

Familiarity with emergency preparedness and its predictors among nurses and physicians working at public hospitals in east Gojjam zone, northwest Ethiopia

SAGE Open Medicine

Volume 10: 1–8

© The Author(s) 2022

Article reuse guidelines:

sagepub.com/journals-permissions

DOI: 10.1177/20503121221096532

journals.sagepub.com/home/smo



Temesgen Ayenew¹ , Mihretie Gedfew¹ , Abebe Dilie Afenigus¹,
Haile Amha¹ , Henok Mulugeta^{1,2}, Belayneh Mengist³ ,
Bekalu Bewket⁴, Yidersal Hune Melese⁵ , Abraham Teym⁶ ,
Keralem Anteneh Bishaw⁷ and Meseret Yitayew⁸

Abstract

Objective: Emergency preparedness and response operations for all types of catastrophes rely heavily on healthcare facilities and their staff. On the other hand, hospital employees suffer significant gaps in emergency preparedness knowledge and skills when it comes to treating mass casualties. The objective of this study was to assess the nurses' and physicians' familiarity with emergency preparedness and identify the associated factors.

Methods: A facility-based cross-sectional survey was conducted by census utilizing a self-administered questionnaire among all nurses and physicians working in emergency departments in East Gojjam zone public hospitals. The collected data were entered into Epi-data version 4.2 and exported to SPSS 25.0 for further analysis. Frequency, mean, and standard deviation were computed to describe individual and other characteristics of the sample. A simple and multiple linear regression model was fitted to identify factors associated with familiarity with emergency preparedness. An unstandardized adjusted beta (β) coefficient with a 95 % confidence level was used to report the result of the association at a p-value of 0.05 statistical significance.

Results: In this study, a total of 237 individuals completed the questionnaire, yielding a response rate of 94 %. The mean score of familiarity with emergency preparedness was 106.1 ± 31.8 (95% CI: 102, 110.1), with approximately 52.3 % scoring higher than the mean score. Self-regulation ($B=3.8$, 95% CI: 2.6, 5), health care climate ($B=1.4$, 95% CI: 0.4, 2.43) and participation in actual major disaster event ($B=15.5$, 95% CI: 7.8, 23.2) were significant predictors of familiarity.

Conclusion: According to the findings of this study, nurses' and physicians' expertise in emergency and disaster preparedness is inadequate. Previous engagement in actual disaster events, self-regulation, and the healthcare climate were significant predictors of familiarity. As a result, the responsible stakeholders should develop strategy to enhance self-regulation (motivation), job satisfaction of emergency department employees, and drills and hands-on training in mass casualty management.

Keywords

Nurses, physicians, familiarity, emergency, disaster, preparedness

Date received: 21 February 2022; accepted: 7 April 2022

¹Department of Nursing, College of Health Sciences, Debre Markos University, Debre Markos, Ethiopia

²School of Nursing and Midwifery, Faculty of Health, University of Technology Sydney (UTS), Sydney, NSW, Australia

³Department of Public Health, College of Health Sciences, Debre Markos University, Debre Markos, Ethiopia

⁴Department of Nursing, College of Health Sciences, Injibara University, Injibara, Ethiopia

⁵Department of Human Nutrition, College of Health Sciences, Debre Markos University, Debre Markos, Ethiopia

⁶Department of Environmental Health, College of Health Sciences, Debre Markos University, Debre Markos, Ethiopia

⁷Department of Midwifery, College of Health Sciences, Debre Markos University, Debre Markos, Ethiopia

⁸Department of Nursing, College of Health Sciences, Assosa University, Assosa, Ethiopia

Corresponding author:

Temesgen Ayenew, Department of Nursing, College of Health Sciences, Debre Markos University, P.O. Box 269, Debre Markos, Ethiopia.
Email: teme31722@gmail.com



Creative Commons Non Commercial CC BY-NC: This article is distributed under the terms of the Creative Commons

Attribution-NonCommercial 4.0 License (<https://creativecommons.org/licenses/by-nc/4.0/>) which permits non-commercial use, reproduction and distribution of the work without further permission provided the original work is attributed as specified on the SAGE and Open Access pages (<https://us.sagepub.com/en-us/nam/open-access-at-sage>).

