VM VIA MEDICA

ORIGINAL ARTICLE

DISASTER PREPAREDNESS ASSESSMENT IN EMERGENCY DEPARTMENT: A CROSS-SECTIONAL STUDY

Ilfa Khairina[1] , Nelwati Nelwati[1] , Esthika Ariany Maisa[1] , Dally Rahman[2]

[1]Department of Basic Nursing, Faculty of Nursing, Universitas Andalas, Padang, Indonesia
[2]Departement of Medical Surgical and Emergency Nursing, Faculty of Nursing, Universitas Andalas, Padang, Indonesia

ABSTRACT

INTRODUCTION: The increasing incidence of natural and non-natural disasters has become a new challenge for nurses in the emergency department (ED). The efficiency of health services provided to the community is needed to optimize disaster preparedness management by nurses in ED. This study aimed to assess the level of disaster preparedness assessment among emergency nurses in Padang of Indonesia.

MATERIAL AND METHODS: A cross-sectional study design was conducted in three emergency departments: a teaching hospital, a public hospital, and a referral hospital in Padang of Indonesia. Fifty nurses in ED were selected using a purposive sampling technique. A self-administered questionnaire was used to measure the sociodemographic of nurses. Meanwhile, the Emergency Preparedness Information Questionnaire (EPIQ) was used to measure emergency nurses' disaster preparedness assessment. Data were analyzed using independent T-test and One-way ANOVA.

RESULTS: The finding of this study indicated there were no differences in the level of assessment preparedness for disaster among nurses by nursing education. However, there were differences in the level of assessment preparedness for disaster among nurses by places of work, especially sub-dimension familiarity with isolation, quarantine, and decontamination (p = 0.045), psychological issues (p = 0.029), and communication and connectivity (p = 0.018).

CONCLUSIONS: Familiarity is associated with isolation, quarantine, decontamination, psychological issues, and communication and connectivity among nurses in ED. Therefore, the hospital can utilize the planning and disaster-based programs services used as an instrument to adjust for potential disasters in the hospital region. Furthermore, nurses' self-efficacy can increase psychological issues to optimize disaster knowledge and skill.

KEY WORDS: emergency assessment; disaster preparedness; nurses

Disaster Emerg Med J 2023; 8(3): 134–140

INTRODUCTION

In 2020, Indonesia is faced with non-natural disaster conditions which also attack other parts of the world [1]. Currently, in Indonesia, there has been another increase in cases of COVID-19 cases. As of November 2022, there was an increase of 6,179 cases in Indonesia during November 2022 [2]. Not only non-natural disasters such as COVID-19, Indonesia is also under threat of natural hazards due to Indonesia's geographical condition, which is a potential disaster zone. Based on National Agency for Disaster Management of Indonesia or Badan Nasional Penanggulangan

Bencana (BNPB) data, during 2022, Indonesia experienced 3,208 natural disasters with 220 fatalities, and as many as 4,524 thousand people were displaced and impacted [3]. On the others hand, disasters and emergencies can be caused by human factors, microorganisms, climate change, and geology. Geographically, Indonesia is situated between two large continents and two oceans and is located on the equator, making Indonesia has a tropical climate with extreme weather conditions [4, 5].

BNPB in 2018 states that almost 98% of disaster events in Indonesia are hydrometeorological disasters such as tornadoes with a total of 90 incidents, 67 floods, and 45 landslides. Hydrometeorology is a disaster influenced by weather and climate, such as increased rainfall, hurricanes, floods, and landslides. In addition to hydrometeorological disasters, some earthquakes and tsunamis threaten Indonesia. This condition made Indonesia vulnerable to earthquakes due to the shift of the plates [4].

Padang is the capital city of West Sumatera Province. Padang is located on the coast, in the form of hills, directly facing the Indian Ocean, and Padang is in Mentawai Megathrust. This condition causes Padang to be vulnerable to floods, extreme weather, abrasion, earthquakes, tsunamis, forest and land fires, droughts, landslides, and other geological disasters. In 2019, nearly 60 drought events were recorded in Padang City, followed by 20 coastal abrasions and extreme weather, which increased until 2019. In 2020 were recorded 14 flood events and 17 landslides [6].

