Research Paper

Nurses' Willingness and Competence to Work During Disasters and Their Related Factors: Case Study of a State Hospital in Turkey

Kubra Gizem Kugum[1], **Ebru Inal Onal**[2*]

1. Department of Disaster Education and Management, Çanakkale Onsekiz Mart University, Çanakkale, Turkey.
2. Department of Emergency Aid and Disaster Management, Faculty of Health Sciences, Çanakkale Onsekiz Mart University, Turkey.

Use your device to scan and read the article online

Citation Gizem Kugum K, Inal Onal E. Nurses' Willingness and Competence to Work During Disasters and Their Related Factors: Case Study of a State Hospital in Turkey. Health in Emergencies and Disasters Quarterly. 2022; 7(4):215-226. http://dx.doi.org/10.32598/hdq.7.4.469.1

http://dx.doi.org/10.32598/hdq.7.4.469.1

Article info:
Received: 21 Mar 2022
Accepted: 29 May 2022
Available Online: 01 Jul 2022

Keywords:
Disaster, Nurse, Competence, Turkey, Willingness

ABSTRACT

Background: Disasters put high burden on healthcare workers. This study aims to determine the willingness and competence of nurses to work during disasters who were employed in a state hospital in Bolu, Turkey and also investigate the related socio-demographic factors.

Materials and Methods: This descriptive study was carried out on 311 nurses working in a state hospital in the center of Bolu city in Turkey. A researcher-made questionnaire with 35 items as well as a questionnaire with 45 items assessing the basic skills of nurses for preparation in disasters were used to collect data.

Results: Most participants were undecided about working during disasters. Most of them were willing to work in earthquakes, while they had less willingness to work during pandemics. Nurses who were single, male, had no phobias, had hobbies, had no children, had a dependent person in the family, had membership in NGOs, and had Hospital Disaster Plan knowledge were more willing to work during disasters ($P<0.05$). Nurses who were single, male, had hobbies, and had a role in Hospital Disaster Plan had more competence to work during disasters ($P<0.05$).

Conclusion: Most nurses in Turkey are undecided about working during disasters. Medical centers should use the nurses that have more willingness and competence to work during disasters.

*** Corresponding Author:**
Ebru Inal Onal, PhD.
Address: *Department of Emergency Aid and Disaster Management, Faculty of Health Sciences, Canakkale Onsekiz Mart University, Canakkale, Turkey.*
E-mail: *ebruinal34@hotmail.com*

1. Introduction

Disasters are events that disrupt the daily activities of people and result in economic and human losses [1]. Turkey, despite being a country that prone to disasters, has lower ability to deal with disasters [2]. Disasters put immense strain on healthcare resources [3, 4]. In the event of a disaster, healthcare workers paly important role in abating the negative effects of disasters on the survivors [3, 5]. Nurses are one of the most important human resources in combating the after-effects of the disasters. They have important roles such as preparedness and intervention against disasters, effective management, delivering healthcare following a disaster, and working for the health and wellbeing of society [6, 7]. They also have special roles in long-term disaster recovery. In the event of a disaster, the executives, decision makers, and public healthcare workers are thought to have willingness [8] or obligation [4] to work. In the United States, a study showed that 25 nurses were suspended or terminated from their jobs due to their unwillingness to work after Hurricane Francis [4]. During the severe acute respiratory syndrome epidemic in 2004 in Hong Kong, 16% of family physicians spent less time with patients, 7% avoided to perform physical examinations, and 19% of physicians working in public clinics stayed at home to protect their families from the epidemic [9]. A study in Qatar showed that 88.1% of the nurses stated their willingness to take care of COVID-19 patients, while 11.9% stated their unwillingness. The two significant predictors of nurses' willingness are knowledge level and expected remuneration [10]. Additionally, studies have shown that having family members in need of care is an important factor in nurses' willingness to work during disasters [4, 11-14].Nurses may express their unwillingness to work in situations where they are unable to hear from their families. They may feel tired or psychologically unwell because of their working conditions; these can also affect their willingness to work during disasters [15].