Introduction

Every year, approximately 190 million people are affected by emergencies and disasters caused by natural and technological hazards, with over 77 000 lives lost.¹ Conflict affects an additional 172 million people.² Between 2012 and 2017, the World Health Organization (WHO) documented over 1200 outbreaks in 168 countries, including those caused by new or re-emerging infectious diseases. In 2018, the WHO also tracked 352 infectious disease events, including Middle East respiratory syndrome coronavirus (MERS-CoV) and Ebola virus disease (EVD). Furthermore, coronavirus disease 19 (COVID-19) has become a new challenge for healthcare facilities.³ These calamities could be confronted partly with strong emergency preparedness activities by healthcare professionals.

Emergency preparedness is the comprehensive knowledge, skills, abilities, and actions needed to prepare for and respond to threatened, actual, or suspected chemical, biological, radiological, nuclear or explosive incidents, man-made incidents, natural disasters, or other related events. Emergency preparedness and response operations for all types of catastrophes, including natural or man-made disasters, pandemic breakouts, and terrorist attacks, rely heavily on healthcare facilities and their staff. The availability of healthcare services is critical to meet the rise in demand when a disaster or emergency occurs.^{4,5}

Health care workers are increasingly confronted with the constant threat of dealing with natural and man-made disasters. They should treat as many victims as possible who have a chance of survival during emergencies. Preparation ahead of time is critical to ensuring that nurses and physicians have the necessary equipment, know where to go, and know how to keep themselves safe during an emergency.⁶ On the other hand, hospital employees suffer significant gaps in emergency preparedness knowledge and skills when it comes to creating and implementing a plan to treat large numbers of casualties.^{5,7} Based on the reports of studies, training, previous disaster response experience, years of working experience, self-regulation, attendance at disaster simulation training, education level, and perceived health care climate can all affect frontline health care workers' emergency and disaster preparedness.^{8–10}

Nurses and physicians perform most of the tasks in the frontline emergency departments, with caring for disaster victims. Emergency preparedness is a critical competency required by both experienced and new graduate nurses and physicians, regardless of where they work.⁵ Nurses and physicians play an important part in emergency preparedness on a local, state, and national level through planning, community and consumer education, and direct disaster care. Their experience with various aspects of emergency preparedness influences overall hospital disaster preparedness.^{11,12} Although they are critical players in overall hospital emergency and disaster preparedness as a frontline

responder in hospitals, there is a scarcity of information about emergency and disaster preparedness among nurses and physicians in Ethiopia. Therefore, the objective of this study was to assess the nurses' and physicians' familiarity with emergency and disaster preparedness and to identify the associated factors.

Methods

Study design, setting, population, and period

A facility-based cross-sectional study was conducted between March 15 to April 15, 2021, among nurses and physicians working at the emergency departments of purposively selected public hospitals of East Gojjam Zone in the Amhara region, located 300 kilometers northwest of Addis Ababa, the capital city of Ethiopia.

Eligibility criteria

Inclusion criteria. This study included all nurses and physicians working at the selected public hospitals' emergency departments.

Exclusion criteria. Nurses and physicians working in the emergency department on annual leave, sick leave, or have worked for less than 6 months were excluded.

Sample size determination and sampling procedure. An estimated 252 nurses and physicians are working in the emergency departments of the selected hospitals and a census method was used to address them.

Data collection tool and procedure. To collect data from participants, a total of 52 questions were employed, divided into four categories. Individual characteristics questionnaire (7 questions), Emergency Preparedness Information Question (EPIQ) (38 questions), SR survey (3 questions), and Job Satisfaction Questionnaire (4 questions). The first section assesses participants' individual characteristics such as age, sex, religion, profession, level of education, work experience, previous exposure to working in actual major disasters, and work at post-disaster shelters. The Emergency Preparedness Information Question (EPIQ) (potential range 38–190) subscales were added together to assess nurses' and physicians' self-reported familiarity with different aspects of emergency preparedness.¹³ The reliability of the EPIQ assessed using Cronbach's alpha coefficient resulted in a satisfactory internal consistency for all EPIQ. The self-regulation (SR) survey included three questions about self-regulation (motivation) to participate in disaster preparedness activities. It investigates nurses' and physicians' likelihood of participating in community disasters (Likert-type scale 1 = not likely to 5 = very likely), commitment to participation if a large scale disaster occurs (1 = not at all committed