Many people who suffer and evacuate due to disasters also bring post-disaster health problems. Nurses can carry out triage or act as coordinators of health services, as information providers, and counselors [6]. To carry out these roles and tasks, nurses' understanding of knowledge, skills, and preparedness in managing disasters is as optimal as possible [7].

The many groups of people affected by natural hazards and non-natural disasters also impact the health system. In Indonesia, the health service system must adapt to existing conditions by coordinating across agencies [1]. Based on minimum service standards by Regional Disaster Management Agency (BPBD), disaster management is coordinated at the sub-district level. So disaster information services are sub-district based. Disaster data are divided into natural disasters, non-natural disasters, and social disasters [6]. In the community-based health facilities, one of the forms of health efforts carried out by the Padang Health Office is preventing the occurrence of non-communicable diseases (NCDs) through health screening activities/early detection of PTM risk factors, intervention/modification of NCDs risk factors [6].

Preparedness is a series of activities carried out to anticipate the impact of disasters through organization and appropriate steps [8]. Disaster preparedness management and the readiness of nurses in the emergency room in dealing with disasters are integrated into each other [9]. The hospital as a unit in the health care system, has a role in a disaster, one of which is to maintain the function of the hospital optimally and normally when the disaster occurs [10]. Hospitals are health facilities with a high risk of responding to disasters that can increase the severity of injuries or even death if not implemented optimally. Nurses are health workers who are widely available in hospitals. As many as 33% of the total nurses are estimated to be involved in disaster management [11].

Health Office manages disaster prevention and preparedness efforts at the community level [11]. Nurses as one of health workers in the hospital, have emergency skills in hospital settings, not disaster settings. So it can be chaos in the health system in hospital services when a disaster occurs. This condition happened when the non-natural disaster of the COVID-19 Pandemic occurred when nurses faced non-natural disaster situations without knowledge [12].

In the study of Nekoie-Moghadam et al. in 2016 hospital disaster preparedness consists of several indicators, namely procedures and protocols, command and control, coordination, communication, triage, surgical capacity, logistics, human resources, safety, and security, structural and nonstructural resilience, training and exercise, evacuation, transportation, and recovery [10]. Emergency nurses are one of the first health services to respond during a disaster. Emergency Preparedness Information determines the familiarity and competence of emergency room nurses in disaster conditions, such as triage and first aid, detection of biological agents, access to critical resources and reporting, incident command system (ICS), isolation, quarantine and decontamination, psychology issues, epidemiology, and clinical decision making, and communication and connectivity [9].

Nursing care in the Emergency Department (ED) is essential in prevention, preparedness, and recovery response. Nurses have an important role in

reducing the impact of a disaster. In the early stages of a disaster, nurses must make life-saving efforts. The impact of disasters on health service providers such as hospitals also affects health services to the community. However, good quality disaster management depends on the hospital's preparedness, in this case, emergency nurses' preparedness in a crisis. Emergency preparedness in dealing with disasters can be identified in planning, knowledge, capabilities, infrastructure, and training of relevant resources as part of the level of disaster preparedness [13]. The readiness of emergency nurses in dealing with disasters is in line with disaster preparedness. Emergency assessment for disaster preparedness has sub-dimensions: triage knowledge, detection of biological agents, reports, isolation, quarantine and decontamination, psychological issues, epidemiology and clinical decision-making, communication, and connections [9]. This study aimed to assess the level of disaster preparedness assessment among emergency nurses in Padang of Indonesia.

MATERIAL AND METHODS
Study design and setting
This research is a descriptive-analytic study with a cross-sectional approach. This research was conducted in three emergency departments of three hospitals in Padang: A teaching hospital, a public hospital, and a referral hospital. The hospitals were selected based on the Padang City Government, which stated that these three hospitals were disaster referral hospitals in Padang City in 2020. The data collection time was due to a COVID-19 outbreak in Padang in June–September 2020.

