Analysis of Factors Related to Disaster Preparedness in Undergraduate Health Students

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Keywords: Preparedness, Disaster, Knowledge, Experience.

Abstract: When a community is unprepared for a disaster situation, the anticipated results are many fatalities and economic loss. Such disasters include earthquakes, tsunamis, volcanic eruptions, floods, and avalanches. The aim of the study was to analyze the factors related to disaster preparedness. The research design was descriptive analytics, and the population of the research was undergraduate health students in Universitas Airlangga, Surabaya (Faculty of Nursing, Faculty of Public Health, and Faculty of Medicine) with 97 students as a subject. The independent variables that were measured were an experience of encountering the disaster, disaster education, and disaster knowledge, and the dependent variable that was measured was an application of disaster preparedness. The data was collected by questionnaire and analyzed with chi square and Spearman's rho statistical. The results showed that knowledge level was not significant ($p = 0.76$), and experience of encountering the disaster ($p = 0.453$) and disaster education ($p = 0.381$) also had no significant result to disaster preparedness. The next study was better if measured another factor that result with disaster preparedness on undergraduate health students.

1 BACKGROUND

Disaster is a series of events that threaten and disrupt people's lives caused by both natural/non-natural factors and human factors and resulting in the occurrence of casualties, environmental damage, property loss, and psychological impact (Law No. 24 of 2007). One of the obstacles that are often encountered in the effort to overcome health problems in disaster areas is the unpreparedness of health human resources in dealing with health problems (MOH 2006).Indonesia is vulnerable to the threat of geological disasters such as volcanic eruptions, earthquakes, tsunamis, and landslides. The most common occurrences of disasters in Surabaya are floods and fires. Several areas in the city of Surabaya experience flooding of varying heights ranging from 10 to 70 cm with the longest flood time of about six hours. Another type of disaster is fire. Fire events are a type of disaster that cannot be predicted but can be prevented.

Every natural disaster must result in material and immaterial loss to the surrounding community, especially if people do not have knowledge about natural disasters. People's unpreparedness in anticipating the disaster resulted in the great loss of lives and economic losses in the event of natural disasters such as earthquakes, tsunamis, volcanic eruptions, floods, and landslides. This is where responsibility and preparedness become key. The main actor in saving lives and possessions is the society itself.

A preliminary study conducted by researchers on March 19, 2016, using the interview method with 30 students consisting of 10 students from Faculty of Nursing, 10 students from Medicine Faculty, and 10 students from Public Health Faculty of Universitas Airlangga obtained the result that nine (30%) people know and claimed to be on standby if one day a disaster occurred both on campus and in their residence area because of having enough knowledge about disaster. Of the rest of the students, three (10%) people claimed not to know about disaster, and 18 (60%) people claimed they were not ready in case of a sudden disaster because they do not have enough supplies.

Dodon (2013) identified that the public knows (34%) and knows enough (33%) of various preparedness measures. Preparedness behavior of communities before a disaster is at a low level. Low levels indicate that the community has not been too concerned with disaster risk reduction measures

Sriyono, S., Yasmara, D. and Pratama, A.
Analysis of Factors Related to Disaster Preparedness in Undergraduate Health Students.
DOI: 10.5220/0008323602630268
In *Proceedings of the 9th International Nursing Conference (INC 2018)*, pages 263-268
ISBN: 978-989-758-336-0

before a disaster (Dodon 2013). Law no. 24 of 2007 on Disaster Management has regulated the implementation of disaster management, which includes pre-disaster, emergency response (during disaster), and post disaster. For the situation in an area where there is a potential for disaster (high disaster vulnerability level) then at pre disaster stage, the implementation of disaster management that needs to be done includes preparedness, early warning, and disaster mitigation (article 44). Responsibility for disaster mitigation activities can take the form of preparedness, measures that enable governments, organizations, communities, and individuals to respond quickly to a disaster situation (Rante et al. 2013). Preparedness is one part of the disaster management process, and in today's evolving disaster management concept, improved preparedness is one of the most important elements of proactive disaster risk reduction activities before a disaster (LIPI 2006).

