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STRATEGIES FOR PREPAREDNESS: INVESTIGATING STUDENT AWARENESS IN EDUCATIONAL DISASTER MANAGEMENT

Fatoni [1]*, Tria Nopi Herdiani [2], Yuliana Hanaratri [3], Wahyu Widodo [4], Fauzan Saputra [5], Budi Astyandini [6] and Baiq Nurainun Apriani Idris [7]

[1] Universitas Faletehan. *Corresponding Author Email: fatoni.phd@gmail.com
[2] STIKES Tri Mandiri Sakti, Bengkulu. Email: direja.mandira1415@gmail.com
[3] STIKES Mayapada, South Jakarta. Email: hanaratri@yahoo.com
4 STIKES Pemkab Purworejo, Central Java. Email: wahyu@akperkabpurworejo.ac.id
[5] Universitas Bumi Persada, Aceh. Email: fauzansaputra@unpb.ac.id
[6] Kemenkes Poltekkes Semarang, Central Java. Email: budiasty23@gmail.com
[7] STIKES YARSI Mataram, West Nusa Tenggara. Email: baiqnurainun87@gmail.com

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Abstract

Natural disasters pose significant challenges globally, with their impact often amplified in regions prone to such events. Indonesia stands out as a high-risk area for natural disasters, especially earthquakes. Effective disaster management strategies are crucial to mitigate risks and enhance community resilience in light of this vulnerability. The research aims to investigate of student awareness and preparedness regarding various aspects of disaster preparedness, with a specific emphasis on earthquake disasters. This study evaluates existing educational programs, curriculum integration, and the efficacy of disaster drills in enhancing student readiness. A quantitative research design was used to collect data from students of STIKES Tri Mandiri Sakti, Universitas Bumi Persada, Universitas Faletehan, STIKES Mayapada, STIKES Pemkab Purworejo, Universitas Bumi Persada, Kemenkes Poltekkes Semarang, and STIKES Yarsi Mataram using stratified random sampling, ensuring representation across different study programs (Nursing, Midwives, and Public Health). The sample size in this study was 240 respondents. Data was collected through structured surveys designed to assess various aspects of student awareness and preparedness. The majority of students, 208 in total, demonstrated a commendable level of preparedness, accounting for 86.7% of the sample. A slightly larger segment of students, comprising 19 individuals or 7.9% of the sample, fell into the category of moderate preparedness. Out of the 240 respondents, only 13 students, constituting 5.4% of the sample, were categorized as not prepared for earthquake disasters. The findings of this study are expected to contribute significantly to the field of educational disaster management, providing insights into effective strategies for enhancing student awareness, preparedness, and resilience in high-risk areas. The implications of this research extend beyond academia, informing policy development, curriculum design, and community-based initiatives aimed at fostering a culture of disaster resilience and preparedness.

Keywords: Strategies for Preparedness, Awareness, Educational, Disaster Management.

BACKGROUND

Natural disasters are catastrophic events resulting from natural processes of the Earth, encompassing a wide range of phenomena such as seismic activities, meteorological events, and climate-related disasters (Willson et al., 2021). Floods, being one of the most prevalent and devastating natural disasters, adversely affect human health, natural ecosystems, and man-made structures (Ullah & Zhang, 2020). These disasters are triggered by natural hazards, such as earthquakes, droughts, volcanic eruptions, and floods (Chaudhary & Piracha, 2021). The consequences of natural disasters include damage to settlements, casualties, socio-economic impacts, and disruptions to the production process (Hidayat & Kalfin, 2021; Ilham, 2023). Indonesia, located in the Pacific Ring of Fire, is prone to various natural disasters due to its position at the convergence of multiple tectonic plates.

The country faces risks such as earthquakes, volcanic eruptions, tsunamis, floods, and landslides. Earthquakes are particularly significant and recurrent in Indonesia (Agus et al., 2023; Novika et al., 2022). The geological setting of Indonesia, where the Indo-Australian Plate collides with the Eurasian Plate and the Pacific Plate, contributes to its high seismic activity (Pramono et al., 2023). This geographic positioning exposes Indonesia to an increased risk of earthquakes and tsunamis (Ponangsera et al., 2021).