In the case of extensive damage from a disaster, nurses are expected to face shortages, have multiple tasks, and work with damaged equipment. In such situations, competency is more important. Nurses who are expected to work where there is lack of resources must have adequate knowledge of disasters and ability to apply their knowledge [16]. If there were no nurses with willingness to work during a disaster, it would be impossible to have effective disaster response. Therefore, willingness and competence are equally important. Even if be sufficiently capable, nurses with unwillingness to work are likely to be unable to efficiently respond to a disaster which shows the importance of determining their willingness and competency [17].

Despite the existence of studies that consider willingness and competence of nurses together [18-21], there is a need for more considerations in a wider scale. No study was found in Turkey that tackles these considerations. Therefore, this study aims to determine the willingness and competence of nurses in public hospitals of Bolu city in Turkey, find socio-demographic and other factors related to their willingness and competence, and assess the relationship between their willingness and competence during disasters.

2. Materials and Methods

Study design and samples

This is a descriptive epidemiological study. The study population comprised of 599 nurses working in public hospitals of Bolu city; 318 in Izzet Baysal State Hospital (Central Unit, Obstetrics and Pediatrics Unit, Köroglu Unit), 57 in AIBU Izzet Baysal Physical Treatment and Rehabilitation Training and Research Hospital (Central Building, AIBU Building), 167 in AIBU Izzet Baysal Training and Research Hospital, and 57 in AIBU Izzet Baysal Mental Health and Illnesses Training and Research Hospital. No permission could be obtained from AIBU Izzet Baysal Mental Health and Illnesses Training and Research Hospital to distribute the questionnaires. Therefore, 57 nurses working in this department were excluded. Of the remaining 547 nurses, 311 (56.8%) were able to be included in the study. Because the study was based on voluntary participation, no sampling was conducted.

Study variables

Independent variables were socio-demographic characteristics of nurses (age, gender, hobbies, phobias, etc.) and their disaster-related characteristics (experience of a disaster, knowledge of disaster, etc.). Dependent variables were nurses' willingness to work during disasters and nurses' competence.

Data collection tools

Data were collected from 15/11/2019 to 15/02/2020. After obtaining informed consent from the volunteered nurses and providing necessary information to them, the data collection tools were distributed among them. In order to collect data, a researcher-made 35-item questionnaire for assessing willingness to work during disasters and the questionnaire assessing basic competences of nurses in preparation for disasters [22] were used. In the willingness to work during disasters questionnaire, there

were 15 items surveying socio-demographic characteristics, 2 items surveying hobbies and phobias, 8 items surveying the experience of working during disasters, 3 items assessing the health status, 3 items about family, and 4 items assessing willingness to work in disasters (total of 35 items). Using 15 items rated on a three-point Likert scale (1=Disagree, 2=No idea, and 3=Agree), the total score of the questionnaire was determined. Higher score indicates higher willingness.

The questionnaire assessing basic skills of nurses for preparation for disasters has 45 items prepared based on competences recommended by International Nursing Coalition for Mass Casualty Education [23]. Its subscales include critical diagnostic skills (Items 1-4), special diagnostic skills (Items 5-23), general diagnostic skills (Items 24-27), technical skills (Items 28-37), and communication skills (Items 38-45). The items are rated based on a five-point Likert scale as follows: 1=Needs to be taught, 2=I can do it with help, 3=I can do it, 4=I can do it easily, 5=I can do it and teach others. The total score ranges from 45 to 225. Higher scores represent higher preparedness for disasters. Reliability of this scale has been examined using correlation test, Cronbach's alpha coefficient, and test-retest method. Total score correlation coefficient of the scale is between 0.27 and 0.81, and its Cronbach's alpha coefficient is 0.96 [22].