The health sector forms an important part of disaster preparedness and response. The regulatory and response mechanisms require careful planning and should take into account the vulnerability of a particular country or region, and health policies and regulations on disasters, as well as the administrative and technical organizations of their health sector institutions. Such considerations should also include coordination of mechanisms, development of technical plans and programs, training and research, and logistical and financial support. Although health institutions can develop disaster preparedness plans, each country is expected to have a clear policy on disaster prevention and management.

Preparedness in anticipating disasters is implemented through organization and by putting into place appropriate and efficient measures (Law No. 24 of 2007). Preparedness is grouped into four parameters: knowledge and attitude, emergency planning, warning system, and resource mobilization (LIPI 2006). Elements of disaster preparedness include personal, community, and national knowledge, both within the government and private sphere in relation to disaster mitigation and vulnerability. Other important elements include disaster education (efficiency and effectiveness), impact of response to disaster, and development of local response, such as an early warning system, as an important part of disaster preparedness (Clust, Human & Simpson 2007).

Disaster preparedness should be invested in community life, especially adolescents because adolescents are a part of the community that has an important role in its life. One of the government's efforts to improve the security with regard to disaster is to develop education on disaster risk in adolescents. The program is intended to generate awareness and preparedness of adolescents living in disaster prone areas in the face of disasters through activities such as disaster simulation training, the establishment of the Youth Red Cross organization, and socialization activities on disaster risks. The role of adolescents as the younger generation in anticipating and handling disaster situations is considered very important (Purwoko 2015).

The cultivation of knowledge for disaster preparedness is conducted through socialization or disaster education and ensuring environmental safety against disaster risk factors. In disaster education, the level of individual readiness will be discussed for later enhancement through the learning process (Clust, Human & Simpson 2007). Individual preparedness for disaster is also demonstrated by the knowledge, skills, and abilities gained through experiential learning from real-life experiences (Clust, Human & Simpson 2007). There are several stakeholders that are closely related to community preparedness, ie individuals and households, government agencies related to disaster management, school communities, non-governmental organizations (NGOs), community institutions, professional groups, and private parties. Of the total stakeholders, three stakeholders, ie households, government, and the school community, were agreed to be key stakeholders and others to be supporting stakeholders in disaster preparedness (LIPI 2006).

In accordance with the definition of students according to Indonesia Dictionary, students are individuals who study in college. Universitas Airlangga is one of the State Universities located in the city of Surabaya with the characteristics of students who come from various regions across Indonesia, from urban to remote rural areas. With the rapid development of health sciences, Universitas Airlangga is determined to be a center of development in this field. Of 14 faculties in the campus of Universitas Airlangga, four of them are faculties that are included in health science classes, namely, Faculty of Nursing, Faculty of Public Health, Faculty of Medicine, and Faculty of Dentistry. In the writing of this thesis, the researchers focus on undergraduate students who are included in the health science class and have lessons about disaster, so the preliminary study conducted by the researchers was undertaken in three faculties who have lessons about disaster, which are Faculty of Nursing, Faculty of Medicine, and Health Faculty Society.

Several studies have been conducted regarding disaster preparedness for students. Usher and Mayner

(2011) examined the level of knowledge of nursing students in Australia by involving 39 institutions of higher education. The results concluded that almost all respondents did not have adequate knowledge of disaster preparedness because 63% of total respondents had never received disaster-related education at the university. The results of (Pangesti and Dwi's 2012) study stated that the level of knowledge about the risk of flood disaster for students living in flood-prone areas is better than that of students living in areas not prone to flooding.

Disaster preparedness is needed by students in health science, so that health students can become professional stakeholders in accordance with their discipline, and so that they have adequate capability, competence, and knowledge in handling disaster. However, the lack of courses on disaster in general has led to the majority of health students not being ready and alert in the face of disaster (Dewi 2010). The lack of knowledge of factors related to disaster preparedness in undergraduate students of health sciences at Universitas Airlangga, Surabaya, is the reason why the researchers conducted this study. The approach in this study uses self-efficacy theory according to Bandura, where knowledge, experience, and individual characteristics interact to form an adaptable behavior. In this study, the researchers linked factors related to the knowledge, experience, and characteristics of the individual with the preparedness of the individual against the disaster.

2 METHODS

2.1 Study Design

The type of this research is quantitative descriptive with a cross-sectional research design, which is only studying the problem or the state of the object at the time of the research to analyze the factors related to disaster preparedness in the undergraduate students of health science at Universitas Airlangga, Surabaya. The process of collecting and measuring the variables is done at the same time.

