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Fire management: A virtual treatment towards psychological preparedness among health college volunteers in Indonesia

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ABSTRACT

Background: Fire disasters in educational facilities often occur and lead to a lack of psychological readiness of volunteers in health colleges and in general.
Objective: The study aimed to analyze the effects of fire management: A virtual short film on the psychological preparedness of university volunteers in Indonesia.
Methods: This study uses quasi-experimental. The sampling technique used purposive sampling with a sample of 87 respondents who were divided into treatment and control groups. Health college volunteers were recruited from Java, Bali, and Sumatera islands. The psychological Preparedness for Disaster Threat Scale (PPDTS) questionnaire was used. The statistical test used is the paired t-test and the Independent Sample T-test.
Results: We found a difference in volunteers' psychological preparedness pre-treatment and post-treatment in the treatment group ($p < 0.001$) and control group ($p = 0.800$). Differences in both groups were significant ($p < 0.001$).
Conclusions: Treatments using technology media, namely short films, can virtually influence increasing psychological preparedness for volunteers. In addition, this intervention can be used as media for health promotion that is easily accessible to everyone in the face of disasters.

Keywords: fire; preparedness; psychological; volunteer

INTRODUCTION

Fire is a disaster event that can occur in any building designation, from housing, settlements, or urban areas to public facilities such as educational facilities (Valentine & Bolaji, 2021). In Indonesia, there are several colleges or campuses (academic) with high-rise and spacious building facilities. In the last ten years, fires have often occurred in Indonesia, especially in the areas of universities. In the past ten years, fires have often occurred in Indonesia, especially in Jakarta and Malang. For example, from 2014 to 2016, at universities in Jakarta and Malang, there was a fire disaster (Pertiwi et al., 2021).

Fires that occur in educational facilities do not only occur in Indonesia. Fire disasters have also occurred from 2000 to 2015

Nursing and Healthcare Practices

- *Fire management is essential knowledge to be known.*
- *Psychological preparedness is improtant during emergency and disaster conditions.*
- *Fire management intervention through virtual should film can be an alternatives to improve the psychological preparedness.*

in the United States. The incidence increases every year to an average of 7 fires per year. The impact of the fire on campus is the loss of life. Nearly 50% of the fires that hit students came from dormitory facilities, student extracurricular activities, and public facilities on campus. In addition, almost 85% of fire incidents on campus are not equipped with fire sprinkler equipment (Rafelitoo & Triyatno, 2019).

The causes of fires on campus are not only caused by inadequate facilities, but several factors, especially disaster risk management on campus, are very important (Sholanke et al., 2020). Integrated efforts in preventing fire risk on campus must be supported by clear planning, implementation, monitoring, and a follow-up system (Waheed, 2014). In addition, human resources are also needed on campus. Through voluntary organization programs such as the Indonesian Red Cross Volunteer Corps (KSR PMI) or disaster care-based student activity units, they are able to become volunteer resources in the field of students in disaster preparedness and response on campus (Lestari & Nurman, 2019).

The results of a survey of 100 students related to earthquake and tsunami disaster preparedness at Padang city universities showed that students' knowledge related to preparedness, while the level of disaster preparedness related to the disaster early warning system, and the level of disaster preparedness related to earthquake and tsunami emergency response was in the high category (Rafelitoo & Triyatno, 2019). In addition, the results of a survey at Binawa University on 207 students, almost 65% have less knowledge of disaster preparedness. In addition, a study of 49 nursing students at one of the universities in Makassar showed that 43% of nursing students were classified as not being ready for knowledge physically and 35% as not being prepared psychologically (Pertiwi et al., 2021).

In addition, the results of the analysis of 4 health colleges in Indonesia, namely health universities on the islands of Java, Bali, and Sumatera, have the same characteristics as adequate campus volunteer resources; there are campus volunteers, is a health college that has a multi-story building, the location of the campus is in the middle of the city centre. However, another problem faced by the campus volunteers was that they never received training related to disaster management, especially fires. In addition, facilities for fire prevention on each campus are also lacking.