Participants
The sampling method used a purposive sampling technique with inclusion criteria. The inclusion criteria were nurses who worked in the emergency department during the COVID-19 outbreak, the 1st level disaster nurses, and nurses who participated in the disaster team in their hospital. The population of this study initially came from three ED in three hospitals were 57 nurses. The respondent who agreed to participate in this study filled in the agreement to the informed consent in Microsoft Form. All of the respondents filled out questionnaires, but 7 questionnaires were invalid. To ensure all 1st level disaster nurses in three hospitals had equal opportunities to participate in this study. So as

many as 57 respondents consist of 13 respondents from a public hospital, 37 from a referral hospital, and 7 from a teaching hospital. Furthermore, 50 respondents were followed up in data analysis. The research team came to the three hospitals to seek approval from the head of the Emergency Department (ED). The researcher team distributed the Microsoft Form instrument link to each respondent.

Instrument and data collection
Sociodemographic data were collected using a questionnaire to identify age, gender, places of work, and education level. The assessment of nurses' disaster preparedness in the emergency department was measured using Emergency Preparedness Information Questionnaire [9, 14–16]. The instrument was translated into Indonesian and used the validity and reliability test values contained in the original and adapted from Giorgino, et.al study in 2015 [9].

Emergency Preparedness Information Questionnaire (EPIQ) determines the relationship of independent variables including triage and first aid, detection of biological agents, access to critical resources and reporting, incident command system (ICS), isolation, quarantine and decontamination, psychological problems, epidemiology and clinical decision-making, and nurse communication and connectivity regarding the disaster measured at the same time. This instrument aims to the measured familiarity of nurses with disaster preparedness in the emergency department [15]. The instrument used 5 Likert Scale, 1 = I have never heard of this topic, 2 = I have heard the terminology but have no knowledge of this information, 3 = I know the terminology but have limited knowledge of this topic, 4 = I am familiar with this topic but not extremely proficient in all subject matter, 5 = I am very familiar with this topic; I am an expert in proficiency on this topic [9]. Interpretation of EPIQ instruments were 1–12 slightly familiar, 13–24 familiar neutral, 25––36 somewhat familiar, and 37–48 very familiar [13].

Ethical consideration
This study was approved by the Medical Research Ethic Committee of M.Djamil Hospital with number LB.02.02/5.7/459/2022.

Data analyses
This research used multivariate analysis test independent t-test, and One-Way ANOVA using statistics analysis software.

Table 1. Characteristic respondent

Variable	Category	(N)	(%)
Gender	Male	9	18
	Female	41	82
Nursing education	Nursing diploma	25	50
	Registered nurse	25	50
Hospital	Referral hospital	23	46
	Public hospital	17	34
	Teaching hospital	10	20
Age (mean, SD)		(35.18; 5,546)	

N (number of respondents) — 50 respondents

Table 2. Level of emergency disaster preparedness among ED nurses in Padang of Indonesia

Level of emergency disaster preparedness	(N)	(%)
Slightly familiar	1	18
Familiar neutral	4	72
Somewhat familiar	36	8
Very familiar	6	2
Total	50	100

N (number of respondents) — 50 respondents

Table 3. Differences in nurses' disaster preparedness assessments based on their education level

The factor of Preparedness for a disaster	Nursing Education		t-value	p-value	95% C.I for a difference of mean
	Diploma mean	RN (Mean)			
Familiarity with triage and basic aid	3.89	3.85	0.791	0.852	(−1.406–1.166)
Familiarity with biological agent detection	3.76	3.43	0.950	0.170	(−4.007–0.727)
Familiarity with accessing critical resources and reporting	3.80	3.84	0.125	0.887	(−0.525–0.605)
Familiarity with the Incident Command System (ICS)	4.94	4.59	0.974	0.212	−3.627–0.827
Familiarity with isolation, quarantine, and decontamination	3.88	3.64	0.334	0.392	−0.799–0.319
Familiarity with psychological issues	3.98	3.64	0.811	0.202	−1.738–0.378
Familiarity with epidemiology and clinical decision making	3.28	3.56	0.682	0.377	−0.352–0.912
Familiarity with communication and connectivity	4.08	3.76	0.447	0.265	−0.891–0.251

