

Research Article

Improved Fire Disaster Mitigation Efforts through Nursing Disaster Education among a Boarding School Students and Teachers at Surakarta City

Bagus Muhammad Iqbal Al Zam Zam, Addi Mardi Harnanto*, Widodo, Sunarto, Sumardino

Department of Nursing Poltekkes Kemenkes Surakarta, Indonesia

Article history:

Submission May 2022

Revised June 2022

Accepted June 2022

*Corresponding author:

E-mail:

addimharnanto@gmail.com

ABSTRACT

Disaster events are also very risky to occur in the school area. The most common danger in school is fire. School disaster management includes the familiar procedural cycle found in planning and implementation of physical risk mitigation, safe facility maintenance, standard operating procedures, and disaster response training. This study aims to analyze the effect of nursing disaster education on increasing fire disaster mitigation efforts among students and teachers of a boarding school in Surakarta City. The research employed one group pretest posttest design. Sampling technique in this study was purposive sampling with the application of inclusion and exclusion criteria. The number of research samples was obtained by 64 respondents. The instruments in this study were questionnaires to find out the level of knowledge and attitudes of the level of fire disaster mitigation efforts. The hypothesis test used was the Paired T-test on the knowledge sub variable and Wilcoxon on the attitude sub variable. The study found both knowledge and attitude towards fire catastrophe mitigation improved between the pretest and posttest. The improvement in knowledge was 3.9 points, whereas the improvement in attitude was 4. The Sig result was 0.00 based on the t-test analysis of the knowledge sub variable. Furthermore, the Sig result was 0.00 based on the Wilcoxon analysis of attitude sub variable. It can be concluded that Nursing Disaster Education has an effect in improving fire disaster mitigation efforts in students and teachers in high schools.

Keywords: Fire Disaster Mitigation, Nursing disaster education

Introduction

Disaster, according to Law No. 24 of 2007 on Disaster Management, is an incident or series of incidents that threaten and destroy the community's life and livelihood due to natural

and/or non-natural factors, as well as human factors, resulting in casualties, environmental damage, property damage, and psychological effects. Man-made forest/land fires, transportation accidents, design/technology failures,

How to cite:

Zam, B. M. I. A. Z., Harnanto, A. M., & Widodo, Sunarto, Sumardino (2022). Improved Fire Disaster Mitigation Efforts through Nursing Disaster Education among a Boarding School Students and Teachers at Surakarta City. *Basic and Applied Nursing Research Journal*, 3(1), 19 – 23. doi: 10.11594/banrj.03.01.04

industrial consequences, nuclear explosions, pollution, and conservation activities are examples of non-natural catastrophes [1].

Disasters are also a high risk in the school environment. When kids and employees are killed in dangerous schools, or when buildings are not prepared to resist foreseen and recurrent natural calamities, the ultimate disqualification happens. Falling objects, ruptured pipelines, and emergency exit blocks are examples of non-structural risks that can result in death or serious harm. The most common danger in school is fire [2]. If the disaster strikes while the teaching and learning process is in progress at school, the ruins of buildings and surrounding objects may collapse on and/or bury pupils, instructors, and other education workers. As a result, schools must be capable of ensuring the safety and security of all students at all times, including defending against natural calamities [3].

Boarding school fire disasters are a major educational concern. In Indonesia there is no exact data on fire incidents in school dormitories including pesantren but based on news searches on the Google page, fire events are very frequent and cause student deaths, injuries, trauma, property damage and loss, and educational infrastructures. School disaster management includes the familiar procedural cycle found in planning and implementation of physical risk mitigation, safe facility maintenance, standard operating procedures, and disaster response training (International Finance Cooperation, 2010). Every kid has the right to safety and survival, as well as the right to a good, long-term primary education. Natural catastrophes and technological hazards frequently cause violations of rights, resulting in large and small disasters. This calamity, whether large, medium, or small in scale, has an impact on the safety and education of children. When a child's education is disrupted, his or her education may become disconnected. In other situations, it is permanent, resulting in long-term economic and social consequences for the kid, family, and community [3].

A catastrophe nurse owes it to infants, children, adolescents, and young adults to speak up

for their health, safety, and well-being as a professional. They may play a part in disaster preparedness as a health professional responder and advocate for children's needs. In order to prepare for a potential mass casualty event and provide care for students in a crisis, nurses serve as conduits for public health information to students and families, as well as liaisons with emergency medical services [5]. Nurses are expected to play a big role in disaster management because they are the most numerous healthcare providers [6]. Unlike other acute care doctors who specialize in the treatment of specific conditions, the scope of public health nurses' practice can range from catastrophe planning through disaster response and evaluation [7]. Based on the previous study, there are several responsibilities for Public Health Nurses in disaster management.

