

# Analysis Of Disaster Awareness And Preparedness Among Undergraduate Students In Public Health In High Risk Areas Of Urban Disasters

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## ABSTRACT

*Background: Indonesia geographically has high vulnerability to disasters. Urban areas have high social vulnerability thereby increasing the potential risk of disaster impacts. Students, as youth workers have contributive potential in disaster management. Objective: To analyze awareness and preparedness of undergraduate students of Public Health students. Method: A cross sectional study with 105 respondents of undergraduate students Public Health students. The study was conducted using a questionnaire consisting of 23 questions. Results: There were 94 students (89.50%) women, 59 respondents came from students (56.20%) <5th semester, 77 students (771.3%) came from out of town, 53 students (50.50%) had not get education about disaster, 75 students (71.40%) have never received a disaster simulation, 80 students (76.20%) have low experience in disaster and have high knowledge about disasters 59 respondents (56.20%). The level of awareness among students was 59 respondents (56.20%) and low preparedness was 85 respondents (81.00%). Student experience and awareness of disasters is related to student preparedness ( $p < 0.05$ ). Conclusion: Awareness and preparedness of undergraduate students for disasters is still low. The need for increased disaster simulation and training so that students have a picture and experience in dealing with disasters.*

**Keywords :** *Public Health, Disaster Preparedness, Undergraduate students*

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## INTRODUCTION

The geographical position at the plate meeting, a series of active volcanoes with potential eruption hazards, as well as tsunami threat areas along the coastline make Indonesian people still very vulnerable to various disaster threats. All areas in the East Java Province have the potential to be disastrous because of their proximity to the Indo Australia tectonic plates which could have shifted[1]. Potential disasters in East Java include earthquakes, tsunamis, floods, landslides, whirlwinds, and drought[1]. However, people do not yet have a high level of awareness of the disaster. Lack of awareness can increase people's risk of disaster threats[2].

Surabaya is the second largest city in Indonesia with a population of more than 3.1 million and is the capital of the province of East Java. The most common disasters experienced by urban areas are floods and fires[3]. Urban areas have a high population density[4–6]. The more dense an area will greatly affect the social vulnerability of the community[7]. The high population density illustrates the high chance of higher casualties, property and objects that threaten the survival of the community[8].

Disaster Risk Reduction (PRB) is the focus of disaster management efforts in Indonesia with the Sendai Framework[9]. Disaster Risk Reduction (PRB) emphasizes cross-sectoral cooperation and partnerships among stakeholders at the local[10], national, and regional / global levels for the implementation of disaster risk reduction programs[2]. The still low quality of early warning in Indonesia makes disasters happen without warning from the authorities. This allows a high number of casualties when the community does not have the ability in disaster preparedness.

Disaster preparedness is an effort to improve capabilities that enable individuals, organizations, and communities to make the right decisions when disasters occur[11,12]. Disaster management efforts are continuous and integrated planning, involving multiple disciplines, and include prevention, mitigation[13], preparedness, response, recovery and rehabilitation activities[11,14].

Characteristics of students who are young, energetic, and have a passion for learning are indeed suitable times to obtain exposure to disaster preparedness education[15,16] because students can become contributive personnel in the event of a disaster[17]. Public health students according to the mandate of the Directorate General of Learning and Student Affairs of the Ministry of Research Technology and Higher Education become one of the

groups of students who get lessons on disaster management. Therefore, the researchers aim to analyze disaster awareness and preparedness in undergraduate of Public Health students.

## **MATERIALS AND METHODS**

This study uses a cross sectional research design with a quantitative approach. The research sample consisted of 105 respondents who were undergraduate of Public Health students spread from semester 1 to semester 7 in October 2019. Variables in this study consisted of disaster education, disaster knowledge, disaster experience, awareness, and student preparedness.

The study used a questionnaire with a total of 23 questions divided into five sections, namely demographic information, knowledge, experience, risk analysis, and preparedness. Demographic information consists of gender, age, area of origin, and experience in disaster education. Disaster knowledge includes definitions of disasters, natural disasters, earthquake signs, earthquake safety, signs of fire, risk of impacts caused by earthquake in the campus area, definition of rehabilitation, definition of mitigation, definition of disaster preparedness and vulnerable community groups. Data were analyzed by cross tab and chi square test. This research was conducted at the Faculty of Public Health, Universitas Airlangga, Surabaya City. The respondents filled out the questionnaire independently by using the online form.

