

## Literature Review: The Effectiveness of Tabletop Disaster Exercise on Disaster Preparedness

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### ABSTRACT

**Backgrounds:** Disasters often come without warning and can result in a lot of losses. Preparedness is a form of activity carried out to anticipate disasters. One of the activities that can be done to improve preparedness is by simulating using the Tabletop Disaster Exercise (TDE) media. Therefore, it is important to identify the effectiveness of tabletop disaster exercise on disaster preparedness.

**Objective :** To assess the effectiveness of tabletop disaster exercise on disaster preparedness.

**Methods:** The study was conducted based on the study. The search is limited to articles published in 2017-2021, full text, using the tabletop disaster exercise method with the type of original research. The databases used are Pubmed, National Library of Indonesia, and Google Scholar with the keywords tabletop disaster exercise, disaster, preparedness.

**Results:** Five articles were found on the implementation of TDE which aims to improve preparedness and knowledge of disasters. The article contains knowledge, self-confidence, understanding of the role of disaster preparedness. The results of the analysis carried out on the five articles taken were the effectiveness of the tabletop disaster exercise on disaster preparedness with a value of  $p = 0.001$  or  $p < 0.05$ .

**Conclusion:** The Tabletop Disaster Exercise is effectively implemented to improve disaster preparedness.

**Keywords:** tabletop disaster exercise, disaster, preparedness

### Introduction (*Pendahuluan*)

Natural disasters are events that have a huge impact on humans. Natural disasters often occur in several regions, including Indonesia. Some of them are landslides, volcanic eruptions, earthquakes, tsunamis, hurricanes, and floods. Natural disasters that occur in Indonesia generally result in a lot of losses ranging from material losses to causing many deaths because they usually occur without warning (Adhiwijaya and Hanaruddin, 2019).

Potential danger can occur at any time. Therefore, everyone must always be alert to threats that may occur. One of the things that can be done is to increase disaster preparedness. Preparedness is a form of activity carried out to anticipate disasters that are effective and efficient (Rosida and Adi, 2017). One of the learning methods that can be used in an effort to improve disaster

preparedness is disaster simulation using the Tabletop Disaster Exercise (TDE) method.

TDE is a discussion-based exercise that focuses on plans, existing policies, assistance and procedures used (Addiarto and Wahyusari, 2018b). TDE is a simulation carried out in a room aimed at testing preparedness in disaster management through analysis of reactions to problem solving (Addiarto and Wahyusari, 2018a). This method has benefits in improving disaster preparedness. This method provides an imagination or picture of a real disaster that may occur. So as to increase the role, knowledge and ability in dealing with disasters (Addiarto and Wahyusari, 2018a)

When a disaster occurs, medical personnel are a source of much-needed health care providers, so they must be responsible for understanding their role in disaster preparedness. (Alim, Kawabata and Nakazawa, 2015). The existence of preparedness education and training can increase their role in

disaster management (Kanita and Wulandari, 2019). Therefore, agencies need to conduct training to improve competence and disaster preparedness (Unver et al., 2018)

The results of previous studies showed that after participating in TDE training, there was an increase in students' knowledge regarding disaster management and management (Watson, Waddell and McCourt, 2020). Another study conducted by Addiarto, Yueniwati, and Fathoni (2016) stated that there was a significant increase in knowledge between before and after giving the intervention with TDE in each group.

The purpose of this study is to determine the effectiveness of tabletop disaster exercise (TDE) on increasing knowledge of disaster preparedness.

## Methods

Literature review. The study was conducted based on the study. The search is limited to articles published in 2017-2021, full text, using the tabletop disaster exercise method with the type of original research. Exclusion criteria in this literature review are the selection of research articles on disaster preparedness but not with the TDE method, the year of publication is more than 5 years and the articles used are meta-analysis. The database used is Pubmed, National Library of Indonesia, and Google Scholar with the keyword tabletop disaster exercise, disaster, preparedness.