RESULTS

Table 1 presents the characteristic of respondents of this study, and showed that the mean of the respondent was 35. 18 years old, the majority were women, half of the respondents were registered nurses, and 46% came from a referral hospital.

Table 2 showed the emergency disaster preparedness among ED nurses in Padang of Indonesia. Most respondents have a neutral familiarity to assess disasters (72%), and 18% of respondents are slightly familiar with assessing the disaster.

Table 3 shows the results of the independent t-test, which aims to identify differences in nurses' disaster preparedness assessments based on their education level. Table 3 showed that there were no significant differences in nurses' assessment in each dimension of disaster preparedness, which is indicated by the p-value > 0.005. In addition, respondents indicated an average sub-dimension of disaster preparedness at each level of education, as much as 3.95 for diploma education and 3.78 for registered nurse education. All no means, there

was a significant difference for most of EPIQ dimensions except Familiarity with Accessing Critical Resources and Reporting, Familiarity with Epidemiology and Clinical Decision Making, and Familiarity with Communication and Connectivity. This finding showed nurses with a diploma degree were more familiar with the sub-dimensions as compared to registered nurses (RN). Because it could be the subject and competencies of disaster management are not being emphasized by diploma nurses and registered nurses. Both of them are at the 1st disaster nurses.

Table 4 showed the difference in the level of preparedness among nurses by place of work. The one-way ANOVA showed differences in the assessment of disaster preparedness by nurses in the ED. The differences especially in the sub-dimensions of Familiarity with Biological Agent Detection (p-value 0.014), Familiarity with Communication and Connectivity (0.018), Familiarity with Psychological issues (p-value 0.029), and Familiarity with Isolation, quarantine, and decontamination (p-value 0.045).

Table 4. Differences in level of preparedness among nurses by place of work

The factor of Preparedness for a disaster	Place of Work (Hospital)			F	p-value
	Referral Hospital	Regional Public Hospital	Teaching Hospital		
Familiarity with triage and basic aid	11.83	11.53	11.30	0.206	0.814
Familiarity with biological agent detection	19.22	18.24	14.70	4.690	0.014
Familiarity with accessing critical resources and reporting	4.04	3.71	3.50	1.251	0.296
Familiarity with the Incident Command System (ICS)	20.35	18.35	17.30	2.670	0.080
Familiarity with . isolation, quarantine, and decontamination	4.09	3.65	3.20	3.306	0.045
Familiarity with psychological issues	8.35	7.18	6.70	3.815	0.029
Familiarity of epidemiology and clinical decision making	3.39	3.59	3.20	0.391	0.679
Familiarity with communication and connectivity	4.35	3.59	3.50	4.407	0.018

F — F test is used to ascertain the combined (simultaneous) impact of the independent factors on the dependent variable

DISCUSSION

The study indicates that nurses working at the referral hospital were more familiar with disaster preparedness factors than those working in other hospitals. There were indicated the referral hospital in the city of Padang is central, and managed by The Republic of Indonesia Health Ministry. Therefore, nurses working in the ED at this referral hospital are nurses who are more likely to participate in emergencies. In addition, access to information related to disaster knowledge and skills is more often done in referral hospitals. This suggests that large hospitals have committees for disaster prevention, just as is the case in Japan, that committees play an essential role in the method of preparation for emergencies. Some hospitals even have instruments to measure disaster-based services in a state of readiness. Disaster preparedness consists of planning, organizing, equipping, training, exercising, evaluating, and improving [17]. Each stage of disaster management requires protocol and planning. The stages in disaster management are mitigation, preparedness, emergency response during the disaster, and recovery and support after the disaster [10]. Nurses have an essential role in every phase of disaster preparedness management from mitigation, emergency response, and recovery [14].