Efforts that can be made to prevent building fires on campus can use a health education approach (Seyedin et al., 2020). These efforts can be through human resource training, such as the presence of campus volunteers (KSR PMI) or disaster response volunteers (Manurung & Siahaan, 2017). In addition, the training can be carried out to prepare human resources on campus for psychological preparation in dealing with fire disasters on campus (Nipa et al., 2020). A suitable form of health education is currently used to reach all circles with a virtual approach. In addition, the health education model of showing a film to the target is more effective and acceptable today (Sowa et al., 2018).

Respondents can improve preparedness and reduce psychological problems during fire disasters through this health education model. Therefore, virtual health education by showing short films on fire disaster management can improve the psychological preparedness of volunteers at health campuses in Indonesia. Therefore, this study aimed to analyze the effects of fire management: a virtual short film on the psychological preparedness of university volunteers in Indonesia.

METHODS

Design

This study uses a quantitative approach with a quasi-experimental research design.

Sample and Setting

The total population in this study was all student volunteer members at four health

Wijayanti, D, P., Pertimi, R. I., Alfianto, A, G., Rahmawati, I., Yusniawati, Y, N, P. (2023). Fire management: A virtual treatment towards psychological preparedness among health college volunteers in Indonesia. *The Journal of Palembang Nursing Studies*. *12*(1), 12-19. http://dx.doi.org/10.55048/jpns.v2i1.54

Table 1. Frequency distribution of respondents (n=87)

Characteristics	Category	n	%
Gender	Male	11	12.6
	Female	67	87.4
Age	18-23	67	77
	24-28	20	23
Education	Diploma	38	43.7
	Bachelor	49	56.3
Volunteer Membership on Campus	PMI volunteer corps	54	62.1
	Disaster Response Nurse	33	37.9
Ready to be a volunteer	Ready	61	70.1
	Possible	24	27.6
	Doubtful	2	2.3
College Origin	Java	39	44.8
	Bali	14	16.1
	Sumatera	34	39.1
Volunteer experience	Ever	12	13.8
	Never	75	86.2

Table 2. An overview of the average psychological preparedness of health college volunteers before and after being given the short film "Fire Management"

Sub-Indicator	Treatment Group		Control Group	
	Pre-test	Post-test	Pre-test	Post-test
Indicator 1 (knowledge and management of extraneous environmental situations	38.5	46.0	37.9	36.5
Indicator 2 (emotional management and psychological response)	16.8	21.2	19.3	19.9
Indicator 3 (social environment management)	6.0	7.9	5.7	5.9
Indicator 4 (anticipatory coping with emotional response)	5.23	8.09	6.7	6.5
Total Average	66.6	83.2	69.5	68.8
Difference	16.6		0.7	

Universities in East Java, Bali, and Sumatera were 93 volunteers. The sampling technique used in this study was purposive sampling, with a sample of 87 respondents divided into two groups, namely the treatment group, with as many as 44 respondents. The control group had as many as 43 respondents, with inclusion criteria being volunteer members (Volunteer Corps Indonesian Red Cross Society, disaster response volunteers, etc.); Volunteer a health student from universities in Java, Bali, and Sumatera, the respondent had previously attended volunteer education. In addition, the respondent had or never been a volunteer in a disaster. While the exclusion criteria are respondents are not able to follow the activity from beginning to end. The place of this research was carried out in health universities in Java, Bali, and Sumatra. The research was conducted in April-Mei 2022.

Variable

This variable consists of the independent variable, namely fire management: a virtual short film. In contrast, the dependent variable is psychological preparedness.

Table 3. The homogeneity test of psychological preparedness scores for health college volunteers before and after being given the short film "Fire Management".

Score	p
The results of the psychological preparedness post-test scores (in the Treatment group and the control group)	0.625

Table 4. Normality test of psychological preparedness data for health college volunteers before and after being given the short film "Fire Management"

Score	Group	Statistic	df	p
Pre-result Treatment Control	Treatment	0.186	43	0.216
	Control	0.079	44	0.200
Post-treatment-control results	Treatment	0.120	43	0.127
	Control	0.140	44	0.149

Table 5. The short film "Fire Management" affects the psychological preparedness of health college volunteers in Indonesia in the treatment and control groups.

Group	Category	n	Mean	SD	p
Treatment	Pre	43	66.60	10.97	< 0.001
	Post	43	83.16	8.49	
Control	Pre	44	69.48	11.05	0.800
	Post	44	68.77	16.80	

Table 6. The average difference test of the short film "Fire Management" on the psychological preparedness of health college volunteers in Indonesia in the treatment and control groups.