Statistical analysis

The data collected from 311 nurses entered into SPSS v. 21 software. Normality of the data distribution was examined by calculating kurtosis and skewness coefficients; the coefficients with values between -1.5 and +1.5 indicate normal distribution of data [24]. Homogeneity of variance was tested by Levene's test. Since all independent variables were observed to have normal distribution, the mean differences of independent variables with two subcategories were analyzed using t-test, while the mean differences of independent variables with three or more subcategories were analyzed using ANOVA. Effects of independent variable on dependent variable was measured with eta squared (η^2) coefficient which ranges between 0 and 1; η^2=0,01 represents small effect size, η^2=0,06 represents medium effect size, and η^2=0,14 represents large effect size [25].

Due to the normal distribution of data, the relationship between two study variables was examined using Pearson correlation test whose results were interpreted using the method proposed by Kirk [26] and Büyüköztürk [25] where r ≥0.90 represents very high correlation, r=0.70-0.89 represents high correlation, r=0.69-0.30 represents medium correlation and r ≤0.29 represents low correlation. Cronbach's alpha coefficient was used for determining the reliability of the instruments that were used in the study. Its value for the questionnaire of willingness to work during disasters was obtained 0.96; for the questionnaire of competences, it was obtained 0.98.

3. Results

Participants had a Mean±SD age of 33.86±8.4 years, ranged 20-58 years. Most of participants were female (n=265, 85.2%), married (n=205, 65.9%), and with a bachelor's degree (n=221, 71.3%). Participants were mostly working in the emergency departments (n=33, 14.2%). The Mean±SD work experience of nurses was 12.48±9.24 years (ranged from 1 to 40 years) years. Most of them had a work experience of 16-40 years (n=101, 32.5%). Most of them (n=226, 73.9%) reported that they were enjoying their work as a nurse. The income level of most of participants (n=192, 61.9%) was moderate. Most of them (n=188, 60.5%) had children and 76 nurses stated that their children were the most important reason that refrained them from working in disasters. Most participants (n=294, 94.5%) had received disaster training either from their organization or from other resources. Most participants (n=188, 60.6%) had knowledge of the hospital disaster plan (HDP) and 32.7% had active roles in the HDP.

Most of participants (n=152, 49%) had no idea about working during disasters. Earthquake was the most prevalent disaster where the participants had willingness to work (n=148, 47.6%), while infectious diseases were the least common disaster where participants wanted to work (n=137, 44.1%). In the questionnaire of competences, the most common answer was "I can do it".

Female nurses had a mean willingness score of 29.79 while male nurses had a willingness score of 32.74. This difference statistically significant (t=-2.04; P<0.05). The mean willingness score of single and married nurses was 31.69 and 29.47, respectively. This difference was statistically significant (t=2.05; P<0.05). Marital status could explain 1% of the variance in total willingness score (η^2=0.01) (Table 1).

According to the results in Table 1, the mean willingness score of nurses with phobias (22.28) was found to be significantly lower than that in nurses without phobias (31.82) (t=3.48; P<0.05). Phobias explained a small part of variance in total willingness score (η^2=0.04). The mean willingness score of nurses with hobbies (33.69) was found to be significantly higher than that in nurses

without hobbies (29.06) (t=-3.98; P<0.05). Hobbies explained a small part of variance in total willingness score (η^2=0.05). The mean willingness score of nurses with children (29.26) was found to be significantly lower than that in nurses without children (31.71) (t=2.34; P<0.05). Having children explained a small part of variance in total willingness score (η^2=0.02). The mean willingness score of nurses with family member who discouraged them from working during disasters (27.01) was found to be significantly lower than that in nurses with no preventing member (31.58) (t=4.14; P<0.05). It explained 5% of the variance in total willingness score (η^2=0.05). The mean willingness score of nurses with membership in NGOs (38.8) was found to be significantly higher than that in nurses without NGO membership (29.94) (t=-3.07; P<0.05). NGO membership explained 3% of the variance in total willingness score (η^2=0.03).The mean willingness of nurses who had knowledge of HDP (31.15) was found to be significantly higher than that in nurses with no knowledge of HDP (28.80) (t=-2.24; P<0.05). Knowledge of HDP explained 2% of the variance in total willingness score (η^2=0.02).