Improving disaster preparedness in Indonesia is crucial due to the country's susceptibility to various natural disasters such as earthquakes, tsunamis, volcanic eruptions, and floods. Research on disaster preparedness underscores the significance of knowledge, training, and resources in effectively responding to disasters (Alruwaili & Islam, 2019; Wulandari et al., 2023; Husna et al., 2021). Efforts to enhance disaster preparedness are essential to mitigate risks associated with Indonesia's vulnerability to disasters (Susanto et al., 2021). Given the high risk of natural disasters in Indonesia, it is crucial to ensure nurse preparedness to effectively reduce and prevent casualties in the aftermath of such calamities (Emaliyawati et al., 2021). Recent studies have emphasized the necessity to enhance disaster preparedness levels among different groups in Indonesia. For example, research has shown that Community Health Nurse Coordinators in one province needed improvements in disaster preparedness (Martono et al., 2019).

Earthquakes are geological events that can lead to significant damage and pose a threat to communities. The impact of an earthquake is influenced by various factors such as its magnitude, depth, proximity to populated areas, and the resilience of local infrastructure and communities (Nakai et al., 2024). Surface waves, which include long-period components, can propagate widely and trigger extensive damage due to delayed shaking phenomena that persist after the earthquake (Nakai et al., 2024). Geological data are crucial for seismic hazard models as they provide information about the location and types of earthquakes that can occur over long time periods, which cannot be obtained through other methods (Morell et al., 2020). Factors such as liquefaction, which is rare during small or moderate earthquakes, can significantly affect the localized ground effects during seismic events (Naik et al., 2019). Additionally, the vulnerability of structures and societal impact is influenced by geological factors, emphasizing the importance of considering fault activity in seismic hazard assessment (Rudolf et al., 2021).

Disaster management in educational settings is crucial for ensuring the safety and well-being of students, faculty, and staff during natural disasters. Educational institutions not only serve as centers for learning but also as hubs for community engagement and preparedness. Research emphasizes the importance of disaster education in schools to enhance disaster risk reduction and preparedness among vulnerable populations (Torani et al., 2019). Efforts to implement disaster preparedness through education in schools, covering disaster risk, mitigation, and preparedness strategies, are crucial for reducing the negative impacts of disasters and increasing students' resilience (Hafida et al., 2024).

Understanding student awareness and preparedness in educational disaster management is crucial for developing effective strategies to mitigate the impact of disasters. Students, as active members of their communities, can significantly contribute to promoting resilience and fostering a culture of preparedness. Research has shown that disaster awareness and coping among college students can influence

their levels of stress, anxiety, and depression (Lee & Lee, 2019). Moreover, the use of educational tools such as comics in teaching mathematics has been found to enhance junior high school students' disaster awareness, especially in disaster-prone areas (Mailizar et al., 2023).

This research aims to investigate student awareness and preparedness regarding earthquake disasters in Indonesia. By examining factors such as knowledge and attitude of disaster risk, emergency response planning, disaster warning, and resource mobilization toward disaster preparedness, this study seeks to identify strengths, challenges, and opportunities for enhancing educational disaster management initiatives.

The findings of this research will contribute to the development of targeted interventions, educational programs, and policy recommendations aimed at improving disaster resilience and preparedness among students and educational institutions in earthquake-prone regions. Through collaborative efforts between academia, government agencies, and local communities, we can work towards building a safer and more resilient future in the face of natural disasters.

RESEARCH METHODS

Research Design: The research aims to investigate student awareness and preparedness regarding earthquake disasters regarding earthquake disasters. A quantitative research design was used to collect data from students of educational institutions using stratified random sampling, ensuring representation across different levels and disciplines (Study program nursing, midwives, and public health). The sample size in this study was 240 respondents.

Data Collection: Data was collected through structured surveys designed to assess various aspects of student awareness and preparedness. The survey included questions related to knowledge of disaster types, familiarity with evacuation procedures, access to emergency resources, participation in disaster drills, and perceptions of institutional support for disaster management education with 4 indicators (knowledge and attitude of disaster risk, emergency response planning, disaster warning, and resource mobilization).