Undergraduate of Public Health students consist of four classes that are held during classes in the first and third floors of the building. The building has access to stairs at six points. The 1st floor consists of an administration office, a nutrition laboratory, a computer laboratory, and a hall. The second floor consists of classrooms and lecturer rooms of the department of biostatistics and population, environmental health, nutrition, administration and health policy, as well as health promotion and behavioral science. The third floor consists of classrooms and lecturer rooms of the occupational safety and health department.

## **RESULT**

Students as the younger generation have a role in anticipating and handling disasters, especially disaster risk. In this study, students of the Faculty of Public Health were analyzed their preparedness based on variables ranging from gender, semester, regional origin, disaster education, simulation, knowledge, experience, awareness, and preparedness. The results showed that the characteristics of respondents as follows:

Table 1. Characteristic of Respondents based on Gender

| Variables                            | n             | Preparedness |             | p      |
|--------------------------------------|---------------|--------------|-------------|--------|
|                                      |               | High         | Low         |        |
| <b>Gender</b>                        |               |              |             |        |
| Female                               | 11 (10,50%)   | 13 (13,80%)  | 81 (86,20%) | <0,001 |
| Male                                 | 94 (89,50%)   | 7 (63,6%)    | 4 (36,40%)  |        |
| Total                                | 105 (100,00%) | 20 (19,00%)  | 85 (81,00%) |        |
| <b>Semester of Study</b>             |               |              |             |        |
| < semester 5                         | 59 (56,20%)   | 8 (13,60%)   | 51 (86,40%) | 0,105  |
| ≥ semester 5                         | 46 (43,80%)   | 12 (26,10%)  | 34 (73,90%) |        |
| Total                                | 105 (100,00%) | 20 (19,00%)  | 85 (81,00%) |        |
| <b>Origin</b>                        |               |              |             |        |
| Outside Surabaya                     | 77 (73,30%)   | 15 (19,50%)  | 62 (80,50%) | 0,851  |
| Surabaya                             | 28 (26,70%)   | 5 (17,90%)   | 23 (82,10%) |        |
| Total                                | 105 (100,00%) | 20 (19,00%)  | 85(81,00%)  |        |
| <b>Disaster management education</b> |               |              |             |        |
| Once                                 | 52 (49,50%)   | 11 (21,20%)  | 41 (78,80%) | 0,586  |
| Never                                | 53 (50,50%)   | 9 (17,00%)   | 44 (83,00%) |        |
| Total                                | 105 (100,00%) | 20 (19,00%)  | 85(81,00%)  |        |
| <b>Disaster simulation</b>           |               |              |             |        |
| Once                                 | 30 (28,60%)   | 7 (23,30%)   | 23 (76,70%) | 0,479  |
| Never                                | 75 (71,40%)   | 13 (17,30%)  | 62 (82,70%) |        |
| Total                                | 105 (100,00%) | 20 (19,00%)  | 85(81,00%)  |        |
| <b>Knowledge towards disaster</b>    |               |              |             |        |
| Low                                  | 46 (43,80%)   | 7 (15,20%)   | 39 (84,80%) | 0,377  |
| High                                 | 59 (56,20%)   | 13 (22,00%)  | 46 (78,00%) |        |
| Total                                | 105 (100,00%) | 20 (19,00%)  | 85(81,00%)  |        |
| <b>Experience in disaster</b>        |               |              |             |        |
| Low                                  | 80(76,20%)    | 10 (12,50%)  | 70 (87,50%) | <0,05  |
| Experienced                          | 25(23,80%)    | 10 (40,00%)  | 15 (60,00%) |        |
| Total                                | 105 (100,00%) | 20 (19,00%)  | 85(81,00%)  |        |
| <b>Awareness</b>                     |               |              |             |        |
| High                                 | 46 (43,80%)   | 13 (28,30%)  | 33 (71,70%) | <0,05  |
| Low                                  | 59 (56,20%)   | 7 (11,90%)   | 52 (88,10%) |        |
| Total                                | 105 (100,00%) | 20 (19,00%)  | 85(81,00%)  |        |

Based on table 1, the results are obtained that the majority of respondents are 94 women (89.50%). This is consistent with the fact that the majority of students in the Faculty of Public Health are women. Comparison of the number of respondents who are students <semester 5 with students ≥ semester 5 is not much different. This is comparable with the

results of information on the number of students who received disaster education and not, because disaster education was given to undergraduate students in Public Health in semester 5. Based on regional origin, the majority of respondents were students from outside the city of 77 people (73,30 %). The majority of respondents had never followed a disaster simulation of 75 people (71.40%). However, the majority of respondents have knowledge of disasters that are categorized as high 59 people (56.20%). Based on experience, only 25 people (23.80%) of respondents had experience of being hit by a disaster. The test results related to student awareness about disasters, showed that the majority of respondents had a low awareness of disasters 59 people (56.20%).