The focus of preparedness is policies and programs that aim to minimize the impact caused by disasters [10]. The results of this study also have similarities with Baker's research which shows that there are differences in the location of hospitals with the level of disaster preparedness, namely in hospitals with a high number of visits during the Hajj season, so nurses are very familiar with disaster preparedness assessment [15].

Based on the finding of this study, familiarity with communication and connectivity is a sub-dimension related to disaster preparedness assessment. Appropriate communication can be one of the foundations for health emergency intervention planning, decision-making, and evaluation processes [18].

Psychological aspects often appear when a disaster occurs and in the phase after the disaster. Nurses are expected to screen patients with psychological problems so they do not burden the healthcare system when a disaster occurs [7]. Psychological problems that often arise in disaster preparedness are nurses who feel they are not ready to face disaster situations. They also think some challenges must be faced personally and by their families later when involved in disaster management [19]. The problem is that nurses feel they are not qualified enough to participate in a disaster. Therefore, disaster seminars and training need to be considered to update the disaster potential in each area [20]. Research from Aykan et al. [19] in 2022, that nurses' self-regulation can increase nurse readiness in disaster management. In addition, the psychological aspect is also one of the competencies of 1st disaster nurses [21]. Knowledge and skills related to psychological factors during and after a disaster are essential for increasing awareness so that nurses can provide the best care for the community and themselves [22].

Based on the results of the independent t-test, it was found that there was no difference in education level with the level of disaster preparedness assessment among nurses in the ED. The International Council of Nurses in 2009, explains disaster nurses are not differentiated based on their nursing education

but are distinguished according to authority in managing disasters and hospital policies, regional policies, and experience in managing disasters. Disaster nurse 1st Level Disaster Nurse is a certified professional nurse and a nurse assigned to work a disaster if it occurs [21].

The results of Brewer's research suggest that one of the factors that can be linked to the assessment level of disaster preparedness is disaster experience [23]. This is also in line with ICN in 2009, which suggests that experience in leading disaster management distinguishes the level of disaster nurses. Based on the ICN in 2009 and ICN version 2.0 about core competencies in disaster nursing and nurses who can manage disasters at the unit level are 2nd level disaster nurses, and the 3rd level disaster nurses are nurses who have fulfilled the 1st level, the 2nd level disaster nurses competencies, and have competencies at the national or international disaster level management, or military nurses [21, 24]. Research from Al-Hajj in 2020 suggests that there is a need for Hospital Disaster Emergency Preparedness which is expected to reduce the impact of a humanitarian crisis from a disaster. Build human resources, in this case, nurses and hospital capacity to overcome deficiencies in the health care system [25].

Awareness regarding effective disaster preparedness is by adapting disaster preparedness training and education to the workplace, by providing knowledge to health workers and nurses regarding the response describing the ED and the hospital to an emergency. Hospitals can have a better prepared and more confident workforce [26].

Almost all hospitals have emergency and disaster plans, but not all have programs related to special hazard sub-plans. The hospital may require this to plan and simulate certain potential hazards that the hospital can handle [18]. The finding research of Ali-akbari et al. in 2022, showed that a disaster training program for nursing students has a positive impact on increasing disaster nursing competency [27].

Because this study was conducted in the disaster hospital of Padang by the Padang Government, the finding describes the nurses' assessment of disaster preparedness in the emergency department in Padang of, Indonesia. The advantage of this study was determined nurses' emergency department disaster preparedness at hospital in Padang of, Indonesia. Furthermore, the hospital or health service centers can utilize the findings of this study to develop planning and evaluation instruments for disaster-based services. The programs and policies related to disaster-based services are appropriate to the hospital's level, such as teaching hospitals, public region hospitals, and referral hospitals. On the other hand, nurses can improve their self-regulation and self-efficacy to optimize their disaster knowledge and skills. But, this study can still be developed in various other regions in Indonesia considering that Indonesia is a country with a high potential for natural hazards and non-natural disasters.