Ethical Considerations: This study prioritized ethical considerations by obtaining informed consent from all participants and ensuring the confidentiality and anonymity of their data throughout the research process.

Limitations: The study encounters limitations such as sample representativeness, response bias in self-reported data, and challenges in generalizing findings beyond the study population. Efforts were made to mitigate these limitations through rigorous sampling procedures, methodological transparency, and cautious interpretation of results.

RESULTS AND DISCUSSION

The research on Strategies for Preparedness: Investigating Student Awareness in Educational Disaster Management conducted at several campuses in Indonesia, aimed to investigate student awareness and preparedness regarding disasters, particularly focusing on earthquakes. The study involved 240 respondents and utilized quantitative research methods to analyze the data.

Demographic Profile of Respondents (N=240)

No	Variables	Frequency (n)	Percentage (%)
1	**Gender**		
	Male	37	15,41 (%)
	Female	203	84,59 (%)
2	**Age**		
	15-20 Years	167	69,58 (%)
	21-25 Years	66	27,50 (%)
	26- Up (Transfers Class)	7	2,92 (%)
3	**Students Grade**		
	2nd Semester	53	22,10 (%)
	4th Semester	130	54,17 (%)
	6th Semester	17	7,10 (%)
	8th Semester	40	16,63 (%)
4	**Study Program**		
	Public Health	108	45,00 (%)
	Nursing	106	44,16 (%)
	Midwives	26	10,84 (%)

Gender Distribution Among the respondents, there were 37 male students (15.41%) and 203 female students (84.59%). This distribution reflects a higher representation of female students in the study, which could indicate either a higher enrollment of females in health-related programs or a higher interest and participation of females in disaster management initiatives.

Age Groups In terms of age groups, the majority of respondents were between 15 to 20 years old, comprising 167 students (69.58%). The next significant age group was 21 to 25 years old, with 66 students (27.50%), followed by a smaller group of students aged 26 and above (transfers class), with 7 students (2.92%). This distribution indicates that the study primarily involved younger students, possibly reflecting the age demographics of the institution or the specific cohorts selected for the research.

Students' Grade Regarding students' grade levels, the distribution was as follows: 2nd semester (53 students, 22.10%), 4th semester (130 students, 54.17%), 6th semester (17 students, 7.10%), and 8th semester (40 students, 16.63%). The higher representation of students in the 4th semester suggests that they were the most actively engaged in the study, possibly due to their advanced standing in the educational program.

Study Programs The respondents were enrolled in different study programs: Public Health (108 students, 45.00%), Nursing (106 students, 44.16%), and Midwifery (26 students, 10.84%). This distribution reflects a diverse sample representing various health-related disciplines, each with its unique perspectives and contributions to disaster management.

The gender distribution in the study reflects the broader trend seen in health-related fields, where female representation is often higher. This could influence disaster management initiatives, gender dynamics play a significant role in shaping individuals' experiences and responses to disasters. Research has consistently shown that women often face a triple burden during disasters, underscoring the importance of recognizing women's roles, needs, decision-making power, and policy responses (McLaren et al., 2020). The predominance of younger students in the study suggests the importance of early education and awareness in disaster management, understanding public perception of disaster risks is crucial for developing effective risk

management strategies and educational programs (Alqahtany & Abubakar, 2020). Engaging students from various grade levels indicates the potential for continuous learning and improvement in disaster preparedness throughout their educational journey, studies emphasize the importance of increasing education on disaster preparedness for nursing students to not only provide theoretical knowledge but also instill practical preparedness for their future practice (Kang et al., 2022). The diversity in study programs highlights the multidisciplinary nature of disaster management. Public health, nursing, and midwifery students bring different skill sets and perspectives that are valuable in addressing various aspects of disaster response, from healthcare delivery to community outreach.