The willingness scores based on vocational experience ($F_{(3,307)}$=2.22; P>0.05) and age ($F_{(2,308)}$=1.93; P>0.05) were not statistically significant. The mean willingness scores based on educational level were as follows: 31.03 for nurses with high school education, 29 for nurses with an associate degree, 30.53 for nurses with a bachelor's degree, and 27 for nurses with a postgraduate's degree. The willingness scores based on educational level were significantly different ($F_{(3,306)}$=1.05; P>0.05). The mean willingness scores based on the income level were as follows: 29.17 for low-income nurses, 30.29 for middle-income nurses, and 30.94 for high- income nurses. The willingness scores based on the income level ($F_{(2,307)}$= 0.56; P>0.05) and based on working departments were not statistically different ($F_{(18,213)}$=1.06; P>0.05) (Table 2).

The competence scores of female nurses (124.49) was found to be significantly lower than that in male nurses (138.22) (t=-2.46; P<0.05). Nurses' gender explained 2% of the variance in total competence score (η^2=0.02). The competence scores of single and married nurses was 132.48 and 123.43, respectively. This difference was statistically significant (t=1.99; P<0.05). Marital status explained 2% of the variance in total competence score (η^2=0.02). The competence score of nurses with hobbies (135.88) was found to be significantly higher than that in nurses without hobbies (123.38) (t=-2.75; P<0.05). Hobbies explained a small portion of variance (5%) in total competence score (η^2=0.05). The competence score of nurses who had roles in HDP (135.53) was found to be significantly higher than that in nurses with no roles in HDP (122.19) (t=-3.16; P<0.05). Having a role in HDP explained 3% of the variance in total competence score (η^2=0.03) (Table 3). Age, educational level, income, vocational experience, or hospital department were not found to have any significant relationship with competence of nurses (P>0.05) (Table 4). A low correlation was observed between competence and willingness (r=0.19, P=0.01).

4. Discussion

In recent years, disasters have caused more damages to our country and other countries worldwide. Magnitude and frequency of both man-made and natural disasters are increasing over time [27]. Nurses, who constitute the largest group of healthcare workers, play important role in saving lives during unforeseen disasters. Therefore, as the frequency of disasters increases, the need for medical resources and nursing workforce increases [28]. In this study, it was found out that 49% of nurses were undecided about working during disasters. Therefore, it is necessary to develop interventions to this group to increase their willingness. Most of nurses had willingness to work in case of earthquake (n=148, 47.6%) while infectious disease pandemic was the least favorable disaster (n=137, 44.1%). This indicated that their willingness to work was lower in cases of disasters that pose a risk to their personal health. They were more willing to work during disasters that affect other members of society, and had no tendency to put themselves or their loved ones at risk. Many studies have been conducted on the effects of different disasters on willingness to work [4, 29-34].

In this study, the nurses who were single, male, with no phobias, with hobbies, with no children, with no one to discourage them, with membership in NGOs, and with HDP knowledge had more willingness to work during disasters. Fung et al. showed that males had no willingness to work during disasters compared to females, especially during infectious disease pandemics [11]. Other studies had similar results compared to our study [4, 31, 34-36]. This result was also valid with respect to having competence to work during disasters. Our results showed that male nurses had significantly higher competency compared to female nurses. This may be because women also have to do childcare and housework. On other hand, man are more active outdoor due to social roles. In Turkey, during COVID-19 pandemic, the notice of "flexible work hours and administrative leave" for healthcare personnel was sent to governorships of all 81 major cities by the Ministry of Health [37]. In this notice, there was no attention to gender

Table 1. Results of t-test for assessing the nurses' willingness based on socio-demographic characteristics

