Disaster Preparedness Education Program for Nursing Staff

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A B S T R A C T

Preparedness in the face of a disaster is one of the important elements of activities in reducing the risk and impact of a disaster, this is very much needed during a disaster, therefore a disaster education program is needed to prepare nurses' preparedness so that they can provide fast, accurate service and save victims from physical disability and death. The aim of the literature study is to identify a disaster education program to prepare the preparedness of nursing personnel in both institutional and acute settings. The method used is narrative review. Search for data using electronic data sources, such as PubMed, ScienceDirect, and Garuda Portal. The articles found will be selected based on the full paper with the publication year 2011-2021, open access, publications in English and Indonesian, while articles that are not relevant to the research topic and duplicated will be issued. Increasing disaster preparedness for nurses, namely by providing education coupled with special training, while nursing students by providing modules, peer group discussions, and evaluating materials included in the curriculum.

Program Edukasi Bencana Guna Mempersiapkan Kesiapsiagaan Tenaga Keperawatan

A B S T R A K

Kesiapsiagaan dalam menghadapi suatu bencana merupakan salah satu elemen penting dari kegiatan dalam mengurangi risiko dan dampak bencana hal ini sangat dibutuhkan selama bencana, oleh karena itu program edukasi bencana dibutuhkan guna mempersiapkan kesiapsiagaan perawat agar dapat memberikan pelayanan cepat akurat dan menyelamatkan korban dari cacat fisik dan kematian. Tujuan dari studi literatur untuk mengidentifikasi program edukasi bencana guna mempersiapkan kesiapsiagaan tenaga keperawatan baik dalam institusional maupun acute setting. Metode yang digunakan adalah narrative review. Pencarian data menggunakan sumber data elektronik, seperti PubMed, ScienceDirect, dan Portal Garuda. Artikel yang ditemukan akan diseleksi berdasarkan fullpaper dengan tahun publikasi 2011-2021, open access, publikasi dengan Bahasa Inggris maupun Bahasa Indonesia, sedangkan artikel yang tidak relevan dengan topik penelitian dan terduplikasi akan dikeluarkan. Peningkatan kesiapsiagaan bencana pada perawat yaitu dengan pemberian edukasi yang ditambah dengan pelatihan khusus, sementara mahasiswa keperawatan dengan pemberian modul, peer group discussion, dan evaluasi materi yang dimasukkan kedalam kurikulum.

INTRODUCTION

The Unitary State of the Republic of Indonesia is located in a disaster-prone area. Astronomically, Indonesia is located between 60LU - 110LS and 950BT - 1410BT. Seen from a geographical side, Indonesia is located between two continents and two oceans, namely the continents of Asia and Australia and the Indian and Pacific oceans. In addition, Indonesia is the meeting place of three active plates between Indo-Australia, Eurasia and the Pacific. Indonesia is also traversed by two circums, namely the Pacific circum and the Mediterranean circum where there are three movements from the meeting point of the earth which can cause the activation of volcanism and frequent earthquakes so, Indonesia is included in the "Ring of Fire" area (Henley & Schulte Nordholt, 2015).

Disasters not only significantly affect health care institutions and providers, they also affect people's lives and economies around the world. The report of BNPB (National Board for Disaster Management), Indonesia has experienced various disasters as many as 3,397 times, and claimed 3,874 lives, both dead and missing in 2018. The impact of a disaster varies widely, ranging from damage, loss, to causing casualties. There are three important things to know about how disasters relate to health

First, according to the World Health Organization (WHO), a disaster is any incidence that can end human life or cause a health-related hazard and requires an immediate response with adequate personnel and resources, preparedness, planning, response and recovery by many agencies, including health care institutions (Hammad et al., 2011) Second, hospitals must increase their capacity to respond effectively to disasters; Large-scale disasters have a very negative impact on hospitals. Third, as the largest group of health care providers, nurses play an important role in treating the injured and their families holistically throughout the four stages of disaster management (Al Harthi et al., 2020).

Emergency services are part of an effort that must be carried out quickly and precisely in the incidence of a disaster. Emergency actions are carried out in an effort to save the victims and the implementation of emergency services is one of the priority factors to prevent and or reduce the occurrence of death, disability and the spread of an infectious disease. Individual awareness of disaster preparedness can affect their actions in protecting and saving themselves from various kinds of hazards caused by disasters (Istiqomah, 2015).

