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The influence of knowledge, attitude, education and gender of the head of the family

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Abstract

The study analyzes the influence of knowledge, attitude, education, and gender of the head of the family for household preparedness against a flood from the Bengawan Solo River in Kedungdowo Village, Balen District of Bojonegoro Regency. The research method used in this study is the survey method. This study is explanatory observational research. Data analysis methods used in this study are descriptive statistical analysis and logistic regression analysis with a 95% confidence level to identify the level of preparedness and the relationship between factors that affect preparedness. The findings show that knowledge, attitude, education, and gender significantly influence household preparedness.

Keywords: Knowledge; Attitude; Education; Gender; Preparedness against flood.

La influencia del conocimiento, actitud, educación y género del jefe de la familia

Resumen

El estudio analiza la influencia del conocimiento, la actitud, la educación y el género del jefe de familia para la preparación del hogar contra una inundación del río Bengawan Solo en la aldea de Kedungdowo, distrito de Balen de la regencia de Bojonegoro. El método de investigación utilizado en este estudio es el método de encuesta. Este estudio es una investigación observacional explicativa. Los métodos de análisis de datos utilizados en este estudio son análisis estadísticos descriptivos y análisis de regresión logística con un nivel de confianza del 95% para identificar el nivel de preparación y la relación entre los factores que afectan la preparación. Los resultados muestran que el conocimiento, la actitud, la educación y el género influyen significativamente en la preparación.

Palabras clave: Conocimiento; Actitud; Educación; Género; Preparación contra inundaciones.

1. INTRODUCTION

Indonesia is located on the equator so that it receives much solar heat and high rainfall, therefore, Indonesia is prone to natural disasters that were caused by hydro-meteorological factors such as floods, droughts, landslides, and storm surges. According to the Indonesian National Board for Disaster Management, the two most common disasters in Indonesia are floods and landslides (DIBI BNPB, 2012).

Research by RISTIKA (2013) showed that in the East Java Province flood rank number one for the most frequent disaster and that the highest frequency of flooding occurred in 2010 with the highest number of flood events occurring in Bojonegoro Regency.

Bojonegoro Regency is a region downstream from the Bengawan Solo River, which is vulnerable to flooding. Floods in this area have caused many negative impacts ranging from loss of human lives, economic losses, health problems, and environmental degradation.

One of the non-structural efforts that can be done to reduce the negative impact of the disaster is by increasing community preparedness in disaster risk reduction. Three main stakeholders who play an essential role in improving household preparedness against floods are government, family, and school. The head of the family plays a crucial role in the household and individual preparedness, because of his or her role to an information source, decision-maker, influencer for the family members and source of social support. Their influence makes them a role model for their family on words, behavior, and actions (EFFENDI, 2009). Therefore, to understand the preparedness of the household in coping with flood observation was done to the head of the family.

Several factors influenced the head of the family's preparedness in coping with a flood; some of the factors are knowledge, attitude, education, and gender. (FEMA, 2016). Notoadmodjo (2015) stated that knowledge and attitude are directly proportional to one's actions. The higher a person's knowledge, the better his actions will be.

Similarly, with attitude, the more positive the attitude of a person, the action taken will be more positive. Knowledge and attitude is influenced by level of education. According to KAPUCU (2008), education can affect a person, including one's behavior, which reflects to his disaster preparedness. Therefore, the higher one's education, the easier it will be to process new information. The higher one's education also means that one is exposed to more information. He or she can be better informed about the cause of floods and ways to prevent and cope with the impact of a flood. In addition to attitudes, knowledge, and education, behavior, and preparedness actions are also influenced by gender. According to the theory of natural selection, biological conditions cause differences in behavior between men and women. Men are considered to have more physical strength than women. Therefore, men are physically more able to cope with the impact of the flood.

This study aims to analyze the influence of knowledge, attitude, education, and gender of the head of the family for household preparedness against a flood from the Bengawan Solo River in Kedungdowo Village, Balen District of Bojonegoro Regency.

2. METHODOLOGY

The research design used in this study is observational research, which is explanatory to analyze the influence of the factors that influence household preparedness based on the preparedness of the

head of the family is anticipating the Bengawan Solo flood in Balen District, Bojonegoro Regency. This research was conducted in Kedungdowo Village, Balen District, Bojonegoro Regency. The population in this study was all head of the family who lived in Kedungdowo Village, Balen District, Bojonegoro Regency. Based on data from the VILLAGE (2014), the number of households in Kedungdowo village was 587 households.

