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RESEARCH ARTICLE

Disaster preparedness and core competencies among emergency nurses: A cross-sectional study

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Abstract

Aim: With the rise in frequency and severity of disasters in recent decades, it is essentially important that nurses must be adequately prepared to handle them. This study was aimed to evaluate the levels of disaster core competencies and preparedness of nurses in the emergency department.

Design: A cross-sectional survey design was used.

Methods: This cross-sectional research was conducted from August 2020 to December 2020 among 271 nurses in the emergency departments of six hospitals in Qazvin, Iran. The participants completed the "Nurses Perceptions of Disaster Core Competencies Scale" (NPDCC) (45 items) and the disaster preparedness (a single-item visual scale). Data were analysed by one-way analysis of variance, independent *t*-tests and multiple linear regression analysis.

Results: The mean scores of disaster preparedness and core competencies of nurses were 6.75 out of 10 ($SD = 1.63$) and 2.88 out of 5 ($SD = 0.80$), respectively. "Technical skills" (mean = 3.24, $SD = 0.91$) were the highest and "communication skills" (mean = 2.57, $SD = 0.95$) were the lowest across the subscales of the scale. A significant association was found between disaster core competencies and preparedness of nurses ($p < .001$). Regression analysis results indicated that nursing disaster core competencies were perceived betted by older nurses (B = −0.405) who had experience in the disaster stage (B = 0.228) and nurses with disaster response experience (B = 0.223) and lower professional experience (B = 0.309). Nurses with a postdiploma degree (B = −0.480) and bachelor's degree (B = −0.416) were perceived to have lower disaster core competency than nurses with a master's or PhD degree.

Conclusion: There are still gaps in disaster preparedness and core competencies for emergency nurses that need to be addressed. Nursing managers must support an improvement in nursing disaster core competencies. This may be done by conducting sessions for routine disaster scenarios and providing formal disaster preparedness training.

KEYWORDS
disaster competencies, disaster nursing, disaster preparedness, disasters, nurses

1 | INTRODUCTION

All countries and societies of the world have been exposed to potential disasters. Disasters affect various economic, social and political aspects of individuals and societies, and their consequences bring about death, disability, financial loss and reduced quality of life (Holla et al., 2018; Perry, 2018). Disaster nursing is described as "systematic usage of nursing knowledge and skills in disasters and the development of practices designed to reduce disaster damages to health and eliminate its life-threatening hazards" (Kalanlar, 2018).

Many studies have been done in this field internationally. These studies have been done in different places and by groups of acute care medical professionals, such as emergency department (ED) nurses, emergency physicians, out-of-hospital emergency medical service (EMS) personnel, medical residents and nursing, medical and EMS students (Brinjee et al., 2021; Mani et al., 2020; Schultz et al., 2012). Also, a recent scoping review investigated the challenges for nurses in disaster management. As disaster nursing is a new speciality, the most common challenges faced by nurses in this regard are inadequate levels of preparedness, poor formal education, lack of research, ethical and legal issues and issues related to their role in disasters. Due to the non-specificity of the breadth of studies done in this field, it is necessary to determine these competencies for the target groups and in specific disaster scenarios and settings. These studies have also stated that more disaster nursing research, based on different contexts and scenarios, is necessary to enhance the knowledge, skills and readiness of nursing professionals so that they may efficiently manage to deal with global disasters such as the COVID-19 pandemic (Al Thobaity & Alshammari, 2020, Loke et al., 2021).

Based on extensive evidence available, one can understand that health workers, especially nurses, play an essential role in responding to disasters, and they need to be better equipped to deal with them (Labrague et al., 2018; Veenema, 2018). Nurses' awareness regarding disaster preparedness has increased over the past decades. However, there is still a need to improve this awareness. Most nurses are not yet psychologically or educationally prepared to respond appropriately to disasters. According to the predictions, much bigger catastrophes are expected to occur in the future, which require more preparation and awareness, so nurses should be constantly trained in this field and their skills should be updated (Kalanlar, 2018). As nurses are one of the biggest groups of health service providers who engage in all phases of disasters, their awareness of the risks and hazards, proper planning for their training (Stoto et al., 2018; Sultan et al., 2020) and adequate knowledge, competency and skills to adjust and manage during disasters are vital (Said & Chiang, 2020).

