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RESEARCH JOURNAL

VOLUME - 66 | ISSUE - 1

ADVANCE RESEARCH

JOURNAL OF

MULTIDISCIPLINARY DISCOVERIES

OCTOBER

2021

The Health Belief Model (HBM) implementation to flood preparedness

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ABSTRACT

One of the natural disasters that has a major impact to health is a flood. Community preparedness is part of disaster risk reduction. Previous research has found that there is a widely developed belief in society about disasters, namely, first, that disasters are unavoidable and thus nothing to worry about. Second, the health sector will manage risk, and disaster risk is not a problem. This leads to an underestimation of disaster preparedness. So that readiness is minimum and prevention is inadequate. The study of beliefs about flood disaster risk, especially on health and flood disaster preparedness in the community in Banjar Regency, South Kalimantan is important. This study aims to analyze the application of the Health Belief Model (HBM) in flood disaster preparedness in the community in Banjar Regency, South Kalimantan Province. This research is analytic, with approach cross sectional. The population in this study is the community in the Hulu Sungai Tengah district. The number of samples taken in the study were 81 people. The instrument that will be used in this research is a questionnaire in the form of a google form. The study was conducted in Hulu Sungai Tengah Regency in June-July 2021. Data analysis used chi-square with a 95% confidence degree. The results showed that the p-values of perceived vulnerability, perceived severity, perceived benefits, perceived barriers, and self-efficacy for flood preparedness were 0.235; 0.575; 0.977; 0.249 and 0.976. This means that there is no significant relationship between perceptions of vulnerability, severity, benefits, barriers, and self-efficacy with flood preparedness.

KEYWORDS: Health belief model, perceived susceptibility, perceived severity, perceived benefits, perceived barriers, self-efficacy, disaster preparedness.

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I. INTRODUCTION

Disaster is an event or series of events that threatens and disrupts people's lives and livelihoods caused, either by natural factors and/or non-natural factors or human factors resulting in human casualties, environmental damage, property losses, and psychological impacts (Law No. 24/2007). One of the natural disasters that have a major impact on health is flooding. The Center for Disaster Information and Communication of the National Disaster Management Agency reported that as many as 7 regencies/cities were affected by flooding in South Kalimantan Province, including Tapin Regency, Banjar Regency, Banjar Baru City, Tanah Laut City, Hulu Sungai Tengah Regency, Balangan Regency and Tabalong Regency (BNPB.go.id).

The flood disaster that occurred in January 2021 in South Kalimantan caused as many as 27,111 houses to be flooded and 112,709 residents evacuated due to rain with moderate intensity causing flooding with details, among others, Tapin Regency as many as 112 houses with 1,777 people affected and displaced, Banjar Regency 14,791 houses with 51,362 people affected and displaced, Kota Banjar Baru 296 houses with 622 people affected and displaced, and Tanah Laut City 8,249 houses with 27,024 people affected and displaced. Furthermore, Balangan Regency as many as 3,571 houses with 11,816 people were affected and displaced, Tabalong Regency 92 houses with 180 people were affected and evacuated and Hulu Sungai Tengah Regency 11,200 people were displaced and 64,400 people were affected. In addition, there were 5 people who died in Hulu Sungai Tengah Regency (BNPB.go.id).

The main factors that can cause the disaster to cause victims and large losses, namely a lack of understanding of the characteristics of hazards, attitudes or behaviors that result in a decrease in natural resources, lack of early warning information that results in unpreparedness, and powerlessness or inability to deal with disasters (Bakornas, 2007).). Disaster preparedness shows the level of effectiveness of the response to disasters as a whole. Community preparedness is part of disaster risk reduction. The estuary of this preparedness is to build community resilience to face disasters (Hening, 2009).

Based on previous research conducted by Seale, H., Heywood, AE, et al (2020) stated that there is a widely developed belief in society about disasters, namely, first, that disasters are unavoidable and thus nothing to worry about. Second, the health sector will manage risk, and disaster risk is not a problem. This leads to an underestimation of disaster preparedness. So that readiness is minimal and prevention is inadequate. The study of beliefs about flood disaster risk, especially on health and flood disaster preparedness in the community in Banjar Regency,

South Kalimantan is important. This is intended to increase community preparedness in dealing with flood disasters, prevent health risks from being minimized and help the government improve risk management related to flood disasters (Seale et al, 2020).

