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Disaster Preparedness Among University of Indonesia's Public Health Student: A Campus Study

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ABSTRACT

Introduction: This study examines the disaster preparedness of students from the Faculty of Public Health at the University of Indonesia. It employs a quantitative descriptive cross-sectional design with a sample size of 417 individuals.

Objective: The objective of this study is to assess the level of disaster preparedness among students of the Faculty of Public Health at the University of Indonesia and identify areas for improvement.

Method: A descriptive research employs a quantitative approach and a cross-sectional research design. Conducted in 2017 at the Faculty of Public Health, University of Indonesia, it involves 417 active students as respondents. Primary data, obtained through distributing questionnaires, evaluates disaster resilience and preparedness. Univariate analysis using SPSS Statistics 17 is applied for data analysis. The questionnaire's validity and reliability are confirmed, ensuring trustworthy results.

Result: Insufficient preparedness (43.4%), with variations in preparations such as storing emergency contacts and attending disaster courses. Males generally exhibited higher preparedness, as did health education and behavioral science majors. Educational levels did not notably affect preparedness, but students under 21 years old showed higher readiness. Notably, students in semester 8 and residing in Bogor displayed the highest preparedness levels, along with those with disaster experience

Conclusion: Most respondents were regular undergraduate students aged 21 or above, lacking specialization, residing in Depok, and having experienced disasters. The findings underscore the need for enhanced disaster readiness strategies tailored to different demographics within the student body.

Keywords: Disaster Preparedness; Disaster Awareness; Disaster Education; Disaster Campus; Training; Simulation; Disaster Response

INTRODUCTION

Indonesia is one of the countries with significant potential for disasters. According to the Disaster Risk Index in Indonesia (2013), this is evident from various assessments of disaster risk, such as Maplecroft (2010), which ranked Indonesia as the second country at extreme risk of disasters after Bangladesh (1). Common disasters in Indonesia include earthquakes, tsunamis, volcanic eruptions, storms, and floods. Volcanoes are almost scattered throughout Indonesia due to its position within the "ring of fire," and most of Indonesia's territory is oceanic. Law number 24 of 2007 concerning disaster management explains that the territory of the Unitary State of the Republic of Indonesia has geographic, geological, hydrological, and demographic conditions that allow for disasters, whether caused by natural, non-natural, or human factors resulting in loss of human life, environmental damage, property losses, and psychological impacts that can sometimes hinder national development (2).

Based on Disaster Data and Information in Indonesia (DIBI) issued by the National Disaster Management Agency (BNPB), there were a total of 10,408 disaster incidents in Indonesia from 2012 to 2016. These disasters resulted in 2,779 deaths, 738 missing persons, 10,783 injured, and 2,142,866 displaced persons. According to the Technical Guidelines for Health Crisis Management Due to Disasters issued by the Ministry of Health in 2007, common problems in disaster management in Indonesia include coordination issues, transportation and distribution delays, and local unpreparedness in providing facilities and infrastructure (3). Therefore, efforts to reduce the impact of disaster risks need to be strengthened at the pre-disaster stage (prevention, mitigation, and preparedness).

Campuses are one of the public facilities with significant potential for disaster exposure. Many activities take place on campus, ranging from academic to student activities. Campuses are not only facilities used by their students but also places visited by the public. All activities will be disrupted or even halted when the campus is hit by a disaster, especially if the campus lacks adequate disaster response efforts.

To assess campus preparedness for disasters, attention needs to be paid to several aspects such as awareness of the importance of disaster preparedness, individual knowledge about disasters, disaster-related information systems, and adequate campus facilities. According to the Indonesia Disaster Risk Index, there are several threats in West Java, such as floods, earthquakes, tsunamis, residential fires, droughts, extreme weather, landslides, volcanoes, abrasion, land and forest fires, technological failures, social conflicts, epidemics, and disease outbreaks, and the city of Depok has a high risk of disasters (BNPB, 2014) (2).