Analysis of Awareness of Students based on knowledge and attitude (N=240)

Indicators	Correct Answer	Frequency (n)		Percentage (%)
Natural disaster is an event caused by nature and detrimental to humans	Yes	Yes	236	98.33%
		No	4	1.67%
Earthquake is a natural disaster	Yes	Yes	239	99.58%
		No	1	0.42%
Earthquakes occur after a volcano erupts	Yes	Yes	114	47.5%
		No	126	52.5%
Storms/tornadoes cause an earthquake	No	Yes	59	24.58%
		No	181	75.42%
Landslides are one of the causes of earthquakes	No	Yes	128	53.33%
		No	112	46.67%
Earthquakes are always accompanied by tsunamis	No	Yes	48	20%
		No	192	80%
Earthquakes be predicted	No	Yes	99	41.25%
		No	141	58.75%
Taking cover under a table is the initial action that must be taken if an earthquake occurs during lecture hours	Yes	Yes	194	80.83%
		No	46	19.17%
When an earthquake occurs running through a window/glass wall is the right action	No	Yes	27	11.25%
		No	213	88.75%
Running towards a field/open space while protecting your head using a bag is the correct action	Yes	Yes	222	92.5%
		No	18	7.5%

The majority of respondents (98.33%) correctly identified that a natural disaster is an event caused by nature and detrimental to humans. This high percentage indicates a strong level of awareness among the students surveyed. Although a vast majority answered correctly, there were still 4 respondents (1.67%) who did not identify natural disasters accurately. This minority might represent a segment that requires further education or awareness campaigns to improve their understanding of disaster terminology and concepts. These findings suggest that the educational efforts in disaster management have been effective in conveying basic concepts about natural disasters. However, ongoing reinforcement and targeted education could benefit those with misconceptions or gaps in knowledge. The high percentage of correct responses reflects positively on the educational programs or initiatives focused on disaster management in the surveyed educational institution. It indicates that students are grasping fundamental concepts essential for disaster preparedness and response. Numerous studies have investigated the knowledge, attitudes, and readiness of students across different disciplines concerning disaster preparedness. For example,

conducted a pre-post study that illustrated an enhancement in students' understanding of emergency preparedness through a disaster curriculum (Al-Ziftawi et al., 2020).

The analysis indicates a high level of awareness among the respondents regarding earthquakes as natural disasters. The overwhelming majority, 99.58%, correctly identified earthquakes as natural disasters, while only 0.42% gave an incorrect answer. The awareness level among students regarding the sequence of events involving earthquakes and volcanic eruptions is moderate, with almost half of the respondents giving the correct answer. These findings underscore the importance of integrating accurate information about disaster sequences into educational curricula. The awareness of students regarding storms/tornadoes causing earthquakes shows that a significant majority of respondents (75.42%) correctly answered that storms/tornadoes do not cause earthquakes, while a smaller proportion (24.58%) incorrectly answered that they do. This indicates a reasonably good level of awareness among the students regarding this specific aspect of disaster management. The majority of students have a correct understanding that storms/tornadoes do not cause earthquakes. This suggests that they may have received adequate education or information on this topic, either through formal education or other sources. While the correct response rate is high, there is still a portion of students (24.58%) who hold misconceptions about the relationship between storms/tornadoes and earthquakes. White-Lewis et al., (2021) emphasize the need for developing disaster and public health emergency-related curricula within schools and programs of public health to address the increasing needs of communities affected by disasters. Additionally, Jannah et al., (2021) discussed the integration of disaster education into the school curriculum as a strategy to enhance disaster preparedness.

The results indicate that a significant portion of students (53.33%) hold an incorrect belief that landslides are one of the causes of earthquakes. This suggests a gap in knowledge regarding the geological processes that lead to earthquakes, which is concerning considering the seismic activity in Indonesia. The findings highlight a need for educational interventions to correct misconceptions about earthquake causes. Understanding the correct geological mechanisms behind earthquakes is crucial for preparedness and response to seismic events. Incorrect beliefs about earthquake causes can impact disaster preparedness efforts. Efforts should be made to not only correct misconceptions but also to promote a proactive approach to disaster management, including early warning systems and evacuation protocols. The research indicates that there is a notable awareness gap among students regarding the association between earthquakes and tsunamis. Only 20% of the respondents correctly answered that earthquakes are not always accompanied by tsunamis, while a significant majority (80%) incorrectly believed that earthquakes are always accompanied by tsunamis. The high percentage of respondents who believe that earthquakes are always accompanied by tsunamis suggests a prevalent misconception or lack of accurate knowledge regarding these natural phenomena. This misconception could potentially impact disaster preparedness and response efforts if not addressed.