Independent sample test	Mean	SD	p
Treatment post-test	83.16	8.49	< 0.001
Control post-test	68.77	16.80	

Instruments

The measuring instrument in this study is the Psychological Preparedness for Disaster Threat Scale (PPDTS) with indicators that have been translated into Indonesian, namely awareness, anticipation, and readiness (sub four indicators, namely knowledge, and management of external environmental situations, emotional management and psychological response, management of social environment and anticipatory coping with emotional responses). The questionnaire items met the validity of 26 items. The reliability value of this questionnaire is 0.750 (Anggraeni et al., 2021). The questionnaire uses a Likert scale with a range of 1 to 4. Therefore, a score of 4 is very appropriate, up to a value of 1 for strongly disagree. The score result is a maximum value of 104 and a minimum of 26 (Zulch, 2019).

Intervention.

The Treatment in this study used the short film "Fire Management" with a film duration of 10.21 minutes. This film was produced by a nursing student of Kerta Cendikia health polytechnic and the copyright holder of the film, as well as a student and lecturer of Kerta Cendikia Health Polytechnic. The short film tells about fire risk assessment in colleges, triage of fire victims, techniques to get together, first aid for trauma, burns, and cardiac arrest, and how to stop a simple fire with a fire extinguisher, wet burlap, and sand. The Treatment was carried out virtually with a duration of explanation and watching a short film four times 30 minutes accompanied by an explanation by the facilitator. Meanwhile, the control group was only explained using a virtual poster explanation about fire management. At the end of the research, all respondents can watch the short film. In addition, questionnaires are distributed via Google Forms sent before and after treatment via the Zoom application.

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Data Collection

Measurements of this study were carried out before and after the treatment of the short film "Fire Management" was given to the treatment group. Meanwhile, the control group was assigned a virtual poster explanation about fire management—data retrieval before and after using the google form application in which there is also informed consent.

Data Analysis

The statistical test used in this research is the paired-sample t-test and the independent sample t-test using the IBM SPSS Statistic 25 tool and $p < 0.05$.

Ethical Consideration,

This study received ethical approval from ITKS Bali with No. 04.0469/KEPITEKES-BALI/IV/2022. First, we provide information to the chairman of each of these health institutions. Then detail the study and ask for approval by asking permission to explain the research objectives and ethical issues through a consent form, anonymity, confidentiality, privacy, and fair dealing.

RESULTS

The distribution of the frequency of respondents who take part in educational activities through the film "Fire Management" states that the majority of respondents are female at 87.4%, respondents are dominated by ages between 18-23 at 77%, respondents with the most education are undergraduates at 56.3%, respondents with the most membership on campus participated in the Voluntary Corps (PMI), as many as 63.1%, the largest volunteer readiness respondents were ready, namely 70.1%, respondents from universities from Java were 44.8%, and respondents experience volunteering is never as much as 86.2% (Table 1).

Based on the total average value of the sub-indicator that the average value of the psychological preparedness of volunteers in health colleges on indicator one treatment group (short film) and control group (Virtual Poster), there is a difference before and after, namely the treatment group 16.6 and the control group 0.7 (Table 2).

The results of the homogeneity test in table 3 show that the significance value of the psychological preparedness post-test in the treatment and control groups is 0.625; this indicates that the data is homogeneous.

The results of the psychological preparedness test of health college volunteers using the Kolmogorov-Smirnov normality test showed that the results of the Treatment and control pre-test were 0.186 and 0.079, while the post-test results of Treatment and control were 0.120 and 0.140. So, the conclusion from the normality test of the data is that the distribution is not normal ($p > 0.05$) so the significance value is normally distributed (Table 4).

Based on table 5 shows that in the Treatment group, namely the provision of a short film "Fire Management". There is an influence on the psychological preparedness of health college volunteers in Indonesia; the significance value is < 0.001. Meanwhile, the control group was given health education in the form of a virtual "fire management" poster with a significance value of 0.800, showing no effect. The table 6 shows the difference between the Treatment group and the control group, namely the significance value is < 0.001, which means that there is a difference between the two.