Variables		N	Mean±SD	t	df	P	η^2
Gender	Female	265	29.79±8.89	-2.04	309	0.04*	0.01
	Male	46	32.74±9.91				
Marital status	Single	106	31.69±9.54	2.05	309	0.04*	0.01
	Married	205	29.47±8.78				
Satisfaction with work	No	80	28.99±9.03	-1.50	304	0.13	-
	Yes	226	30.76±9.06				
Having phobias	No	171	31.82±9.28	3.48	309	0.01*	0.04
	Yes	140	28.28±8.50				
Having hobbies	No	233	29.06±9.06	-3.98	309	0.00*	0.05
	Yes	78	33.69±8.33				
Having physical disabilities	No	300	30.16±9.13	-0.63	309	0.53	-
	Yes	11	31.91±8.30				
Having children	No	123	31.71±8.85	2.34	309	0.02*	0.02
	Yes	188	29.26±9.14				
Presence of a dependent person in the family	No	219	31.58±9.07	4.14	309	0.00*	0.05
	Yes	92	27.01±8.37				
Disaster experience	No	103	31.06±9.18	1.14	309	0.26	-
	Yes	208	29.81±9.05				
Disaster preparadnes training	No	17	28.88±9.58	-0.63	309	0.53	-
	Yes	294	30.30±9.08				
Membership in NGOs	No	301	29.94±8.96	-3.07	309	0.00*	0.03
	Yes	10	38.80±9.52				
Knowledge of HDP	No	122	28.80±9.10	-2.24	308	0.03*	0.02
	Yes	188	31.15±9.02				
Havinga role in HDP programs	No	208	29.91±9.06	-0.75	307	0.45	-
	Yes	101	30.74±9.23				
Participation in drills	No	120	29.73±9.26	-0.77	309	0.44	-
	Yes	191	30.54±9.00				

Table 2. Results of ANOVA for asessing the nurses' willingness based on socio-demographic characteristics

Variables		N	Mean±SD	F	df	p
Age (y)	20-30	130	31.33±9.14	1.93	2	0.15
	31-40	107	29.84±8.81			
	≥41	74	28.84±9.30			
Educational level	High school diploma	32	31.03±9.88	1.05	3	0.37
	Associate degree	42	29.00±9.18			
	Bachelor's Degree	221	30.53±9.03			
	Postgraduate	15	27.00±8.19			
Income level	Low	54	29.17±10.27	0.56	2	0.57
	Medium	192	30.29±9.00			
	High	64	30.94±8.44			
Vocational experience (y)	1-5	86	31.15±8.67	2.22	3	0.09
	6-10	76	31.72±9.45			
	11-15	48	28.10±9.39			
	≥16	101	29.32±8.87			

Health in Emergencies and Disasters Quarterly

sensitivity, while gender is a factor affecting willingness and competence of healthcare workers to work during disasters. A study on 888 healthcare workers by Burke et al. showed that single nurses were 1.5 times more willing to work during a disaster [38]. This may be due to the fact that married nurses have more household responsibilities. As it was indicated, nurses with no children had significantly more willingness to work during disasters.

It was observed in this study that disaster training was not a significant factor for the willingness and competence of nurses. This needs more in-depth studies for further understanding. Contrary to this study, Lanziolotti et al. found that doctors and nurses with more information on biological agents were more willing to work during biological disasters [32]. Additionally, a study by DiMaggio et al. showed that healthcare workers with prior disaster training were more willing to work during radiological, chemical, and biological disasters [39]. There are other studies that have shown that nurses with disaster training have better understanding of disaster preparedness [20, 30, 40]. It was observed in our study that disaster experience was not a significant factor for the willingness and competence of nurses. Contrary to this result, a study in Yemen by Al-Hunaish et al. showed that prior experience of disasters was the significant factor of willingness to work during infectious disease pandemics [31]. Evaluation of this result by further studies can be beneficial.

