Determination of Disaster Preparedness of Nurses Working in Adult Internal Medicine and Surgical Emergency Department

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Abstract

The study was planned to determine the disaster preparedness of nurses working in the adult internal medicine and surgery emergency department. It is cross-sectional. In July and September 2023, 66 adult internal medicine and surgery emergency nurses in a public hospital and a university participated in the study. Face-to-face interviews were conducted using the Nurses' Individual Characteristics Form and Disaster Preparedness Perception Scale of Personnel Working in Pre-Hospital Emergency Health Services to collect research data. These forms were collected through face-to-face interviews. The total score of the scale used in the study was 111.15 ± 15.08. Mann-Whitney U, Spearman correlation test, and descriptive analyses were used to evaluate the data. It was determined that there was a significant positive relationship between the working year of the nurses participating in the study and the self-efficacy sub-dimension of the scale (p <0.05). It was determined that the benefit sub-dimension of female nurses was significantly higher than that of male nurses (p <0.05). The mean total scale score of nurses with a bachelor's degree was found to be highly significant compared to nurses with a high school degree (p <0.05). The mean total scale score of nurses who are not working in the disaster management process other than the COVID-19 pandemic was found to be highly significant compared to those who are involved in the earthquake management process (p <0.05). It was found that the level of disaster preparation of adult internal medicine and surgery emergency service nurses was slightly above the middle level. In addition, it was determined that experience, gender, education level, and the COVID-19 pandemic were effective in determining the preparedness of nurses for disasters.

Keywords: Disaster, Emergency, Medical and Surgical Nursing

1. INTRODUCTION

Worldwide, according to the Global Natural Disaster Assessment report, a total of 1313 major natural disasters occurred in 2020, affecting 123 countries or regions worldwide (Su et al., 2021). A disaster is a serious disruption of the functioning of society, whether of human or natural origin, that exceeds the resources of the affected community, causing losses in all dimensions (such as health and economy) (Erdoğan, 2018; Sultan et al., 2020). The World Health Organisation (WHO)

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has also addressed the issue of disasters. WHO defines a disaster as an event that disrupts living conditions and causes problems beyond the adaptation limits of society (Su et al., 2021).

During the disaster period, the duties, authorities, and responsibilities of the units should be determined in order to save many lives, meet urgent needs, and reduce the negative effects of the disaster on health (Bayraktar and Totur 2018). WHO and the International Council of Nurses (ICN) emphasise that health care professionals should have the knowledge and skills to respond to all disasters, regardless of their type (World Health Organization I, ICN, 2009). It is known that nurses, one of the health care professions, have been at the forefront since Florence Nightingale in all kinds of disasters of human or natural origin at the international level (Erkin et al., 2023; Fletcher et al., 2022). ICN addresses disaster nursing under four main headings: prevention-mitigation, preparation, response, and recovery-rehabilitation (World Health Organization I, ICN, 2009).

It is not possible to prevent disasters completely. In order to minimise the effects of disasters as much as possible, it is vital to make a disaster preparedness plan. The more prepared one is for disasters, the less the damages are. The countries that have suffered the most damage in disasters have been the countries with little or no preparation (Keskinsoy et al., 2025). In terms of health professionals, disaster preparedness includes the processes of accelerating recovery in cases such as loss of life and injury. In this process, it is necessary to have knowledge and competence for correct intervention and correct behavior (Cebeci and Arberk 2024; Keskinsoy et al., 2025 ; Shukla et al., 2024).

In disasters, especially emergency nurses play an active role in triage, search and rescue, first aid, emergency care, and the transfer of disaster victims to emergency services (Ghanei Gheshlagh et al., 2024; Taskiran and Baykal 2019; Tercan and Şahinöz 2021). Dincer et al. (2022) found that health professionals have a low level of preparation for disasters. Looking at the studies, it was determined that 44.6% of nurses in the United States of America and 80%, the Philippines were unprepared for any disaster (Hodge et al., 2017; Labrague et al., 2018). The study was planned to find out the disaster preparedness of adult internal medicine and surgery emergency room nurses.

2. METHODS

2.1. Place and Time
It is cross-sectional study. In July and September 2023, internal medicine and surgery emergency nurses in a public hospital and a university participated in the study.

2.2. Sample
The convenience sampling method was used to determine the research sample. Scope of the research was 70 nurses in the adult emergency departments of two hospitals in Edirne province. An attempt was made to reach the whole of the universe without sampling. The population consisted of 66 (94%) nurses who answered the survey questions completely.

