THE INFLUENCE OF KNOWLEDGE, ATTITUDE, EDUCATION AND GENDER OF THE HEAD OF THE FAMILY FOR HOUSEHOLD PREPAREDNESS AGAINST FLOOD

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ABSTRACT

The aims of the study to analyze the influence of knowledge, attitude, education and gender of the head of the family for household preparedness against flood from Bengawan Solo River in Kedungdowo Village, Balen District of Bojonegoro Regency. The method used in this study is survey method. This study is explanatory observational research. Population studied is 85 head of families from Kedungdowo Village, Balen District, Bojonegoro Regency. The sampling method for collecting the data from the families is stratified random sampling. 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 shows that knowledge, attitude, education and gender significantly influence household preparedness against Bengawan Solo flood. Attitude is the most dominant variable that influenced household preparedness.

Key words: Knowledge, attitude, education, gender, preparedness

INTRODUCTION

Indonesia is located on the equator so that it receives a lot of solar heat and high rainfall, therefore, Indonesia is prone to natural disasters that was caused by hydro-meteorological factors such as floods, droughts, landslides, and storm surges. According to Indonesian National Board for Disaster Management the two most common disasters in Indonesia are floods and landslide (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 important role in improving household preparedness against flood are: government, family, and school. The head of the family plays a crucial role in household and individual preparedness, because of his or her role to information source, decision maker, influencer for the family members and source of social support. Their influence makes them the role model for their family on words, behavior and actions (Effendi, 2009). Therefore, to understand the preparedness of household in coping with flood observation was done to the head of the family.

There are several factors that influenced the head of family's preparedness in coping with flood, some of the factors are: knowledge, attitude, edication 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 flood and ways to prevent and cope with the impact of 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 flood.

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

METHODS

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 in 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. 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 in 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 were given a value which then total to determine the score for these category. 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 Chi Square test with a significance level of $p < 0.05$ and multi-variate with Logistic Regression Test.

Table 1 Questionnaire Category and Scoring

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

RESULTS

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

Knowledge, Attitude, Flood Readiness

Overall knowledge of the head of the family on flood preparedness in Kedungdowo Village, Balen Sub-district, Bojonegoro Regency is categorized into poor, moderate, and good. 33 people or 38.8% of the head of the family has moderate level of knowledge and 32 people or 37.6% of respondents has 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 positiveattitude 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 greater 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). This 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, 0.004 respectively.

Table 3 Chi Square Test for Knowledge, Attitude, Education and Gender towards Household Preparedness against Flood

Variable	Preparedness				*p*
	Not Prepared		**Prepared**		
	Quantity	Percent	Quantity	Percent	
Knowledge					
Poor	21	24,7%	11	12,9%	
Moderate	15	17,6%	18	21,2%	0,002
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%	

In this test all variables that have a significant influence on the previous bivariate test α = 5% (0.05) will be included in the multivariate test model. The test used to conduct multivariate analysis is logistic regression analysis. This 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 a 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 α 5% (0.05). This 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 α 5% (0.05). This 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 α 5% (0.05). This 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 α 5% (0.05). A positive regression coefficient value indicates that male family heads influence preparedness in the face of flooding.

Table 3 Result of Logistic Regresion Analyzes

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

Source: Result of Logistic Regresion Analyzes

The results showed that the pseudo R2 value has a value of 0.422 (42.2%) or 0.564 (56.4%). This 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 attitude with a p value of 0.005. This shows that the attitude variable has a dominant influence on flood preparedness.

DISCUSSIONS

Household Preparedness against Flood

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.

This findings shows 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 have the ability to anticipate the possibility of future disasters. The government needs people who have the knowledge and preparedness in facing 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 from a disaster that occurs.

Responses to the questionnaire showed that preparedness actions that are taken by the head of the family in the village of Kedungdowo includes preparing for emergency supplies that are consist of the essential needs before the flood occurs, 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.

Influence of Knowledge to Household Preparedness against Flood

The knowledge of the head of the family in the Kedungdowo village about flooding shows that as many as 33 head of households (38.8%) have sufficient knowledge about the threat of flooding. The results of multivariate analysis with logistic regression statistical tests showed knowledge variables had an effect on flood preparedness. Referring to statistical result of the test results it can be explained that 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 important documents when floods occurred. The head of the family knows enough about things that causes 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 river overflow. However, due to 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 knowledgeable to what needs to be protected during a flood. One of the action is preparing important documents and storing them in a safe place. Most of the households secure their documents in a waterproof or plastic folder and kept it on the ceiling, and some household makes copies of these documents and entrust them to family or friends who live in places that are save from floods.

Knowledge about the threat of flooding can be influence by factors such as age and past personal experience or experience from family member who have often dealt with floods in their village. Frequent flooding will form its own 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 the course of 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 you get older you will also develop your intelligent quotient and mindset, so you become 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 knowledgable 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 a good 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 factual 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 effective community actions (both alone and in collaboration with other stakeholders) in dealing with disasters.

Influence of Attitude to Household Preparedness against Flood

The attitude of the head of the family in the village of Kedungdowo, Balen District, Bojonegoro Regency is mostly positive. 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 are 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 attitude with a p value of 0.005. This shows that the attitude variable has a dominant influence on flood preparedness. This means that the more positive the attitude of the head of the family in Kedungdowo Village, the more households have preparedness to face flooding.

In accordance with the research results of LIPI (2006), that the greatest 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 good for individuals / households. This means that the community has 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 positive attitude to stimulus will resulted in conformation actions, namely disaster preparedness.

Influence of Education to Household Preparedness against Flood

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 certain 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 in accordance with 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.

This 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 are able to take actions that are needed to reduce the risk of disasters.

Influence of Gender to Household Preparedness against Flood

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 α 5% (0.05). A positive regression coefficient value indicates that male family heads have more influence to preparedness in coping with flooding.

Behavior and preparedness actions are influenced by differences in biological conditions. According to the theory of natural selection, biological conditions tend to encourage different behavior between men and women. Karanci et al (1999) research results about the ability to adapt to earthquakes shows that men often use the problem solving approach and have an optimistic attitude compared to women who use a pattern of helplessness. In many societies, men are seen as higher and tend to be more mobile than women (Huky, 1982), so men certainly have more opportunities than women to increase their preparedness. Women role as the main caregiver are expected to stay at home, while men as the main economic support for the family are expected to have more activities

outside. Although, this role division between men and women are changing, most of the household in this village still conform to this.

According to Sutermeister & Sedarmayanti (2009), a person's work productivity will differ according to gender. A man and woman with the same body weight will have different activity abilities. This is because a woman's body has more inactive tissue, thus the minimal energy that is used to carry out the work process of the body in women is lower than men. The minimum energy needed by women is 10% lower than that needed by men (Marsetyo and Kartasapoetra, 1995).

According to Sedarmayanti (2009) women's physical strength is only 2/3 of the physical ability of male muscle strength. Therefore, women are consider less able to do the flood preparedness activity that required strength such as preparing a raft and building dikes.

However, Sedarmayanti also stated that in certain cases women are more careful than men. Therefore, women could be more detail when preparing the emergency supplies.

CONCLUSIONS

It can be concluded from this study that knowledge about the threat of flooding, attitudes, education and kelamindan 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 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 so as 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, especially through non-formal education, such as reading magazines about flooding, attending counseling about flooding and training on flooding.

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