2.2 Study Population, Sampling, and Sample

The population were students of health sciences in Universitas Airlangga. The population of this study were 2,185 students of health sciences in Universitas Airlangga with the details of 533 students of the undergraduate nursing program, 855 students of the medicine study program, and 817 students of the Public Health study program.

The number of respondents in the sample is 97 people consisting of 24 respondents who were undergraduate students of the nursing study program, 36 respondents who were undergraduates of the medicine study program, and 37 respondents who were undergraduate students of Public Health study program.

2.3 Measurement

The instrument used as a data collection tool in this study was a questionnaire that contained a list of questions referring to the conceptual framework and was prepared based on a literature review. The questions on the questionnaire were filled in by writing a cross mark (X) on one of the columns provided in accordance with the respondents answer. The data used in this study is the primary data.

3 RESULTS

Based on the demographic characteristics of respondents is female, seen from data consisting of 66 (68.1%) respondents, who are women. Viewed in terms of age, almost all respondents were aged between 18 and 24 years, visible from data consisting of 94 (94.9%) of respondents aged 18-24 years. In terms of cluster sampling, a small percentage of respondents were undergraduates in Public Health, 37 (38.1%) respondents; then 36 (37.1%) respondents were students of medicine, and nursing students totaled 24 (24.7%) of respondents. Judging from all respondents who filled in the questionnaire, it is known that 49 (49.4%) respondents were from non-prone areas. This means the distribution of respondents was almost evenly distributed in this variable.

In this study the variables measured are the level of knowledge on disaster, experience in the face of disaster, and disaster preparedness applications.

Distribution of experience in the face of disaster with people who had experienced disaster reaching the number of respondents 54 people (56%) 43 people (44%). Education on disasters with indicators 72 people (74%) and dominate in this variable. Disaster preparedness application with positive indicator reaches 50 respondents (52%), and disaster preparedness application with negative indicator reaches 47 people (48%), whic means that disaster preparedness application has average value between respondents with positive and negative indicator. Based on the result of hypothesis test by using chi

square and Spearman's rho statistic test, it can be seen that the level of knowledge has an insignificant relationship to the disaster preparedness with the significance of p is -0.076. Education on disasters with significance p value of 0.383 has an insignificant relationship to disaster preparedness.

4 DISCUSSION

Based on data analysis about the relationship of knowledge level with disaster preparedness, it is known that the result obtained is not significant. The un-indicated value indicates no relationship between the respondents. knowledge level and disaster preparedness. The results of this study contradict the theory according to Allport in Notoatmodjo (2010), which states that in determining the whole attitude, knowledge, thoughts, beliefs, and emotions play an important role. Knowledge or cognitive is a very important domain in the formation of one's actions (Notoatmodjo 2005).

Differences in the level of knowledge in each individual can be reviewed according to Bloom's cognitive domain taxonomy. Benjamin Bloom in Aderson and Krathwohl (2001) states that knowledge includes six levels of cognitive domains knowing, understanding, application, analysis, synthesis, and evaluation. Each level of taxonomy shows the competence of different individuals in understanding and receiving information.

The higher the level of individual cognitive domains, the higher the individual's ability to process and apply information or knowledge. Bloom's taxonomy also explains that each individual has different cognitive levels due to various factors.

The researchers believe that respondents in this study have variations in the level of different cognitive domains with each other, so the understanding of the concept of disaster varies. Each individual will be different way to interpret attitude in preparedness in the face of disaster, insignificant value happened because majority of respondents have enough value reach 54 people consisting of 26 respondents who have positive attitude and 28 respondents who have negative attitude. So if tested statistically will yield insignificant value. This happens as can be seen from the source of information about the disaster. For the majority of respondents, these are informal sources such as the internet (30.9%) and newspapers (28.8%). Therefore, the level of understanding of respondents in Bloom's taxonomy will have an effect because they do not get valid knowledge from formal sources that can be trusted such as lecture materials and disaster training, so that will cause different interpretations.