Preparedness is a series of activities carried out by a person in anticipating a disaster which is organized through appropriate and efficient steps (UU RI No. 24 of 2007). Meanwhile, preparedness according to IDEP (2007) is an effort and effort in conducting a need assessment to deal with emergency situations and identifying the required resources. Preparedness in the health sector according to the Ministry of Health of the Republic of Indonesia (2006) aims to: (1) Minimize casualties/life (2) Reduce the suffering felt by victims (3) Prevent the emergence of possible post-disaster health problems and (4) Facilitate and expedite emergency response efforts quickly in the recovery process.

In disaster preparedness, nothing more important than the readiness of health workers. Each disaster can strike at any time and preparation for this incidence is health care. Nurses as one of the largest groups of health care providers play an important role in all aspects of providing health care for patients and their families, especially during disasters (Al Harthi et al., 2020). In holistic disaster preparedness, nurses must be involved in preparing, activating plans, and educated with disaster management (Goodwin Veenema, 2018). Some literature has discussed the role of nurses in the preparedness stage but needs to be reviewed further based on its implementation, both in the student and clinical sphere (Wand et al., 2015; Goodwin Veenema, 2018).

The purpose of this review is to identify the disaster education programs to prepare nursing staff for preparedness in both institutional and acute settings.

METHOD

The literature review methodology that is suitable to be used in this literature study was a narrative review because of the general research question, and the research objective was to get an overview. This review used narrative review guidelines according to (Green et al., 2006). Narrative review included a summary, and didn't have a specific analytical method (Goodman, 2016). Therefore, the articles included in this review were only summarized and analyzed due to time efficiency. Although narrative reviews have shortcomings, the materials used must be trusted, and only taken from reliable sources because narrative reviews are based on other research so, the articles produced must be reliable and honest.

The data searching used electronic data sources, such as PubMed, ScienceDirect, and Garuda Portal. The PICO technique was used to make it easier for getting the appropriate literature in conducting a literature search. The population (P) in this literature study were nurses, both nursing students and nurses, intervention (I) was in the form of a disaster education program, comparison (C) was not used, and the outcome (O) determined was nurse preparedness.

Based on the technique ofliterature search, the keywords used in the English database (PubMed, ScienceDirect) were, "nursing education" and "disaster preparedness" while the keywords used in the Indonesian database (Portal Garuda) were nurse education, and pre-disaster. . Keywords are combined with boolean operators. The data obtained will be selected based on the inclusion criteria, namely full paper with publication year 2011-2021, open access, publication in English and Indonesian, while articles that are not relevant to the research topic and duplicated will be excluded.

RESULTS AND DISCUSSION

The articles obtained are sorted to get appropriate articlebased on literature study carried out. The sorting of articles is done by adjusting the inclusion and exclusion criteria that have been set.

The inclusion criteria set are articles that discuss disaster education programs to prepare nursing staff preparedness both in institutional and acute settings, the year of publication of the article (2010-2020), the sample used is nursing staff, articles in Indonesian or English, full text availability , published in a sinta accredited journal or indexed by Scopus.

The exclusion criteria in this literature study were articles that did not include the volume, number, and publisher of the article.

The data found collected will be extracted into a table and then the data will be analyzed using an inductive method of content analysis where the publications obtained

will be grouped into several sub-groups, and critical analysis on the publications content which then has a pattern of associations with the discussion. From the content analysis, there were 2 main sub categories, namely disaster education programs for nursing students, and disaster education programs for clinical nurses.