Health Belief Model (HBM) is a model that explains a person's beliefs and considerations before they behave. Health Belief This model is a cognitive model consisting of dimensions of knowledge, perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and self-efficacy. Preparedness is one of the important elements of proactive disaster risk reduction prevention activities, before a disaster occurs (LIPI, 2006). A person will take a precautionary measure, screen for or control the opportunity for an adverse health condition if they feel they are susceptible to the condition, if they believe that the effects or consequences are potentially serious, if they believe that such action will reduce their vulnerability or severity of the condition and if they believe that the anticipated obstacles or barriers to taking the action are worth the benefits (Polit, DF & Beck, CT, 2008).

Based on the problems above, this study aims to analyze the application of the Health Belief Model (HBM) in flood disaster preparedness in the community in Hulu Sungai Tengah Regency, South Kalimantan Province. This research can support the achievement of the strategic plan and research roadmap of PT, especially the focus of field 3 on disaster, namely the study of natural resource management, environment and disaster. Where in this study will be obtained.

II. RESEARCH METHODOLOGY

This research is analytic, with approach cross sectional, which aims to analyze the application of the Health Belief Model (HBM), namely perceived susceptibility, perceived severity, perceived benefits, perceived barriers and self-efficacy on flood preparedness in Banjar Regency, South Kalimantan Province. The population in this study is the community in the Hulu Sungai Tengah Regency, South Kalimantan Province. The sample hereinafter referred to as the respondent in this study was determined using a simple random sampling technique with a minimum sample size of 81 people. The sampling technique was based on the inclusion criteria. Inclusion criteria are general characteristics of research subjects from a population to be studied (Notoadmojo S, 2010).

The inclusion criteria used were as follows:
a. People living in flood-prone areas
b. People who have been affected by floods in the last 1 year
c. People aged 18 years taken

The number of sample using the Slovin formula was 81 respondents. The instrument used in this study was a questionnaire. The independent variables in this study are knowledge, perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and self-efficacy. The dependent variable in this study is the level of preparedness in dealing with floods. The statistical test used was chi-square with a 95% confidence degree.

III. RESULTS AND DISCUSSION

A. Characteristics of Respondents

Data collection was carried out in June-July 2021 using an online questionnaire on respondents who live in Hulu Sungai Tengah Regency, with a total of 81 respondents. The distribution and frequency of respondents' characteristics are presented in table 1 below.

Table 1. Distribution and Frequency of Research Respondents Characteristics

No	Variable		Frequency	Percentage (%)
1	**Gender**			
		Male	29	35.8
		Female	52	64.2
2	**Age**			
		14 – 27 years	75	92.6
		27 – 40 years	6	7.4
3	**Education**			
		Junior high school/ equivalent	4	4.9
		Senior high school/ equivalent	60	74.1
		Education D1/D2/D3	8	9.9
		Education D4/S1	8	9.9
		Masters education	1	1.2

Based on the table above the majority of respondents are female (64,2%), included in the age category of 14-27 years (92,6%) with the last education being high school or equivalent (74,1%).

B. Frequency Distribution of the Application of the Health Belief Model (HBM) and Flood Preparedness

The frequency distribution of the flood preparedness variable and the variable from the health belief model identified based on the 6 main variables is presented in table 2 below.

Table 2. Distribution and Frequency of Application of Health Belief Model (HBM) and Flood Preparedness

No	Variable	Frequency	Percentage (%)
1	**Perceived Susceptibility**		
	Not good	76	93,8
	Good	5	6,2
2	**Perceived Severity**		
	Not good	79	97,5
	Good	2	2,5
3	**Perceived Benefits**		
	Not good	62	76,5
	Good	19	23,5
4	**Perceived Barriers**		
	Not good	69	85,2
	Good	12	14,8
5	**Self-Efficacy**		
	Not good	64	79
	Good	17	21
6	**Preparedness for Disasters**		
	Not good	36	44,4
	Good	45	55,6

It is known from 81 respondents, that the majority of respondents (93.8%) have a poor perception of vulnerability as well as a perception of severity (97.5). This indicates that respondents still have confidence that they may be susceptible to disease during floods, and respondents still think that if affected by floods it will cause serious problems. As for the perceived benefits variable, the comparison of respondents in the unfavorable (76.5%) and good (23.5%). (14.8%). Similarly, the variable of belief for behavior of respondents in the unfavorable category (79%) is more than that in the good category (21%). As for the dependent variable regarding flood preparedness, respondents in the unfavorable category (44.4%) differed slightly from the good category (55.6%).