2.3. Instruments for Data Collections
Disaster Preparedness Perception Scale of Personnel Working in Pre-Hospital Emergency Health Services (HASPAHA) developed by Tercan and Şahinöz (2021). It is a scale consisting of 28 items and five dimensions. It consists of desire, importance, self-efficacy, intervention skill, benefit sub-dimensions. The 5-point Likert-type scale, which does not have a reverse item. Scoring is done from one point (strongly-disagree) to five points (strongly-agree). The minimal point is 28, and

the maximum point is 140. The higher the scores on the scale, the higher the level of preparedness. Cronbach's alpha value for the scale is 0.925. In this study, it is 0.934.

The personal information form included seven questions that assessed information about nurses' individual characteristics and perceptions of preparedness for disasters.

2.4. Data Collection

Nurses were informed about the study before data collection. Survey forms were given to those who wanted to participate. The nurses participating in the study were given 15-25 minutes to answer the questionnaires.

2.5. Data Analysis

The research was conducted using Statistical Package for the Social Sciences (SPSS) version 20.0 (IBM, Armonk, NY, USA). Data were evaluated by descriptive analysis, Mann-Whitney U test and Spearman's correlation analysis. The statistically significant value is $p < 0.05$.

2.6. Ethical Dimension

The necessary written approval was obtained from the Trakya University Faculty of Medicine Non-Interventional Scientific Research Ethics Committee for the realisation of the research (TUTF-GOBAEK) XX/XX: decision number XX/XX date:XX) and University Hospital.

3. FINDINGS

The HASPAHA Scale total score was 111.15 ± 15.08. The mean age of the nurses who participated in the study was 27.81 ± 5.62 years, the mean number of years of service was 4.93 ± 4.29, 65.2% were female, 66.7% were undergraduate graduates, 62.1% did not receive in-service training, 56.1% cared for medical emergency patients, and 77.3% not working in the disaster management process other than COVID-19 (Table 1).

Table 1. Individual Characteristics of Nurses (n= 66)

Features	Distribution	n (%)
Age (mean)	27.81 ± 5.62	
Number of years of service in the emergency department (mean)	4.93 ± 4.29	
Gender	Female	43(65.2)
	Male	23 (34.8)
Educational level	High-school	22 (33.3)
	Undergraduate degree	44 (66.7)
Status of receiving in-service training	Yes	25 (37.9)
	No	41 (62.1)
Emergency department where she/he works	Medical	37 (56.1)
	Surgery	29 (43.9)
Attending any disaster other than COVID-19 status	Earthquake	15 (22.7)
	No	51 (77.3)

It was found that there was a significant positive relationship between the working years of the nurses involved in the study, and the self-efficacy sub-dimension of the scale. (p = 0.015). It was determined that the benefit sub-dimension of female nurses was significantly higher than that of male nurses (p = 0.024). The mean total scale score of nurses with bachelor's degrees was found to be statistically significantly higher than that of nurses with high school degrees (p <0.001). The mean total scale score of nurses who were not working in the disaster management process other

than the COVID-19 pandemic was found to be highly significant compared to those who were involved in the earthquake management process (p = 0.024) (Table 2).

Table 2. Distribution of Prehospital Disasters Preparedness Perception Scale Total Scores and Subscale Scores (n= 66)