2 | BACKGROUND

In the United States, the International Nursing Coalition for Mass Casualty Education (INCMCE) at Vanderbilt University first developed "disaster nursing competencies" to foster leadership and understanding of the role of nurses during mass casualty accidents (Elaine Daily & Padjen, 2010). Several health care organizations have created a set of competencies for different professions over the years. However, there is a lack of consistency and descriptions of terms in this space (Elaine Daily & Padjen, 2010). According to a broad definition, competency means a set of characteristics of a person, which is usually associated with effective or superior performance in a job or role. In a more precise field such as nursing, competencies are related to the effective use of knowledge, skill and judgements in each level of performance (Satoh et al., 2018). As defined by the "International Association of Nurses," competencies of nurses include skills related to techniques, critical thinking and effective communication (Latif et al., 2019).

It is essential for nurses to have basic knowledge about issues related to crisis management and its stages, including preparedness, response, recovery and mitigations, and the skills needed for each stage (Tzeng & Yin, 2008). Nurses are supposed to have minimum abilities, knowledge and skills about disaster management, to be able to support during a disaster, to promote preparedness among people and community and to show her/his professional commitment by participating in disaster preparedness planning, exercises and training, in and out of their professional environment (Veenema et al., 2016).

Evidence shows that improved training to strengthen disaster preparedness, enhancing the psychological preparedness of nurses during disasters, innovative learning and training strategies such as high fidelity modelling are required to help educate nurses for disasters (Al Thobaity et al., 2017; Horrocks et al., 2019; Said & Chiang, 2020). Despite the efforts made to empower nurses in the event of a disaster, much evidence has reported gaps between preparedness abilities and core competencies in nurses (Aliakbari et al., 2014; Hammad et al., 2011; Nejadshafiee et al., 2020).

Iran is one of the most catastrophic countries, due to its geographical location and numerous natural disasters that occur every year, including floods, earthquakes, fires and other similar crises. On the other hand, considering the vital role of nurses as a front-line force in the face of these disasters and crises, it is necessary to examine the perception of this group towards disaster preparedness. Previous studies have discuss the preparedness in each level of the crisis management cycle and have shown that the competencies of nurses need further study (Ardalan et al., 2009; Taskiran & Baykal, 2019; Vahedparast et al., 2013; Zarea et al., 2014). The present study was done to evaluate the level of disaster core competencies and preparedness of the EM nurses in Iran.

3 | METHODS

3.1 | Design

The study was conducted from August 2020 to December 2020 and adopted a cross-sectional correlation design.

3.2 | Samples and setting

The study population included all nurses working in the emergency departments of six public hospitals in Qazvin and they were recruited using a simple random sampling method. The eligibility criteria for the sampling included nursing staff were as follows: (1) They had been working for a minimum of one year in the emergency department; (2) they were a full-time nurse; and (3) they were active during the data collection stage. All those on break during the study time were excluded from the research.

The basic information was acquired from a similar study conducted by Taskiran and Baykal (2019) in Turkey to determine the sample size. A minimum sample size of 198 nurses was calculated on the basis of a correlation coefficient of 0.37 using STATA14 software, the so-called basic information considering 95% confidence, 95% test power and two-way testing methods. The design effect of 1.5 indicated that 280 was the minimum number needed.

3.3 | The tools

The data collection tool contains three parts:

- The demographic information consisting of 10 questions on the personal and professional characteristics of participants.
- The Nurses' Perception of Disaster Core Competencies (NPDCC) scale was used to determine the disaster core competencies of nurses. This scale was used in a previous study (Taskiran & Baykal, 2019), but was developed and confirmed in a Turkish study by Celik (2010) with a Cronbach's α of 00.96. The scale consists of 45 items in five dimension skills that include "critical thinking skills," "special diagnostic skills," "general diagnostic skills," "technical skills" and "communication skills." The answers were scored using a 5-point scale ("this needs to be taught" = 1 to "I can do and teach it" = 5). The minimum and maximum ratings range from 45 to 225. High scores mean better perceptions of disaster core competencies.
- Nurses' perceptions of "disaster preparedness" were assessed using a single-item visual scale ranging from 0 to 10 (0 = completely unprepared and 10 = completely prepared): "How do you evaluate your disaster preparedness as a nurse?"

