

## The effect of earthquake educational mini videos on safety behavior of anesthesiology nursing students at 'Aisyiyah University Yogyakarta

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### Abstract

Earthquakes are sudden natural disasters that can result in significant risks to human life, psychological health, and the environment. In Indonesia, a country prone to frequent earthquakes, anesthesiology nursing students are expected to be well-prepared, possess positive attitudes, and demonstrate appropriate safety behaviors during emergencies. However, gaps in knowledge, attitudes, and practical preparedness among students are still often found. Educational interventions utilizing mini educational videos offer a concise, engaging, and easily understood medium through which disaster readiness, awareness, and safety practices can be effectively improved. This study aimed to examine the effect of earthquake educational mini videos on the safety behavior of anesthesiology nursing students at 'Aisyiyah University Yogyakarta. Employing a quantitative pre-experimental design with a one-group pretest-posttest approach, this research involved 60 sixth semester students selected through simple random sampling. Data were gathered using a validated and reliable questionnaire and analyzed using the Wilcoxon Signed Rank Test. The results revealed a significant improvement in the students' safety behavior after the educational intervention ( $p < 0.05$ ). This finding demonstrates that mini educational videos can effectively enhance students' knowledge, shape positive attitudes, and foster safety practices in responding to earthquake disasters. Such methods can serve as valuable strategies to strengthen disaster preparedness among healthcare students.

**Purpose:** This study aimed to assess the effect of earthquake educational mini videos on the safety behavior of anesthesiology nursing students at 'Aisyiyah University Yogyakarta, addressing the need for improved disaster preparedness in student training.

**Method:** A quantitative pre-experimental one-group pretest-posttest design was used with 60 sixth semester anesthesiology nursing students, selected randomly. Safety behavior was measured using a validated questionnaire before and after the mini video intervention and analyzed with the Wilcoxon Signed Rank Test.

**Results:** The findings indicate a significant improvement in the safety behavior of anesthesiology nursing students following the educational intervention. The Wilcoxon Signed Rank Test showed a significance value of 0.000 ( $p < 0.05$ ), demonstrating a meaningful difference in safety behavior levels before and after the introduction of the mini video education. This suggests that mini educational videos are effective tools to enhance disaster preparedness and safety actions among nursing students in earthquake-prone areas.

**Keywords:** disaster preparedness; earthquake; educational mini video; safety behavior

### 1. Introduction

Earthquake disasters represent a critical global health issue as they are sudden, unpredictable, and capable of causing substantial loss of life, psychological trauma, and extensive environmental and material damage (Saparawati Mona et al., 2020). Indonesia, located on the Pacific Ring of Fire, is highly prone to seismic activity due to

its position at the convergence of four tectonic plates (Raden et al., 2023). Over the past two decades, the country has suffered significant economic losses and a high number of casualties as a result of earthquakes, with disasters such as the 2006 Yogyakarta earthquake highlighting the vulnerability of both infrastructure and communities (BMKG, 2023).

Despite ongoing exposure to these risks, disaster preparedness among the Indonesian population remains insufficient. Prevailing cultural beliefs, limited community awareness, and a general lack of practical readiness have hindered effective disaster risk reduction. More importantly, there is a notable gap in the education and training provided to future healthcare professionals, including nursing students, who are expected to play a pivotal role in disaster mitigation and response efforts (Soeli et al., 2021).

Given their vital role, anesthesiology nursing students should be well-equipped with the necessary knowledge, attitudes, and practical skills to respond effectively during earthquakes. However, studies suggest that nursing students' preparedness often remains suboptimal due to insufficient integration of these elements into educational curricula and practice (Harahap & Wulandari, 2024). One promising solution is the use of educational mini videos, which present essential information in a concise, engaging, and easily comprehensible format. Such digital media have been shown to facilitate knowledge acquisition, promote disaster-aware attitudes, and improve safety-related practices, enhancing overall disaster readiness among healthcare students (Nyoman & Alexander, 2022).

Therefore, this study aims to evaluate the effect of earthquake educational mini videos on the safety behavior of anesthesiology nursing students at 'Aisyiyah University Yogyakarta. The hypothesis of this research is that the provision of earthquake educational mini videos will significantly improve the safety behavior of anesthesiology nursing students with respect to earthquake preparedness.

