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RELATIONSHIP OF KNOWLEDGE LEVELS WITH THE PREPAREDNESS ABILITIES IN DEALING WITH EARTHQUAKE DISASTERS

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ABSTRACT

The importance of the knowledge of disaster preparedness can be done early through a disaster alert program if children in particular youth can understand how to save themselves during a disaster. SMP *Negeri* 1 Gantiwarno had been hit by the 2006-magnitude tectonic earthquake on a 5.9 Richter scale so that the teaching and learning process in class was interrupted by the earthquake. The socialization or simulation of disaster preparedness in the school itself is still rare. The purpose of this study was to determine the relationship between the level of knowledge and the preparedness ability of SMP Negeri 1 Gantiwarno in facing earthquake disasters. This type of research is non-experimental quantitative. This study used a cross-sectional approach which was done on July 8^{th} -14^{th}. The population in this study were 224 students of VIII grade class at SMP Negeri 1 Gantiwarno, Klaten city, Central Java Province, Indonesia. The sample used in this study were 143 grade VIII students of SMP Negeri 1 Gantiwarno. Data collection was performed by visiting groups of students at school. The spearman rank test was done in the statistical testing of this study. The results showed P value of less than α of 0.05, so that there was a relationship between the level of knowledge and ability with the readiness of students of SMP Negeri 1 Gantiwarno. Based on the results, it can be concluded that there is a relationship between the level of knowledge and ability with preparedness in dealing with earthquake in SMP Negeri 1 Gantiwarno.

Keywords: adolescents; earthquake disaster; knowledge; preparedness

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INTRODUCTION

Disaster is a serious disruption of a community or society function which leads in the loss of human, material, economic, or environmental that exceeds the capacity of the communities affected to deal by using their resources (United Nations, 2011). According to Law Number 24 of 2007, a disaster threat is an event that can lead to disaster. Vulnerability is a series of conditions that determine whether the existing hazard (both natural and artificial) will result in a disaster or not. A series of conditions generally in the form of physical, social, and attitudes cab affect the ability of the community to prevent, mitigate, prepare and respond to the impact of a hazard (UPI, 2010).

An earthquake is an event where the earth shakes due to the sudden release of energy in the earth, which is marked by the breaking of the rock layers in the earth's crust. The accumulation of energy that causes earthquakes is generated by the movement of tectonic plates. The energy produced is then emitted in all directions in the form of earthquake waves whose effects are occurred to the surface of the earth (BMKG, 2017).

Geographically, Indonesia is located on the equator and is at the coordinates of 950 BT-1410 BT and 60 LU-110 LS with various morphologies from land to high mountains. Indonesia is located on the equator, so that its territory has a tropical climate. Indonesia is also at the confluence of three tectonic plates in the world, those are Eurasian Plate, the Pacific Plate, and the Indian-Australian Plate. This condition makes Indonesia vulnerable to earthquakes, tsunamis, volcanic eruptions, and other types of geological disasters (BNPB, 2017).

Some of the major causes for a large number of victims due to earthquake disasters are the lack of public knowledge about disasters and the lack of community preparedness in anticipating the disaster. Among the fatalities, most were the elderly and children (Simandalahi, 2019). Knowledge of disasters is one of the factors that influence disaster preparedness, while disaster preparedness is a factor that reduces disaster risk (Utama TA, 2003). Preparedness is a part of the disaster management process and in the current concept of disasters. The importance of preparedness is one of the main elements in disaster-risk reduction prevention activities that are pro-active before a disaster occurs (Kurniawati, 2019).

Preparedness is an action taken in anticipation of a disaster to ensure that the actions taken can be implemented appropriately and effectively during and after a disaster occurs. Awareness of the importance of disaster preparedness can increase individual acts in protecting and saving oneself from disaster hazards (Devi, 2015). Disaster preparedness is actions aimed at improving the safety of life when a disaster occurs. Preparedness also includes measures designed to strengthen the ability to take emergency measures to protect property from damage and chaos due to disasters (Sudaryono, 2013).

Based on a preliminary study conducted on April 22nd, 2020 at SMP Negeri 1 Gantiwarno, two out of ten respondents had participated in disaster preparedness simulations once and had lack understanding of disaster preparedness, especially earthquakes such as what actions to take during an earthquake and after an earthquake. Three out of ten respondents did not know about preparedness and only got information about the disaster through social media. Five out of ten respondents had attended socialization regarding disaster preparedness at school but did not understand the material provided. At the school itself, there were very few socializations or simulations on disaster preparedness. The purpose of this study was to determine the relationship between knowledge level and preparedness Ability of Students of SMP Negeri 1 Gantiwarno in dealing with earthquake disasters.