In a study by İnal and Kaya, NGO membership was found to be a factor affecting the willingness to work [41], which is consistent with our results. Disaster-related NGOs play important roles in preparation, damage control, intervention, and recovery during disasters. Therefore, the membership in this organizations can be effective in clarifying the responsibilities of nurses during disasters and increasing their awareness. In our study, the nurses who had someone that can discourage them from working during disasters had significantly lower willingness. Similar to this result, many studies have shown that having a dependent person is a significant factor on willingness to work during disasters [4, 11, 12, 14, 31, 42-44]. One study showed that 21% of healthcare workers believed that the nurses without children should be first responders during a flu pandemic [44]. HDP knowledge was another significant factor that affected the willingness and competence of nurses; those with a knowledge of HDP were better aware of their responsibilities and, therefore, had more willingness. This is consistent with other studies [30, 45].

Table 3. Results of t-test for assessing the nurses' competence based on socio-demographic characteristics

Variables		N	Mean±SD	T	df	P	η^2
Gender	Female	265	124.49±34.34	-2.46	309	0.01*	0.02
	Male	46	138.22±38.04				
Marital status	Single	106	132.48±40.95	1.99	170.72	0.04*	0.02
	Married	205	123.43±31.47				
Satisfaction with work	No	80	128.03±40.89	0.33	117.84	0.75	-
	Yes	226	126.37±33.16				
Haivng phobias	No	171	128.93±36.23	1.34	309	0.18	-
	Yes	140	123.57±33.76				
Having hobbies	No	233	123.38±32.94	-2.75	309	0.01*	0.02
	Yes	78	135.88±39.95				
Having physical disabilities	No	300	126.42±35.52	-0.26	309	0.73	-
	Yes	11	129.27±25.31				
Having children	No	123	131.02±37.88	1.83	309	0.07	-
	Yes	188	123.57±33.08				
Presence of a dependent person in the family	No	219	128.62±36.40	1.63	309	0.10	-
	Yes	92	121.51±31.75				
Disaster experience	No	103	129.50±35.43	1.05	309	0.29	-
	Yes	208	125.04±35.06				
Disaster preparadness training	No	17	119.35±40.64	-0.86	309	0.39	-
	Yes	294	126.93±34.88				
Membership in NGOs	No	301	126.40±34.45	-0.22	9.23	0.83	-
	Yes	10	130.20±55.45				
Knowledge of HDP	No	122	122.46±34.88	-1.69	308	0.09	-
	Yes	188	129.34±35.21				
Having a role in HDP programs	No	208	122.19±35.55	-3.16	307	0.00*	0.03
	Yes	101	135.53±33.16				
Participation in drills	No	120	122.58±33.79	-1.57	309	0.12	-
	Yes	191	128.99±35.90				

Table 4. Results of ANOVA for assessing the nurses' competence based on socio-demographic characteristics

Variables		N	Mean±SD	F	df	p
Age (y)	20-30	130	130.52±38.15	1.89	2	0.15
	31-40	107	125.66±33.49			
	≥41	74	120.72±31.51			
Educational level	High school diploma	32	121.88±35.44	1.29	3	0.28
	Associate degree	42	118.17±30.22			
	Bachelor's degree	221	128.42±36.25			
	Postgraduate	15	131.40±31.16			
Income level	Low	54	122.87±33.97	0.50	2	0.61
	Medium	192	127.99±34.91			
	High	64	125.16±37.51			
Vocational experience (y)	1-5	86	127.00±34.00	2.51	3	0.06
	6-10	76	134.72±40.59			
	11-15	48	118.17±33.90			
	≥16	101	123.90±31.43			

Health in Emergencies and Disasters Quarterly

Although most nurses stated that they had competency to accomplish most tasks by themselves, there is a need to improve their skills. The plans for disaster training should include materials that can improve nurses' competence. In a study by Back and Alfred, it was found that most nurses had a lower perception of their skills for intervening during a disaster and that their perception scores were lower than average [18]. In a study by Zeren, a positive relationship was found between critical thinking and general diagnostic skills, and between critical thinking and technical skills [46]. Based on these results, nurses' skills should be comprehensive. Therefore, it is important that nurse learn all related skills and put apply them thoroughly. Nurses stated high confidence in their abilities during natural disasters, but low confidence in their abilities during hazardous material incidents and in terror attacks or wars. It can be extrapolated that since earthquakes are the most common disasters in Turkey, their awareness and competence in preparation during earthquakes is higher [47]. Back and Alfred showed that competent nurses were more likely to have real life experience of working during disasters and in shelters [18].