The sample in this study was the heads of families living in the Village of Kedungdowo, totaling 85 families. The sampling technique used is simple random sampling. The variables in this study are independent variables that include knowledge, attitudes, education, and gender of the head of the family, and the dependent variable is household preparedness is facing floods. The instrument used in this study was a list of questions (questionnaire). The questionnaire was made based on modifications to previous research questionnaires. Questions related to knowledge, attitude, gender, educational levels, and flood preparedness were asked to the respondents. Response to knowledge, attitude, and flood preparedness was given a value, which then totals to determine the score for these categories. Scoring for education is based on what level of education that was chosen. There is no scoring given to gender. Furthermore, Table 1 explains the aspects used to score responses provided by interviewees in detail.

Data was analyzed bi-variate using the Chi-Square test with a significance level of $p < 0.05$ and multivariate with the Logistic Regression Test.

Category	Number of Questions	Response	Value	Scoring
Knowledge	15	Right	1	Good = 76–100 Moderate = 56–75 Bad < 56
		Wrong	0	
Attitude	15	Strongly Disagree	1	Positive > 50 Negative < 50
		Disagree	2	
		Undecided	3	
		Agree	4	
		Strongly Agree	5	
Education level)		No formal education		1 Advance (Tertiary level) Intermediate (Secondary) Basic (≤ Elementary)
		Elementary School		
		Middle School		
		High School College		
Gender	1	Male	1	No Scoring
		Female	2	
Flood Preparedness	15	Yes	1	Prepared = 8 – 15 Not prepared = 0–7
		No	0	

Table 1: Questionnaire Category and Scoring

3. RESULTS and DISCUSSION

The research respondents were 85 heads of households (KK) who lived in Kedungdowo Village, Balen District, Bojonegoro Regency, which were divided into several characteristics according to age, sex, education, and occupation. Table 2 describes the characteristics of the 85 respondents for this study.

Respondents are dominated by the head of the family with an age range between 41 – 50 years (36.47%), and only 3.53% of the respondents are below thirty years of age. By gender, most respondents were male respondents, with a total of 57 people. 36 of the respondents had an elementary school level of education, and only 2

respondents have a college education. Respondents with the occupation of farmers dominated by 58 people; this might be caused by 66% of the area in Kedungdowo village is utilize as paddy fields.

Overall knowledge of the head of the family on flood preparedness in Kedungdowo Village, Balen Sub-district, and Bojonegoro Regency is categorized into poor, moderate, and good. 33 people or 38.8% of the head of the family have a moderate level of knowledge, and 32 people or 37.6% of respondents have poor knowledge about flood preparedness.

The attitude of the head of the family towards flood preparedness in Kedungdowo Village, Balen District, Bojonegoro Regency is categorized into negative and positive, where 79 people (92.9%) of the heads of the family have a positive attitude towards flood preparedness. The majority of 46 respondents (54.1%) were ready to face floods, and the remaining 39 people (45.9%) were not ready to face floods.

The test results show that the knowledge, attitude, and flood readiness variable have a Cronbach Alpha value of 0.819, 0.911, and 0.732 respectively, and since each has a Cronbach Alpha value more significant than the cutoff, value of 0.60, it can be declared reliable.

The results of Pearson Chi-Square analysis for the influence of knowledge, attitude, education, and gender on household preparedness in coping with floods obtained p values smaller than the significant level of p (0.05). It shows that statistically, there is a significant influence between knowledge attitude, education, and gender on household preparedness in coping with floods. P-value for knowledge,

attitude, education and gender are: 0.002, 0.006, 0.004, and 0.004 respectively.

Variable	Preparedness				<i>p</i>
	Not Prepared		Prepared		
	Quantity	Percent	Quantity	Percent	
Knowledge					
Poor	21	24,7%	11	12,9%	0,002
Moderate	15	17,6%	18	21,2%	
Good	3	3,5%	17	20,0%	
Attitude					
Negative	6	7,1%	0	0,0%	0,006
Positive	33	38,8%	46	54,1%	
Education					
Basic	29	34,1%	18	21,2%	0,004
Intermediate	10	11,8%	26	30,6%	
Advance	0	0,0%	2	2,4%	
Gender					
Female	19	22,4%	9	10,6%	0,004
Male	20	23,5%	37	43,5%	

Table 2: Chi-Square Test for Knowledge, Attitude, Education and Gender towards Household Preparedness against Flood

In this test, all variables that have a significant influence on the previous bivariate test $\alpha = 5\%$ (0.05) will be included in the multivariate test model. The test used to conduct multivariate analysis

is logistic regression analysis. It is because the dependent variable is categorical.