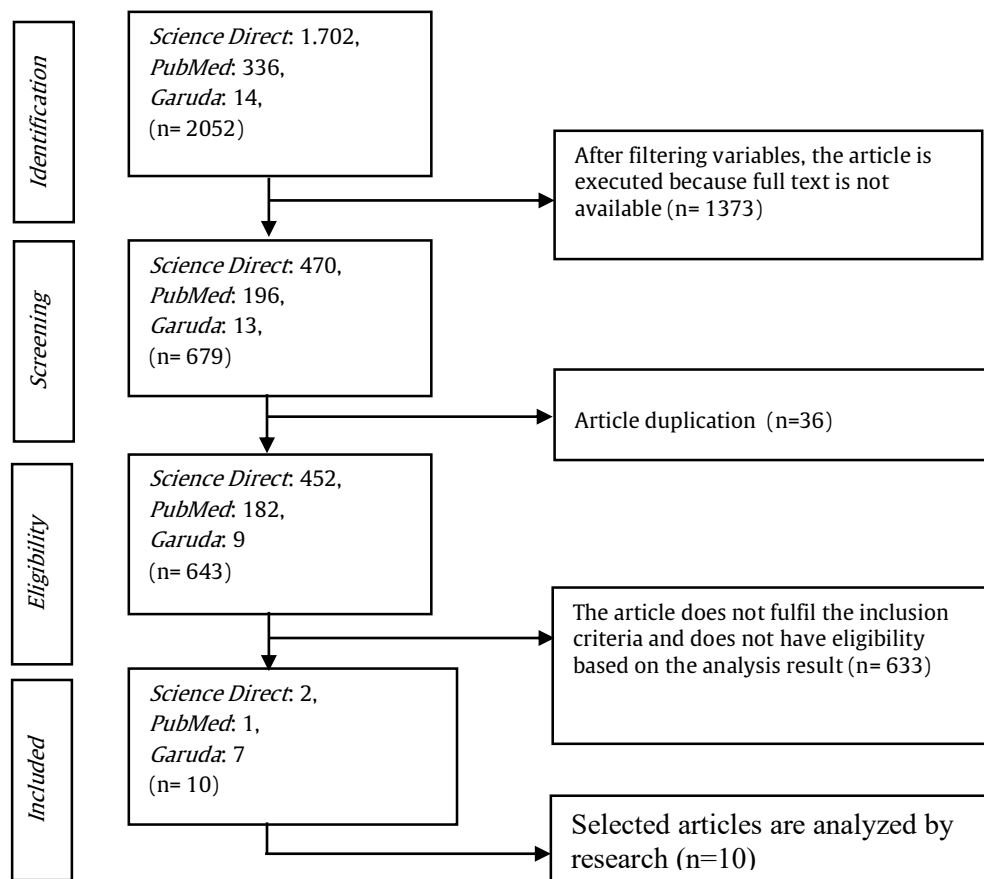The following is a flow chart for sorting articles obtained according to topic of the literature study carried out:

Identification
Science Direct: 1.702,
PubMed: 336,
Garuda: 14,
(n= 2052)

After filtering variables, the article is executed because full text is not available (n= 1373)

Screening
Science Direct: 470,
PubMed: 196,
Garuda: 13,
(n= 679)

Article duplication (n=36)

Eligibility
Science Direct: 452,
PubMed: 182,
Garuda: 9
(n= 643)

The article does not fulfil the inclusion criteria and does not have eligibility based on the analysis result (n= 633)

Included
Science Direct: 2,
PubMed: 1,
Garuda: 7
(n= 10)

Selected articles are analyzed by research (n=10)

Chart 1. Flowchart of Article Selection Process

The data found collected will be extracted into a table and then the data will be analyzed using an inductive method of content analysis where the publications obtained will be grouped into several sub-groups, and critical analysis on the content of the publications which then has a pattern of associations with the topic of discussion. From the content analysis, there were 2 main subcategories, namely disaster education programs for nursing students, and disaster education programs for clinical nurses.

Based on the results of a journal search, 10 research articles were found in Turkey (n = 1); Indonesia (n = 7); Italian (n = 1); Australia (n=1). The number of samples used has a range of 5 - 1,758 respondents. The findings were stated in tabular form. Synthesis of research articles that have the main focus of discussion, namely (1) research, (2) methods, (3) samples, (4) results, and (5) research conclusions. The intervention used was based on sources, namely the use of modules according to national and international standards (Kalanlar, 2018); K3 and MFK

programs (Samosir, R. V., Suroto, S., & Kurniawan, 2015); evaluation instruments (Arrigoni et al., 2017); Education and training (Sonneborn et al., 2018); (Lestari & Priambodo, 2017); and Basic Life Support and Basic Traumatic Coronary Life Support (Simbolon & Situmorang, 2017).

According to WHO, any occurence that can end human life or cause a health-related hazard and requires an immediate response with adequate personnel and resources, preparedness, planning, response and recovery by many agencies, including health care institutions (Hammad et al., 2011)

In disaster preparedness, nothing is more important than the readiness of health workers. Any disaster can strike at any time and preparation for this event is health care. Nurses as one of the largest groups of health care providers play an important role in all aspects of providing health care for patients and their families, especially during disasters (Al Harthi et al., 2020). Nurses need to prepare themselves starting from being a student to being a nurse.