Variables		Total score	Desire	Importance	Self-efficacy	Intervention skill	Benefit
Age		r= 0.161†	r= 0.161†	r= 0.009†	r= 0.108†	r= 0.108†	r= 0.076†
Statistical Value		p= 0.196	p= 0.196	p= 0.942	p= 0.388	p= 0.388	p= 0.543
Number of years of service in the emergency department		r= 0.198†	r= 0.151†	r= 0.371†	r= 0.299†	r= 0.237†	r= 0.125†
Statistical Value		p= 0.111	p= 0.222	p= 0.112	**p= 0.015**	p= 0.055	p= 0.319
Gender	Female	112.23 ± 15.25	10.4 ± 1.62	19.82 ± 2.247	26.04 ± 6.54	30.08 ± 4.50	13.12 ± 2.53
	Male	109.13 ± 14.88	9.85 ± 2.53	19.15 ± 2.23	25.98 ± 6.18	29.28 ± 4.22	11.80 ± 1.76
Statistical Value		p= 0.300‡	p= 0.300‡	p= 0.199‡	p= 0.314‡	p= 0.314‡	**p=0.024‡** (Cohen's *d*: 0.77)
Status of receiving in-service training	Yes	112.36 ± 14.95	10.27 ± 1.95	19.79 ± 1.98	26.34 ± 6.64	30.01 ± 4.31	12.71 ± 2.13
	No	109.17 ± 15.39	10.10 ± 2.07	19.25 ± 2.97	25.50 ± 6.00	29.46 ± 4.57	12.57 ± 2.74
Statistical Value		p= 0.530‡	p= 0.740‡	p= 0. 506‡	p= 0.552‡	p= 0.715‡	p= 0.710‡
Educational level	High-school	99.07 ± 14.94	9.34 ± 2.15	18.21 ± 3.32	22.26 ± 5.61	26.59 ± 4.63	11.37 ± 2.21
	Undergraduate degree	117.19 ± 11.09	10.64 ± 1.77	20.27 ± 1.35	27.90 ± 5.92	31.41 ± 3.27	13.30 ± 2.17
Statistical Value		**p <0.001 ‡** (Cohen's *d*: 1.39)	**p= 0.027‡** (Cohen's *d*: 0.66)	**p= 0.001‡** (Cohen's *d*: 0.88)	**p= 0.001‡** (Cohen's *d*: 0.97)	**p <0.001‡** (Cohen's *d*:1.29)	**p= 0.001‡** (Cohen's *d*: 0.88)
Emergency department where she/he works	Medical	115.06 ± 13.72	10.39 ± 1.73	20.02 ± 1.82	27.15 ± 6.54	31.31 ± 4.12	13.31 ± 2.44
	Surgery	106.17 ± 15.49	9.97 ± 2.27	19.04 ± 2.91	24.58 ± 5.94	27.87 ± 4.00	11.82 ± 1.99
Statistical Value		**p= 0.015‡** (Cohen's *d*: 0.60)	p= 0.099‡	**p= 0.037‡** (Cohen's *d*: 0.41)	p= 0.080‡	**p= 0.001‡** (Cohen's *d*: 0.84)	**p= 0.014‡** (Cohen's *d*: 0.67)
Attending any disaster other than COVID-19 status	Earthquake	106.53 ± 17.28	10.13 ± 2.56	19.26 ± 3.08	28.30 ± 5.20	24.29 ± 6.35	11.72 ± 2.34
	No	113.97 ± 13.00	10.26 ± 1.56	19.79 ± 1.88	30.72 ± 3.57	27.07 ± 6.22	13.23 ± 2.21
Statistical Value		**p= 0.024‡** (Cohen's *d*: 0.44)	p= 0.534‡	p= 0.669‡	**p= 0.049‡** (Cohen's *d*: 0.56)	**p= 0.032‡** (Cohen's *d*: 0.44)	**p= 0.021‡** (Cohen's *d*: 0.58)

†Spearman correlation analysis; ‡Mann-Whitney U Test

3. DISCUSSION

Nurses were at the forefront of disasters such as COVID-19 and the earthquake that occurred in February 2023, which significantly affected the world and our country. It is very difficult to predict the exact time of disasters. Therefore, nurses should always be ready for disasters.

In the study, it was found that the mean total point score of the HASPAHA scale of nurses working in the adult internal medicine and surgery emergency department was 111.15 ± 15.08 (slightly higher than average). Okan et al. (2023) determined the mean total score of the HASPAHA scale as 117.95 ± 13.82 in a study conducted with 112 healthcare workers. Taş et al. (2020) found in their study that 67% of nurses felt 'partially ready' for disasters, and 10.8% did not feel ready at all. Labrague et al. (2018) In their systematic review, Labrague et al. (2018) found that nurses in disaster-prone countries are not adequately prepared for disaster response and management. Hastaoğlu and Çelik (2024) state in their study that the disaster preparedness score is affected by individual factors as well as the preparedness of countries. It is stated that it is important that nurses be included in the disaster preparedness activities carried out in the community and other institutions as much as possible in order to have information about the disaster preparedness status of the country. Also in the studies conducted, it was concluded that nurses were generally trained theoretically, and this situation affected their disaster preparedness (Erkin et al., 2023). For this reason, training should be given one-on-one with practical or realistic practice rather than memorization (Erkin et al., 2023; Şentuna and Çakır 2020). It is thought that nurses' perceptions of disaster preparedness are caused by inadequate training and experience, low personal safety perception, and lack of awareness. It is known that disasters are complex areas that require speed

due to their functioning and structure and where vital decisions are taken and implemented. Therefore, the nurses involved in the disaster, patient's life during service delivery make a series of critical decisions that will affect and environmental factors, this care service delivery becomes even more complex is taking.