By providing health management and assistance throughout the community and public healthcare system, public health nurses play a key role in disaster preparedness, response, and recovery. Furthermore, identifying Public Health Nurses involvement in disaster management necessitates the development of specific abilities in order to ensure their assistance during disasters [8]. School safety programs include training in school search, rescue, and first aid, providing training trauma counseling, stocking supplies, and simulated drills to accommodate the specific needs of children. Expectantly give distribution not only for kids but also for academicians in elementary school through the school safety program as a method of disseminating awareness [5].

Based on a preliminary study at a boarding high school in the City of Surakarta using interview techniques, it was found that there was a fire in the mosque at this school in 1997 caused by an electric short circuit, this school does not yet have a team for disaster management and there is no socialization of fire disaster management in this school. This study aims to analyze the effect of nursing disaster education on increasing fire disaster mitigation efforts among students and teachers of a boarding school in Surakarta City.

Material and Methods

The research design was descriptive quantitative research. This study used an experimental design with one group pretest and posttest. This study was completed in April of 2021. The students and teachers of a boarding high school in Surakarta City, a total of 179 people, were the subjects of this study. Purposive sampling with the application of inclusion and exclusion criteria was used in this investigation. Students and teachers who agreed to participate in the study and sign an informed consent form were considered for inclusion. Students and teachers who were unwilling to participate in study and were not present at the time the research data was collected were excluded. 64 responders calculated the number of research samples using the Slovin formula.

Questionnaires were used in this study to determine the level of knowledge and attitudes

about fire catastrophe mitigation initiatives. The research instruments have been tested at a high school in Surakarta City on a number of 30 students. The research instrument was declared valid with the measurement of the value of *r* count amounting to 0.369-0.868 (knowledge questionnaire) and the value of *r* count amounted to 0.420-0.846 (attitude questionnaire). The research instrument was also declared reliable with the results of **Cronbach's alpha** measurements of 0.782 (knowledge questionnaire) and **Cronbach's alpha** scores of 0.868 (attitude questionnaire). The hypothesis test used was the Paired T-test on the knowledge sub variable and Wilcoxon on the attitude sub variable. The Health Research Ethics Committee of Dr. Moewardi Hospital granted this study ethical approval.

Results

Tables below contain the result of the study.

Table 1. The demographic distribution of respondents.(n=64)

Characteristics		Frequency (%)
Gender	Male	28 (23.8)
	Female	36 (56.3)
Age	≤ 20 years	44 (68.7)
	> 20 years	20 (31.3)

Table 1 shows that women are the majority of responders in this survey (56,3%). Furthermore, the majority of responses are under the

age of 20. (68,7%). Table 2 compares the knowledge levels of the two groups of respondents.

Table 2. Distribution of Fire Disaster Mitigation Knowledge and Attitudes (n=64)

	Pretest (%)	Posttest (%)
Knowledge		
Low	3 (4.7)	0
Medium	36 (56.3)	13 (20.3)
High	25 (39.1)	51 (79.7)
Attitude		
Low	14	0
Medium	49	11 (17.2)
High	1	53 (82.8)

Table 2 reveals that the majority of respondents were at a medium level during the pretest and posttest. The posttest of responders

showed an increase in both knowledge and attitude about fire disaster mitigation.

Table 3 shows the findings of the pretest and posttest in the two research groups, as well as the results of the analysis of the various tests.

Table 3. Analysis of data from the pretest and posttest

Disaster Mitigation Knowledge					t-test
Average					Sig
Pre	Post	Min	Max	Change value	
4.2	8.1	39	91	3.9	0.00
Disaster Mitigation Attitude					Wilcoxon
Average					Sig
Pre	Post	Min	Max	Change value	
4.5	8.5	49	88	4	0.0

Table 3 reveals that both knowledge and attitude about fire catastrophe mitigation improved between the pretest and posttest. The improvement in knowledge was 3.9 points, whereas the improvement in attitude was 4. The Sig result was 0.00 based on the t-test analysis of the knowledge sub variable. Furthermore, the Sig result was 0.00 based on the Wilcoxon analysis of attitude sub variable. It can be concluded that Nursing Disaster Education has an effect in improving fire disaster mitigation efforts in students and teachers in high schools.