## **2. Methods**

This study employed a quantitative pre-experimental research design with a one-group pretest-posttest approach. The research was conducted at the Anesthesiology Nursing Study Program, Faculty of Health Sciences, 'Aisyiyah University Yogyakarta. The population consisted of all sixth-semester students in the anesthesiology nursing program during the 2024/2025 academic year. A total of 60 students were selected using simple random sampling.

The primary material used in this study was an educational mini video about earthquake preparedness, which was developed by the research team to deliver concise, engaging, and easily understandable information regarding earthquake mitigation and safety behavior (Medika et al., 2021). The research instrument was a safety behavior questionnaire that had been previously tested for validity and

reliability. Data collection was conducted in two stages: a pretest administered before the intervention, and a posttest after the students viewed the educational mini video (Azhar et al., 2024). Operationally, "safety behavior" is defined as the knowledge, attitudes, and practices demonstrated by students when responding to earthquake disaster scenarios. The main research activities took place in classroom settings and on university-based digital learning platforms (BNBP, 2019).

Data obtained from the pretest and posttest were compiled and processed using a data processing application. The Wilcoxon Signed Rank Test was used to assess the statistical significance of differences in safety behavior before and after the intervention. Ethical approval was obtained from the institutional review board at 'Aisyiyah University Yogyakarta No. 2179/KEPUNISA/VI/2025 prior to commencing the study.

### 3. Results

#### 3.1. Characteristics of Respondents

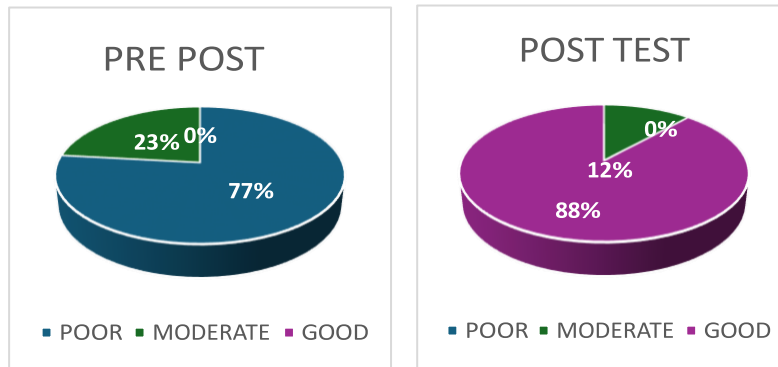
The research conducted involved a total of 60 students from the Anesthesiology Nursing Study Program at Universitas 'Aisyiyah Yogyakarta, all of whom participated as respondents in this study. The demographic analysis focused on several key characteristics, namely gender, age group, and previous experience with earthquake preparedness training. Based on the data collected, the majority of respondents were female, totaling 45 individuals or 75% of the sample, while the remaining 15 respondents, or 25%, were male. When grouped by age, most participants were between 20 and 22 years old, accounting for 38 individuals or 63.3%, while 22 participants, corresponding to 36.7%, were older than 22 years. In terms of experience with earthquake disaster preparedness or simulation training, only 7 respondents (11.7%) reported ever participating in such activities, while the vast majority, 53 respondents (88.3%), had never attended any formal disaster-related education or simulations before this research.

**Table 1.** Characteristics of Respondents

Characteristic	Frequency (n)	Percentage (%)
Gender : Female	45	75.0
Gender : Male	15	25.0
Age > 22	22	63.3
Age : 20-22	38	36.7
Earthquake Training : Yes	7	11.7
Earthquake Training : No	53	88.3

### 3.2. Safety Behavior Scores Before and After Intervention

The safety behavior of anesthesiology nursing students was evaluated before and after the educational intervention using a mini video regarding earthquake preparedness. The classification of safety behavior was divided into three categories poor, moderate, and good. The distribution of students' safety behavior levels at both pretest and posttest stages is presented in Figure 1.



**Figure 1.** Safety behavior before and after intervention

As presented in figure 1 before the introduction of the educational video intervention, the earthquake disaster management safety behavior was classified as poor in 46 respondents (76.7%) and as moderate in 14 respondents (23.3%). No respondents were rated as having good safety behavior at this stage. However, following the dissemination of the educational video, the majority of respondents demonstrated good safety behavior, with 53 individuals (88.3%) falling into this category, while 7 respondents (11.7%) remained in the moderate category. Notably, no respondents were categorized as poor after the intervention. This distribution reflects a substantial positive shift in safety behavior following the earthquake education video intervention.

