Community Preparedness of the Fire Hazard in Jetis District, Yogyakarta City

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Abstract. This study aims: (1) to determine the level of community preparedness in facing fire hazards in the Jetis District of Yogyakarta City and (2) to understand the efforts to increase community preparedness to deal with fire hazards in the Jetis District of Yogyakarta City. This research uses descriptive methods with quantitative and qualitative approaches. In this research, we utilize the environmental approach as a tool. The indicator that we use here is based on the 2006 UNESCO / ISDR LIPI to measure the level of community preparedness. This research was conducted at Jetis District of The City of Yogyakarta. The population of this study was all family heads in Jetis Subdistrict, at least we came to 9282 families. The number of samples was determined using the Slovin formula and obtained 99 respondents. We chose the Proportional Random Sampling in three villages in Jetis Subdistrict as the sampling technic. The data was gained from the process of observations, structured interviews with standardized guidelines, in-depth interviews with three main resource persons, and documentation. The analysis technique that we used is the frequency table and descriptive analysis. The results show that: (1) the level of community preparedness in the Jetis Subdistrict in facing the danger of fire was in the "Less Ready" category (55.56%). The level of community preparedness on the knowledge and attitudes of the majority was in the category of "Ready" with 63.63%. The majority of emergency plan variables are in the unprepared category as much as 56.57%. The majority of disaster warning system variables are in the ready category that is 56.57%. Resource mobilization ability is a variable with respondents who are at the lowest level of preparedness, the majority are in the category of not ready as much as 76.77%. (2) the efforts to increase fire hazard preparedness in the community in Jetis District have been carried out, namely: conducting training and simulation of fire prevention, procurement of supporting facilities for fire prevention, making fire engines, and establishing disaster relief posts in Jetis District. Efforts that must be increased are: educating the public about the risks of fire hazards, increasing synergy between community organizations and local governments, and adding firefighting infrastructure.

1. Introduction
Disaster is one of the events as well as a natural process that we cannot avoid, but we can reduce the impact caused by a disaster. Disasters always threaten every human life or what are known as risks. Disasters are divided into three types according to Law number 24 of 2007 natural disasters, disasters and social disasters. One of the non-natural disasters is fires, namely residential and forest / land fires. Residential fires rarely get attention even though during 2018 according to BNPB data there were around 422 fire incidents. Fires can be caused by human negligence or occur naturally, for example due to high temperatures (BNPB: 2018).
An urban area is a zone or area that is the center of economic activity, the center of government and population concentration with a heterogeneous way of life. The area as the center of economic and government activity has an attraction consisting of the many facilities, facilities and infrastructure which are represented by the dominance of built-up land in urban areas to meet the living needs of the population in it (Adiarto, 2013: 2). The problem that often arises in urban areas in Indonesia as a result of the attractiveness of urban areas is high population growth and it is estimated that by 2020 the population living in urban areas will reach more than 60% of the population (Fire Prevention and Management of the Yogyakarta Fire Service: 2005).

The attractiveness of urban areas results in population concentration which encourages urban change and development. There are several things that come up frequently. One of them is the problem of population growth. The population that is always increasing will cause problems in urban life because it is to meet the growing population development, while the land used never increases. Urban land is occupied by a large number of residents, as a result urban areas experience a fairly complex development process of built-up areas, which can include the wider area of built-up land and densification (compaction). This situation will cause a decrease in environmental quality in urban areas.

Administratively, Jetis District is part of Yogyakarta City. The Jetis District area has several large buildings such as hotels, markets to universities which are one of the main factors of attraction to support the development of the area towards urban areas. Jetis sub-district is built by 2 rivers, one of which is Jetis District and the other Sub-district, Code River in the east and Winongo River in the west, that is, it is not surprising that the growth of settlements in Jetis District is high, namely with a longitudinal pattern along the river. Jetis District has an area of 1,703 or 5.23% of the area of Yogyakarta City.

The results of the population registration of Jetis District which was carried out by BPS in 2019 had a population of 27,312 people with their livelihoods mostly in the service and trade sectors because they were supported by the large number of offices, educational facilities and trade / market places in Jetis District.