C. Bivariate analysis of perceived susceptibility, perceived severity, perceived benefits, perceived barriers and self-efficacy

The results of the bivariate test using the chi square test between perceptions of vulnerability, severity, benefits, barriers and beliefs to behave with disaster preparedness of respondents are presented in table 3 below.

Table 3. Bivariate Test of Perceived Susceptibility, Perceived Severity, Perceived Benefits, Perceived Barriers And Self-Efficacy on Flood

Variable	Preparedness for Disasters				Total		P-Value
	Not Good		Good				
	n	%	n	%	n	%	
Perceived Susceptibility							
Poor	32	42.1	44	57.9	76	100	0.235
Good	4	80	1	20	5	100	
Perceived Severity							
Not Good	36	45.6	43	54.4	79	100	0.575
Good	0	0	2	100	2	100	
Perceived Benefits							
Not Good	27	43.5	35	56.5	62	100	0.977
Good	9	47, 4	10	52.6	19	100	
Perceived Barrier							
Less Good	33	47.8	36	52.2	69	100	0.249
Good	3	25	9	75	12	100	
Self-Efficacy							
Less Good	0.976	45.3	35	54.7	64	100	29
Good	7	41.2	10	58.8	17	100	

Based on the table above, it is known that respondents with poor perception of vulnerability are more dominant in having good flood preparedness (57,9%) than respondents with poor disaster preparedness (42,1%). Meanwhile, respondents with good vulnerability perception category were more dominant in having poor preparedness (80%), but only slightly different from respondents with good preparedness (20%). Statistical test results obtained p-value of 0.235 which indicates that there is no significant relationship between the variable perception of vulnerability with disaster preparedness.

The same thing also happened to the severity perception variable, respondents who had a poor perception of severity category were more dominant in having good disaster preparedness (54,4%) compared to respondents who had poor preparedness to face (45,6%). Meanwhile, in the category of good severity perception, all respondents have good disaster preparedness (100%). The results of the statistical test obtained a p-value of 0.575 which indicates that there is no significant relationship between the perceived severity variable and disaster preparedness.

The table above also shows information regarding the relationship between perceived benefits and preparedness to face disasters, where respondents with the category of perceived benefits are not good more dominantly have good disaster preparedness (56,5%) compared to respondents who have poor preparedness (43,5 %), in respondents with good

perception of benefits category where respondents who have good disaster preparedness (47,4%) show a slight difference with respondents who have poor preparedness (55,6%). The results of the statistical test obtained a p-value of 0,977 which indicates that there is no significant relationship between the perceived benefits variable and the respondent's disaster preparedness.

Table 3 also shows that respondents with poor perception of obstacles category have good disaster preparedness (52,2%) slightly different from respondents who have poor disaster preparedness (47,8%). Meanwhile, in the category of respondents with a good perception of obstacles, respondents who have good disaster preparedness (75%) are more dominant than those who have poor preparedness (25%). The statistical test results obtained a p-value of 0,249 which indicates that there is no significant relationship between the perceived obstacle variable and the characteristics of the respondent's preparedness in dealing with disasters, in this case the flood disaster.

The theory of Health Belief Models (HBM) is based on the understanding that a person will take health-related actions based on his perceptions and beliefs, based on 6 aspects of an individual's thinking that will influence decision making in the individual to determine what is good for him. these are (Green & Murphy, 2014):

1. Perceived susceptibility

The perception of vulnerability in the Theory Health belief Model is defined as the presumption of yourself as a person vulnerable to certain conditions which measures the perception of vulnerability refers to the belief in the possibility of getting the disease. For example, individuals who feel that they are vulnerable to certain health problems will make efforts to reduce the risk of contracting disease in flood conditions. Based on the results of statistical tests, it is known that there is no significant relationship between perceptions of vulnerability and preparedness to face floods (p-value= 0.235). This is different from research conducted by Abbas and Routray (2014) which states that there is a relationship between flood vulnerability and health. Factors such as urbanization, poverty and education directly affect people's vulnerability (Faiqoh, 2017). In addition, this is also contrary to research conducted by Susila et al (2020) which states that there is a relationship between perceptions of vulnerability and preparedness in dealing with disasters (p-value= 0.001) (Susila et al, 2020).

The results of the above study are different from the research conducted in America by Sattler, Kaiser and Hittner (2000) which found that the perception of

vulnerability has a significant relationship with disaster preparedness which has a p-value < 0.01 in respondents who experienced Hurricane Emily and a p-value < 0 .05 in respondents who experienced Hurricane Fran. Miceli, Sotgiu and Settanni (2008) add that the perception of vulnerability can keep individuals away from disaster situations. In the risk perception literature, level of knowledge and frequent exposure to it is usually associated with lower risk perceptions (Slovic, 1987).