Permission to use the tool was received prior to the study, and the questionnaire was translated from English into Persian, and further, it was translated from Persian to English by translation experts in compliance with the World Health Organization (WHO) instructions (World Health Organization, 2009). Researchers also matched the original English questionnaire with the Persian one, which was re-translated. The content validity tests were performed by ten experts. These experts who had diverse skills and expertise were asked to evaluate the content validity of the instrument and were purposely recruited for the area of interest of this study. These experts rated each item on a 4-point Likert scale (not relevant, somewhat relevant, quite relevant and very relevant) based on item clarity and conciseness. The IN-CVI index was calculated and its value for each items ranged from 0.81 to 1(Polit et al., 2007). After applying slight changes, the final Persian version of the questionnaire was prepared for use. The reliability of the questionnaire was assessed using Cronbach's α coefficient. For this, we distributed the questionnaire among 25 nurses who were not considered for the main study. Cronbach's α coefficient was 0.956 for the total scale.

3.4 | Data collection and ethical considerations

Research Ethics Committee approval from the Qazvin Medical University (ethical code: IR.QUMS.REC.1399.256) was obtained. For the morning and evening shifts, one of the researchers referred to the target hospitals for data collection and invited the qualified nurses to complete the surveys either at the hospital or at home. The nurses were requested to return the completed questionnaires within 5 days. Prior to data collection, institutional consent was obtained after outlining the purpose of the research to the head of each participating hospital's nursing department. Individual approval was also obtained from the emergency departments. The objective of this research was explained to the participants, and they were asked to fill out the consent forms. The questions were administered to all those who volunteered to take part in the research. The ethical guidelines were adhered to, as they were allowed to withdraw from attending at any time, and their presence did not influence their professional practice. Anonymity was maintained during data gathering.

3.5 | Data analysis

Using SPSS 22.0 (IBM Corp., Armonk, NY, USA), data processing was carried out. Descriptive statistics, including frequency, standard deviation, mean and percentage, were used to describe the demographic characteristics of the participants. The Pearson correlation coefficient was used to investigate the association between nurses' disaster preparedness and disaster core competencies. Independent *t*-test and one-way analysis of variance (ANOVA) were also used to examine the mean difference of disaster core competencies between nurses' groups according to their demographic variables. Tukey test for multiple comparisons was used post hoc in the ANOVA. A multiple model of linear regression was generated, with the disaster core competencies as the dependent variable and demographic variables as independent variables. The significance level was set at 0.05.

4 | RESULTS

The demographic characteristics of respondents are summarized in Table 1. The sample consisted of 271 participants, of which 51.3% were women. Most of the nurses were married (52.4%). The nurses

varied in age from 21 to 57 years, with an average age of 33.9 (*SD* = 8.2) years. The largest proportion of nurses (43.9%) was in the 30 or lower age group. Most of them had a bachelor's degree (74.5%). The mean professional experience of the nurses was 5.36 (*SD* = 4.90) years.

The majority of the nurses had less than 6 years of professional experience (66.4%). Most of them had disaster experience (69%) or disaster response experience (64.9%).

TABLE 1 Demographic characteristics of the nurses (*N* = 271)

Variables	*N*	%
Age		
≤30	119	43.9
31–40	97	35.8
>40	55	20.3
Gender		
Male	132	48.7
Female	139	51.3
Marital status		
Married	142	52.4
Single	129	47.6
Educational degree		
Post diploma	26	9.6
Bachelor's degree	202	74.5
Master's or PhD degree	43	15.9
Professional experience		
≤5 year	180	66.4
6–10 years	55	20.3
>10 years	36	13.3
Nurses have role in the disaster stage		
Yes	187	69.0
No	84	31.0
Disaster response experience		
Yes	176	64.9
No	95	35.1

4.1 | Nurses' perceptions of their own disaster preparedness and core competencies