Table 1
Disaster Preparedness Education Program For Nursing Staff

No	Title and Authors	Research Design	Sample	Intervention	Result	Conclusion
1	*Effects of disaster nursing*	Quasi-experimental design with	75 people in the control group and 75 in the	The use of the "Disaster Nursing and Management" module	All students in the intervention group scored with a 90%	The use of modules on disaster nursing

	education on nursing students knowledge and preparedness for disasters (Kalanlar, 2018).	2-session questionnaire	intervention group	on nursing faculty students from 2 universities located in Ankara City, Turkey.	success rate in the final module exam. The data analysis used ANOVA showed a significant increase in the knowledge and preparedness of students in the intervention group for disasters, disaster nursing management, which was relatively higher than in the control group.	and management can be utilized to supply undergraduate students becoming effective students in the process of disaster preparedness, response, recovery and rehabilitation once they graduate.
2	Analysis of knowledge level of inpatient nurses on patient evacuation systems in readiness to face a fire disaster at the dr amino gondohutomo regional mental hospital, Central Java province (Rotua dkk., 2021)	Qualitative	5 nurses and 2 hospital section chief in Indonesia	Purposive sampling was taken from the implementing nurse and the section chief at the hospital	The journal findings, the OSH and MFK programs owned by hospitals have some tasks, one of which is disaster preparedness. The hospital always routinely and periodically conducts patient evacuation training for employees once a year and in collaboration with relevant agencies. The patient evacuation system has been disseminated through printed and electronic media information. All nurses have participated in patient evacuation simulations more than once.	The hospital has implemented the applicable regulations regarding disaster preparedness through regular education and training involving the relevant sectors. Patient evacuation simulations for room nurses are always carried out in an effort to increase the knowledge and experience of nurses in the hospital environment. The facilities and infrastructure of the evacuation system are adequate.
3	*Nursing students' clinical competencies: a survey on clinical education objectives,* (Arrigoni et al., 2017)	Observational explorative study with convenience sampling	1.758	Clinical internship system implemented: 461 for the first year, 471 for the second year and 826 for the third year at the School of Nursing, University of Pavia, Italy	The level of heterogeneity and the intrinsic complexity of the University of Pavia education system, characterized by clinical settings with different clinical levels (Research hospitals and other traditional hospitals) offering different training levels.	The use of self-evaluation forms for clinical learning makes it possible to observe the timing of all student training activities. Educational models structured in this way allow students to develop their capacity for critical thinking. For educational activities, such as The self-

						evaluation form is an ideal instrument for identifying areas in need of improvement. This exploratory study, which is carried out through a form of self-evaluation, is the first step towards the development of an educational program that is more uniform and easily traceable within the academic system.
4	*Disaster education and preparedness in the acute care setting: A cross sectional survey of operating theatre nurse's disaster knowledge and education.* (Sonneborn et al., 2018).	Cross-sectional study with the data collection by using survey tools	53 surgical assistant nurses, 51 registered nurses and 2 Australian registered nurses	Interventions on surgical assistants, 51 registered nurses and 2 Australian registered nurses	A survey of 53 operating room nurses identified that only a few had previous disaster experiences (19.9%). The majority of respondents were aware of disaster management policies (Code Brown policy) (94.1%), reporting lines, and triage (80.4%). Nevertheless, a significant number of nurses (50.9%) stated that they "phoned the office to see if (they needed) additional assistance" compared to 43.4% of respondents "waiting to be contacted by the manager/coordinator " such as policy. Lastly, general knowledge of disaster nursing among staff was very less; an average of 1.79 (SD = 1.20) correct answers out of a possible 7.	Disaster education and disaster training methods become specific to the roles required by nurses and all staff during disaster activation; Training is preferred even though face-to-face education is practical.
5	Analysis of nurse preparedness in providing services respiratory system emergencies due to natural disasters in the work	The research design is a qualitative descriptive survey.	40 nurses	The nurse of the disaster response team at the working Area of Health Center in Aceh Tamiang District	The study result illustrated that the disaster response team nurses have good knowledge in disaster response by 65%, have a positive attitude of 82.5%, and have skills in carrying out emergency	The conclusion stated that emergency education and training can provide strong support for nurses as awareness and disaster preparedness in