Based on the analysis, there are still many respondents who agree with the statement that it is possible that their health will decline and they cannot maintain their health during the flood. This can happen due to a lack of knowledge and attitudes of respondents in disaster preparedness. Perceived susceptibility is an individual's assessment of his susceptibility to a disease. The HBM theory also states that preventive action against a disease will arise when a person feels himself and his family vulnerable to disease (Hayden, 2013). In these findings, participants in perceiving the vulnerability of themselves and their families to a disease were also associated with other accompanying losses. Such as being vulnerable to natural disasters (for example: floods and landslides) and material losses due to disease (Mailoa et al, 2017).

2. Perceived severity

Believe that certain conditions have serious consequences, which measures feelings about the seriousness of contracting the disease or leave it untreated includes an evaluation of both the medical consequences and clinical (eg, death, disability, and pain) and social consequences that may (such as the impact of conditions on work, family life, and social relationships). For example, a person may think that a flood disaster is not serious, but if he thinks that if he is exposed to health problems due to a flood, it can cause him not to work for several days, then he will consider a flood disaster to be a very serious condition. Based on the results of data analysis shows that there is no significant relationship between perceived severity and preparedness in dealing with floods (p-value= 0.575). In contrast to the research conducted by Susila et al (2020) which stated that there was a relationship between perceived seriousness (p-value= 0.037) and disaster preparedness (Susila, 2020). This happened because there were still many respondents who stated that they were worried about their health and stated that the flood event made them susceptible to disease.

3. Perceived benefits

Health-related behavior is also influenced by the perceived benefits. Perceived benefit refers to an individual's assessment of the benefits of performing or not engaging in a healthy behavior. If a person believes that a particular action will reduce susceptibility to a health problem or decrease its seriousness, then he or she is more likely to do so (regardless of objective facts about the effectiveness of the action). In the variable of perceived benefits, statistical tests showed that there was no significant relationship with flood preparedness (p-value= 0.977). This is different from the research conducted by Susila et al (2020) which proves that there is a relationship between perceived benefits and disaster preparedness (p-value= 0.001). Referring to several statements in the questionnaire, there are still many respondents who feel worried about their health condition even though they have implemented a healthy lifestyle. This can happen due to the respondent's lack of knowledge about the benefits of implementing a healthy lifestyle.

4. Perceived barriers

Perception of barriers can measure the individual assessment of the major obstacles encountered to adopt the recommended health behaviors, such as financial constraints, physical, and psychosocial. In this obstacle perception variable, there is no significant relationship with flood preparedness (p-value= 0.249). In contrast to the research conducted by Susila et al (2020) which stated that there was a significant relationship between perceived barriers and preparedness for disasters (p-value= 0.017). Based on the analysis of the existing statements, the above can be caused because there are still many respondents who find it too inconvenient to cook their own food so that they can ensure the quality of the food they eat during a flood, and choose to eat food that is not clean and healthy during a flood rather than not. eat during the flood.

5. Self-efficacy

Defined as the belief that one can successfully execute the behavior required to produce results. Outcome expectations refer to perceptions of the likely consequences of one's actions, expectations self-efficacy refer to personal control of actions. Statistical test results show that the variable of confidence to behave (self-efficacy) has no significant relationship with the dependent variable of flood preparedness (p-value= 0.976). In contrast to the results from Susila (2020) which states that there is a significant relationship with disaster preparedness (p-value= 0.012). This happens because there are still many respondents who are not sure that they are able to prepare healthy and clean food during a flood. This is due to the lack of respondent education regarding preparation for the occurrence of disasters so that respondents tend to have doubts about dealing with disasters.

III. CONCLUSION

The conclusion in this study is that there is no significant relationship between perceived susceptibility, perceived severity, perceived benefits, perceived barriers and self-efficacy with flood preparedness. The advice that can be given is the need for educational activities about the importance of maintaining health by implementing a healthy lifestyle, consuming clean and healthy food during floods, as well as preparing individuals and families in dealing with floods, the need for collaboration and cooperation between local governments and NGOs and the community. to improve community preparedness in dealing with disasters, especially floods, and it is necessary to carry out sustainable disaster mitigation activities so that people are better prepared in dealing with disasters and do not hesitate in making decisions in self-rescue during disasters.

IV. ACKNOWLEDGMENTS

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