A significant portion of respondents (58.75%) incorrectly believe that earthquakes can be predicted. This indicates a gap in understanding among the student population regarding earthquake prediction. The belief that earthquakes can be predicted might stem from misconceptions or a lack of education on seismology and earthquake science. The majority of students (80.83%) demonstrated a correct understanding of

the initial action to take during an earthquake, which is encouraging in terms of disaster preparedness. However, the 19.17% of students who answered 'No' highlight a significant portion with potential gaps in their knowledge or awareness of disaster management protocols. Further investigation into the reasons behind the 'No' responses could provide insights into specific areas for educational interventions or improvements in disaster management training. The findings suggest that while a considerable portion of students are aware of the correct actions during earthquakes, there is room for enhancing overall awareness and preparedness. Targeted educational programs or initiatives focusing on disaster management could help bridge the knowledge gaps identified in the research. Studies have indicated that educational qualifications and training experience in disaster management can enhance preparedness actions (Martono et al., 2019).

The data shows that the majority of respondents, 213 out of 240 (88.75%), correctly identified that running through a window or glass wall is not the right action during an earthquake. This indicates a high level of awareness among students regarding appropriate actions during earthquake situations. The 11.25% of respondents who answered 'Yes' might represent a segment of the student population that needs further education or clarification on proper disaster management protocols. However, this percentage is relatively low, suggesting that the educational efforts in disaster management have been effective in conveying the correct knowledge and attitudes regarding earthquake safety measures. Overall, the study reflects a positive outcome in terms of student awareness and preparedness in educational disaster management at the institution.

The high percentage (92.5%) of students answering "Yes" suggests a strong level of knowledge regarding the recommended action during disasters. This indicates that a significant portion of the sampled students understand the importance of seeking open spaces and protecting their heads during emergencies. The research reflects a positive aspect of awareness among students regarding disaster management. The fact that a large majority chose the correct response indicates that they are aware of basic safety measures to be taken during disasters. The study indirectly reflects a positive attitude toward preparedness for disasters among the surveyed students. Their willingness to select the appropriate action suggests a proactive mindset regarding safety and emergency response. Despite the majority selecting the correct response, the 7.5% who answered "No" indicated a small but notable gap in knowledge or understanding among some students.

Analysis of Awareness of Students based on Emergency Response Planning (N=240)

Indicators	Correct Answer	Frequency (n)		Percentage (%)
Saving favorite items such as shoes, clothes, and toys during an earthquake.	No	Yes	226	94.17%
		No	14	5.83%
Contact relatives/family during an earthquake.	Yes	Yes	158	65.83%
		No	82	34.17%
Equipped the building with evacuation route signs to make it easier to evacuate during an earthquake.	Yes	Yes	236	98.33%
		No	4	1.67%

The data shows that a significant majority of respondents (94.17%) incorrectly believed that saving favorite items like shoes, clothes, and toys is necessary during an earthquake. Only a small percentage (5.83%) correctly answered that it is not

necessary to save such items during an earthquake. The high percentage of incorrect responses indicates a potential lack of awareness or misunderstanding among students regarding appropriate actions during earthquakes. The data shows that a majority of the respondents, about 65.83%, are aware of the importance of contacting relatives/family during an earthquake. This awareness is crucial as it indicates a level of preparedness and understanding of communication strategies during emergencies. However, it's also notable that about 34.17% of the respondents answered incorrectly, indicating a gap in knowledge or understanding among a significant portion of the surveyed students. The indicator regarding equipping buildings with evacuation route signs for easier evacuation during an earthquake shows a high level of awareness among the students surveyed. With 98.33% of respondents correctly answering 'Yes,' it indicates a strong understanding of the importance of clear evacuation routes in ensuring safety during disasters like earthquakes.