METHOD

This type of research is descriptive research with a quantitative approach. The study utilizes a cross-sectional research design. The research was conducted for one month from March to April 2017 at the Faculty of Public Health, University of Indonesia. The respondents in this study were 417 active students of the Faculty of Public Health, University of Indonesia.

$$n = \frac{\mathrm{N}}{1 + \mathrm{N(e)}^2}$$

Explanation:
n = sample size
N = population size
e = margin of error or standard deviation used 5% (5%-10%)

The data is derived from primary data resulting from the distribution of questionnaires via Google Forms containing several questions related to the level of disaster resilience in terms of disaster preparedness. Data analysis is performed using univariate analysis with SPSS Statistics 17. The questionnaire has been tested for validity and reliability, yielding valid and reliable results for all questions.

RESULTS

Quantitative Research

A total of 417 students aged 17 to 60 years old, from various majors and educational levels, were randomly selected to participate in this study. The characteristics of the respondents can be seen in the table below.

Table 1. Respondent Characteristics

Variable	Variable Category	Count	% Count
Gender	Female	359	86,1
	Male	58	13,9
Specialization	Administration and Health Policy	67	16,1
	No Specialization	107	25,7
	Biostatistics and Demography	11	2,6

	Epidemiology	25	6
	Nutrition	31	7,4
	Public Health Management	6	1,4
	Environmental Health	48	11,5
	Reproductive Health	22	5,3
	Occupational Health and Safety	85	20,4
	Health Promotion and Education	15	3,6
Education Level	S1 Extension	123	29,5
	S1 Regular	275	65,9
	S2	8	1,9
	S3	11	2,6
Age	≥ 21 years old	209	59,1
	< 21 years old	208	49,9
Duration of Education	8 months	145	34,8
	1 year 8 month	113	27,1
	2 year 8 month	110	26,4
	3 year 8 month	49	11,8
Location of Residence	Jakarta	122	29,3
	Bogor	28	6,7
	Depok	194	46,5
	Tangerang	28	6,7
	Bekasi	41	9,8
	Bandung	1	0,2
	Karawang	1	0,2
	Pekanbaru	1	0,2
	Serang	1	0,2
Experience Facing Disease	Ever	249	59,7
	Never	168	40,3

In this study, a portion of the respondents are female. The largest group of respondents consists of students who do not have a specialization. The respondents in this study are also predominantly regular undergraduate students and those aged ≥ 21 years old. The most common duration of education for respondents is 8 months (2 semesters). The majority of respondents reside in Depok, and most of them have experienced disasters.

Analysis of disaster preparedness is conducted based on the respondents' questionnaire responses, with results consistent with Tables 2 and 3. The level of disaster preparedness among students of the Faculty of Public Health, University of Indonesia is still considered inadequate (43.4%).

Table 2. Distribution of Respondents' Preparedness Before Disasters Occur

Preparation Status	Count	Percentage
Already Prepared	181	43.4%
Not Yet Prepared	236	56.6%
Total	**417**	**100%**

Table 3. Distribution of Individual Characteristics towards Disaster Preparedness

Individual Characteristic		Disaster Preparedness		Total
		Not Yet Prepared	Already Prepared	
Gender	Male	28	30	58
		48.3%	51.7%	100%
	Female	208	151	359
		57.9%	42.1%	100%
Education Level	Administration and Health	43	24	67
	Policy	64.2%	35.8%	100%
	No Specialization	65	42	107
		60.7%	39.3%	100%
	Biostatistics and	7	4	11
	Demography	63.6%	36.4%	100%
	Epidemiology	18	7	25