The mean scores of the nurses' perceptions of their disaster core competencies and the overall scale are presented in Table 2. Using a single-item visual scale (min-max: 0–10 points), we assessed the nurses' views about their own disaster preparedness, the mean score of which was 6.75 (*SD* = 1.63). The total mean score of nurses' perceptions of disaster core competencies was 2.88 (*SD* = 0.80). A descriptive analysis of the nurses' perceptions of disaster core competencies indicated that "technical skills" (mean = 3.24, *SD* = 0.91) rated the highest through the subscales of the scale, and "communication skills" (mean = 2.57, *SD* = 0.95) rated the lowest.

In addition, Pearson's correlation coefficient test results showed a positively significant relationship between the nurses' perceptions of disaster preparedness and the average score of the disaster core competencies and subscales ($p < .001$).

4.2 | Perceptions of disaster core competencies' scores and comparisons according to nurses' demographic characteristics

The scores of perceptions of disaster core competencies were analysed based on nurses' demographic features (Table 3). Higher levels of "critical thinking," "technical skills" and "communication skills" were observed in the older age group (>40 years), compared to the younger age groups. Statistically significant differences were observed in technical skills and communication skills for female nurses ($p < .05$), with those who were married ($p < .05$) having statistically significantly higher skills scores. General diagnostic skills were also statistically significantly higher in married nurses ($p = .025$). There were differences in special diagnostic, technical and communication skills between the education levels of nurses ($p < .05$), with postgraduate or PhD degrees having statistically significantly higher competency when compared with the associate degree/diploma group. Communication skills were statistically significantly lower among nurses with more than 10 years of clinical experience compared to those with 1–5 years ($p = .016$).

TABLE 2 Nurses' perceptions of disaster core competencies' scores and the correlations with the nurses' perceptions of their own disaster preparedness (*N* = 271)

			Nurses' perceptions of their own disaster preparedness	
	Mean (*SD*)	95% CI	*r*	*P*
Critical thinking skills	3.02 (1.04)	2.89–3.14	0.210	<.001
Special diagnostic skills	2.84 (0.92)	2.73–2.95	0.257	<.001
General diagnostic skills	2.72 (0.88)	2.61–2.82	0.313	<.001
Technical skills	3.24 (0.91)	3.13–3.35	0.250	<.001
Communication skills	2.57 (0.95)	2.46–2.69	0.328	<.001
Total scale score	2.88 (0.80)	2.78–2.97	0.318	<.001

TABLE 3 Disaster core competencies scores and comparisons according to nurses' demographic characteristics ($N = 271$)