Based on the results of logistic regression analysis, it can be concluded that all independent variables that are being studied, which are: knowledge, attitude, education, and gender, have a significant positive effect on preparedness. The knowledge variable has a significant positive effect on preparedness because it has a positive regression coefficient of 0.202 with a significance value (p) of 0.022, which is smaller than the significance level of $\alpha = 5\%$ (0.05). It means that the better the knowledge, the preparedness will also increase.

The attitude variable has a significant positive effect on preparedness because it has a positive regression coefficient of 0.127 with a significance value (p) of 0.005, which is smaller than the significance level of $\alpha = 5\%$ (0.05). It means that the more positive the attitude, the preparedness will also increase.

The education variable has a significant positive effect on preparedness because it has a positive regression coefficient of 0.766 with a significance value (p) of 0.027, which is smaller than the significance level of $\alpha = 5\%$ (0.05). It means that the higher the level of education, the preparedness will also increase.

The gender variable has a significant effect on preparedness because it has a regression coefficient of 1,300 with a significance value (p) of 0.046, which is smaller than the significance level $\alpha = 5\%$ (0.05). A positive regression coefficient value indicates that male family heads influence preparedness in the face of flooding.

Variabel	B	P Value	Cox & Snell R Square	Nagelkerke R Square
Pengetahuan	0,202	0,022		
Sikap	0,127	0,005	0,422	0,564
Pendidikan	0,766	0,027		
			Jenis Kelamin	1,300 0,046

Source: Result of Logistic Regression Analyzes

Table 3: Result of Logistic Regression Analyzes

The results showed that the pseudo R2 value has a value of 0.422 (42.2%) or 0.564 (56.4%). It shows that the proportion of variance in preparedness that can be explained by knowledge, attitudes, education, and gender is 42.2% or 56.4%. The logistic regression analysis also shows that the variable with the smallest probability of error (p) is the attitude with a p-value of 0.005. It shows that the attitude variable has a dominant influence on flood preparedness.

3.1. Household Preparedness against Flood

The results of this study showed that most households in Kedungdowo village are ready to cope with flooding, where 46 households (54.1%) are ready to cope with flooding, and the remaining 39 households (45.9%) are not ready to cope with floods.

These findings show that households in Kedungdowo village have preparedness against the threat of flooding, which includes the high capability to identify the potential threat of flooding in their area, the ability to recognize the signs of flooding, and the awareness to make preparations before a flood occurs.

Disaster preparedness, according to GREGG et al., 2004; PERRY and LINDELL, 2008; SUTTON and TIERNEY, 2006, is a condition of society both individually and in groups that can anticipate the possibility of future disasters. The government needs people who have the knowledge and preparedness to face a disaster to reduce the risk of disaster (MATSUDA and OKADA, 2006). Household preparedness will make the community better prepared when disaster strikes. This community readiness will minimize the negative impacts of a disaster that occurs.

Responses to the questionnaires showed that preparedness actions that are taken by the head of the family in the Village of Kedungdowo include preparing for emergency supplies are consist of the essential needs before the flood occurs. The needs such as food, water, and personal medicines; preparing tools for emergency rescue such as the availability of a raft for family evacuation during the flood; providing emergency lighting tools such as flashlights; assigning groups to monitor signs of flooding by family members during rainy seasons, especially in the events of heavy rains; and some of them also attend flood preparedness training.

The knowledge of the head of the family in the Kedungdowo village about flooding shows that as many as 33 heads of households (38.8%) have sufficient knowledge about the threat of flooding. The results of multivariate analysis with logistic regression statistical tests showed that knowledge variables affected flood preparedness. It can be explained that referring to the statistical result test, the higher the

knowledge about flood threats, the preparedness measures will also be better in the flood-prone areas.

The results showed that sufficient knowledge of the head of the family was found in the aspects of causal of the flood and protection of essential documents when floods occurred. The head of the family knows enough about things that cause floods, such as the cause of flooding in this Village is because the houses in this Village are built on the banks of Bengawan Solo River, at the catchment area for the river overflow. However, due to the economic situation and social attachment to the place, they do not want to relocate.

In addition to understanding the cause of the flood, the head of the family is also know to what needs to be protected during a flood. One of the actions is preparing essential documents and storing them in a safe place. Most of the households secured their documents in a waterproof or plastic folder and kept it on the ceiling, and some households make copies of these documents and entrust them to family or friends who live in places that are safe from floods.