		72%	28%	100%
	Nutrition	15	16	31
		48.4%	51.6%	100%
	Public Health Management	4	2	6
		66.7%	33.3%	100%
	Environmental Health	24	24	48
		50%	50%	100%
	Reproductive Health	16	6	22
		72.7%	27.3%	100%
	Occupational Health and Safety	38	47	85
		44.7%	55.3%	100%
	Health Promotion and Education	6	9	15
		40%	60%	100%
Education Level	S1 Extension	76	47	123
		61.8%	38.2%	100%
	S1 Regular	147	128	275
		53.5%	46.5%	100%
	S2	5	3	8
		62.5%	37.5%	100%
	S3	8	3	11
		72.7%	27.3%	100%
Age	≥ 21 years old	120	89	209
		57.4%	42.6%	100%
	< 21 years old	116	92	208
		55.8%	44.2%	100%
Semester (Duration of Education)	2 (8 months)	84	61	145
		57.95	42.1%	100%
	4 (1 year 8 month)	63	50	113
		55.8%	44.2%	100%
	6 (2 year 8 month)	66	44	110
		60%	40%	100%
	8 (3 year 8 month)	23	26	49
		46.9%	53.1%	100%
Location of Residence	Jakarta	69	53	122
		56.6%	43.4%	100%
	Bogor	13	15	28
		46.4%	53.6%	100%
	Depok	115	79	194
		59.3%	40.7%	100%
	Tangerang	15	13	28
		53.6%	46.4%	100%
	Bekasi	21	20	41
		51.2%	48.8%	100%
	Outside Jabodetabek (Bandung, Karawang, Pekanbaru, Serang)	3	1	4
		75%	25%	100%
Experience Facing Disease	No	108	60	168
		64.3%	35.7%	100%
	Yes	128	121	249
		51.4%	48.6%	100%

Disaster preparedness is a crucial stage to consider as it significantly determines the resilience of individuals in facing disasters (Ramli, 2010)24. The level of disaster preparedness is analyzed by scoring, where it is considered to have a "high level of preparedness" (score 1) if more than half of the respondents have answered that they have prepared (>50%), and it is considered "low level of preparedness" (score 0) if ≤50%. The results of this study indicate that the level of preparedness among students of the Faculty of Public Health, University of Indonesia in facing disasters is still low (score 0).

The results show that 181 individuals (43.4%) of students of the Faculty of Public Health, University of Indonesia have made preparations for future disasters, while 236 individuals (56.5%) have not made any preparations before disasters occur.

The types of preparations made by students of the Faculty of Public Health, University of Indonesia in preparing for disaster events vary, including storing emergency contact numbers, preparing disaster kits (drinks, food, flashlight, and first aid kit), seeking information about necessary preparations, identifying evacuation routes, building flood barriers, attending disaster management courses, preparing valuable items, mental preparedness, participating in training, and creating disaster maps. Based on several responses from students of the Faculty of Public Health, University of Indonesia regarding the types of preparations made, the most common preparation is seeking information about necessary preparations during disasters, with 128 out of 181 students who have made preparations (70.72%). This is followed by preparations such as storing emergency contact numbers, with 103 out of 181 students who have made preparations (56.91%), as well as other types of preparations mentioned above.

Respondent characteristics related to gender show that males have a higher level of disaster preparedness compared to females. This is consistent with the study by Yosafat, F.E et al., (2012), which states that the preparedness level of males is higher than that of females31. This can be seen in Table 3, where 51.7% of the total male students have made preparations for disasters and can be considered to have a high level of disaster preparedness because more than half have made preparations, compared to female students who have not yet prepared well for disasters, at 42.1%.

Furthermore, the level of disaster preparedness among students is examined based on their majors. Researchers divided 10 categories of students of the Faculty of Public Health, University of Indonesia majors, including health administration and policy, no specialization, biostatistics and demography, epidemiology, nutrition, public health, environmental health, reproductive health, occupational health and safety, and health education and behavioral science. The results of the study with questionnaire responses show that health education and behavioral science majors have the highest level of disaster preparedness compared to the other nine majors. This can be seen in Table 3, where 60% of the total health education and behavioral science majors have made preparations for disasters and have a high level of disaster preparedness. In addition, other majors with a high level of preparedness for disasters are nutrition and occupational health and safety majors, while other majors have not yet prepared well for disasters.