To enhance students' understanding of emergency response planning, particularly in the context of earthquakes, targeted educational interventions and training programs are crucial. Research has demonstrated that disaster education and training significantly improve the effectiveness of emergency responses immediately following earthquakes (Sun & Liu, 2023). Research has shown that factors like levels of education, training, and experience can impact skills related to disaster response, although they may not necessarily influence knowledge and evaluation in dealing with disasters (Martono et al., 2019). Furthermore, studies have highlighted the effectiveness of disaster preparedness education, with significant increases in knowledge observed following educational interventions (Sholihah et al., 2020; Wang et al., 2022; Al-Qbelat et al., 2022).

Analysis of Awareness of Students Based on Disaster Warning (N=240)

Indicators	Correct Answer	Frequency (n)		Percentage (%)
Campus bells can be used as a disaster warning system	Yes	Yes	224	93.33%
		No	16	6.67%
Running out of the classroom is the right step when the disaster warning bell rings	No	Yes	85	35.42%
		No	155	64.58%
Scream and panic during the disaster warning bell rings.	No	Yes	31	12.92%
		No	209	87.08%

The high percentage (93.33%) of students correctly identifying that campus bells can be used as a disaster warning system indicates a strong awareness among the student population regarding this aspect of disaster preparedness. This finding suggests that the majority of students recognize the role of campus infrastructure in providing early warnings during disasters, which is crucial for effective disaster management and preparedness efforts. However, the 6.67% of respondents who answered 'No' may indicate a need for further education or awareness campaigns to ensure that all students understand and acknowledge the importance of campus bells as a disaster warning system. The majority of respondents (64.58%) incorrectly believed that running out of the classroom is the right step when the disaster warning bell rings. This indicates a significant gap in understanding among students regarding appropriate actions during disaster warnings. Misconceptions like these can lead to panic and unsafe behavior during emergencies, potentially endangering lives.

The correct response, which is not screaming and panicking during disaster warning bells, was provided by 209 respondents, accounting for 87.08% of the total sample. This indicates a significant awareness level among the students regarding appropriate behavior during disaster warnings. 31 respondents (12.92%) indicated that they would scream and panic during disaster warning bells. While this percentage is relatively low compared to the correct responses, it still signifies a portion of students who may not be adequately prepared or aware of the appropriate response during such situations.

To enhance emergency preparedness among students, a variety of educational initiatives can be implemented, such as drills, workshops, and seminars. These methods have been widely used by healthcare professionals to improve readiness for emergencies (Aljahany et al., 2020). Regular evaluation of students' awareness and preparedness levels is essential to address any evolving challenges or knowledge gaps (Schilly et al., 2024; Thomas et al., 2019). Training programs, mock drills, and disaster management education are recommended to enhance awareness and preparedness among students and frontline health workers (Thomas et al., 2019; Fauziyah et al., 2022). Research indicates a positive correlation between knowledge and preparedness levels, suggesting that the more students know about dealing with disasters, the better their attitudes and behaviors towards preparedness (Aisa et al., 2024).

Analysis of Awareness of Students based on Resource Mobilization (N=240)

Indicators	Correct Answer	Frequency (n)		Percentage (%)
Important to take disaster preparedness training to improve knowledge & skills about disasters	Yes	Yes	236	98.33%
		No	4	1.67%
Taking/getting courses on disasters, especially earthquakes is boring	No	Yes	21	8.75%
		No	219	91.25%
Participated in a disaster simulation on campus	Yes	Yes	156	65%
		No	84	35%
Talked about the earthquake disaster with friends/relatives	Yes	Yes	236	98.33%
		No	4	1.67%

The research findings indicate a high level of awareness among students regarding the importance of disaster preparedness training. With 98.33% of respondents acknowledging the importance, it reflects a strong understanding of the role that training plays in improving knowledge and skills related to disasters. The overwhelming majority of students agreeing that disaster preparedness training is essential suggests a positive attitude towards proactive measures for disaster management. This positive attitude is crucial for fostering a culture of preparedness and resilience. The small percentage (1.67%) of respondents who answered 'No' to the importance of training indicates a minority opinion or perhaps a lack of understanding among a very small fraction of students. Further investigation could delve into the reasons behind this opinion to address any misconceptions or gaps in knowledge. These results have significant implications for educational institutions. Disaster preparedness education is essential for enhancing readiness for disasters among students. Research has shown that ongoing and comprehensive disaster preparedness education within the curriculum is crucial for improving students' understanding of the importance of training in disaster readiness (Kang et al., 2022).