Knowledge about the threat of flooding can be influence by factors such as age and past personal experience or experience from a family member who has often dealt with floods in their Village. Frequent flooding will form its local wisdom in the flood-prone areas (SYLVARANTO, 2012). By experiencing the same condition repeatedly, a person can learn by trial and error in what actions can best answer this adverse condition. Age also affects one's experience because, during their lifetime, every human will interact with others so that personal experience or the experience of others can be used as a

source to increase knowledge. Age also affects a person's comprehension and mindset. As an individual getting old, he or she will also develop his or her intelligent quotient and mindset, so the individual becomes more knowledgeable (NOTOATMODJO S 2005). Knowledge is also very closely related to education. The expectation is the higher someone's level of education, the more knowledgeable that person will be (WIDIONO, S 2001).

The results of this study are in line with the results of MARPAUNG'S STUDY (2009) that there is a correlation between knowledge and action, which means that the right level of community knowledge about disasters will increase the ability to deal with flooding. According to Nashir (2008), that science that is supported by theories and high technology can explain disasters objectively, rationally, and based on actual natural behavior. As TWIGG (2007) argues, if community knowledge of hazards, vulnerabilities, risks, and risk reduction activities is sufficient, it will be able to create practical community actions (both alone and in collaboration with other stakeholders) in dealing with disasters.

The attitude of the head of the family in the Village of Kedungdowo, Balen District, Bojonegoro Regency, is mostly positive. The results of the study showed that almost 79 respondents (92.9%) had a positive attitude in terms of flood preparedness. The results of multivariate analysis with logistic regression statistical tests indicate a variable attitude towards disaster preparedness. Based on the statistical test results, it can be explained that the more positive the attitude to

flood preparedness by the head of the family, the more action is taken in preparing for the flood.

The result of logistic regression analysis also shows that the variable that has the smallest probability of error (p) is the attitude with a p -value of 0.005. It shows that the attitude variable has a dominant influence on flood preparedness. It means that the more positive the attitude of the head of the family in Kedungdowo Village, the more households have the preparedness to face flooding.

Following the research results of LIPI (2006), that the most significant influence in calculating the level of preparedness of the rural communities of Aceh is the level of community knowledge and attitudes (KA), which are considered quite suitable for individuals or households. It means that the community has a sufficient understanding of the disaster and knows the actions that must be taken when the disaster occurs.

SUNARYO (2004) also stated that attitude is a person's closed response to a stimulus or object, both internal and external, and that its manifestations cannot be directly seen, but can only be interpreted first from closed behavior. Reality shows the suitability of responses to certain stimuli. Based on the result of this study, it shows that a positive attitude to a stimulus will result in conformation actions, namely disaster preparedness.

The results of this study indicate that the head of the Kedungdowo village family who has secondary education and above will have flood preparedness, and they are more aware of what components that must be fulfilled for flood preparedness. In principle,

education is the entrance of a person in knowing what decision to take for a particular situation, including for flood preparedness.

Based on research from MARPAUNG (2009), education factors can strengthen or weaken community actions to deal with disasters. Education is an important factor and is part of community preparedness in facing disasters.

That statement is following the opinion of Cumming et al. in AZHARI (2002), who argued that education is a process or activity to develop the personality and abilities of individuals or society. It means that education is a formation of character, which is values and attitudes accompanied by abilities in the form of intelligence, knowledge, and skills.

The results of this study are consistent with what was stated by SYAHRIAL (2005) that the level of education greatly determines a person's reasoning power, better reasoning power means that it is more able to absorb information and can also think rationally in response to information or any problems encountered. Furthermore, PRIYANTO (2006) also stated that highly educated people are better able to reduce risk, increase capacity and reduce the impact on health so that they will participate as individuals or communities in preparing themselves to react to disasters. Through educational activities, a person could learn about new information as well as learning new skills and self-empowerment in such a way that they can take actions that are needed to reduce the risk of disasters.

4. CONCLUSION

It can be concluded from this study that knowledge about the threat of flooding, attitudes, education, and gender have a significant effect on community preparedness for flood preparedness. The logistic regression analysis also shows that the variable with the smallest probability of error (p) is the attitude with a p-value of 0.005. These results indicate that the dominant variable influencing preparedness in dealing with flooding is the attitude variable.

In order to increase flood preparedness in Kedungdowo Village, Balen District, Bojonegoro Regency, the head of the family must have a caring attitude towards flood preparedness to minimize the impact of the flood and change the attitude of the head of the family into an attitude that cares about the threat of flooding. It is also expected that the head of the family will be able to search for information about floods, primarily through non-formal education, such as reading magazines about flooding, attending counseling about flooding, and training on flooding.

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