METHOD

The type of this research was non-experimental quantitative-research using a correlational design. This study used a cross-sectional approach which was conducted at SMP Negeri 1 Gantiwarno in July 2020. This research has received ethical clearance from the Institute for Research and Community Service of STIKES Muhammadiyah Klaten.

The instrument of knowledge level variable was the knowledge level questionnaire adopted from previous research which was conducted by Haryanto (Haryanto,2018). In this case, the knowledge level was measured by using a Likert scale of strongly agree, agree, disagree, and strongly disagree. The questionnaire statement was divided into two groups, those are favorable and unfavorable. The results of the answers were then categorized as good, enough, and poor. In this study, the preparedness ability questionnaire used a questionnaire that had been developed by the LIPI institution so that the reliability test was not carried out because it was declared valid and reliable with a Cronbach Alpha value of 0.956.

The instrument preparedness ability variable used was the preparedness ability questionnaire which was adopted from previous research by Khoirun (Khoirunisa, 2017). The measurement of preparedness ability was done by using a Likert scale of strongly agree, agree, disagree, and strongly disagree. The questionnaire statement was divided into two groups of favorable and unfavorable. The results of the answers were categorized as well-prepared, prepared and unprepared.

The population in this study were 224 students of class VIII, with a total sample of 143 people at SMP Negeri 1 Gantiwarno. The sampling process in this study used a non-probability sampling technique with a purposive sampling method. The sample size obtained was 143 grade VIII students of SMP Negeri 1 Gantiwarno. Furthermore, the researcher distributed the questionnaire link to the respondent through the class VIII homeroom teacher to cooperate in sharing the link with students in 5 classes. The questionnaire was made using google form contains a research explanation sheet, informed consent, knowledge level questionnaire, and preparedness ability questionnaire. The respondents obtained in one week were 132 respondents. Since the number of respondents was still insufficient, the researcher contacted the homeroom teacher again to remind the respondents to fill in the questionnaire soon and the result increased to 149 respondents, 6 responses were dropped because they sent responses more than once with the same answer. In this study, the bivariate analysis used the Spearmen Rank statistical test.

RESULTS

Table 1.
Respondents' Age (n=143)

Variable	Min	Max	Mean ± SD
Age	13	15	13.87±0.626.

In table 1 above, it is shown that the average age of the respondents in this study was 13.87 years old with a standard deviation of 0.626.

Table 2
Gender, Level of Knowledge and Student Preparedness (n=143)

Variable	f	%
Gender		
Female	91	63.6
Male	52	36.4
Level of knowledge		
Enough	29	20.3
Good	114	79.7
Students preparedness		
Prepared	52	36.4
Well-prepared	91	63.6

In table 2 above, it is shown that most of the respondents were female by 91 students (63.6%). The frequency distribution of the data on the knowledge level shows that most of the students had goo knowledge by 114 students (79.7%). The distribution of students' preparedness shows that most of the students were well-prepared by 91 students (63.6%).

Table 3.
Relationship between the Knowledge Level and the Preparedness Ability (n=143)

Variable		Students ability Preparedness				Total		Result analysis
		Prepared		Well-prepared				
		f	%	F	%	f	%	r = 0.342
Level of	Enough	20	14.0	9	6.3	29	20.3	p = 0.000
knowledge	Well	32	22.4	82	57.3	114	76.7	

In table 3 above, it can be seen that respondents who had a sufficient level of knowledge and being prepared were 20 students (14.0%). Respondents who had sufficient level of knowledge and well-preparedness were nine students (6.3%). Respondents who had well-knowledge and being prepared were 32 students (22.4%). Meanwhile, 82 students (57.3%) had well-knowledge with well-preparedness.

The results of the bivariate analysis showed p-value of 0.000, which means p-value < 0.05 so that there was a relationship between the level of knowledge and the preparedness ability of students of SMPN 1 Gantiwarno. A correlation coefficient or the value of r = 0.342 showed a sufficient positive correlation, which means the better the level of knowledge, the higher the level of preparedness of the students.