The majority of respondents (91.25%) demonstrated a positive attitude towards disaster-related courses, indicating that they do not find these courses boring. This suggests a high level of awareness and interest among students regarding disaster management education.

The significant number of students who answered 'No' indicates a willingness to engage with courses on disasters, particularly earthquakes. This is crucial for effective disaster preparedness and management, as engaged students are more likely to absorb and apply knowledge and skills related to disaster response and mitigation.

While only a small percentage found the courses boring, it could be beneficial for educational institutions to continuously assess and improve the design and delivery of disaster-related courses. This could include interactive and practical learning approaches to further enhance student engagement and learning outcomes.

The positive attitude towards disaster courses suggests that students are likely to take proactive measures in disaster preparedness, translating theoretical knowledge into practical actions during emergencies. Disaster courses are essential in shaping students' attitudes towards disaster preparedness. Research has shown that students who participate in disaster training programs demonstrate enhanced attitudes, knowledge, and skills related to disaster and pandemic preparedness (Ashcroft et al., 2020).

The majority of respondents (65%) correctly indicated that they had participated in a disaster simulation on campus. Despite the significant participation rate, the 35% of students who did not participate indicate a potential area for improvement in promoting awareness and encouraging more active involvement in disaster management initiatives. This indicates a relatively high level of engagement and proactive preparedness among students regarding disaster management.

Various studies have emphasized the value of conducting simulations across different settings to improve preparedness and increase staff awareness. For example, full-scale disaster simulations in hospital pharmacies have been found to enhance institutional preparedness and staff awareness (Schumacher et al., 2022). Disaster simulations have been proven to enhance disaster knowledge, preparedness levels, and confidence among participants, indicating their effectiveness in improving readiness (GÜRBÜZ et al., 2022; Betka et al., 2021).

The overwhelmingly high percentage of students (98.33%) who have discussed earthquake disasters with friends or relatives suggests a high level of awareness and engagement with disaster-related topics outside of formal education settings. This result indicates that students are actively engaging in conversations about disaster preparedness and management within their social circles, which can contribute to spreading awareness and preparedness strategies.

Discussions within social networks can contribute significantly to building community resilience by fostering mutual support, sharing knowledge, and promoting collective action during disasters. While the majority of students have engaged in discussions about earthquake disasters, there is still a small percentage (1.67%) who have not. Understanding the reasons behind this lack of discussion can provide insights into potential areas for targeted awareness campaigns or educational interventions.

Engaging in discussions about disasters with friends or relatives among students is a positive trend that can enhance community engagement in disaster management education. Such discussions play a crucial role in increasing disaster literacy and awareness among individuals, ultimately leading to better preparedness efforts (Torani et al., 2019; Seo et al., 2021).

Analysis of Earthquake Disaster Preparedness of Students (N=240)

		Frequency	Percent	Mean	Median	Std. Deviation
Valid	Not Prepared	13	5,4	1,81	2,00	,512
	Moderate	19	7,9			
	Prepared Well	208	86,7			
	Total	240	100,0			

The statistical analysis revealed that 5.4% of the respondents, comprising 13 individuals, were categorized as "Not Prepared" for earthquake disasters. These individuals may require additional education and training to enhance their readiness for such events. Furthermore, 7.9% of the respondents, totaling 19 individuals, fell into the category of "Moderate" preparedness. This group shows some level of awareness and preparation but may benefit from further guidance and resources to improve their readiness. Remarkably, the majority of respondents, accounting for 86.7% or 208 individuals, were classified as "Prepared Well" for earthquake disasters. This indicates a high level of awareness, readiness, and understanding among these students regarding disaster management strategies, evacuation protocols, and safety measures. The results suggest that the educational programs and initiatives have significantly contributed to the preparedness of students for earthquake disasters. However, ongoing efforts in disaster education and training remain crucial to ensure continuous improvement and adaptability in handling such critical situations effectively.