	Critical thinking skills	Special diagnostic skills	General diagnostic skills	Technical skills	Communication skills	Total scale score
	Mean (*SD*)	Mean (*SD*)	Mean (*SD*)	Mean (*SD*)	Mean (*SD*)	Mean (*SD*)
Age						
≤30[a]	2.89 (1.07)	2.69 (0.93)	2.60 (0.92)	3.01 (0.92)	2.40 (0.96)	2.72 (0.83)
31–40[b]	3.05 (1.05)	2.89 (0.90)	2.75 (0.82)	3.38 (0.88)	2.63 (0.91)	2.94 (0.75)
>40[c]	3.25 (0.94)	3.06 (0.89)	2.92 (0.85)	3.47 (0.85)	2.84 (0.95)	3.11 (0.75)
p (ANOVA)	.099	***.033**; a < c*	.078	***.001**; a < b, c*	***.013**; a < c*	***.006**; a < c*
Gender						
Male	3.10 (1.06)	2.85 (0.96)	2.64 (0.89)	3.10 (0.90)	2.45 (0.92)	2.83 (0.82)
Female	2.94 (1.02)	2.83 (0.89)	2.80 (0.86)	3.36 (0.90)	2.69 (0.97)	2.92 (0.78)
p (t-test)	.193	.885	.175	***.019***	***.032***	.335
Marital status						
Single	3.11 (0.99)	2.80 (0.88)	2.61 (0.85)	3.11 (0.86)	2.44 (0.93)	2.81 (0.78)
Married	2.92 (1.09)	2.88 (0.96)	2.84 (0.89)	3.38 (0.95)	2.72 (0.96)	2.94 (0.82)
p (t-test)	.130	.488	***.025***	***.013***	***.017***	.166
Educational level						
Post diploma[a]	3.02 (0.93)	2.71 (0.91)	2.43 (0.74)	2.99 (0.90)	2.47 (0.88)	2.72 (0.76)
Bachelor's degree[b]	2.99 (1.04)	2.80 (0.93)	2.64 (0.84)	3.16 (0.88)	2.49 (0.94)	2.82 (0.78)
Master's or PhD degree[c]	3.14 (1.16)	3.07 (0.86)	3.29 (0.90)	3.76 (0.88)	3.04 (0.95)	3.26 (0.81)
p (ANOVA)	.099	***.033**; a < c*	.078	***.001; a < b, c***	***.013**; a < c*	***.002**; a, b < c*
Professional experience						
≤5 year	2.99 (1.12)	2.85 (0.90)	2.81 (0.90)	3.33 (0.92)	2.69 (0.98)	2.93 (0.82)
6–10 years	3.15 (0.89)	2.85 (1.03)	2.52 (0.80)	3.09 (0.89)	2.31 (0.85)	2.79 (0.77)
>10 years	2.97 (0.87)	2.77 (0.86)	2.58 (0.82)	2.99 (0.86)	2.39 (0.84)	2.74 (0.73)
p (ANOVA)	.558	.886	.068	.059	***.016**; a > b*	.275
Nurses have role in the disaster stage						
Yes	3.15 (0.99)	2.91 (0.89)	2.81 (0.84)	3.33 (0.86)	2.69 (0.96)	2.98 (0.77)
No	2.73 (1.11)	2.67 (0.97)	2.53 (0.92)	3.04 (0.99)	2.31 (0.88)	2.67 (0.82)
p (t-test)	***.002****	.055	***.020****	***.024****	***.002****	***.003****
Disaster response experience						
Yes	3.19 (1.01)	2.94 (0.88)	2.82 (0.89)	3.33 (0.88)	2.66 (0.99)	2.99 (0.78)
No	2.71 (1.04)	2.64 (0.98)	2.53 (0.82)	3.06 (0.95)	2.41 (0.85)	2.67 (0.79)
p (t-test)	***<.001****	***.013****	***.008****	***.026****	***.028****	***.002****

Note: The bold values are statistically significantly different taking into account disaster core competencies scores and comparisons according to nurses' demographic characteristics.

$^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Nurses who played a role in the disaster stage perceived their "critical thinking," "general diagnostic," "technical" and "communication skills" better than those without experience. Eventually, nurses with disaster response experience had higher "critical thinking," and "special diagnostic," "general diagnostic," "technical" and "communication skills" scores compared to those that did not ($p < .05$). Statistically significant differences were found when the total disaster core competencies' scores were compared and analysed according to nurses' demographic characteristics of age, educational degree, disaster response experience and experience in the disaster stage ($p < .05$). Older nurses, nurses with a postgraduate or PhD degree, nurses with experience in the disaster stage and nurses with disaster response experience had statistically significantly higher total disaster core competencies scores than others ($p < .05$).

The multiple linear regression analysis of predictor variables for total nurses' perceptions of disaster core competencies is presented in Table 4. The model had an R^2 of 0.147 and adjusted R^2 of 0.117. Older nurses had higher levels of disaster core competencies than the younger ones (B = −0.405, 95% CI −0.644 to −0.166, $p = .001$). Nurses who had experience in the disaster

TABLE 4 Multiple linear regression analysis of factors associated with disaster core competencies scores ($N = 271$)

