

# The Effect of Simulation Method for Flood Disaster Preparedness towards Nursing Students of Faculty of Health Sciences Unipdu, Jombang, East Java, Indonesia

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**Abstract:** Indonesia has a high risk of natural disasters. The geological condition makes a natural surface of mountains and valleys that induced potential for flood disaster. Flood is one of the most frequent natural disasters. Preparedness behavior is one way to reduce disaster risk. Nursing students as nurse candidates have an important role in disaster management. In the learning process required a right method for students to understand and ready to face of disaster. One of the learning methods that can be given is a simulation method. The simulation method used to improve student preparedness in facing disaster. The purpose of this study is to analyze an effect of simulation method for flood disaster preparedness on nursing students, Faculty of Health Sciences, Universitas Pesantren Tinggi, Darul Ulum. This study was pre-experimental research with one group pre-post test design approach. The population was all of Nursing Students, in 8 semesters. Sampling technique used Probability Sampling (systematic simple random sampling). Data collection was conducted by giving questionnaire before and after an intervention. The analysis used Wilcoxon Signed-rank Test with significance level  $p < 0.05$ . The result of Wilcoxon Signed-rank Test statistic test obtained  $p = 0,000$  which means there was an effect of simulation method of flood disaster preparedness towards nursing students. Disaster preparedness level of nursing students increased after simulation of a flood disaster. The results of this study explain importance of applying simulation learning method which involves three aspects, namely knowledge, skill, and attitude, especially with roleplay like in a real situation.

## 1 INTRODUCTION

Indonesia has a high risk of natural disasters. This is due to many things, ranging from natural conditions to human error itself. Geologically, climatologically, and geographically, the territory of Indonesia is vulnerable to disaster. The rain with high intensity and in long-term, supported by a slope of the hill, and limited land cover caused soil movements.

The geological order in Indonesia that makes natural surface of Indonesia mountainous and lavish with various rivers cause the potential of flood, landslide, and erosion. Flood is one of the most frequent natural disasters (60%) occurring in Indonesia (Hadisusanto, 2011). In addition, flood became a problem and developed into a disaster when the flood disrupted human activities and even brought casualties and property (Sobirin, 2009).

The National Agency for Disaster Management (BNPB) noted that until October 2016, there were 639 times of floods that caused the loss of lives and economic losses. The death toll consisted of deaths and disappeared 134 people, wounded 104 people and the number of refugees 2,210,114 people. While the economic losses include damaged houses (heavily damaged (2,071 units), moderate damage (1,018 units), minor damage (5,242 units), submerged (214,079 units), 16 health facilities, 119 facilities of compass facility and 277 (BNPB, 2016).

The nursing profession is flexible and covers all the conditions, where the nurse is not only limited to provision of care in hospital but also is required to work in the alert condition of disaster response. The situation of handling between alert and normal circumstances is very different, so nurses must be capable of skill and technique in the face of such conditions. Medical care and care activities in a state

of disaster preparedness can be performed by nursing procedures. The knowledge and abilities of a nurse can perform disaster relief in various forms.

Nursing students as nurse candidates have an important role in disaster management. Preparedness behavior is one way to reduce disaster risk. Critical Nursing 2 is one of the 8th semester courses in the curriculum of the nursing science program, that discusses the management and disaster preparedness. In the learning process required a right method for students to understand and ready to face of disaster. One of the learning methods that can be given is a simulation method. According to Nana Sudjana (2000), simulation is a method of teaching to explain something through deeds or behavioral process that is done as if in real circumstances. The simulation method used to improve student preparedness in facing disaster. Based on that literacy, the purpose of this study to analyze an effect of simulation method for flood disaster preparedness on nursing students, Faculty of Health Sciences, Universitas Pesantren Tinggi, Darul Ulum.

## 2 METHOD

This study was pre-experimental research with one group pre-post test design approach. Population in this research was all students of nursing in eight academic semester, Faculty of Health Sciences, Universitas Pesantren Tinggi Darul Ulum, Jombang. Sampling technique used Probability Sampling (systematic simple random sampling). Total sampling of 42 respondents, data collection was conducted by giving questionnaire before and after an intervention.

Independent variable of this research was simulation method for flood disaster. Dependent variable was disaster preparedness level of students. The data collection stage about disaster preparedness level before flood disaster simulation method through questioner then simulated as intervention, then given questionnaire to evaluate disaster preparedness level of student in facing flood disaster. After that, analyze the results of questionnaire before and after an intervention of flood disaster simulation method to disaster preparedness level of students. The analysis used Wilcoxon Signed-rank Test with significance level  $\rho = 0.05$  if the result obtained  $\rho < 0,05$  then  $H_0$  rejected mean there were an effect of a flood disaster simulation method to disaster preparedness level.