### 3.3. Safety Behavior Scores Before and After Intervention

To assess the statistical significance of changes in safety behavior before and after the intervention, the Wilcoxon Signed Rank Test was utilized. This non-parametric test is specifically appropriate for evaluating paired data collected at two distinct time points in this study, namely prior to and following the administration of the video-based educational intervention.

**Table 2.** Wilcoxon Signed Rank Test Results on Safety Behavior

Comparison	Z-value	p-value
A comparative analysis of safety behavior was conducted between the pretest and posttest	-6.738	0.000

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measurements to determine the effect  
of the intervention.

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The analysis produced a Z-value of -6.738 and a *p*-value of 0.000. Given that the *p*-value is significantly lower than the conventional threshold of 0.05, these results indicate a statistically significant difference in safety behavior scores between the pretest and posttest phases. Consequently, these findings reflect a meaningful change in participants safety behavior levels following exposure to the educational mini video intervention.

#### **4. Discussion**

##### **4.1. Interpretation and Evaluation of the Results**

The results of this study demonstrate a significant improvement in the safety behavior of anesthesiology nursing students following the implementation of an earthquake educational mini video intervention. Before the intervention, the majority of respondents exhibited poor safety behavior regarding earthquake disaster management. After the intervention, a marked shift was observed with most students classified as having good safety behavior (Griffin dan Neal 2000). This finding is supported by statistical analysis using the Wilcoxon Signed Rank Test, which produced a Z-value of -6.738 and a *p*-value of 0.000, indicating that the increase in safety behavior post-intervention is statistically significant ( $p < 0.05$ ).

##### **4.2. Comparison with the Hypothesis or Research Question**

This outcome is consistent with the initial hypothesis and research objective that the use of educational mini videos would have a positive effect on the safety behavior of anesthesiology nursing students in the context of earthquake preparedness. The significant difference between the pretest and posttest scores confirms the effectiveness of the videobased educational intervention as postulated (Naranti Putri et al., 2023). The data suggest that visual, concise, and accessible learning media such as mini videos can significantly enhance knowledge, attitudes, and potentially the actions of students when faced with emergency situations (Pratiwi., 2022).

#### 4.3. Implications for Theory and Practice

From a theoretical standpoint, the results of this study further validate existing models of multimedia learning, which suggest that integrating visual and auditory information enhances knowledge transfer and behavior modification (Abdullah 2020). Practically, incorporating concise and engaging videos into disaster preparedness curricula could be an accessible and scalable strategy to improve readiness and safety conduct among healthcare students (Faidal, 2024). This aligns with previous reports that educational technology interventions are both efficient and accepted by learners in health sciences education (Yosiana et al., 2023).

#### 4.4. Limitations and Suggestions for Future Research

Despite these positive results, the present study has several limitations. The use of a pre-experimental one-group pretest-posttest design without a control group limits the ability to attribute changes in safety behavior solely to the intervention, as potential confounding factors cannot be excluded. The relatively small sample size and the focus on a single institution may also affect the generalizability of the findings. Future research is recommended to address these limitations by employing randomized controlled trial designs and including participants from multiple institutions or regions. It may also be valuable to explore long-term retention of improved safety behavior and to compare the effectiveness of various educational modalities. Additionally, investigating the impact of similar interventions in other healthcare or student populations would further enhance the evidence base for disaster preparedness education.

### 5. Conclusion

This study demonstrated that earthquake educational mini videos significantly improved the safety behavior of anesthesiology nursing students at 'Aisyiyah University Yogyakarta. Most students shifted from poor or moderate safety behavior levels to good after the intervention, as supported by statistical analysis. These findings suggest that concise educational videos are an effective and practical approach to enhance disaster preparedness and promote safer behaviors among nursing students.

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## 7. Author Contributions

Rabiyatull Adawiya S. Mamuki was responsible for the following contributions:

- Conceptualization and formulation of the research question and study design.
- Literature review and theoretical framework development.
- Data collection, analysis, and interpretation.
- Design and implementation of the educational intervention (mini video preparation and delivery).
- Preparation of research instruments and ethical compliance documentation;
- Drafting and revising the manuscript, including the preparation of tables, figures, and references.

The author confirms full responsibility for all aspects of the research and the final approved version of the manuscript.

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