## Results and Discussion

The articles obtained are search results from several addresses on long searches such as Google Scholar, PubMed, and the National Library of Indonesia. The number of articles found in the search was 424 articles. Then the articles were selected according to the specified inclusion criteria including research journals in the last 5 years, free full text, topics according to the theme and articles used were original journals, the intervention used was tabletop exercise. Articles that are included in the inclusion criteria are then re-selected regarding the suitability of the methods used in research articles, so that the total articles that can be used to compile a Literature Review are 5 articles (JBI 2020). Based on the search results and reviews that have been carried out, the following results are obtained:

No	Judul Artikel	Penulis	Jenis Jurnal, Volume, Nomor, Tahun	Desain	Sampel (Kriteria Inklusi dan Eksklusi)	Hasil
1.	<i>Does Tabletop Exercise Enhance Knowledge and Attitude in Preparing Disaster Drills?</i>	Cut Husna, Hajjul Kamil, Mustanir Yahya, Teuku Tahlil, & Darmawati	<i>Nurse Media Journal of Nursing</i> , Vol.10. No.2, Hal.183 (2020)	The research design used is a one-group pre and post-test of a quasi-experimental design	The sample of this study was 80 semester nursing students who took disaster nursing courses	The results showed that menunjukkan TTE improves nursing students' knowledge and attitudes in preparing for disaster drills. Table top exercise had a positive effect on increasing knowledge ( $p=0.001$ ) and attitudes of nursing students in disaster training ( $p=0.001$ ) ( $df=79$ ).
2.	<i>Comparison of the Effect of Lecturing and Tabletop Exercise Methods on Level of Preparedness of Nurses against Natural Disasters</i>	Mirzaei, Samaneh Eftekhari, Adel Mohammadinia, Leila Tafti, Abbas Ali Dehghani, Norouzinia, Roohangiz Nasiriani and Khadijeh	<i>Journal of Holistic Nursing and Midwifery</i> Vol. 30, No. 1 Pg. 17-26 (2020)	The research design used is a quasi-experimental study with simple random sampling	The population in this study was a total of 74 nurses drawn from various wards randomly at Yazard City Hospital, Iran. Measurement is measured in three aspects including knowledge, attitude and performance	After the intervention was carried out in group A with the usual learning method and in group B with the tabletop exercise method, the average score of knowledge, attitudes, and performance of nurses increased by 4.94, 7.38, and 5.59 in group A. Then the score increased by 6.56, 11.43, and 6.08 in group B. In addition, the total nurse readiness score in group B was significantly higher in pre-test, post-test, ( $107.89 \pm 7.50$ ) ( $P=0.0001$ )

No	Judul Artikel	Penulis	Jenis Jurnal, Volume, Nomor, Tahun	Desain	Sampel (Kriteria Inklusi dan Eksklusi)	Hasil
3	<i>Comparison of Tabletop Disaster Exercise (Tde) and Educational Film on Disaster Preparedness Among Indonesian Vocational High School Student: a Quasi-Experimental Study</i>	Sholihah, Imroatus Rahayu, Masruro, Suryanto	The Malaysian Journal of Nursing, Vol. 12, No. 2, p. 51-57 (2020)	This study uses a quasi-experimental method with a pretest-posttest nonequivalent control group	The population in this study were 104 high school students who were divided into two groups or groups, namely the TDE group and the education group by watching movies.	This study divided into two groups, namely the group using the TDE method as its teaching material, then the other group using the film-watching method as its teaching material. Significant results were obtained by each group where there was a significant difference before and after being given treatment with a value ( $p = 0.000$ ). The results show that the EFT method is more effective than the movie watching method with a value ( $p=0.000$ ) with a higher variance in the EFT, which is 6.94.
4.	<i>Tabletop Tsunami Simulator In Tsunami Disaster Preparation To Make Schools Of Disaster Preparedness</i>	Ekapraseti a, Ferry Wirasakti, Guruh	Journal of Health dr. Soebandi, Vol. 9, No. 1, p. 55-59 (2021)	This study uses the one group pre-post test method of a quasi-experimental design	The population in this research is elementary school children in grades 5 and 6 with a total of 157 people who have smartphones and are willing to be respondents	From the research conducted, it was found that there was an effect of the tabletop tsunami simulator on increasing knowledge and attitudes in dealing with the threat of a tsunami disaster with a value of ( $p < 0.05$ )
5.	<i>Disaster Preparedness Training for Emergency Medicine Residents Using a Tabletop Exercise</i>	Sena, Ariel Forde, Frank Yu, Catherine Sule, Harsh Masters, M. Meredith	<i>The journal of teaching and learning resources</i> , Vol. 17, p. 11119 (2021)	This study uses the one group pre-post test method of a quasi-experimental design	The population in this study were students grade 1-4 at Rutgers New Jersey Medicine with a total of 29 people	The result of the research is that the TDE method is effectively used to increase self-confidence but is not too significant in increasing knowledge with a value ( $p < 0.011$ ). The EFT was carried out for 2 hours by dividing the population into two groups that were given the same intervention. The activity started with a lecture or presentation of material for 15-20 minutes, then continued with training for 1 hour, finally a post test was carried out from the activities that had been carried out.