Factors	B	SE	95% CI	Upper	Sig.
Age (reference = >40)					
≤30	−0.405	0.1220	−0.644	−0.166	0.001
31–40	−0.205	0.1279	−0.456	0.045	0.109
Gender (reference = Female)	−0.034	0.0914	−0.213	0.145	0.710
Marital status (reference: Married)	−0.077	0.0918	−0.257	0.103	0.404
Nurses have role in the disaster stage (reverence = no)	0.228	0.1059	0.020	0.435	0.031
Disaster response experience (reference = no)	0.223	0.1084	0.010	0.435	0.040
Clinical experience (reference: >10 years)					
≤5 year	0.309	0.1363	0.042	0.576	0.023
6–10 years	0.179	0.1602	−0.135	0.493	0.263
Educational status (reference: Master's or PhD degree)					
Post diploma	−0.480	0.1852	−0.842	−0.117	0.010
Bachelor's degree	−0.416	0.1250	−0.661	−0.171	0.001
$R^2 = 0.147$; Adjusted $R^2 = 0.117$; $F = 4.99$; $p < .001$					

Abbreviation: CI, confidence interval.

stage (B = 0.228, 95% CI 0.020–0.435, $p = .031$) and nurses with disaster response experience (B = 0.223, 95% CI 0.010–0.435, $p = .040$) perceived their disaster core competency better than those without experience. Nurses who had lower professional experience rated their disaster core competency better than nurses with more than 10 years of professional experience (B = 0.309, 95% CI 0.042–0.576, $p = .023$). Finally, nurses with a master's or PhD degree rated statistically significantly higher skills level than those with a post diploma (B = −0.480, 95% CI −0.842 to −0.117, $p = .010$) or bachelor's degree (B = −0.416, 95% CI −0.661 to −0.171, $p = .001$).

5 | DISCUSSION

The findings of this study indicated that the mean score of nurses' perceptions of disaster core competencies was 2.88 out of 5. This was similar to the study of Taskiran and Baykal (2019) with the total score of disaster core competencies of 2.97. In the study by Jeong and Lee (2020) in Korea, the nurses obtained 2.98 out of 5 on "disaster preparedness competencies" and 3.37 out of 5 on "disaster response competencies." The findings of the study by Baack and Alfred (2013) indicated that most nurses are not assured in their ability to cope with major disaster incidents, and in most cases, they have poor perceptions of disaster core competencies.

The findings of our study highlighted the training needs of emergency department nurses during disasters. One of those core competencies was communication, as communication training for nurses was shown to be insufficient and had the lowest score among the dimensions. Nurses are supposed to have communication skills about both disaster survivors and other professionals. Different studies report the need for good communication and teamwork skills for an effective disaster nursing manager to take care of patients during a disaster (Samuel et al., 2015; Veenema et al., 2016). The competence and factual accuracy of nurse leaders were viewed by the ability to communicate on time and with the relevant contents of messages. Proper communication refutes gossip in a time of instability (Pekkarinen, 2019). Similar results have been reported in a study conducted in Saudi Arabia (Brinjee et al., 2021). However, in the study conducted in Turkey by Taskiran and Baykal (2019), "communication skills" of the nurses obtained the highest score. During a disaster, communication and planning in healthcare organizations or between these organizations are often weakened. Therefore, it is essential that every hospital develop alternative communication methods and provide nursing managers and staff with adequate knowledge on these alternatives and their uses to prepare them to operate efficiently during a disaster to prevent these situations. Furthermore, all ED nurses must understand the proper chain of command and with whom to communicate and how to enforce effective communication, especially during disastrous events. Also, group research should be offered to nurses to improve their communication skills. Similarly, media relations ought to be a part of the education of nursing staff (Pekkarinen, 2019). Robaity et al. conducted a broad scope review of core competencies in disaster nursing and identified communication and planning skills as the main capabilities (Lavin et al., 2017).

The mean score of nurses' disaster preparedness was 6.75 out of 10, which was higher than that of a similar study in Turkey (4.62 out of 10) (Taskiran & Baykal, 2019). Low to moderate and moderate levels of disaster preparedness were perceived by Asia-Pacific (Usher et al., 2015) and Indonesian nurses (Rizqillah & Suna, 2018). Low levels of disaster preparedness have also been reported in other studies (Ahn et al., 2017; Labrague et al., 2018;

Uhm et al., 2016). Similarly, Labrague et al. (2016) reported that 80% of Filipino nurses suggested that they were not completely ready to respond to disasters. The WHO advises that all nations, no matter how often they suffer disasters, consider preparing their healthcare professionals to adapt to disasters as a national and local priority because of the recent global rise in disasters (Achora & Kamanyire, 2016). Good preparedness, especially the relational component, will be a positive boost to nurses in the first place, and therefore to their treatment for the society, by providing them with the inner strength to face negative feelings and tension following disasters (Roudini et al., 2017). Psychological disorders such as "posttraumatic stress disorder" (PTSD) can be caused by disasters. Nurses ought to know how to take care of patients with PTSD and other mental trauma due to disasters (Li et al., 2015). Special education and preparation, such as psychological debriefing, counselling and psychological first aid, can help to properly educate nurses (Langan et al., 2017).