to 5=very committed), and willingness to assume the risk of involvement in a disaster situation such as pandemic or bio-terrorism (1=not likely to 5=very likely)¹³ and the instrument's final section determined the Healthcare Climate as measured by job satisfaction. The Job Satisfaction Questionnaire was used to assess the healthcare climate.^{13,14} It addresses explicitly employment-related questions on a 5-point Likert-type scale, such as overall job satisfaction (1=highly dissatisfied to 5=highly satisfied), likelihood to recommend current employer to colleagues (1=highly unlikely to 5=likely), willingness to accept the same job again (1=would definitely not take the same job to 5=would definitely take the same job), and extent of fairly rewarded considering the responsibilities taken (1=not at all to 5=totally). The data collectors presented the questionnaire to each study participant hand-to-hand after receiving training on the data collection process. The participants completed the questionnaire and returned it to the data collectors assigned to them during the study period.

Study variables

Dependent variable. The level of familiarity with emergency preparedness

Independent variables. Individual differences (age, sex, work experience, previous exposure to work in actual major disasters, work at post-disaster shelters), self-regulation, and health care climate as measured by job satisfaction.

Operational definitions

Emergency preparedness. The comprehensive knowledge, skills, abilities, and actions required to prepare for and respond to chemical, biological, radiological, nuclear, or explosive incidents, man-made incidents, natural disasters, or other related events that are threatened, actual, or suspected.⁵

Familiarity with emergency preparedness. The overall average score on a 5-point Likert-type scale for the Emergency Preparedness Information Question (EPIQ).¹³

Data quality control

A self-administered questionnaire was used to collect data from study participants. The questionnaire was pre-tested on 5% (n ~ 13) of the sample size at Finote Selam Hospital before the actual data collection to ensure its understandability and reliability. Ten data collectors and four supervisors were employed and received one day of training on the study instrument, data collection procedure, and confidentiality ethical principles. Moreover, supervisors were closely monitoring the data collection process from the beginning to the end. The collected data were checked for completeness and relevance daily.

Statistical analysis

The collected data were entered into Epi-data version 4.2 and exported to SPSS version 25.0 for analysis. Descriptive analysis such as frequency, mean, and standard deviation was performed to describe sociodemographic factors and assess the familiarity of nurses and physicians. Simple and multiple linear regression analyses were done, with assumptions including linearity, normality, homoscedasticity, and independence being taken into account. Independent variables having a P-value ≤ 0.2 (gender, profession (nurse, physician), participation in actual major disaster events, self-regulation, and health care climate) in the bivariate analysis were fitted into the final multivariate linear regression model for further analysis. An adjusted unstandardized beta (β) coefficient with a 95% confidence interval at a p-value of < 0.05 statistical significance level was used to report the association of factors with the dependent variable. The results were summarized using tables and texts.

Results

In this study, a total of 237 individuals completed the questionnaire, yielding a response rate of 94 %. The mean age and work experience in years were 32.65 ± 6.68 and 8.37 ± 7 , respectively. The majority of the study participants were men (64.1%), married (69.6%), and nurses with a bachelor's degree (68.4 %). The majority of the participants (72.6 %) did not engage in actual major disasters and did not work in post-disaster shelters (84%) (Table 1).

Familiarity of nurses and physicians with emergency and disaster preparedness

In a score range of 38–190, the total mean score of familiarity with emergency and disaster preparedness was 106.1 ± 31.8 (95% CI: 102.0, 110.1), with approximately 52.3% of participants scoring higher than the mean score (Table 2).

Perceived Self-regulation (motivation) of nurses and physicians

The mean self-regulation score was found to be 9.3 ± 3.4 on a scale of 3 to 15. About 28% of the participants were somewhat likely to get involved and prepared for disasters in their community. About 30.8% were very committed to participating in community emergency preparedness measures, and about 28% were moderately likely to accept the risk of involvement in a disaster situation (Table 3).

Perception of health care climate by nurses and physicians

The mean score for health care climate was 10.8 ± 3.6 on a scale of 4 to 20. About 27 % of participants reported that they are generally dissatisfied with their current position,

Table 1. Individual and professional characteristics of nurses and physicians in east Gojjam zone public hospitals, 2021.