Almost the entire area of Jetis District is a permanent building, covering an area of 93.59% of the total area of the Jetis District. The large area resulted in the development of settlements in this area so dense. Recorded from the 2018 census, the population density of Jetis District reached 16,066 (BPS Kota Yogyakarta 2019) so that it can be categorized that the population density in Jetis District is quite high because the population density level is more than the area of Jetis District. The population density map shows that Jetis District is included in the category of rather high population density (Fire Service 2019).

High population growth in an area is of course directly proportional to the growth of buildings in that region. The large number of buildings and residents will certainly cause both physical and social hazards, one of which is fire hazard. Fire is a danger that often occurs in big cities in Indonesia, including Yogyakarta City.

The majority of land use in Jetis District is in the form of permanent buildings and semi-permanent buildings, which is one of the factors that influence the handling of fire emergencies. This is due to the condition of the building materials which are relatively susceptible to fire in the event of a fire. Other factors that influence are human error / lack of community vigilance, short-circuit electricity, and the condition of Jetis District itself, where the majority of permanent buildings are built, both for offices, settlements, and markets.

Impact of the fire hazard can of course be minimized with disaster management efforts. Disaster management itself consists of several stages, one of which is preparedness. Preparedness is a series of activities carried out to anticipate disasters through effective and efficient measures (Law No. 24 of 2007). Increasing community preparedness for fire disasters aims to train people not to panic when a disaster occurs and also to reduce the level of losses when a disaster occurs. The level of preparedness of a community can decrease over time and with the occurrence of socio-cultural, political, and economic changes of a society. It is necessary to always monitor and know the condition of community preparedness and make efforts to always maintain and increase the level of preparedness (Hidayati, et al, 2009: 7).
2. Research Methods

The data analysis used in this research is quantitative and qualitative. Research is a descriptive study with quantitative and qualitative approaches, namely research whose results are expected to reveal facts from things that are observed and measured so that it can provide an overview and analysis of the level of community participation in fire hazard preparedness. Geography used is the environmental approach because it deals with the interactions between organisms and their natural environment. Indicators used to measure the level of community preparedness and efforts to increase community preparedness based on LIPI / UNESCO 2006.

The population in this study were people in Jetis District. Based on bps data in 2018, there were 27,312 people with 9282 families in 3 villages. The number of samples was determined using the Slovin formula and obtained 99 respondents. The sampling technique used was proportional random sampling in three sub-districts in Jetis sub-district. Data obtained from interviews, in-depth interviews, and documentation. The data analysis technique used is quantitative and qualitative analysis.

3. Results

3.1. Description area

Jetis District is located in the western part of Yogyakarta City. Jetis District is located at 7,773219 ° -7,788496 ° South Latitude and 110.368873 ° - 110.369218 ° East Longitude. Jetis District has an area of 1,703 consisting of 3 villages, namely Cokrodiningratan, Jetis, and Gowongan. The population composition of Jetis District is 27,312 people, consisting of 13,251 male residents (48.51%) and 14,061 female residents (51.49%).

3.2. Community Preparedness Level

There are 5 variables to measure the level of preparedness to face a disaster according to LIPI / ISDR, namely knowledge and attitudes, emergency response plans, policies, disaster warning systems, and resource mobilization capabilities. This study uses 4 of the 5 variables, namely knowledge and attitudes, emergency response plans, disaster warning systems, and resource mobilization capabilities because the main respondents in this study are people who do not have the authority to determine policies related to hazard preparedness, especially fire hazards.

3.2.1 Knowledge and Attitude

Knowledge becomes the basis for carrying out the right activities in anticipating disasters.

| No | Preparedness Level | Frequency (Soul) | Percentage (%) |
|----|--------------------|------------------|----------------|
| 1  | Ready              | 63               | 63.63          |
| 2  | Less Ready         | 34               | 34.34          |
| 3  | Not Ready          | 2                | 2.02           |
|    | Total              | 99               | 100            |

Source: Primary Data (2020)

The ready category can be illustrated that the respondent has a level of knowledge about fire starting from the causes of fire, the impact of the fire, the signs of fire, knowledge of buildings with a low risk of fire, relatively safe house building conditions, and discussions within the family to support their attitude, fire emergency response. The majority of respondents who are in the unprepared category have weaknesses in the condition of the building which has a small risk when a fire occurs. Factors that cause are economic limitations that have an impact on the choice
of building materials and the location of the house which must be in a densely-built village. The majority of respondents who are in the unprepared category have low scores on almost every indicator due to the relatively low level of knowledge (SD and SMP), age, and economic level.