	area of the Deli Serdang District Health Office. (Nagoklan & Paska, 2017)				procedures by 55.0%.	providing emergency services.
6	Readiness of emergency nurses at the Bandung Regency General Hospital in dealing with disasters. Lestari, (2017)	Quantitative descriptive	33 Nurses	Nurses on duty in the ER Soreang Hospital and Majalaya Hospital.	The results showed that as many as 28 nurses (85%) had a moderate level of readiness in facing disasters. The highest mean value obtained (3.16), the lowest (2.80) was a moderate level of readiness, which means that the nurses were quite ready to deal with it even though there were several other dimensions that are still lacking, such as handling special populations.	The conclusion showed that nurses have moderate readiness in dealing with disasters. The result based on mean implied that the greater the value in each dimension, the more prepared that dimension is to face disasters.
7	The Relationship between Individual Characteristics and Nurses Preparedness in Public Health Center Nurses when Facing Flood Disasters in Bandung Regency Al Fatih, H. (2019).	cross-sectional design of descriptive statistics and Spearman Correlation	46 respondents	Eight flood-prone Public Health Centers in Bandung Regency were given intervention using the convenient sampling method	The results showed that the health center care preparedness was at a moderate level of 78.3% and a high level of 21.7%. There was a significant relationship between the age of nurses with disaster preparedness with test results (rs= 0.309, p = 0.037) and length of work with disaster preparedness with test results (rs = 0.325, p = 0.027)	The efforts to reduce and decrease morbidity and mortality, through training and education on disaster preparedness for nurses at Public Health Center, especially young nurses who do not have experience in disaster management.
8	Factors influencing disaster preparedness in Dr. Zainoel Abidin Regional Hospital Banda Aceh. (Husna, 2012)	Exploratory descriptive with cross sectional study design	Total sampling of 30 people	Respondents were inventoried based on their experience of attending emergency education and training on disaster preparedness.	The results obtained (63.3%) have a good level of knowledge, supportive attitude (83.3%), following policies and guidelines (73.3%), preparing plans for emergencies (73.3%), making systems disaster warning (70%), and efforts to mobilize resources (86.7%).	Disaster preparedness factors in the Emergency Room of the dr. Zainoel Abidin Regional Hospital Banda Aceh based on all of its subvariables is in the good category ranging from Knowledge, attitudes, policies, emergency response plans, disaster warning systems, and how to mobilize resources in disaster

					preparedness.
9	An Overview of Nurses' Knowledge Levels of Disaster Management in Lampung Province.

(Thongkrajai, 2019) | Descriptive analysis | 136 respondents | The study was conducted in three hospitals and one Public Health Center in Lampung Province | The results showed that the knowledge level of nurses was mostly female as many as 76 people (64.7%), with an age classification of 30-40 years as many as 60 people (44.1%), having the last education level of DIII Nursing as many as 71 people (52%). The research results illustrate that the knowledge level of respondents included in the good category as many as 63 people (46.3%). | Based on the study result, it can be concluded that nurses in hospitals and health centers must be supported with good knowledge and skills related to disaster management for reducing risks that occur during disasters. Training and skills are carried out from basic to advanced levels supported by adequate infrastructure, either for training or for the work setting. |
| 10 | Cognitive Emergency Nurses With Intensive Care In The Disaster Response Phase.

(Hayaturrahmi & Husna, 2018) | Explorative descriptive | 185 Respondents | The study was conducted by using total sampling in the emergency room (n=57) and intensive care (n=128). | The results obtained the mean value of cognitive emergency room nurses was 71.01 with SD=9.54 having a good category, and in the intensive care room was 66.41 with SD=8.76 with a poor category. | The cognitive view of nurses who served in the emergency room of the disaster response phase was in a good category, while the nurses in the intensive care room were in the poor category. To address this, a hospital policy is needed to improve knowledge and skills of disaster preparedness in order to improve management, communication and legal ethics of emergency response to help victims or patients. |

Disaster Education Program for Nurses

When a disaster occurs, members of the nursing profession are often the first to respond to the situation. Thus, disaster preparedness training of all health care professionals is essential for maintaining an efficient health care system in the midst of a disaster, especially given the potentially widespread nature and complex environment of these types of events (Kalanlar, 2018).

According to Wiyadi & Rahman, (2020), stated that nurses in the emergency room had a moderate level of alertness based on the results of the 8 readiness dimensions assessed. These include incident instruction systems, victim triage, epidemiological systems, surveillance, prevention

efforts, communication, psychological conditions, population and access to resources.

From the 8 dimensions assessed, there is one dimension that is still lacking, even though training has been carried out, namely on the special population dimension, because certain populations in an emergency are a priority that requires attention. However, in reality there is still a delay and lack of preparedness in fulfiling the needs for special populations so, the handling of special populations during disasters can fail and have an impact on disability, illness and even death. So it is necessary to increase a more detailed understanding of special populations, for example by providing training for nurses on handling certain populations during disaster.

