

PREPAREDNESS IN FACING FLOOD DISASTERS AND ITS CORRELATION WITH THE DEMOGRAPHIC PROFILE OF THE COMMUNITY IN CAWANG SUB-DISTRICT, EAST JAKARTA

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ABSTRACT.

Flood disasters are one of the serious problems faced by people in the Jakarta area. Community preparedness plays an important role in dealing with these disasters. The flood disaster in Cawang Sub-district is an annual flood, caused by long periods of rain and water sent from upstream. This research aims to; (1) Identify the level of community preparedness in facing flood disasters, and (2) Examine the correlation between the factors of age, level of education, and type of work and the level of community preparedness in facing flood hazards. This research uses quantitative research methods with descriptive statistical analysis and correlation tests. The respondents were 100 people. The parameters used to measure the level of community preparedness are; knowledge and attitudes towards disasters, emergency response plans, disaster warning systems, and resource mobilization. The research results show that; (1) The level of community preparedness in facing flood disasters is at the level of almost good preparation (64%), (2) The factors of age ($r = 0.622$), level of education ($r = 0.719$), and type of work ($r = 0.569$) have strong correlation with the level of community preparedness. This research shows the importance of community preparedness in facing flood disasters. The government and community must collaborate to improve preparedness and reduce the impact of flood disasters. Flood disaster education and socialization need to be promoted in the community as an effort to increase preparedness in facing flood disasters.

Keywords: *community, disaster, flood, preparedness.*

1 INTRODUCTION

Indonesia is a country that is prone to natural disasters. As an archipelagic country, Indonesia is crossed by the equator, which causes Indonesia to have a tropical climate and only has two seasons, namely the rainy and dry seasons. These two seasons are often made worse by uncertain climate changes, making Indonesia vulnerable to hydrometeorological disasters such as landslides, droughts, tornadoes, and floods [1].

Flood disasters are natural disasters that almost certainly occur every rainy season and can cause damage, both physical and non-physical. Physical damage in the form of damage to existing facilities and infrastructure at disaster locations such

as houses and bridges. Meanwhile, the form of non-physical damage is loss of life [9].

To minimize this damage, community preparedness in facing flood disasters is very necessary to manage disasters in the future. Preparedness is a form of action taken to reduce the impact of a disaster. Community preparedness efforts in flood-prone zones are essential. This is as stated in Law Number 24 of 2007, Article 1 Paragraph 7, namely that preparedness is a series of activities carried out to anticipate disasters through organization and through appropriate and effective steps.

Areas with high population density in Indonesia often experience floods, one of which is the DKI Jakarta area. DKI Jakarta is a lowland area with an average height of ± 7 meters above sea level. The city of Jakarta is an area with a relatively large number of reservoirs, while there are 17 rivers or canals that pass through the DKI Jakarta area [2]. The city of Jakarta is flowed by several rivers, one of which is the Ciliwung River which passes through dense villages and settlements in the center of Jakarta City, including Cawang Sub-district, East Jakarta. High rainfall intensity in East Jakarta was recorded at 703.4 millimeters in January and 766.8 millimeters in February. These things make the East Jakarta area, especially the Cawang Sub-district, increasingly vulnerable to flood disasters.

The flood disaster in the Cawang Sub-district that occurred in January 2020 was caused by high rainfall intensity and the overflow of the Ciliwung River. This affected most of the Neighborhood Units (RW) with inundation heights of more than 150 centimeters and inundation heights ranging from 10 centimeters to 70 centimeters [14]. With water levels of 10-70 centimeters to more than 150 centimeters, the flood disaster in Cawang Sub-district is in the high-level category according to Minister of Public Works Regulation No.12/Prt/M/2014 [10]. There were 2,431 flood victims in Cawang Sub-district in January 2020, consisting of 779 heads of families. Therefore, this research aims to determine the level of community preparedness in facing flood disasters, as well as examine the correlation between the demographic profile and the level of community preparedness in facing flood hazards.

2 RESEARCH METHODS

The approach used in this research is a quantitative descriptive method. The descriptive method is used to provide a description of the situation being studied. Presentation and analysis of the data are processed, and then interpretation is given through an in-depth description of the information obtained. So, the results of this research can be more easily conveyed.