3.2.2. Emergency Response Plan

Emergency planning is an important part of activities that need to be carried out in the context of community preparedness to anticipate fires.

Table 2. Level of Community Preparedness, Emergency Response Plan variable

| No | Preparedness Level | Frequency (Soul) | Percentage (%) |
|----|---------------------|-----------------|----------------|
| 1  | Ready               | 41              | 41,41          |
| 2  | Less Ready          | 56              | 56,57          |
| 3  | Not Ready           | 2               | 2,02           |
| Total |                     | 99              | 100            |

Source: Primary Data (2020)

The level of community preparedness in the emergency response plan variable is mostly at the unprepared level. There are many things that affect it, such as the relatively low level of knowledge (SD and SMP), age, to economic factors. Environmental conditions also affect the level of community preparedness. There are still locations that cannot be passed by fire engines and dry hydrants have not been installed, although in some hard-to-reach locations there are already dry hydrants. The problem is that the distribution of dry hydrants is still uneven.

The ready category indicates the condition of the family and its environment that is ready to face the danger of fire, such as the readiness of evacuation, starting from items for emergencies both in the family or RW environment and participation in training and fire simulations. This condition will facilitate the evacuation process in a fire emergency so as to minimize the loss of life and property.

3.2.3. Disaster Warning System

The disaster warning system is an important part of community preparedness to face hazards, including fire hazards. Signs that are given from the warning system will be conveyed to the wider community either directly or indirectly, then the public can respond to the warning.

Table 3. Levels of Community Preparedness for Disaster Warning System variables

| No | Preparedness Level | Frequency (Soul) | Percentage (%) |
|----|---------------------|-----------------|----------------|
| 1  | Ready               | 56              | 56,57          |
| 2  | Less Ready          | 39              | 39,39          |
| 3  | Not Ready           | 4               | 4,04           |
| Total |                     | 99              | 100            |

Source: Primary Data (2020)

Ready category indicates that the community is ready. The community is considered to have known the existence and function of a disaster warning system in their environment, such as there are sources of information about fire hazards, there are tools for traditional and modern disaster
warnings, and respondents are aware of the kentongan codes which the majority are still used as a warning tool. In contrast to the level of lack of readiness, the majority of which are filled by respondents with education levels below SMA, as well as jobs that take up a full day so that they do not have time to understand the disaster warning system. The lowest level is not ready, indicating that the respondent does not know the form of disaster early warning, from traditional to technology-based. Respondents do not know in their surroundings whether there are bells, sirens, or other electronic media within the RT or RW as a tool for disaster warning. The most influencing factor is age because some family heads are elderly.

The second indicator measures technology-based disaster warning systems. Entering the era of globalization, the technology that can be used as a danger warning is increasingly sophisticated and varied. Examples are TV, radio, newspapers, magazines, to the internet. The majority of respondents agreed that in the neighborhood where they live there is already a technology-based disaster warning tool because the condition of the respondent's residence is in an urban area, thus facilitating the flow of information.

3.2.4. Resource Mobilization Capability

The ability to mobilize resources is a training program (resources), community action, funds, community social capital.

| Table 4. Community Preparedness Level of Resource Mobilization Ability variable |
|------------------|----------------|----------------|
| No | Preparedness Level | Frequency (Soul) | Percentage (%) |
| 1 | Ready | 13 | 13,13 |
| 2 | Less Ready | 76 | 76,77 |
| 3 | Not Ready | 10 | 10,1 |
| Total | | 99 | 100 |

Source: Primary Data (2020)

As many as 78% of respondents, based on the results of filling out the questionnaire, said that apart from the head of the family, no one had ever attended fire preparedness training, even though fire emergency conditions could occur at any time, including when the family head was not at home.