DISCUSSION

Respondents' Age

The results of the study in table 1 show that the average age of the respondents in this study was 13.87 years old. A person's age affects the level of maturity in thinking and experience. Adolescents can think about events that are likely to be purely abstract proportions and try to reason logically. The quality of abstract thinking is shown by the ability to solve problems and systematically test solutions (Santrock, 2011). Respondents' experiences in dealing with disasters determine their level of disaster

preparedness. Respondents who are older but do not live in disaster-prone areas will be able to have a lower level of knowledge than younger respondents who live in disaster-prone areas (Pangesti, 2012).

The results of the study in Table 2 explain that most of the respondents were female by 91 students (63.6%), while male respondents were 52 students (36.4%). In a similar study conducted by previous researcher (Suwaryo, 2017), gender had no relationship on the level of knowledge of the community on natural disaster mitigation landslides. The gender difference may form a different perception, thus affecting the different attitudes and knowledge as well as between men and women, as differences in how they make ethical decisions and cognitive.

The results of research conducted by previous researcher (Ariandini, 2019) also stated the same thing, that is the result of preparedness between men and women still vary from the low, medium, to high levels. (Widyastuti, 2019) Differences in physical, biological, social norms, and economic status of women cause disasters to have different impacts on women and men.

Knowledge Level

The results of this study explain that respondents with good level of knowledge were 114 (79.7%) students, while those with a sufficient knowledge level were 29 (20.3%) students. Lack of knowledge is caused by students' lack of experience in obtaining disaster education and information about earthquake disaster preparedness. According to research conducted by previous researcher (Styaningsrum, 2015) before the provision of disaster education, most of the students which is 40 (87.0%) students were in the unprepared category; while after being given disaster education, there were 35 students in the well-prepared category (76.1%) while 11 students (23.9%) were in the prepared category.

A study conducted by another previous researcher (Styaningsrum, 2015) showed that the students' level of knowledge before the disaster education with 22 respondents (42.3%) in the category is almost prepared. These results are since schools have never conducted education about disasters, the lack of this knowledge affects the level of student preparedness. According to previous research (Simandalahi, 2019), the results show that health education on earthquake disaster preparedness can increase respondents' understanding of earthquake disaster preparedness.

Preparedness Capability

The results of this study show that respondents who had well-preparedness were 91 students (63.6%), while respondents who had preparedness were 52 (36.4%). It was stated that preparedness is a necessary step in disaster management that must be followed up by the government, private, and community elements; made in the form of regulations, program planning, funding and development, institutional relations, or disaster preparedness organizations. Suwaryo (2017) then explained that disaster preparedness in the community is needed as a form of more structural and systemic preparedness. In this research, it was found that disaster education is not only open for schools but also needs to be shared with families and communities.

Relationship between Knowledge Level and Preparedness Ability

The results of the bivariate analysis show p-value of 0.000 which means that p-value < 0.05 so that there was a relationship between the level of knowledge and the preparedness ability of the students of SMPN 1 Gantiwarno. The value of the correlation coefficient or the score of r = 0.342 indicates a sufficiently positive correlation, indicating that the better level of student knowledge, the higher level of students' preparedness ability in facing earthquake disasters.

Notoatmodjo (2011) stated that knowledge affects a person's behavior, meaning that it can also affect a person in preparedness behavior. According to LIPI-UNESCO/ISDR (2006), knowledge is a major key factor in preparedness. Knowledge that must be mastered by individuals and households regarding earthquake disasters is an understanding of earthquake disasters and an understanding of disaster preparedness, including an understanding of appropriate self-rescue measures when a disaster occurs as well as actions and equipment that need to be prepared before a disaster occurs. Apart from knowledge, one's experiences can also influence preparedness.

Havwina (2017) said that a poor disaster preparedness due to the lack of experiences in dealing with disasters and one of the factors affecting preparedness behavior is the experience of disasters. Jelita (2018) in her research claimed that several factors affect a person's preparedness in facing disasters, including knowledge and attitudes towards disaster risk, policies and guidelines, plans for disaster emergency response, disaster warning systems, as well as the ability to mobilize resources. The level of disaster knowledge in the good category was 66.2%, and the level of disaster preparedness in the ready category was 74.6%.

CONCLUSION

Respondents in this study were 143 people with an average age of 13.87 years old and a standard deviation of 0.626 with male gender (36.4%) and female gender (63.6%). The level of knowledge possessed by most respondents was categorized in the good category (79.7%). The preparedness ability of respondents who were in the well-prepared category in dealing with disaster category (63.6%) was greater than the prepared respondents. There is a significant relationship between the level of knowledge and the preparedness ability of students in dealing with earthquakes.

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