Data collection methods in this research include primary and secondary data. Primary data was obtained directly from the research location through direct observation at the research location and distributing questionnaires to 100 heads of families in the Cawang Sub-district who were used as respondents. Secondary data was obtained from literature studies and related agencies.

The population in this study were heads of families in the Cawang Sub-district community, totaling 15,472 families. The sampling technique used stratified random sampling, with a sample size of 100 respondents who acted as heads of families. Stratified random sampling is a sampling method that involves dividing the population into smaller subgroups known as strata [4].

There are four indicators used to identify the level of preparedness of the community in the Cawang Sub-district in facing flood disasters [7], namely; a) Community knowledge and attitudes towards flood disasters, b) Emergency response plans, c) Flood disaster warning systems, and d) Resource mobilization.

The maximum parameter score is obtained from the number of questions in the indexed parameter, while the real score for the parameter is obtained by adding up the real scores of all questions in the parameter concerned. The index numbers in this research consist of the index of each indicator.

In examining the correlation between demographic profiles and the level of community preparedness in facing flood disasters using Pearson correlation analysis. The demographic profile of the respondents studied was age, education level, and type of work. Interpretation of the correlation can be seen at the significance level, namely 5% or with r table = 0.195 with 2 (two) degrees of freedom.

3 RESULT AND DISCUSSION

3.1 Level of community preparedness to face floods.

Community Knowledge and Attitudes towards Flood Disasters. As many as 86% of respondents stated that flood disasters were caused by natural factors (high rainfall and lowlands) and human factors (felling trees and littering). The majority also stated that flooding would occur if rainfall was high, the rain lasted a long time, river water levels rose (84%), and floods could cause loss of life, health risks, food shortages, and water pollution, namely 84%. Most people already know that the Cawang Sub-district is an area that is vulnerable to flood disasters, namely 84%. Followed by respondents who stated that the flood disaster was an event that could threaten people's lives as much as 81%. A value above 80% means very good.

Respondents who stated that they had family members who were motivated to anticipate flood disasters were 79%, respondents who stated that floods were river water whose height exceeded normal limits so that it overflowed into residential areas were 76%, and respondents who helped flood disaster victims were 73%. In addition, 71% of respondents stated that being active in evacuation training was important in preparedness, followed by 67% of respondents who stated that there were family members who had preparedness skills. A value above 60% and less than 80% means good.

Improving indicators of public knowledge and attitudes is very necessary because it will have an impact on other indicators. Knowledge and attitudes towards preparedness in facing disasters are abilities that must be possessed by every individual as a form of preparedness in facing disasters, especially flood disasters. This aims to save and reduce the many casualties, dislocations, and economic losses caused by flood disasters [7]. Knowledge of disasters is obtained from repeated personal experiences, thereby obtaining information about how to deal with floods and how to deal with them. This situation can increase preparedness before a disaster occurs [9].

Emergency Response Plan. The majority of respondents (87%) have prepared basic needs for emergencies and as many as 80% of respondents stated that storing important documents needs to be done as one of the disaster preparedness efforts. A score of 80% and above is classified as very good.

As a place of refuge, as many as 79% of respondents stated that they had relatives/family/friends who provided temporary refuge places during emergency conditions, but there were also some respondents who said that refuge places for disaster victims were provided by the government at the Binawan University refugee camps, places worship services in Cawang Sub-district, and there were respondents who stated that their refuge was in their own house, namely on the 2nd floor. As many

as 72% of respondents stated that families need to know and save telephone numbers for hospitals, fire departments, police, drinking water companies (*PAM*) and state electricity companies (*PLN*) to be contacted if an emergency occurs at any time. Meanwhile, 69% of respondents stated that there were supporting transportation facilities to the evacuation location, such as rubber boats and rubber boats made from Styrofoam with a thickness of 30 cm. This value of 65% - 79% means good.

Based on the aspect of facilities for evacuating families, it is still considered almost good, with 59% of respondents stating this. Furthermore, 46% of respondents stated that they had prepared equipment in containers/bags ready to carry, 43% of respondents had provided life jackets for family members, and 41% of respondents had provided maps of evacuation routes and family gathering places.