This showed that nurses in applying the implementation of nursing are less than optimal, reinforced by research by Anam et al., (2015) which states that nurses do not have the right readiness for disaster management with a result of 97%.

In addition, based on the research of Simbolon & Situmorang, (2017), it was found that there are three most important domains owned by nurses in providing services in emergency conditions, namely the domains of knowledge, attitudes, and skills. From the study result, it was found that most nurses had knowledge in the good category and the category of positive attitude, but there were still some nurses who were not skilled in carrying out emergency actions. Therefore, it is needed a training in improving the competence of an emergency nurse, such as training in the Integrated Emergency Management System (IEMS), Basic Life Support (BLS) training and Basic Trauma/heart training in life support (BTCLS).

According to research conducted by Sonneborn et al (2018), disaster training in surveyed hospitals is included in the mandatory online annual 'Emergency Training', which includes responses to quiz questions for internal incidence such as fires, information technology malfunctions, bomb threats, or patient aggression. Code Brown activation training is also conducted through exercise simulations by individual departments or by specialist disaster training courses, such as the Major Incident Medical Management & Support (MIMMS) course, sought after by relevant and interested staff, but not available to all nursing staff.

The quality of disaster education provided to nurses is a determinant of nurses' willingness to participate, feel confident in conducting their roles and performance in responding to disasters. Disaster preparedness education for acute care departments such as emergency rooms, intensive care and operating rooms. The purpose of developing such a framework for each acute care department is to reduce the burden of developing and establishing disaster education programs in individual departments and organizations and to strengthen the disaster preparedness resources available for dissemination to acute care settings across institutions and countries.

According to research conducted by Samosir, RV, Suroto, S., & Kurniawan, (2015), it was found that the provision of material on the patient evacuation system for inpatient nurses was carried out at least once a year and at least participated in the training material for three times within a period of time work. The material purpose is expected to provide an initial understanding to new nurses and at the same time to old nurses in reminding the importance of life safety and disaster management. Knowledge has a significant relationship with the level of preparedness for disaster management due to fire, because one's knowledge is the result of a sensing process, one of which is influenced by education.

Disaster Education Program for Nursing Students

Disaster preparedness is an important element of educational institutions owned by a health professional graduate. Thus, the main competence of disaster preparedness as a professional requirement must be established and can be functioned effectively through an adequate educational process in accordance with the certainty

In 2015 the Association of Indonesian Nurse Education Center (AINEC) established a curriculum for the Bachelor of Nursing program. This curriculum contained about disaster nursing. The International Council of Nursing (ICN) module on disaster nursing competencies was also used in Turkey with a good success rate (Kalanlar, 2018). In East Java, the content of the disaster nursing module was implemented in the seventh semester of the undergraduate nursing program. However, the experiences of nursing students in middle-income countries, such as Indonesia, were under-represented in the disaster literature for undergraduate students compared to master's programs, which get more exploration from training, seminars, and workshops (Hindriyastuti et al., 2019).

The learning model by using the tutorial group education model is ideal and effective in developing students for critical thinking, clinical reasoning and decision-making skills in accordance with the desired competencies. Educational arrangements with tutorial groups begin with reviewing the educational program before moving on to an internship. This group tutorial process gradually creates a more conducive environment for exchanging ideas and assessments and identifying areas for improvement (Arrigoni et al., 2017). This is also in line with the research of Constantia et al., (2017) which stated that the use of the tutorial group education model produces a number of results that should be expected from nursing graduates which can be measured and determined by the knowledge, skills and talents of nursing students.

According to research conducted by Kalanlar, (2018), it was revealed that nursing students have limited knowledge about disasters and have different views about what will be covered in the nursing study program for the post-disaster process, the fact that disaster management is a distinct, multi-dimensional and disciplinary field of study is ignored, legislation related to disasters does not have a general framework containing activities from all phases of disaster management and lastly disaster nursing should be included in the study program from all nursing faculties in Indonesia.

CONCLUSIOAN AND SUGGESTION

Improving nurse preparedness in the field is by providing education and training for IEMS, BLS and BTCLS on how to deal with a disaster and then implementing it directly, while nurse preparedness in the nursing student sphere is by using ways to improve education both with learning modules, evaluations, and peer groups discussion that is included in the curriculum and later on, the student will be able to improve the skills that have been learned when the student has become a nurse by participating in disaster preparedness training.

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Conflict of Interest Statement

The authors declare that there is no potential conflict of interest in connection with the writing and publication of this article.

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