Variables		Frequency (n = 237)	Percent (%)
Sex of participants	Male	152	64.1
	Female	85	35.9
Marital status	Single	67	28.3
	Married	165	69.
	Divorced	4	1.7
	Widowed	1	0.4
Level of educational qualification	Diploma	10	4.2
	BSc	162	68.4
	Masters	25	10.5
	MD and above	40	16.9
Profession	Nurse	197	83.1
	Physician	40	16.9
Participated in actual major disaster event	Yes	65	27.4
	No	172	72.6
Worked in post-disaster shelter	Yes	38	16.0
	No	199	84.0

Table 2. Familiarity scores to emergency and disaster preparedness by nurses and physicians in east Gojjam zone public hospitals, 2021.

Variables	Score range	Mean $\pm$ SD
Familiarity with emergency preparedness terms and activities	4–20	12.1 $\pm$ 3.9
Familiarity with the incident command system (ICS)	8–40	20.4 $\pm$ 7.5
Familiarity with ethical issues in triage	4–20	11.9 $\pm$ 4.7
Familiarity with epidemiology and surveillance	4–20	10.6 $\pm$ 3.8
Familiarity with decontamination	3–15	9.2 $\pm$ 3.6
Familiarity with communication	7–35	19.2 $\pm$ 6.8
Familiarity with psychological issues	4–20	11.6 $\pm$ 4.3
Familiarity with special populations	2–10	5.5 $\pm$ 2.3
Familiarity with accessing critical resources	2–10	5.6 $\pm$ 2.1
Total Familiarity	38–190	106.1 $\pm$ 31.8

Table 3. Perceived self-regulation of nurses and physicians in east Gojjam zone public hospitals, 2021.

Self-regulation		Frequency (n = 237)	Percent (%)
Likelihood to get involved and prepared for disasters in your community?	Not likely	39	16.5
	Somewhat not likely	66	27.8
	Neutral or don't know	35	14.8
	Somewhat likely	61	25.7
	Very likely	36	15.2
Commitment to participating in emergency preparedness measures in the community	Not at all committed	21	8.9
	Somewhat committed	70	29.5
	Neutral or do not know	32	13.5
	Moderately committed	41	17.3
	Very committed	73	30.8
Willingness to assume the risk of involvement in a disaster situation? (Bioterrorism event, pandemic, etc.)	Not likely	37	15.6
	Somewhat likely	64	27.0
	Neutral or do not know	28	11.8
	Moderately likely	66	27.8
	Very likely	42	17.7

Table 4. Perception of health care climate by nurses and physicians in east Gojjam zone public hospitals, 2021.

Health care climate		Frequency (n = 237)	Percent (%)
Overall satisfaction with current position	Highly dissatisfied	52	21.9
	Generally dissatisfied	63	26.6
	Neutral	60	25.3
	Generally satisfied	48	20.3
	Highly dissatisfied	14	5.9
Likelihood to recommend current employment setting to colleagues as a desirable place to work?	Highly unlikely	43	18.1
	Somewhat unlikely	64	27.0
	Neutral	53	22.4
	Somewhat likely	63	26.6
	Highly likely	14	5.9
Decision to take the job having now, if had to decide all over again	Would definitely not take the same job	38	16.0
	Would probably not take the same job	63	26.6
	Neutral	58	24.5
	Would probably take the same job	55	23.2
	Would definitely take the same job	23	9.7
Extent of fairly rewarded considering the responsibilities taken?	Not at all	54	22.8
	To a slight extent	50	21.1
	To some extent	86	36.3
	To a considerable extent	34	14.3
	To a great extent	13	5.5

Table 5. Predictors of familiarity to emergency and disaster preparedness of nurses and physicians in east Gojjam zone public hospitals, 2021.

Variables		B (95% CI)	SE	β	t	p
Self-regulation		3.80(2.60, 5.00)	0.606	0.41	6.22	.000*
Health care climate		1.40(0.40, 2.43)	0.521	0.16	2.70	.008*
Sex	Male	1.60 (-6.00, 9.10)	3.803	0.02	0.42	.678
	Female	Ref.	—	—	—	—
Profession	Nurse	Ref.	—	—	—	—
	Physician	2.7(-7.30, 12.70)	5.060	0.03	0.53	.596
Participation in actual major disaster event	Yes	15.5(7.80, 23.20)	3.911	0.22	4.00	.000*
	No	Ref.	—	—	—	—

B: unstandardized coefficient; CI: confidence interval; SE: standard error; β : standardized coefficient; Sig: Significance; Ref: Reference, *statistically significant at 95% confidence level.

about 27% would somewhat hesitantly recommend their current employment setting to colleagues as a desirable place to work, 26.6 % would probably not take the same job if they had to do it all over again, and 36.3 % believe they are fairly rewarded for the responsibilities they have taken (Table 4).