## 3 RESULT AND DISCUSSION

Result and discussion about the effect of simulation method for flood disaster preparedness towards nursing students

### 3.1 Result

#### 3.1.1 Preparedness Levels Before Simulation

Table 1: Preparedness Level Frequency Percentage

Preparedness Level Frequency	Frequency	Percentage
Good	4	9,50%
Moderate	17	40,50%
Less	21	50%
Total	42	100 %

Based on the table 1 that disaster preparedness level of students before simulation, half of 21 (50%) respondents have a low level of preparedness.

#### 3.1.2 Level of Preparedness After Simulation

Table 2: Preparedness Level Frequency Percentage

Preparedness Level Frequency	Frequency	Percentage
Good	25	59,50%
Moderate	15	35,70%
Less	2	4,80%
Total	42	100 %

Based on the table 2 that disaster preparedness level of students after simulation, majority 25 (59.50%) respondents have a good level of preparedness.

#### 3.1.3 The Effect of Simulation Method for Flood Disaster Preparedness Towards Nursing Students

Based on Wilcoxon Signed-rank Test results obtained  $\rho = 0.000$  which means there was an effect of a flood disaster simulation method to the level of preparedness.

### 3.2 Discussion

Based on the results, there were differences in the level of preparedness in facing floods with a significance value of  $p = 0,000$ . The average value before the simulation is 64.52 and after the simulation is 78.45

Nursing Program is a professional academic education with a learning process that emphasizes the growth and ability of students to become an academician and professional. The cornerstone of this growing ability is an educational concept framework that includes the philosophy of nursing as a profession, and nursing as a form of professional service that could affect the curriculum content and the main approach in the learning process. During education process is pursued through academic and professional stages. The number of semesters in the academic phase of eight semesters and two semesters in the profession stage. There are several courses in the academic stage as the institution's founding courses. One of the courses is a critical course 2. Critical course 2 is taken in the eighth semester.

According to Pupuh (2011) for teaching and learning process can be done well and achieve the target, then one important factor that must be considered is to determine the appropriate method of learning.

Learning strategy is a common pattern to realize the learning process that is believed to effectiveness to achieve learning objectives. In the application of learning strategies educators need to choose, appropriate learning models, appropriate learning methods and learning techniques that support the implementation of learning methods. To determine the right learning strategy, educators consider the goals, characteristics of learners, subject matter and so that the learning strategy can work optimally.

The learning method in critical 2 includes lecture method, discussion and simulation method. The simulation method is applied in an effort to improve student preparedness in facing disaster. Simulation techniques are used in all teaching systems, especially in instructional design that is oriented toward behavioral goals. Skills exercises require practice in real life situations (in certain occupations), or in simulated situations that contain the characteristics of real life situations. The exercises in the form of simulations basically practice doing the tasks that will be faced in everyday life. Simulation techniques are used in four skill categories, namely cognitive, psychomotor, reactive, and interactive. Such skills are needed to

develop more complex productive skills (Hamalik, 2008: 196). Student simulation method is taught about skill in facing flood disaster.

According to Nurjannah in Ristyani (2016), things that can be done to improve preparedness in the face of disasters include training on how to save yourself and others, coordination between stakeholders, prepare emergency equipment, how to give first aid to the injured, and efforts made to recover quickly.

Preparedness for flooding is an activity undertaken in order to anticipate floods so that actions taken during and after floods are carried out appropriately and effectively by experts and personnel or field workers. Required experts are qualified experts in their field, one of whom is a nurse (Colombo, 2012). According to LIPI-UNESCO / ISDR (2006), there are 5 critical factors of preparedness to anticipate natural disasters such as flood disaster, knowledge and attitude toward disaster risk, policies and guidance, plans for disaster emergencies, disaster warning systems and the ability to mobilize resources power. Flood disaster simulation method applied to students and done in a flood-prone area. Students are faced in the real condition of the area at risk of a flood disaster. The level of student preparedness increases after the simulation method. Armed with knowledge and abilities, a nurse can perform disaster relief in various forms.

## 4 CONCLUSIONS

Disaster preparedness level of nursing students increased after simulation of a flood disaster. The results of this study explain the importance of applying simulation learning method which involves three aspects, namely knowledge, skill, and attitude, especially with roleplay like in a real situation. Nurses are considered as one of the health professions to be prepared to deal with and deal with natural disasters. In preparing for nurse preparedness must be started since the stage of academic and professional education. Thus, the selection of appropriate learning methods can prepare students as prospective professional nurses who are ready to face disaster.

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