In the present study, nurses participating in HDP programs had higher competence to work during disasters. This result was expected as HDPs are important tools for reinforcing duties and responsibilities during disasters. In a study that evaluated preparedness of nurses in a public hospital, comparison of basic preparedness skills of nurses based on their gender, marital status, and educational level showed no significant difference, while comparison of their skills based on age, vocational experience, working department, and disaster experience revealed a significant difference [48]. On the other hand, Jiang et al. showed the importance of nurses' working department, prior education, current state of employment, and attitude as the indicators of their competence [49]. Furthermore, our results showed that nurses with hobbies had higher competence. Activity and mobility can make problem-solving faster during disasters. No any studies was found on investigating the effect of hobby variable to compare the results.

In this study, a correlation was found between nurses' competence and willingness. This indicates that the steps taken for increasing nurses' competence can increase their willingness. Other similar studies also found that willingness of nurses to work during a disaster is an important indicator of their competence in disaster preparedness [18, 20]. Some studied have also shown that knowledge and willingness have a positive relationship with each other [10, 50, 51].

This study had some limitations. It is limited to nurses employed in public hospitals in the center of Bolu city; therefore, the results cannot be generalized to the whole population of the country.

5. Conclusions

Most nurses in Turkey are undecided about working during disasters. They are mostly willing to work during an earthquake, while are less willing to work during pandemics. There is a low correlation between nurses' competence and willingness to work during disasters. Any steps that are taken for increasing their competence can increase their willingness. Medical centers should consider that nurses have willingness to work during different disasters and should appoint them based on the situation. The centers can provide childcare or elderly care services to the nurses to increase their willingness and competence in working during disasters. They should consider the nurses' marital status and that whether they have children or not. Nurses should be given active roles in HDP programs and have updated information about the subject. Willingness and competence of working during disasters should be examined together and appropriate legal and practical measures should be taken in the field. Because of gender role beliefs, male nurses have more willingness and competence to work during disasters. Therefore, gender sensitivity should be taken into account in the selection of nurses to work during disasters.

Ethical Considerations

Compliance with ethical guidelines

Permission of the ethics board (Protocol No: 2019/49) was acquired for the conduct of this study by Çanakkale Onsekiz Mart University School of Graduate Studies. Permission to use "Basic Qualifications Scale in Nurses' Preparedness for Disaster" for measurement was acquired.

Funding

The paper was extracted from the MSc thesis of the first author, Department of Disaster Education and Management, Graduate Education Institute, Çanakkale Onsekiz Mart University

Authors' contributions

Conceptualization and Supervision: Ebru Inal Onal; Methodology: Both authors; Investigation, Writing-original draft, and Writing-review & editing: Both authors; Data collection: Kübra Gizem Kugum; Data analysis: Both authors.

Conflict of interest

The authors declared no conflict of interest.

Acknowledgments

This study was presented as an oral presentation at the 5th International 23rd National Public Health Congress

References

[1] Department of Humanitarian Affairs. Internationally agreed glossary of basic terms related to disaster management. United Nations. Geneva: United Nations, Department of Humanitarian Affairs; 1992. [Link]

[2] Ministry of Interior Disaster and Emergency Presidency (AFAD). 2019 overview of disaster management and natural disaster statistic. Ankara: Ministry of Disaster and Emergency Management Presidency; 2020. [Link]

[3] Stergachis A, Garberson L, Lien O, D'Ambresio L, Sangare L, Dold C. Health care workers' ability and willingness to report to work during public health emergencies disaster medicine and public health preparedness. 2011; 5(4):300-8. [DOI:10.1001/dmp.2011.77] [PMID]