Table 2. Knowledge of Respondents about Disasters (Question details).

| No                  | Knowledge   | n   | %     |
|---------------------|---|-----|-------|
| 1                   | Disaster definition   |     |       |
|                     | Correct   | 104 | 99,00 |
|                     | Incorret  | 1   | 1,00  |
| 2                   | Example of disaster   |     |       |
|                     | Correct   | 101 | 96,20 |
|                     | Incorret  | 4   | 3,80  |
| 3                   | Earthquake signs  |     |       |
|                     | Correct   | 104 | 99,00 |
|                     | Incorret  | 1   | 1,00  |
| 4                   | Rescuing technique during an earthquake in a high-rise building |     |       |
|                     | Correct   | 78  | 74,30 |
|                     | Incorret  | 27  | 25,70 |
| 5                   | Signs of fire   |     |       |
|                     | Correct   | 76  | 72,40 |
|                     | Incorret  | 29  | 27,60 |
| 6                   | Potential risk of earthquake impact on campus                   |     |       |
|                     | Correct   | 92  | 87,60 |
|                     | Incorret  | 13  | 12,40 |
| 7                   | Post disaster recovery efforts                                  |     |       |
|                     | Correct   | 79  | 75,20 |
|                     | Incorret  | 26  | 24,80 |
| 8                   | Disaster risk reduction efforts                                 |     |       |
|                     | Correct   | 51  | 48,60 |
|                     | Incorret  | 54  | 51,40 |
| 9                   | Definition of disaster preparedness                             |     |       |
|                     | Correct   | 28  | 26,70 |
|                     | Incorret  | 77  | 73,70 |
| 10                  | Vulnerable groups   |     |       |
|                     | Correct   | 31  | 29,50 |
|                     | Incorret  | 74  | 70,50 |
| <b>Preparedness</b> |   |     |       |
|                     | Low   | 85  | 81,00 |
|                     | High  | 20  | 19,00 |

Each of the points in the question about knowledge of disasters, the majority has been answered correctly except in a number of cases namely knowledge about disaster risk reduction efforts, the definition of preparedness, and the range of time of a disaster. Based on the results of the study found that the majority of students still have low preparedness of 85 people (81.00%).

## **DISCUSSION**

Disaster preparedness is increasingly becoming a public concern. Improving disaster management skills from the general public and students has become a key component in disaster prevention and reduction plans[18]. In this research, we will discuss the suitability and the results of the analysis in each variable. The majority of respondents by sex were dominated by female students. This illustrates the characteristics of students in the health faculty who tend to be more proportion of female students. In a study among Jordanian nursing students for disaster preparedness, the proportion of students compared to male students was 61.4% and 38.6%[19].

Preparedness is defined as actions or activities carried out before a disaster occurs. Preparedness aims to minimize the side effects of hazards through effective, timely, adequate, efficient prevention measures for emergency response measures and assistance during disasters. Measures for preparedness for floods can be in the form of actions taken to reduce the impact of disasters directly or indirectly[20]. Preparedness efforts also aim to ensure that the resources needed to respond in a disaster event can be used effectively during a disaster and know how to use it. Preparedness can also be interpreted as a series of activities carried out to anticipate disasters through organizing as well as through effective and effective steps[21]. In this study conducted a series of disaster education activities on students for disaster preparedness. Students as a special group are considered capable of having an influential impact on all societies, this study focuses on increasing disaster preparedness among university students[22].

This is in line with the policy of the Indonesian Government's Directorate General of Learning and Student Affairs which promotes disaster learning for students in tertiary institutions<sup>2</sup>. The results showed that although most students had high knowledge about disaster, disaster experience and simulation became important things to do. Adequate disaster education but still has low disaster experience so that disaster education will not significantly

influence student preparedness[18]. This is reinforced by the value of the chi square test results between experience and preparedness ( $p > 0.05$ ).

Disaster education provided by the campus also does not have a significant influence on student preparedness because students can also still get off-campus training which sometimes tends to suit the needs of students.

This study still has some limitations that can be corrected by further researchers in order to get more representative results. The number of respondents could be increased because the total number of undergraduate of Public Health students at the Airlangga University Faculty of Public Health reached more than 1000 students. In addition, the distribution of the number of respondents between semesters can also be made more distributed so that the results of preparedness can be represented at each level of lecture.

## CONCLUSION

The majority of public health students have low awareness and preparedness despite disaster education at the student level. This is because the experience of disaster has a significant influence on disaster preparedness.

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