The level of knowledge regarding fire hazard preparedness which is still quite low is strengthened from the interview data on the indicator of family agreement to participate in training and the frequency of participating in disaster preparedness or hazard training, especially fire. As many as 73% of respondents stated that they did not have a family agreement to participate in the training because they would only participate in training spontaneously, or only family representatives who were usually followed by the head of the family. Many factors influence this, such as the activity of each family member to the low level of community awareness of attending training. This is corroborated by a statement from a resource person who comes from the Bokomi Community management who also assesses that the level of public awareness of disaster preparedness is still low. So far, the participation of family heads has been good enough. As many as 70% of household head respondents stated that they had attended disaster preparedness training, although not everything they had attended specifically discussed fire. The ability to mobilize resources also includes the financial readiness of the community to deal with emergencies, especially fires. Public awareness to support preparedness from a financial perspective is still quite low due to the economic factors of the community, most of whom are still in the middle to lower class. 66% said they had no plans for funding in an emergency. They only rely on modest funds and assistance from the surrounding community.
3.2.5. Community Preparedness Level

Preparedness is a part of the disaster management process and in the concept of disaster management that is currently developing. Increased preparedness is one of the important elements of pro-active disaster risk reduction activities, before a disaster occurs.

Table 5. Levels of Community Preparedness in Facing Fire Danger

| No | Preparedness Level | Frequency (Soul) | Percentage (%) |
|----|--------------------|-----------------|----------------|
| 1  | Ready              | 41              | 41.41          |
| 2  | Less Ready         | 55              | 55.56          |
| 3  | Not Ready          | 3               | 3.03           |
|    | Total              | 99              | 100            |

Source: Primary Data (2020)

Referring to the assessment of the calculation results using a predetermined formula, the average value of the overall respondents in Jetis District is classified into the less prepared level. The variables of the emergency plan and the ability to mobilize resources were the variables with the lowest level of readiness. Data from interviews with respondents on the emergency plan variable and the ability to mobilize resources are variables with a lower level of readiness than the other two variables.

The variable of resource mobilization ability is the variable with the least number of respondents who fall into the ready category. There are only 13.13% of respondents in the ready category while 41.41% of respondents are in the ready category. There are several indicators that are still weaknesses in efforts to support preparedness such as the participation and frequency of family heads and family members' participation in training and fire simulations, then funding and availability of logistics for emergencies, while indicators with low scores on the emergency response plan variable are the availability of goods. These items include Hydrant extinguishers / light fire extinguishers, Handy Talky, First Aid Box, and alternative lighting tools.

3.3 Efforts to Improve Community Preparedness

The first attempt is related to knowledge and attitude variables. Efforts to improve preparedness are emphasized on indicators of knowledge of the causes of fire, knowledge of buildings with low risk when a fire occurs, and attitudes when a fire occurs. Activities carried out to increase the level of community knowledge include training and simulations to deal with disasters and fire hazards including attitudes when a fire occurs, how to extinguish fires independently, and family evacuation plans. The second effort carried out by the District Government in order to improve community preparedness is to coordinate with the Yogyakarta City Government for the provision of supporting facilities and infrastructure to deal with fire hazards.

The Bokomi community is here to provide breakthrough training so that the ability to handle a fire emergency can be comprehensive down to family members. Evaluating the training program held by the District Government, the Bokomi management made a regulation that training was held once a month with residents but carried out in rotation so that each family member was expected to participate. Public education related to disaster is also a concern of Bokomi. There were training and simulation activities with the community, then several times Bokomi also collaborated with universities and schools in order to educate and foster an attitude of disaster preparedness, especially fire. As a community that comes from residents, by residents, and for residents, of course, it always experiences ups and downs in its journey to increase community preparedness because it is only supported by minimal funds and resources. This is
still homework for the bokomi administrators and the local government because until now there has been no intense coordination, especially to improve community preparedness in facing fire hazards in Jetis District.

The existence of bokomi, KTB, and Linmas should be able to be synergized so that they are able to work together mutually to further improve community preparedness. The bokomi management hopes that the local government can collaborate with KTB as an organization engaged in disaster that was formally formed by the government with bokomi.

4. Conclusion

From this research, we knew that the level of community preparedness in Jetis District in facing fire hazards. Jetis Subdistrict is classified as a fire incident red zone according to data from the Fire Service, which means that the fire incidence rate is still quite frequent. Efforts to increase preparedness in the face of fire hazards were carried out by the Jetis District Government as the policy maker and assisted by several organizations and communities, one of which was Bokomi. The first attempt is to conduct fire management training and simulation activities. Second, the procurement of supporting facilities for fire prevention by the Jetis District Government and the construction of a fire train by Bokomi. The third is the establishment of the Jetis District disaster post.

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