DISCUSSION

Research related to the short film "Fire Management" shows a change in the increase in psychological preparedness in the Treatment group. Meanwhile, in the control group, there was a decrease in psychological preparedness. Disaster preparedness education is very important, especially in the Indonesian state, where disasters often occur (Johnson et al., 2014). One of the risks of disaster in urban areas is fire. Public facilities such as educational facilities also often fire (Desriani, 2018). Therefore, the effort that can be done is prevention in the pre-disaster phase. In this pre-disaster phase, a person must be able to prepare for disasters in this phase (Panes et al., 2020). Several studies related to the lack of knowledge about fire disaster preparedness make problems in handling fire problems. This lack of disaster preparedness knowledge is limited to contacting the fire department; when panicking, it only shouts and asks for help until it only extinguishes the fire with water (Setyawan et al., 2021).

This form of preparedness impacts a person's psychology when facing a fire disaster. Some of the impacts that arise are anxiety, panic feeling afraid of the surrounding environment (Chowdhury &

Chakraborty, 2017). The effect of psychological preparedness on disasters is also influenced by several factors, such as one's knowledge in dealing with disasters, emotional management and psychological responses, management of the social environment and anticipatory coping through emotional responses (Sheek-Hussein et al., 2021). In addition, technical factors can increase a person's preparedness for disasters. Technology and information advances can prevent and control fires, especially in densely populated locations (Rathore, 2016).

One can improve one's psychological preparedness through preparedness education, health education models and modality therapy (Noviekayati et al., 2021). The current form of health education is easy to do concerning current technology (Nastiti et al., 2021). One of the appropriate technologies to improve psychological preparedness is screening a short film on fire management (Mukhopadhyay, 2015). There is research on the health education model using short films to reduce the risk of sexual behavior among adolescents. In addition, this educational model is straightforward to understand by everyone because the focus on health education model focuses on audio and visual (Susanto et al., 2020).

Audio and visuals seen by someone are more likely to be easily remembered by someone. Because the film media will show a story like the actual condition. Many films become a conversation after being watched by someone. This becomes the attraction of a person to behave (Botchway & Simpson, 2017). The research results also explain that films shown in theatres or social media platforms are easier to remember to retell to others (Stellefson et al., 2020). This short film tells about fire management focusing on managing and responding to a fire disaster. This film also explains the steps in disaster management, especially fires.

A person can change through educational media in the form of films, especially in his psychological problems. By watching a short film about fire management, it is hoped that someone who sees it will be able to dissolve and follow the film and put it into practice in everyday life. This requires a change in one's behaviour in changing for the better. Behaviour change is influenced by a person's knowledge, attitudes and actions. Therefore, preparedness education is very important for a person or community at risk (Rahman et al., 2020).

In addition, volunteers become people ready to prevent or help victims during disasters. Volunteers need to be continuously trained in dealing with disasters. Many volunteer organizations currently carry out standardized education and training, with the aim that when helping disaster victims have good knowledge and ability to help (Whittaker et al., 2015). These efforts can be carried out at the level of education, such as universities. Many volunteers at universities are still unable to implement human values during a disaster. This is not done because many volunteers and students are not ready when they come to help in a disaster.

The results of government policies and the current minister of education are promoting an independent campus. One of these indicators is a humanitarian project. In humanitarian projects, students are expected to participate in disaster activities and humanitarian organizations such as volunteers (Sulistiyani et al., 2021). The government program is expected to be able to increase the capacity of students to prevent a disaster from occurring, with this program also being able to increase campus preparedness in preventing disasters from occurring.

The obstacle in this treatment is the network constrained some respondents during the treatment. So that some respondents could not become inclusion criteria because they did not follow the Treatment until the end. And the efforts that have been made by re-recording the film and the recorded explanations were also sent to all respondents.

Conclusions

Health college volunteers on Java, Bali, and Sumatra increased their psychological preparedness during a fire disaster after watching the short film "fire management". While volunteers who have explained fire management through virtual posters also had a decreased change in psychological preparedness during a fire disaster. However, the two groups have different psychological preparedness in a fire disaster. The implications of this Treatment as a technology-based health promotion innovation media that all people can access in preventing psychological problems and preparedness in disaster risk areas.

Declaration of Interest

None

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Data Availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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