Disasters are a series of events caused by both natural and non-natural factors that threaten and disrupt human life causing casualties, environmental damage, property losses, and also have an impact on human psychology. (Rosida and Adi, 2017). Disasters can occur at any time without any signs of impending disaster. The high incidence of disasters that occur, it is necessary to increase disaster preparedness to minimize the impact of disasters. According to BNPB data, during the year 2020 there have been 2,925 natural disasters such as floods, flash floods, landslides, hurricanes, droughts and forest and land fires. With

the number of disaster events, increasing disaster preparedness is an important component that must be carried out by every community, students, and workers.

Literature review This consists of 7 articles that explain the effectiveness of the tabletop disaster exercise (TDE) on disaster preparedness. TDE is an indoor simulation to test preparedness related to disaster management through problem solving prepared with certain disaster scenarios. TDE is a simple and systematic concept that makes it easier for participants to understand their role in the

simulation of a disaster situation (Addiarto and Wahyusari, 2018a).

After the analysis, the results of research conducted by Sena et al. (2021) stated that TDE is effective to be implemented in increasing preparedness and can increase self-confidence. The research also explained that the results of the activities carried out had no significant effect on medical knowledge and perceptions about the importance of disaster treatment. This is different from the research conducted by Husna et al. (2020) shows that training using a tabletop disaster exercise has a big impact. Providing training with this method increases students' knowledge and attitudes in disaster preparedness.

Another research related to the application of the tabletop disaster exercise method in an effort to increase preparedness was also carried out by Mirzaei et al. (2020) that the TDE method is very effective in improving the knowledge, attitudes and performance of nurses in preparedness. A similar study was conducted by Sholihah, Rahayu and Suryanto (2020) in his research explained that the learning method with TDE is more effective and significant results compared to the method of watching movies. The implementation is by dividing the treatment groups. The first group is the group using the TDE method and the second group using the movie watching method with a total of 52 people in each group. TDE is done by making a city simulation from a 1.5 x 2 meter board and a scenario consisting of disaster cases that occur and the role of each individual. TDE is carried out for 60 minutes starting from preparation, training then followed by simulation. The group with the method of watching a film entitled "Waspada Banjir Bandang" which contains knowledge about floods, activity plans for disasters, and resources for mobilization including evacuation. (2021) that there is an effect of tabletop tsunami simulator on increasing knowledge and attitudes in dealing with disaster threats.

Through the literature review, it can be concluded that preparedness training using the tabletop disaster exercise method is very effective with each article taken for analysis having a value of  $p=0.001$  or  $p<0.05$ . The TDE method provides a significant increase in knowledge, understanding of roles and can increase self-confidence for respondents. The TDE method has a good impact on implementation, so that preparedness and a culture that is sensitive to disasters will be formed (Addiarto, 2019).

## Conclusion

Natural disasters are events that have a huge impact on humans. Natural disasters that occurred in Indonesia caused a lot of losses ranging from material losses to many deaths. Disasters that often occur in Indonesia are landslides, volcanic eruptions, earthquakes, tsunamis, hurricanes, and floods. There are several ways to anticipate or prevent the impact of disasters, one of which is to increase preparedness. Preparedness is an activity carried out to anticipate disasters that are effective and efficient. One way to improve preparedness is through training or education using the tabletop disaster exercise (TDE) method. Based on the literature study conducted, shows that the TDE method is effective to be implemented in improving preparedness. In addition, this method can increase confidence, knowledge and understanding of roles in disaster preparedness.

The author proposes suggestions for further research, namely 1) future research can compare the TDE method with other methods regarding the effectiveness of the method in improving disaster preparedness. 2) Future research can combine the TDE method with other methods to improve preparedness.

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