Regarding first aid, it can be seen that it is still not good because only 53% of respondents prepared a first aid kit or important medicines for first aid at home. Likewise, only 43% of respondents stated that there were family members who had first aid skills. First aid skills can be input for preparedness material, considering that the community still lacks skills in first aid, so they always depend on the medical team when a disaster occurs.

Meanwhile, regarding willingness to take part in flood disaster evacuation training and skills, only 46% of respondents had just taken part. From the aspect of flood disaster preparedness training that remains in the Cawang Sub-district, only 45% of respondents answered. A value below 55% means it is less good.

Flood Disaster Warning System. As many as 79% of respondents received sources of information about technology-based flood disaster warnings, namely from cellphones via Short Message Service (SMS) from the Meteorology, Climatology, and Geophysics Agency (*BMKG*), loudspeakers from mosques, and announcements from the Cawang Sub-district government. As many as 74% of respondents received information for flood disaster warnings from traditional and local sources, namely from banging on electricity poles and conveying information from the community to other communities. Based on aspects of information sources regarding flood disaster warnings, both technology-based and traditional-based were found to be in the good category. Meanwhile, 50% of respondents who carried out training and simulations of flood disaster warning systems were classified as not good. A good disaster warning system reflects the high level of knowledge and availability of technology related to flood disaster warning systems. An early warning system that functions well and can be accessed by the community has a great influence on disaster preparedness [13].

Resource Mobilization. The majority of respondents (81%) received assistance from other parties after the flood disaster occurred until they could recover. Meanwhile, only 52% of respondents allocated funds/savings/investment/insurance related to flood disaster preparedness. On the other hand, 59% of respondents knew that building embankments uses concrete walls to prevent water from entering settlements. The score of 52% is in the less good category, while the score of 59% is in the almost good category.

Judging from the aspect of human resources, it is in the bad category, because only 38% of respondents received disaster preparedness material and only 37% of respondents understood this material and were able to apply it if a flood disaster occurred. This is because access to education and flood disaster preparedness materials is in the less good category for as many as 51% of respondents. However, 81% of respondents said that they received help from other parties. Meanwhile, as many as 59% of respondents stated that the construction of embankments had used concrete walls to prevent water from entering settlements. Resource mobilization that

is in the 'less good' category is an indication of the lack or low capacity of families to mobilize their resources during and after a flood disaster [5].

Average Level of Community Preparedness in Facing Flood Disasters in the Cawang Sub-district. Based on the results of calculations on the 4 (four) indicators described above, the average level of community preparedness in facing flood disasters in Cawang Sub-district in 2022 can be seen in Table 1.

Table 1. Average Level of Community Preparedness in Facing Flood Disasters in the Cawang Sub-district in 2022

No.	Indicator	Percentage	Category
1.	Knowledge and Attitudes towards Disasters	78	Good preparation
2.	Disaster Warning System	68	Good preparation
3.	Emergency Response Plan	59	Almost good preparation
4.	Resource Mobilization	53	Less preparation
	Average	64	Almost good preparation

Based on Table 1, it can be seen that the emergency response plan and resource mobilization indicators are in the 'less preparation' and 'almost good preparation' categories in anticipating flood disasters. This situation is indicated by the index values which only reach 53% and 59% of the maximum value of 100%. Meanwhile, the indicators of knowledge and attitude towards disasters, as well as the disaster warning system respectively have an index value of 78% and 68%, including in the 'good preparation' category to anticipate flood disasters.

The level of community preparedness in the Cawang Sub-district is dominated by indicators of knowledge and attitudes towards disasters. Based on this indicator, it can be seen that the knowledge and attitudes of the community in the Cawang Sub-district regarding flood disaster preparedness are good. This is because the majority of people already know about flood disaster preparedness through their experience, although theoretically, it may still be lacking because academic material about flood disaster preparedness is still lacking or not yet owned by the community.

Apart from that, based on the disaster warning system indicators, the results are also in the 'good preparation' category. This can be seen from the sources of information that the community has, originating from technology-based and traditional or local information sources, namely from cellphones via Short Message Service (SMS) from *BMKG*, loudspeakers from mosques, announcements from the Cawang Sub-district government, banging electricity poles, and delivery from the community to other communities. However, most people still lack training and simulation of flood disaster warning systems.