The study involves some limitations. Firstly, the present study has conducted in the government hospital in Padang of Indonesia. The finding can not generalized to other hospitals in West Sumatera. Furthermore, there was no verification to measure the emergency disaster competencies of ED nurses.

CONCLUSIONS

We can conclude that nursing education has no significant differences in assessing disaster preparedness, but places of work have. Sub-dimensions include isolation, quarantine, decontamination, psychological issues, and communication and connectivity. Therefore, the hospital can utilize the planning and disaster-based programs services used as an instrument to adjust for potential disasters in the hospital region. Furthermore, nurses' self-efficacy can increase psychological issues to optimize disaster knowledge and skill.

Article information and declarations

Conflict of interest
None.

REFERENCES

1. Health M of. Penguatan Sistem Kesehatan dalam Pengendalian COVID-19 – P2P Kemenkes RI [Internet]. 2021. http://p2p.kemkes.

go.id/penguatan-sistem-kesehatan-dalam-pengendalian-covid-19 (22.11.2022).

2. Covid-19 Task Force. Situasi COVID-19 di Indonesia (Update per 12 November 2022) _ Covid19 [Internet]. 2022. https://covid19.go.id/artikel/2022/11/12/situasi-covid-19-di-indonesia-update-12-november-2022 (22.11.2022).

3. BNPB BNPB. Geoportal Data Bencana Indonesia [Internet]. 2022. https://gis.bnpb.go.id/ (22.11.2022).

4. BNPB BNPB. BNPB_ Bencana di Indonesia 95% Adalah Bencana Hidrometeorologi [Internet]. 2021. https://www.beritasatu.com/nasional/760305/bnpb-bencana-di-indonesia-95-adalah-bencana-hidrometeorologi (22.11.2022).

5. BNPB BNPB. Info Bencana Januari 2021 [Internet]. 2021. https://gis.bnpb.go.id/arcgis/apps/Cascade/index.html?appid=adb735cf30134c-5cb503c8887a60d424 (22.11.2022).

6. Badan Penanggulangan Bencana Daerah. Badan Penanggulangan Bencana Daerah Tahun 2019-2024 [Internet]. https://ppid.padang.go.id/uploads/audios/ppidpadang_60e5337998514.pdf (22.11.2022).

7. Martono M, Satino S, Nursalam N, et al. Indonesian nurses' perception of disaster management preparedness. Chin J Traumatol. 2019; 22(1): 41––46, doi: 10.1016/j.cjtee.2018.09.002, indexed in Pubmed: 30850325.

8. Seyedin H, Abbasi Dolatabadi Z, Rajabifard F. Emergency nurses' requirements for disaster preparedness. Trauma Mon. 2015; 20(4): e29033, doi: 10.5812/traumamon.29033, indexed in Pubmed: 26839868.

9. Georgino M, Kress T, Alexander S, et al. Emergency preparedness education for nurses. J Trauma Nurs. 2015; 22(5): 240–248, doi: 10.1097/jtn.0000000000000148.

10. Nekoie-Moghadam M, Kurland L, Moosazadeh M, et al. Tools and checklists used for the evaluation of hospital disaster preparedness: a systematic review. Disaster Med Public Health Prep. 2016; 10(5): 781–788, doi: 10.1017/dmp.2016.30, indexed in Pubmed: 27231031.

11. Li HY, Bi RX, Zhong QL. The development and psychometric testing of a Disaster Response Self-Efficacy Scale among undergraduate nursing students. Nurse Educ Today. 2017; 59: 16–20, doi: 10.1016/j.nedt.2017.07.009, indexed in Pubmed: 28917131.

12. Khairina I, Nelwati N, Maisa EA, et al. Nurse preparedness in emergency department during the COVID-19 outbreak; nurse's perspective. J Keperawatan. 2023; 14(1), doi: https://doi.org/10.22219/jk.v14i01.22115 .