The level of disaster preparedness among students is also examined based on their educational levels. Researchers divided the students into 4 categories of educational levels, namely S1 extension, regular S1, S2, and S3. The results show that higher or lower educational levels do not significantly affect the level of preparedness for disasters. The research results show that regular S1 students have the highest level of disaster preparedness compared to the other three educational levels. This can be seen in Table 3, where 46.5% of the total regular S1 students have made preparations for disasters, but it cannot yet be said that regular S1 students have a high level of disaster preparedness because it is still less than half of the total number of regular S1 students who have made preparations for disasters, as well as other educational level categories.

Respondent characteristics related to age, students aged <21 years and ≥21 years. The research results show that students aged <21 years have a higher level of disaster preparedness compared to students aged ≥21 years. This can be seen in Table 3, where 44.2% of the total students aged <21 years have made preparations for disasters, compared to students aged ≥21 years, which is 42.6%. However, students aged <21 years or ≥21 years cannot yet be said to have made adequate preparations for disasters because it is still less than half of the total number who have made preparations for disasters in both age categories.

The level of disaster preparedness among students is observed based on the duration of education. Based on respondent answers, the categories of duration of education for students of Faculty of Public Health, University of Indonesia are semester 2 (8 months of education), semester 4 (1 year 8 months of education), semester 6 (2 years 8 months of education), semester 8 (3 years 8 months of education). The results show a correlation between the duration of education and the level of preparedness for disasters. The research results show that students in semester 8 (the longest duration of education) have the highest level of disaster preparedness compared to the other three categories. This can be seen in Table 3, where 53.1% of the total semester 8 students have made preparations for disasters and can be considered to have a high level of disaster preparedness because more than half have made preparations, compared to other categories that have not yet made adequate preparations.

Respondent characteristics related to the location of residence. Based on respondent answers, the categories of residence location for students of the Faculty of Public Health, University of Indonesia are Jakarta, Bogor, Depok, Tangerang, Bekasi, and Outside Jabodetabek. The research results show that students residing in Bogor have the highest level of disaster preparedness compared to other categories. This can be seen in Table 3, where 53.6% of the total students residing in Bogor have made disaster preparations and can be considered to have a high level of disaster preparedness because more than half have made preparations, compared to other categories that have not yet made

adequate preparations.

Next, the level of disaster preparedness among students is observed based on disaster experience. The research results with questionnaire responses show that students who have experienced disasters have a higher level of preparedness for disasters compared to students who have not experienced disasters. This can be seen in Table 3, where 48.6% of the total students who have experienced disasters have made preparations, but it cannot yet be said that they have made adequate preparations for disasters because it is still less than half of the total number who have made preparations for disasters, as well as those who have not experienced disasters.

CONCLUSION

Based on the research conducted on 417 respondents among students of the Faculty of Public Health, University of Indonesia, the researcher concludes that some respondents are female. The majority of respondents are students who do not have a specialization. Respondents in this study are also dominated by regular S1 students and students aged ≥ 21 years. Students with 8 months of education (semester 2) are the most respondents. The majority of respondents reside in Depok, and most respondents have experienced disasters. The description of the level of preparedness among UI FKM students in facing disasters is still considered inadequate (43.4%). Characteristics that have a high level of preparedness for disasters include: males, health education and behavioral science specialization, regular S1 education level, age <21 years, semester 8, residing in Bogor, and experiencing disasters.

SUGGESTION

To enhance disaster resilience within the Faculty of Public Health, University of Indonesia, several recommendations can be proposed. Firstly, the campus should initiate a comprehensive assessment of disaster risks, followed by the dissemination of assessment findings to the entire community. This communication should include clear guidelines on necessary preparations to mitigate risks effectively. Additionally, organizing training sessions and disaster simulations is crucial to equip students and staff with the knowledge and skills needed to respond appropriately during emergencies. Leveraging various communication channels such as signage, posters, and the campus website can further facilitate education and awareness regarding disaster preparedness. Furthermore, for future research endeavors, it is advised to meticulously gather data while ensuring balanced distribution across respondent characteristics to enable meaningful comparisons. Moreover, there is a need to delve deeper into cause-and-effect relationships pertaining to disaster resilience to foster a more nuanced understanding of effective mitigation strategies.

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