Judging from the aspect of community knowledge and attitudes towards flood disasters and the disaster warning system, it is relatively good, but unfortunately, other aspects, namely emergency response plans and resource mobilization, are not yet in the good or 'not good' category. Most communities' preparedness for flood disasters is still lacking in terms of first aid, namely the provision of first aid kits or important medicines, family members' skills in first aid, provision of life jackets for family members, availability of evacuation route maps, and family gathering places. Most

people also have not participated in evacuation training and skills due to the lack of continuous preparedness training in the Cawang Sub-district.

Resource mobilization efforts are also still minimal. The community in general has not been able to improve their skills to respond to flood disaster emergencies, which is indicated by the minimal participation of family members in receiving materials and training on flood disaster preparedness. This is due to a lack of access to education and flood disaster preparedness materials. Most people also do not have allocated funds/savings/investment/insurance related to preparedness in facing flood disasters.

This research is in contrast to research conducted by [6] which explains that the level of community preparedness in facing flood disasters is in a good category. This is partly because the local community and government, in collaboration with the Regional Disaster Management Agency (*BPBD*), have carried out continuous disaster resilience training, so that community preparedness in facing flood disasters can be maximized.

3.2 Correlation between Community Preparedness Level and Demographic Profile

Based on Table 2, it can be seen that the age, level of education, and type of work of the people in the Cawang Sub-district have a strong correlation with their level of preparedness in facing flood disasters ($r\text{-value} > 0.5$). Age is one of the factors that contribute to influencing the level of preparedness because of the role of thinking and memory in it. The older the respondents, the better their level of preparedness for flood disasters. According to WHO in [3] explains that the age group 20-60 years is adulthood, while those over 60 years are elderly who are vulnerable to risks to a person's health and thinking power. Based on the research results, it is known that respondents in the 20-40 year and 40-60 year age groups were 73%, while respondents aged over 60 years were 27%. This research contradicts research conducted by [8] which explains that there is no correlation between age and the level of disaster preparedness. However, age must receive attention because it affects a person's mental, and physical condition, workability, and responsibility for disaster preparedness.

Table 2. Correlation of Community Preparedness Level with Respondents' Demographic Profile

Demographic Profile of Respondents	Correlation of Community Preparedness	
	r value	Category
Age	0.622	Strong
Education	0.719	Strong
Job	0.569	Strong

Education influences a person's thinking power. The higher a person's level of education, the easier it will be to receive information. The more information someone gets, the more knowledge they will gain. This research is in line with research conducted by [12] which explains that there is a strong correlation between the level of community education and the level of land disaster preparedness. The higher the level of community education, the higher the community's knowledge regarding disaster preparedness. On the other hand, the lower the level of public education, the

lower the public's knowledge about natural disasters.

Job is one of the main things in earning income. Through a job, a person will also have access to information and can influence their knowledge. Based on research results, there is a strong correlation between the type of work and the level of disaster preparedness. It can be stated that someone who has high knowledge about flood disasters will also have high preparedness efforts in facing this disaster. This research is in line with research conducted by [11] which explains that a person's work will influence their knowledge and experience in dealing with natural disasters.

4 CONCLUSION

Based on the results and discussion, it can be concluded that the factors that determine the level of flood disaster preparedness in the Cawang Sub-district are as follows; the indicator of community knowledge and attitudes towards flood disasters was 78%, the flood disaster warning system indicator was 68%, the emergency response plan indicator was 59%, and the resource mobilization indicator was 53%. Based on these indicators, the average level of preparedness of the Cawang Sub-district community in facing flood disasters is in the 'almost good preparation' category (64%).

There is a strong correlation between age group, level of education, type of work, and the level of preparedness of the Cawang Sub-district community in facing flood disasters, where the product-moment correlation calculation has an r value greater than 0.5 for these three variables. Relevant stakeholders need to provide continuous education regarding flood disaster training, one of which is family first aid, as an effort to reduce the risk of flood disasters.

Overall, the level of community preparedness for flood disasters in the Cawang Sub-district still needs to be improved through education, awareness, collaboration, and mitigation measures. Efforts involving the government, related institutions, and the general public need to continue to be strengthened so that people are better prepared to face and reduce the impact of flood disasters.

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