13. Salem Sultan AM, Mary PE, Al Grad HE. Emergency nurses readiness for disaster response-an explorative study. Am Res J Nurs. 2017; 4(1): 1–10.

14. Abdelalim F, Ibrahim A. Nurses knowledge, attitudes, practices and familiarity regarding disaster and emergency preparedness – Saudi Arabia. Am J Nurs Sci. 2014; 3(2): 18–25.

15. Ghazi Baker O. Preparedness assessment for managing disasters among nurses in an international setting: Implications for nurses. Int

Emerg Nurs. 2021; 56: 100993, doi: 10.1016/j.ienj.2021.100993, indexed in Pubmed: 33798981.

16. Husna C, Miranda F, Darmawanti D, et al. Emergency preparedness information among nurses in response to disasters. Enferm Clin. 2022; 32(2): 44–49.

17. Nishigami A. Evaluation of the use of the "Natural Disaster Preparedness Scale for Hospital Nursing Departments" tool in Japan. Heal Emerg Disaster Nurs. 2020; 7(1): 1–8, doi: 10.24298/hedn.2017-0002.

18. Ayenew T, Tassew SF, Workneh BS. Level of emergency and disaster preparedness of public hospitals in Northwest Ethiopia: A cross-sectional study. Afr J Emerg Med. 2022; 12(3): 246–251, doi: 10.1016/j.afjem.2022.05.007, indexed in Pubmed: 35795819.

19. Aykan EB, Fidanci BE, Yildiz D. Assessment of nurses' preparedness for disaster. Int J Disaster Risk Reduct. 2022; 68.

20. Sonneborn O, Miller C, Head L, et al. Disaster education and preparedness in the acute care setting: A cross sectional survey of operating theatre nurse's disaster knowledge and education. Nurse Educ Today. 2018; 65: 23–29, doi: 10.1016/j.nedt.2018.02.015, indexed in Pubmed: 29524836.

21. ICN. ICN Framework of Disaster Nursing Competencies [Internet]. Genewa; 2009. http://www.apednn.org/doc/resourcespublications/ICN%20Framework%20of%20Disaster%20Nursing%20Competencies%20ICN%202009.pdf (22.11.2022).

22. Said NB, Chiang VCL. The knowledge, skill competencies, and psychological preparedness of nurses for disasters: A systematic review. Int Emerg Nurs. 2020; 48, doi: 10.1016/j.ienj.2019.100806 , indexed in Pubmed: 31685363.

23. Brewer CA, Hutton A, Hammad KS, et al. A feasibility study on disaster preparedness in regional and rural emergency departments in New South Wales: Nurses self-assessment of knowledge, skills and preparation for disaster management. Australas Emerg Care. 2020; 23(1): 29–36, doi: 10.1016/j.auec.2019.12.005, indexed in Pubmed: 31926956.

24. ICN. International Council of Nurses Core Competencies in Disaster Nursing [Internet]. 2.0. Geneva, Switzerland; 2019. https://www.icn.ch/sites/default/files/inline-files/ICN_Disaster-Comp-Report_WEB.pdf (22.11.2022).

25. Al-Hajj S, Abou-El-Hassan H, Khalil L, et al. Hospital disaster and emergency preparedness (HDEP) in Lebanon: A national comprehensive assessment. Int J Disaster Risk Reduct. 2020; 51: 101889, doi: 10.1016/j.ijdrr.2020.101889.

26. Duong K. Disaster education and training of emergency nurses in South Australia. Aust Emerg Nurs J. 2009; 12(3): 86–92, doi: 10.1016/j.aenj.2009.05.001.

27. Aliakbari F, Heidari M, Moezzi M. Designing a disaster training program and examining its impact on the level of competence of nursing students. Disaster Emerg Med J. 2022; 7(3): 142–149, doi: 10.5603/demj.a2022.0023.