Significant differences were found between the perceptions of disaster core competencies scores and the nurses' socio-demographic characteristics. For example, participants who had previous disaster response experience had more significant levels of all disaster core competencies compared to those with limited experience in disaster response. Nurses with postgraduate degrees, especially PhDs, scored higher in their competencies. This can be due to disaster education being included in their graduate work and higher critical thinking competencies. Also, older, married nurses had higher levels of technical and communication skills. Previous researchers have shown a significant relationship between the importance of disaster nursing competencies and disaster experience, job experience and disaster-related training (Lee, 2014; Lee et al., 2013). Similarly, Tzeng et al. (2016) found a statistically significant correlation between the communication and critical thinking skills of nurses and their age and clinical experience. The disaster preparedness of Indonesian nurses increased with their years of experience (Rizqillah & Suna, 2018).

The findings suggest that inexperienced and young nurses should be properly educated to improve their disaster preparedness. Related findings have reported that disaster core competencies of nurses can differ based on their individual/family safety, personal judgements, clinical competence and circumstance (Park & Kim, 2017; Rolls & Thompson, 2007). Despite attempts to enhance nursing disaster core competencies through training, several studies have revealed that most nurses stay inadequately qualified for disasters, lacking the confidence and ability to contribute to disaster management (Baack & Alfred, 2013). This suggests that it is vital to recognize factors that affect nursing disaster core competencies so that appropriate nurse training and disaster education courses can be created and implemented more productively to prepare nurses for disasters.

Previous researches showed that the different health states and ages of nurses only make disaster nursing competencies look ever more complicated (Kako & Mitani, 2010). Richard and Nada (Garfield & Al Ward, 2008) said that a popular series of emergency competencies should be developed by dialogue and debate with WHO and its members of the committee. The focus of these basic competencies is on emergency conditions, or, in other words, on the acute phase of the crisis cycle. If other disaster periods, such as rehabilitation, were to be included, this view would shift, since each disaster period needs various systems from the community and the people.

5.1 | Limitation of study

The cross-sectional nature of the study restricted causal interpretations. Only nurses from emergency departments were recruited as study participants; that is, the findings cannot be applied to other research domains. In addition, to gather data, a self-administered questionnaire, which may be subject to bias, was used.

6 | CONCLUSION

The current study showed that nurses working in emergency departments had an inadequate degree of disaster core competencies and were found to be moderately prepared for disasters. Also, this study found that the nurses who had experience in the disaster stage, had experience with disaster response and had higher educational status perceived their disaster core competency better than those without experience. The current study showed that nurses working in emergency departments had an inadequate degree of disaster core competencies and were found to be moderately prepared for disaster.

Therefore, policymakers and hospital managers should adopt educational programmes to improve the knowledge and core competencies of nurses. It is also essential to study and teach techniques that drive nurses to improve their communication skills. Nursing managers must support an improvement in disaster preparedness for all the nurses. This may be done by conducting sessions for routine disaster scenarios and formal disaster preparedness training. Definitions of nursing duties in nursing laws and rules should also be updated. Specific additional guidelines about nursing instruction and practice should be added in compliance with disaster nursing laws.

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

AUTHOR CONTRIBUTIONS

ZCH contributed to the study concept and design. Acquisition, analysis or interpretation of data performed by ZCH, ML, AN and HA. The manuscript was drafted by ZCH, EK and MA. All authors have critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

ETHICAL APPROVAL

Research Ethics Committee approval was obtained from the Qazvin University of Medical Science (IR.QUMS.REC.1399.256).

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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