Factors associated with familiarity with emergency and disaster preparedness

A multiple linear regression analysis resulted in a significant F-test equation ($F(5, 236) = 20.502$, $p\text{-value} < 0.001$) with an adjusted $R^2 = 0.292$. All of the variance inflation factors were less than five. This means that combinations of variables significantly predicted familiarity with emergency and disaster preparedness. Self-regulation, Health care climate, and participation in an actual major disaster event significantly

contributed to the prediction. A unit increase in self-regulation score was associated with a 3.8 unit (95% CI: 2.60, 5.00) increase in familiarity score, and a unit increase in a health care climate score was associated with a 1.4 unit (95% CI: 0.40, 2.43) increase in familiarity. The familiarity with emergency and disaster preparedness of nurses and physicians who had participated in an actual major disaster event is increased by 15.5 units (95% CI: 7.80, 23.20) compared to those who had not attended (Table 5).

Discussion

Health-care workers' emergency readiness is critical in dealing with the surge of mass casualties that occurs during disasters. The level of nurses' and physicians' expertise in various aspects of emergency preparedness can explain their

disaster management competence. Individual characteristics, motivation (self-regulation), and the health-care climate, on the other hand, can alter their familiarity.^{6–10} This study assessed nurses' and physicians' familiarity with emergency preparedness and its predictors.

One method of finding and addressing potential gaps and weaknesses in the functioning and effective management of a hospital during mass-casualty crises is to evaluate the emergency response preparedness of nurses and physicians.¹⁵ The mean score of familiarity with emergency and disaster preparedness in this study was 106.1 ± 31.8 , which is slightly higher than the midpoint (95) in a familiarity score range of 38 – 190. Approximately half of the participants (52.3%) scored higher than the mean. This finding is consistent with other studies conducted in the USA, Northwest Arkansas, Iran, Indonesia, Egypt, and Ethiopia.^{13,16–20} As nurses and physicians are frontline employees in the emergency room, this data suggests that their familiarity with emergency and disaster preparedness is inadequate. The increasing number of mass casualties necessitates more significant attention to improving the competencies of these frontline health care workers in emergency preparedness through various strategies.^{21,22}

One might expect that the participants' familiarity with emergency preparedness would be influenced by individual differences like their year of work experience and educational level, but this was not the case in this study. Previous involvement in a real-life major disaster event, on the other hand, was found to be positively associated with nurses' and physicians' familiarity with emergency preparedness, which is consistent with other studies.^{8,10,13} A positive association between previous experience and higher scores on the familiarity scale suggests that hands-on training or participation in actual events can improve perceived preparedness and thus actual preparedness abilities.^{13,23} Similarly, drills for mass causality management might well be helpful in enhancing familiarity with emergency preparedness.^{24,25}

Self-regulation (motivation) was found to be an important predictor of nurses' and physicians' familiarity with emergency preparedness, which is consistent with other similar studies.^{8,13} This could be due to the fact that humans are motivated by a natural desire to grow and achieve fulfillment.^{26,27} Similarly, contrary to a Texas study, the healthcare climate as manifested by job satisfaction was found to be associated with nurses' and physicians' familiarity with emergency preparedness.¹³ This could be because when people's needs for competence, relatedness, and autonomy are met, they are more likely to be committed to succeeding in their performance.²⁸ This would imply that different essential, inborn, psychological human requirements that motivate performance and professional demands must be met for nurses and physicians to perform their jobs more effectively.²⁹ Likewise, it would be suggested that various strategies be initiated to enhance job satisfaction in the workplace that might promote nurses' and physicians' familiarity with emergency preparedness.³⁰

In general, a positive correlation of previous participation in actual major disaster management activities, self-regulation, and health care climate with a higher familiarity score with emergency preparedness by nurses and physicians would imply that responding to emergencies is far more than knowing how to identify and manage emergency conditions. It should also be evaluated regularly using various exercises. Furthermore, as many factors can influence it, effective response necessitates a disciplined team in which each participating individual adheres to clear lines of communication and performs in accordance with clearly assigned role directions.