Discussion

Between the pretest and the posttest, both knowledge and attitude towards fire disaster mitigation improved. This data is proving that Nursing Disaster Education has an effect in improving fire disaster mitigation efforts in students and teachers in high schools. The findings of this study back up prior research showing that first aid training can boost self-confidence in using PSC-119 services to seek assistance in an emergency [9]. Taking action in three areas is required to manage school fires. The first is disaster preparedness. The second step is to educate staff, students, and families about what to do in the event of a fire. The third stage is to make sure the school building is fireproof [10]. Disaster management concepts can be instilled in pupils through education, allowing them to develop proper incident perception. As a result, their incident reaction capability can be strengthened in societies such as families. Schools and students must develop emergency resilience and be prepared to mitigate their

effects in order to provide an effective reaction as well as the continuation of instruction as quickly and effectively as possible [11].

Training is needed to increase the capacity of teachers and students in disaster preparedness in the school environment. School safety and instructional continuity necessitate a dynamic, ongoing process that includes personnel, students, parents, and the local community. Evaluate the risks, vulnerabilities, capacities, and resources available; Plan and carry out physical risk reduction, safe facility maintenance, standard operating procedures, and disaster response training. Regularly test your mitigation and preparedness strategies and abilities using realistic simulation drills, and adapt your strategy based on your findings [12].

Nurses have a very important role in increasing the capacity of school residents in dealing with disaster conditions through the training and education programs. The major goal of the School Safety Program is to help inform, persuade, and incorporate safety problems in order to establish safe schools. The program's purpose is to instill a disaster preparedness culture in the school community [5]. Nurses can work together with all parties in the school in implementing a training program that begins with an assessment. When it comes to risk reduction knowledge and skills, think of structural engineers, environmental engineers, safety specialists, facilities staff, handymen, plumbers, electricians, and builders. For reaction and recovery, consider disaster management professionals, health professionals,

volunteer groups, scouts, women, organizing volunteers, obtaining supplies, communication experts, shelter construction, and supply management. Determine which reaction skills your pupils and workers already have. Use the results of this assessment to determine what training is required to close the gaps [12].

As part of the school's emergency management strategy, the school nurse is in a leadership position to provide continual integration, coordination, and training of all school and community personnel. The school nurse's role in emergency management planning is divided into four phases: prevention/mitigation, preparedness, response, and recovery [13]. In developing mitigation programs, nurses can involve all parties in schools in developing educational programs related to disaster preparedness.

References

1. Pemerintah Republik Indonesia. (2007). *Undang-Undang Republik Indonesia Nomor 24 Tahun 2007 Tentang Penanggulangan Bencana*.
2. Petal, M. (2008). Disaster Prevention for Schools Guidance for Education Sector Decision-Makers Consultation version, November 2008. *Consultation Version, November*.
3. Ministry of Education and Culture, & Unicef. (2015). *Module 2 Pillar 2 - School Disaster Management*.
4. International Finance Cooperation. (n.d.). *Disaster and Emergency Preparedness: Guidance for Schools*. Health and Education Department.
5. Herlianita, R. (2017). The role of disaster nurse through school safety program for disaster preparedness in elementary school. *Research Report*, 81–86.
6. WHO. (2017). *History of nursing and midwifery in WHO 1948-2017*.
7. Rowney, R., & Barton, G. (2005). The role of public health nursing in emergency preparedness and response. *Nursing Clinics of North America*, 40(3), 499–509.
<https://doi.org/10.1016/j.cnur.2005.04.005>
8. Ardia Putra, Wongchan Petpichetchian, K. M. (2011). Review Public Health Nurses' Roles and Competencies in Disaster Management. *Nurse Media: Journal of Nursing*, 1(1), 1–14.
<https://doi.org/10.14710/nmjn.v1i1.742>
9. Sunarto, & Harnanto, A. M. (2021). *Increasing Public Confidence in Accessing Public Safety Center-119 Services Through First Aid Training*. 6(1), 27–31.
10. Kiehne, H. A. (2014). Fire Safety Management. In *Healthcare Hazard Control and Safety Management*.
<https://doi.org/10.1201/b16667-13>
11. Seyedin, H., Dowlati, M., Moslehi, S., & Sakhaei, F. S. (2020). Health, safety, and education measures for fire in schools: A review article. *Journal of Education and Health Promotion*, 9(May), 1–8.
<https://doi.org/10.4103/jehp.jehp>
12. IFC. (2010). Disaster and emergency preparedness: Guidance for schools. *World Bank Group*, 64.
13. National Association of School Nurses. (2008). Emergency preparedness-The Role of the School Nurse. *ASHA Leader*, 13(12), 1–4.