, and based on information sources, almost half (26.9%) have not received education.

Tabel 2 Statistical Test Results Knowledge About Safety During An Earthquake With Adolescent Self-Evacuation Ability in SMP Negeri 1 Pakel Tulungagung

Knowledge about safety during Earthquake	Self Evacuation						Total
	Good		Moderate		Less		
	n	%	n	%	n	%	
Good	25	37.3	4	6.0	7	10.4	36
Moderate	4	6.0	7	10.4	6	9.0	17
Less	5	7.5	6	9.0	3	4.5	14
Total	34	50.7	17	25.4	16	23.9	67
p-value : 0,018 r : 0,288 α : 0,05							

Based on table 2, the results show that respondents who are knowledgeable about safety during an earthquake in the good category indicate that almost half (37.3%) have good self-evacuation abilities. Respondents who are knowledgeable about safety during earthquakes in the good category indicate that a small proportion (10.4%) have the ability to sufficient self-evacuation, and respondents who are knowledgeable about safety during an earthquake in the poor category indicate that a small proportion (9%) have sufficient self-evacuation capability. From the results of quantitative data analysis with the Spearman Rho statistical test with the help of the SPSS computer program, the statistical test results can be interpreted with a significant 0.05 (0.018 0.05) so that H1 is accepted, which means that there is a relationship between knowledge about safety during an earthquake and the ability to self-evacuate. In SMP Negeri 1 Pakel Tulungagung, with the results of r (cc) = 0.404, it said that there was a relationship with moderate or moderate criteria. The direction of the positive relationship means that the better the knowledge about safety during an earthquake, the better the ability to self-evacuate.

The results showed that knowledge about safety during an earthquake showed that most (53.7%) had good knowledge. Disasters are something that happens in every country, both in developed and developing countries. In developed countries, disasters that occur include floods, storms, and earthquakes (Rhona, 2020). Earthquakes are a natural phenomenon that is difficult to predict when an earthquake occurs, whether the earthquake that occurs causes property damage and causes casualties or not. This is because of the difficulty in predicting the earthquake, so if a destructive earthquake occurs (more than 5 on the Richter Scale), it will cause stress to the population affected by the earthquake, because in a short time it can result in the loss of everything, such as family and property (Condolences, 2016).

There is a serious impact related to earthquakes. It is necessary to prepare for

earthquakes. Adults who are active inside and outside the home, such as work or those who are still in school stage, have knowledge in dealing with disasters, whether in the form of how to save themselves during an earthquake, psychological preparation, and in relation to daily activities. Knowledge of earthquake disasters will result in individuals knowing what to do and being required to do when facing an earthquake disaster for their personal safety and those around them. Preparedness is an action taken in the pre-disaster period (before a disaster occurs). The purpose of earthquake disaster preparedness is to reduce the risk (impact) caused by a disaster. Preparedness measures also include the preparation of disaster management, resource maintenance, and personnel training (Widjanarko, 2018).

The main factor causing many victims due to the earthquake disaster is the lack of knowledge about safety during the earthquake by those anticipating the disaster, especially teenagers. They have limited ability and resources to control or prepare themselves when they feel afraid, so they are very dependent on parties outside themselves to be able to recover from a disaster. Earthquakes can also have a psychological impact that can cause trauma to victims and volunteers who experience the disaster. Post Traumatic Stress Disorder (PTSD) is a psychological stress disorder that often occurs after an earthquake. The impacts and losses caused by the earthquake are caused by the lack of readiness of students or the surrounding community in anticipating these problems. Therefore, safety knowledge in adolescents must be increased (Simandalahi, 2019).

Awareness of the importance of disaster preparedness can increase individual actions to protect and save themselves from disaster hazards (Devi & Sharma, 2015). The level of preparedness for earthquakes can be measured by taking into account certain factors, namely knowledge about safety during earthquakes. Knowledge is part of the disaster preparedness factor (Rusiyah, 2017). The results of this study indicate that knowledge about safety during an earthquake shows that most (53.7%) have good knowledge. Teenagers with a high level of knowledge in dealing with earthquake disasters will have a better understanding of safety when dealing with earthquakes, and good knowledge will result in good behavior when dealing with earthquakes (Rhona, 2020).