Continuous efforts in disaster education and training are essential to ensure ongoing improvement and adaptability in effectively managing critical situations like earthquakes (Koca & Arkan, 2020). Studies have indicated a direct correlation between individuals' level of disaster preparedness and their actual or perceived ability to respond to disasters (Ghavami et al., 2021). Nurses who have received training in disaster management have shown a higher likelihood of reporting to work during epidemics, natural disasters, and other critical situations compared to those without such training (Ghavami et al., 2021). This highlights the importance of structured training programs in enhancing professionals' readiness to respond to disasters effectively. Furthermore, disaster preparedness education has been shown to significantly increase awareness and actions related to isolation preparedness among older individuals (Matsuo & Hirano, 2021). This emphasizes the effectiveness of educational initiatives in improving individuals' understanding of disaster-related risks and enhancing their preparedness to cope with such situations. In conclusion, while the educational programs have positively impacted students' preparedness for earthquakes, ongoing efforts in disaster education and training are crucial for ensuring continuous improvement and adaptability in handling various critical situations effectively. Training programs play a vital role in enhancing professionals' readiness to respond to disasters, and educational initiatives are effective in increasing awareness and preparedness among different age groups. By investing in comprehensive disaster education and training, institutions and communities can better equip individuals to mitigate risks and respond efficiently to disasters.

CONCLUSIONS

The study "Strategies for Preparedness: Investigating Student Awareness in Educational Disaster Management" aimed to assess the level of awareness among students regarding disaster management strategies in Indonesia.

The research findings offer valuable insights into the effectiveness of current disaster preparedness initiatives and highlight areas for improvement to enhance overall disaster resilience.

High Awareness and Knowledge Levels: The research revealed a commendably high level of awareness and knowledge among students regarding disaster management principles. Key indicators such as recognizing natural disasters, understanding emergency response planning, and knowledge of evacuation procedures demonstrated a strong foundation in disaster preparedness.

Effective Educational Programs: The presence of educational programs and courses focused on disaster management significantly contributed to the positive awareness levels observed among students. Institutions investing in structured disaster preparedness education are likely to foster a culture of resilience and proactive response among their student populations.

Room for Improvement: While overall awareness levels were high, certain areas indicated room for improvement. Responses related to panic during disaster warnings and participation in disaster simulations highlighted potential gaps in practical readiness and psychological preparedness. Addressing these gaps through targeted training and awareness campaigns can further strengthen the institution's disaster management strategies.

Importance of Campus Infrastructure: The study underscored the importance of campus infrastructure in facilitating effective disaster management. Clear signage, robust warning systems, and designated evacuation routes were identified as critical elements contributing to students' ability to respond appropriately during emergencies.

Recommendations for Enhancing Preparedness: Based on the research findings, several recommendations are proposed to enhance disaster preparedness among students:

- Conduct regular disaster drills and simulations to familiarize students with emergency procedures and reduce panic responses.
- Implement ongoing training programs to enhance students' psychological preparedness and stress management during disasters.
- Enhance campus infrastructure with improved signage, updated emergency contact information, and accessible evacuation routes.
- Strengthen collaboration with local authorities and community organizations to expand disaster education initiatives and promote a culture of collective resilience.

Future Research Directions: Further research is recommended to explore the long-term impact of disaster preparedness education on students' behavior and resilience beyond educational settings. Longitudinal studies tracking students' responses to real-world disasters and evaluating the effectiveness of ongoing preparedness programs can provide valuable insights for continuous improvement in disaster management strategies.

In conclusion, the study highlights the critical role of education, infrastructure, and proactive initiatives in enhancing student awareness and preparedness for disasters. By implementing targeted interventions and fostering a culture of resilience, institutions can significantly contribute to building safer and more resilient communities in the face of natural and human-made disasters.

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Conflıct of Interest

The authors affirm that there are no conflicts of interest influencing this study.

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