Limitation of the study

Despite its strengths, this research has some limitations. The results will not be generalized for nurses and physicians working outside of the chosen study area due to purposively chosen study area and relatively smaller sample size without performing power analysis. There might be possible acquisition bias because of self-reported responses.

Conclusion

Despite being frontline workers in the emergency room, nurses' and physicians' familiarity with emergency and disaster preparedness is inadequate, according to the findings of this study. Their familiarity with emergency and disaster preparedness was found to be influenced by previous engagement in an actual major disaster event, self-regulation (motivation), and the healthcare climate as measured by job satisfaction. As a result, the regional health bureau, zonal health departments, and hospitals, in collaboration with the federal ministry of health, should collaborate to develop strategies aimed at improving self-regulation (motivation), job satisfaction of emergency department employees, and drills and hands-on training about mass causality management when disasters and emergencies occur.

Acknowledgements

Debre Markos University college of health sciences, hospital administrators, and study participants are acknowledged for their unreserved support and cooperation.

Author contributions

All authors made substantial contributions to conception and design, acquisition of data, analysis, and interpretation of data; took part in drafting the article, revising it critically for important intellectual content; agreed to submit to the current journal; gave final approval of the version to be published; and agree to be accountable for all aspects of the work.

Availability of data and materials

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

Consent to participate

The research purpose, its benefits, and the procedures were explained to each potential respondent by the data collectors and any respondent seeking further clarification was assisted. Written informed consent to participate was then obtained from all nurses and physicians prior to the study initiation. Any person unwilling to participate was not forced to do so, and any person wishing to withdraw at any time during the study was free to do so. Confidentiality and privacy were strictly maintained. Only the principal investigator and the research assistants accessed the data. In general, the study was carried out in accordance with the Helsinki Declaration of the World Medical Association (WMA).

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethical approval

This study was approved by Debre Markos University's College of Health Science's Ethical Review Committee with ethical approval number Ref. Res/Com/ser/&Post gra/Coor/Off:798/2013. In order to collect the necessary data, a formal letter of support was written to each of the respective hospitals.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: The data collection procedure of this research was funded by Debre Markos University.

ORCID iDs

Temesgen Ayenew  <https://orcid.org/0000-0001-5411-6947>
 Mihretie Gedfew  <https://orcid.org/0000-0001-9599-3006>
 Haile Amha  <https://orcid.org/0000-0002-7583-6780>
 Belayneh Mengist  <https://orcid.org/0000-0002-0363-8777>
 Yidersal Hune Melese  <https://orcid.org/0000-0001-7656-6148>
 Abraham Teym  <https://orcid.org/0000-0001-5954-0923>
 Keralem Anteneh Bishaw  <https://orcid.org/0000-0001-7386-9418>

Supplemental material

Supplemental material for this article is available online.