Not only because of the knowledge factor that affects safety during an earthquake, but it is also influenced by the level of disaster risk. In addition to being determined by the potential for disasters, it is also determined by mitigation efforts and

preparedness in dealing with disasters, and limited ability and resources to control or prepare themselves when they feel overwhelmed. afraid of those outside himself in order to recover and return from a disaster.

The results showed that the self-evacuation ability showed that most (50.7%) had good self-evacuation abilities. Providing understanding to community members, especially to junior high school students, regarding natural disasters needs to be given in schools. As we know, in some places, Indonesia often experiences natural disasters. The territory of Indonesia includes areas prone to disasters, especially geological natural disasters. This is caused by Indonesia's position, which is located at the confluence of 3 (three) tectonic plates in the world, namely: the Australian Plate in the south, the Euro-Asia Plate in the west, and the Pacific Ocean Plate in the south-eastern part, which can support the occurrence of a number of disasters (Rusnardi, Junji, Yusuke, and Hari, 2012: 59). Adha, (2015) explained that, "The Indonesian archipelago is located at the boundary of three major tectonic plates: the Indo-Australian, Pacific, and Eurasian plates, stretching from Sumatra in the west to Papua in the east." One of the natural disasters that occurred in Indonesia was an earthquake.

Therefore, as citizens of the community who are citizens as a whole, it is very important to gain understanding and learn about natural disasters in schools. Cooperation between the government and the community, in this case, schools, is needed in the process of developing disaster mitigation. Reflecting on several natural disaster events is needed to maximize the state of preparedness carried out by each individual both at the government and community levels. "Disaster risk management practices within a local area describe a disaster risk management project with real, specific terms that represent the technical conditions regarding the management plan" (Adha, 2015).

Natural disasters have a fairly large impact on suffering, such as loss of life and injuries, damage, and loss of property. Not only physical injuries and injuries, but natural disasters also have a psychological or psychological impact on the people who experience them. Therefore, it is important to anticipate natural disaster management so that citizens will react more quickly and make preparations both before the disaster occurs and during the disaster and after the natural disaster occurs. "From a positive perspective, the goal is to build resilience to these hazards." Thus, citizens will be faster in carrying out rescues to reduce casualties and losses from damage or loss of property. Natural disasters that

occur in several regions in Indonesia are our shared responsibility and at the same time play a role in the state as Indonesian citizens,"... and to teach them the rights and duties of citizenship as officially defined." (Mustofa, 2015).

In view of the extraordinary impact, as citizens, we must be able to carry out and prepare natural disaster management measures by using the right principles and methods for mutual safety. "They are also seen as an important ingredient of good citizenship and can pose problems which citizens must be ready and able to resolve for themselves while at the same time respecting the viewpoints, interests, and rights of others."

Natural disaster management must be carried out thoroughly for every citizen by seeing that citizens must be ready and able to solve problems related to disaster mitigation while still paying attention to the concept of mutual respect for various inputs, wishes in the form of ideas, and obligations that must be met. pursued by citizens. At national and local levels, most countries have developed legislation, policies, programs, and projects to address the increasing disaster risk threat to humanity. Disaster mitigation is done to ensure that natural disasters do not have a negative impact on the people who are affected by them (Sripramai et al., 2012).

Self-evacuation capability exists in disaster mitigation. The results of this study indicate the ability of self-evacuation shows that most (50.7%) have good self-evacuation abilities. Disaster mitigation management that is implemented properly can make a positive contribution to reducing the number of victims and property losses. According to Ruli Mustafa (2015), disaster management encompasses all activities aimed at controlling disaster emergency situations and developing plans to assist people affected by the disaster, including direct handling of what occurred prior to, during, and after the disaster, monitoring from cause to effect, and handling dynamics. Protection of citizens is an absolute thing that is the responsibility of the state, in this case, the government. However, the participation and responsibility of individuals and communities must be maximized in disaster mitigation. The right step is if students are involved in disaster mitigation by providing understanding and awareness of the importance of protecting themselves and others around them in order to minimize the risks that will occur.