Self-efficacy refers to the level of self-perception of individuals regarding their ability to realise the goals they set. It is stated that experiences are the most important factor in the development of self-efficacy (Uysal Toraman and Konal 2023). Songwathana and Timalsina (2021) reported that nurses' self-efficacy scores in disasters were low in a study conducted in developing countries. It was concluded that there was a significant positive relationship between years of employment and the self-efficacy sub-dimension of the scale. In their study, Denizli and Kınış (2024) found no significant relationship between years of employment and self-efficacy, contrary to our study. In parallel with our research Taş et al. (2020) determined in their study that as the working years of the nurses increased, their perceptions of disaster preparedness increased. Similar to our study, there are studies emphasizing that working time increases the perception score of disaster preparedness (Basal and Ahmed 2018; Bülbül, 2021; Dinçer and Kumru 2021). Nurses with high self-efficacy have more self-confidence in adapting to new environments, such as disaster areas, and coping with difficulties. Therefore, initiatives should be taken to strengthen the self-efficacy of nurses.

It was determined that the benefit sub-dimension of women was significantly higher than that of men. The basic characteristics of nursing practices in disasters include ethical principles such as providing benefit and not harming by working to help individuals and families cope with physical and emotional problems and to improve communities in all areas of need (Basal and Ahmed 2018; Gökkaya and Dinç, 2020). It is stated that the fact that the benefit sub-dimension of disaster preparedness, which is one of the main characteristics of the profession, differs according to gender may be related to factors such as women's emotional approach to events and being motherly and helpful (Ayvazoğlu et al., 2023; Demirci and Avcu 2021). Similar to our research findings, Ma et al., (2021) determined that women were more willing to benefit than men in their study on disaster preparedness. Denizli and Kınış (2024), in contrast to our study, stated that the gender variable did not affect the disaster preparedness score. Nofal et al. (2018) found that male health professionals had higher disaster preparedness score perceptions than female participants. There are similar and different studies in the literature.

In the research, the average total scale scores of bachelor's degree graduates were significantly higher than those of high school graduates. There are studies supporting our research results in the literature (Çelebi and Uçku 2017; Okan et al., 2023). It can be said that the level of education affects the perception of disaster preparedness among nurses by increasing individual awareness.

The mean total scale score of nurses not working in the disaster management process other than the COVID-19 pandemic was found to be highly significant compared to those involved in the earthquake management process. Nurses play an important role in natural disasters (earthquakes) and global pandemics (COVID-19, etc.) (Songwathana and Timalsina 2021). In a study with a data collection phase before COVID-19, 86% of nurses stated that the first thing they thought of when disaster was mentioned was an earthquake (Avcı et al., 2022). Nurses who played an active role on the front lines in the complex process of the COVID-19 pandemic have gained great experience (Çapur and Karasu 2023). Inal et al., (2019) determined that the disaster preparedness score of those with previous disaster experience was 21.62 times higher than that of those without experience. In our study, all of the nurses took part in the COVID-19 pandemic.

22.7% of the nurses participated in health service-related activities in the February 6, 2023, Hatay earthquake. It is thought that the decrease in the mean scale score of nurses involved in the earthquake management process after the COVID-19 pandemic is due to the differences between natural disasters and global epidemics. The type of disaster (earthquake, COVID-19, flood, fire, etc.) affects the disaster preparedness of nurses. Therefore, effectiveness should be increased by preparing scenarios specific to disaster types and developing different strategies (Russin and Mottel 2024).

It is recommended that the study be repeated with more sample groups in different and high disaster risk regions of the country. In addition, randomized controlled studies with different training scenarios to increase the level of preparedness of nurses for disasters are recommended for future research.

4. CONCLUSION

It was found that the level of disaster preparation of adult internal medicine and surgery emergency service nurses was slightly above the middle level. It was found that years of employment, gender, and education level were effective in determining disaster preparedness. Furthermore, it was found that the mean total score of the scale of nurses who were not working in the disaster management process other than the COVID-19 pandemic was higher than that of those who were involved in the earthquake management process.

In order to minimise the effects of disasters as much as possible, initiatives should be taken to increase the knowledge and skills of nurses, who are at the forefront of all kinds of disasters. Increasing the disaster preparedness of nurses will contribute positively to effective disaster management.

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