References

1. Saha CK. Dynamics of disaster-induced risk in southwestern coastal Bangladesh: an analysis on tropical Cyclone Aila 2009. *Nat Hazards* 2015; 75(1): 727–754.
2. World Health Organization. *Health emergency and disaster risk management framework*. Geneva: World Health Organization, 2019.
3. World Health Organization. *International Health Regulations (2005): summary of States Parties 2013: report on IHR core capacity implementation: regional profiles*. Geneva: World Health Organization, 2014.
4. Waring S, Skryabina E, Goodwin D, et al. What components of emergency preparedness exercises improve healthcare practitioners' emergency response learning? *Int J Disast Risk Reduct* 2021; 62: 102357.
5. Mikovits JC. A concept analysis of preparedness: application to LGBTQ considerations for nursing. *J Nurs Manag* 2021; 29(1): 16–23.
6. Michaels D and Wagner GR. Occupational Safety and Health Administration (OSHA) and worker safety during the COVID-19 pandemic. *JAMA* 2020; 324(14): 1389–1390.
7. Ogedegbe C, Nyirenda T, DelMoro GF, et al. Health care workers and disaster preparedness: barriers to and facilitators of willingness to respond. *Int J Emerg Med* 2012; 5(1): 29.
8. Putra SDG, Putra KR and Noorhamdani A. Factors related to disaster preparedness among nurses: a systematic review. *Malaysian J Nurs* 2020; 12(2): 71–79.
9. Al Harthi M, Al Thobaity A, Al Ahmari W, et al. Challenges for nurses in disaster management: a scoping review. *Risk Manag Healthc Policy* 2020; 13: 2627–2634.
10. Emaliyawati E, Ibrahim K, Trisyani Y, et al. Determinants of nurse preparedness in disaster management: a cross-sectional study among the community health nurses in coastal areas. *Open Access Emerg Med* 2021; 13: 373–379.
11. Wiley Online Library. The role of the nurse in emergency preparedness. *J Obstet Gynecol Neonat Nurs* 2012; 41(2): 322–324.
12. Ahayalimudin N and Osman NN. Disaster management: emergency nursing and medical personnel's knowledge, attitude and practices of the East Coast region hospitals of Malaysia. *Australas Emerg Nurs J* 2016; 19(4): 203–209.
13. Baack S and Alfred D. Nurses' preparedness and perceived competence in managing disasters. *J Nurs Scholarsh* 2013; 45(3): 281–287.
14. Yuwanich N, Akhavan S, Nantsupawat W, et al. Experiences of occupational stress among emergency nurses at private hospitals in Bangkok, Thailand. *Open J Nurs* 2017; 7(6): 657–670.
15. Goniewicz K and Goniewicz M. Disaster preparedness and professional competence among healthcare providers: pilot study results. *Sustainability* 2020; 12(12): 4931.
16. Waller KM. Emergency preparedness competencies among nurses in northwest Arkansas, 2017, <https://scholarworks.uark.edu/cgi/viewcontent.cgi?article=1055&context=nursuht>
17. Tilahun L, Desu B, Zeleke M, et al. Emergency and disaster handling preparedness among front line health service providing nurses and associated factors at emergency department, at Amhara regional state referral hospitals, Ethiopia. *Open Access Emerg Med* 2021; 13: 221–232.
18. Seyedin H, Abbasi Dolatabadi Z and Rajabifard F. Emergency nurses' requirements for disaster preparedness. *Trauma Mon* 2015; 20(4): e29033.
19. Rizqillah AF and Suna J. Indonesian emergency nurses' preparedness to respond to disaster: a descriptive survey. *Australas Emerg Care* 2018; 21(2): 64–68.
20. Hussein AH and Mahmoud NAEA. Emergency preparedness and perceived competence of health care providers in disaster: an Egyptian study. *Alexandria Sci Nurs J* 2016; 18(2): 1–14.
21. Laytin AD, Azazh A, Girma B, et al. Mixed methods process evaluation of pilot implementation of the African Federation

- for Emergency Medicine trauma data project protocol in Ethiopia. *Afr J Emerg Med* 2019; 9: S28–S31.
22. Salman FS and Gül S. Deployment of field hospitals in mass casualty incidents. *Comput Ind Eng* 2014; 74: 37–51.
 23. Georgino MM, Kress T, Alexander S, et al. Emergency preparedness education for nurses. *J Trauma Nurs* 2015; 22(5): 240–248.
 24. Skryabina EA, Betts N, Reedy G, et al. The role of emergency preparedness exercises in the response to a mass casualty terrorist incident: a mixed methods study. *Int J Disast Risk Reduct* 2020; 46: 101503.
 25. Adini B, Laor D, Hornik-Lurie T, et al. Improving hospital mass casualty preparedness through ongoing readiness evaluation. *Am J Med Qual* 2012; 27(5): 426–433.
 26. Hagger MS and Chatzisarantis NL. Self-determination theory. In: Conner M and Norman P (eds) *Predicting and changing health behaviour: research and practice with social cognition models*. New York: McGraw Hill Education, 2015, pp. 107–141.
 27. Forner VW, Jones M and Berry Y. Motivating workers: how leaders apply self-determination theory in organizations. *Organ Manag J* 2021; 18(2): 76–94.
 28. Deci EL, Olafsen AH and Ryan RM. Self-determination theory in work organizations: the state of a science. *Annu Rev Organ Psychol Organ Behav* 2017; 4: 19–43.
 29. Orsini C, Evans P and Jerez O. How to encourage intrinsic motivation in the clinical teaching environment? A systematic review from the self-determination theory. *J Educ Eval Health Prof* 2015; 12: 8.
 30. Abate HK and Mekonnen CK. Job satisfaction and associated factors among health care professionals working in public health facilities in Ethiopia: a systematic review. *J Multidiscip Healthc* 2021; 14: 821–830.