Therefore, an understanding of disaster management needs to be understood and mastered by all groups, including the government, the community, and the private sector, as well as students in particular. Students who are ready for disaster management need to be formed and

trained in schools, starting from the initial concept of what is meant by natural disasters. After students understand what things need to be considered, then students can be trained in the field with simulations to provide direct experience of good natural disaster management concepts. The simulation of natural disasters will give students the mental strength to not panic when natural disasters occur and to better control their minds so that they are more focused on saving themselves wisely. This kind of activity is important to do to train students' minds and give a general picture through the simulation. In the simulation, students must be able to take responsibility as good individuals, not only in saving themselves but also in saving other family members or other relatives, to minimize disaster victims.

The results showed that respondents who were knowledgeable about safety during an earthquake in the good category showed that almost half (37.3%) had good self-evacuation abilities; respondents who were knowledgeable about safety during an earthquake in the good category showed that a small proportion (10.4%) had the ability to sufficient self-evacuation; and respondents who were knowledgeable about safety during an earthquake in the poor category indicated that a small proportion (9%) have sufficient self-evacuation capability.

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Earthquakes occur due to friction between tectonic plates beneath the earth's surface. The impact of the friction creates tremendous energy and causes shocks on the surface and causes great damage to facilities such as houses, buildings, roads, bridges, and electricity poles. Based on the source of the cause, there are 3 types of earthquakes: Tectonic earthquakes are earthquakes that are caused by the release of energy due to the movement of the earth's plates or faults. This type of earthquake causes the most damage and many victims. Volcanic earthquakes are earthquakes caused by the release of energy due to volcanic activity, namely the movement of magma that pushes and pushes layers of rock so

that the shifting of rocks within them causes earthquakes. Induction earthquakes are earthquakes that are caused by the release of energy from other sources, such as ground debris. Earthquakes are often followed by aftershocks within a few hours or days after the first earthquake, which can cause destruction of buildings that have been cracked or shaky from the previous earthquake.

From the phenomenon that occurs, knowledge about safety during an earthquake will add insight to the ability to self-evacuate where knowledge is obtained from various sources of information such as social media. After doing the research, positive results were obtained where the better knowledge about safety during an earthquake, the better the ability to evacuate independently. This means that knowledge about safety during an earthquake is good for increasing self-evacuation ability because in knowledge of safety during an earthquake there are ways of evacuation so that teenagers gain insight into the good one.

Knowledge is the main factor and is the key to the ability to evacuate independently during a disaster. The knowledge possessed can usually influence attitudes and concerns to be prepared for disasters by anticipating them. The following are the main factors that can cause a disaster to cause victims and large losses: a lack of understanding of the hazards' characteristics, attitudes or behaviors that result in a decrease in natural resources, a lack of early warning information, which results in unpreparedness and powerlessness or inability to deal with disasters (Rinta, 2020).

CONCLUSIONS AND RECOMMENDATIONS

The results of the research and discussion described can be concluded that Some respondents have good knowledge about safety during an earthquake. Almost half of the respondents have good criteria for self-evacuating an earthquake disaster. There is a correlation between knowledge about safety during an earthquake and the ability to self-evacuate at SMP Negeri 1 Pakel.

Future researchers are expected to be able to make learning materials that increase knowledge and ability to self-evacuate, especially in minimizing the occurrence of earthquake disasters, namely by increasing knowledge about safety during earthquakes through further research that discusses knowledge and ability to self-evacuate in the face of earthquake disasters by adding research variables. Respondents should continue to improve their insight and knowledge about earthquake disasters, which can increase their knowledge and ability to self-

evacuate in dealing with earthquake risks, namely by attending counseling held in schools or through social media. So, by increasing the knowledge and ability of independent evacuation of earthquake disasters, it can reduce the number of victims and losses that will be experienced.

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