Differences in interpretation between respondents who received knowledge or information related to disaster management will also affect their preparedness in the face of disaster because of the validity of the information or knowledge obtained by respondents through informal sources reaching 59.7% cannot be accounted scientifically so that will impact on variation level of respondent understanding in answer questionnaire question. According to Bandura's (Hoy 2008) social theory of cognitive one of them discuss about one's understanding of a thing so make someone attitude will have positive reinforcement; this is in line with this research because data obtained shows that the majority of respondents have level of knowledge less so it does not have a significant relationship with disaster preparedness. In the process of learning, self-efficacy is needed both within the self and the teachers themselves, which in turn leads to self-regulated learning, which is the process of activating and maintaining the thoughts, behaviors, and emotions to achieve the goals (Santrock 2010).

Based on data analysis of disaster education relationship with disaster preparedness, it is known that the result obtained is not significant. The non-significance value indicates the absence of correlation between respondents' education about disaster and disaster preparedness. The results of this study contradict the theory put forward by Caudill (2011), which states that each work unit or agency is obliged to facilitate residents with disaster education to ensure that appropriate action will be taken during a disaster. Each individual who inhabits the building must understand the disaster risks. Disaster education can be realized through an education curriculum, training, and disaster simulation. In line with (Pangesti & Dwi 2012) which concluded that there was no significant relationship between the experience of obtaining disaster-related courses and disaster preparedness.

The researchers believe that each individual will be different way to interpret attitude in preparedness in the face of disaster; insignificant value happened because at cross tabulation of research data in table 5.4 did not experience gap which is too massive so that if tested statistically will yield insignificant value. As Caudill (2011) points out, more institutionally where each institution must have a training program and a simulated disaster to minimize disaster impacts in its institution, it will be different from individuals where each individual has different views on disaster preparedness so that each individuals seeking disaster training will also be

different. In terms of information, the data shows that 30.9% of respondents are more dominant in accessing information about internet disaster, while those who receive education about disaster through lecture material is only 20.6%, so there is a tendency of different interpretation related to disaster management among respondents who get education through formal (lecture material) and informal (internet) sources.

According to Wang et al. (2008), disaster management training standards for different people also affect the attitude to disaster preparedness as it relates to material relevance in disaster training, so it could produce statistically meaningless results. Wang et al. (2008) also revealed that the time span between disaster research and education gained by multiple respondents allows for varying levels of understanding of questionnaire questions, which may lead to statistically meaningless results. Bandura in Woolfolk (2004) revealed that the more often a person gets an education, the greater the self-efficacy he gets. If education gets better than the level of self-efficacy of a person, their self-efficacy will increase, but if education gets worse. then the self-efficacy of the person will decrease.

Based on data analysis of experience relationships in the face of disaster with disaster preparedness in mind, the results obtained are not significant. The non-significance value indicates no relation between experience in responding to disaster and disaster preparedness. This is in contrast to Kapucu's (2008) study, which suggests that individuals who have experience in dealing with disasters will adapt and learn while engaged in disaster situations, so the threat of disaster will be responded to seriously and more effectively in the future. At the individual level, the experience of disasters generally has a positive impact on future disaster-related motivations.

In line with research (Dewi 2010), the proportion of health human resources preparedness in the group of respondents with a working experience ≤ 1 year of 23.4%. While in the group of respondents with a working experience of 2-5 years proportion of 37.4% and in the group of respondents. The researchers believe that insignificant value occurs because It can be seen in this study that the majority of respondents experience in dealing with disasters is as a victim (82.4%) of the disaster itself so that the interpretation of preparedness in the face of disasters will be different from the experience of the students when as a helper or health worker. Bandura's theory of self-efficacy in Woolfolk (2004) reveals that our direct experience becomes a powerful source of efficacy information. The experience of success becomes the greatest source of effectiveness of the effect on individual self-efficacy levels based on authentic experience. The experience of success leads to increased individual self-efficacy, while repeated failures result in decreased self-efficacy, especially if failure occurs when the individual's self-efficacy has not really formed strongly. Failure can also decrease the individual's self-efficacy if the failure does not reflect a lack of effort or influence from outside circumstances.

5 CONCLUSIONS

Knowledge of disaster has an insignificant relationship with disaster preparedness in undergraduate students of health science at Universitas Airlangga Surabaya. Disaster education has an insignificant relationship with disaster preparedness in undergraduate students of health sciences at Universitas Airlangga. Experience in dealing with disaster has an insignificant relationship with disaster preparedness in undergraduate students of health sciences at Universitas Airlangga.

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