[4] Qureshi K, Gershon RRM, Sherman MF, Straub T, Gebbie E, McCollumn M, et al. Health care workers' ability and willingness to report to duty during catastrophic disasters. Journal of Urban Health. 2005; 82(3):378-88. [DOI:10.1093/jurban/jti086] [PMID] [PMCID]

[5] Iserson KV, Heine CE, Luke Larkin G, Moskop JC, Baruch j, Aswegan AL. Fight or flight: The ethics of emergency physician disaster response. Annals of Emergency Medicine. 2008; 51:345-53. [DOI:10.1016/j.annemergmed.2007.07.024] [PMID] [PMCID]

[6] Fung OW, Loke AY, Lai CK. Disaster preparedness among Hong Kong nurses. Journal of Advanced Nursing. 2008; 62(6):698-703. [DOI:10.1111/j.1365-2648.2008.04655.x] [PMID]

[7] Putra A, Petpichetchian W. Public health nurses' roles and competencies in disaster management. Nurse Media Journal of Nursing. 2011; 1(1):1-14. [DOI:10.14710/nmjn.v1i1.742]

[8] Iserson KV, Heine CE, Luke Larkin G, Maskop JC, Baruch J, Aswegan AL. Paramedics' perceptions of risk and willingness to work during disasters. Annals of Emergency Medicine. 2008; 51(4):345-53. [DOI:10.1016/j.annemergmed.2007.07.024] [PMID] [PMCID]

[9] Wong WC, Lee A, Tsang KK, Wong SY. How did general practitioners protect themselves, their family, and staff during the SARS epidemic in Hong Kong? Journal of Epidemiology and Community Health. 2004; 58(3):180-5. [DOI:10.1136/jech.2003.015594] [PMID] [PMCID]

[10] Nashwan AJ, Abujaber AA, Mohamed AS, Villar RC, Al-Jabry MM. Predicting the willingness of nurses to work with COVID-19 patients: The impact of knowledge and attitude. Nursing Open. 2021; 8(2):695-701. [DOI:10.21203/rs.3.rs-60995/v1]

[11] Fung OW, Loke AY. Nurses' willingness and readiness to report for duty in a disaster. Journal of Emergency Management. 2013; 11(1):25-37. [DOI:10.5055/jem.2013.0125] [PMID]

[12] Kang HS, Son YD, Chae SM, Corte C. Working experiences of nurses during the Middle East respiratory syndrome outbreak. International Journal of Nursing Practice. 2018; 24(5):e12664. [DOI:10.1111/ijn.12664] [PMID] [PMCID]

[13] Sultan MAS, Løwe Sørensen J, Carlström E, Mortelmans L, Khorram-Manesh A. Emergency healthcare providers' perceptions of preparedness and willingness to work during disasters and public health emergencies. Healthcare (Basel). 2020; 8(4):442. [DOI:10.3390/healthcare8040442] [PMID] [PMCID]

[14] Turner JA, Rebmann T, Loux TM, Charney RL. Willingness to respond to radiological disasters among first responders in St. Louis, Missouri. Health Security. 2020; 18(4):318-28. [DOI:10.1089/hs.2019.0160] [PMID] [PMCID]

[15] Bektaş Akpınar N, Aşkın Ceran M. [Current approaches about disasters and role and responsibilities of disaster nurse (Turkish)]. Journal of Paramedic and Emergency Health Services. 2020; 1(1):28-40. [Link]

[16] Kalanlar B, Kubilay G. [An important concept of protecting public health in disasters situations: Disaster nursing (Turkish)]. Florence Nightingale Journal of Nursing. 2015; 23(1):57-65. [DOI:10.17672/fnhd.34589]

[17] Taşkıran G, Baykal Ü. [Disasters and nurses' preparedness for disasters in Turkey: Literature review (Turkish)]. Journal of Health and Nursing Management. 2017; 4(2):79-88. [DOI:10.5222/SHYD.2017.07]

[18] Baack, S, Alfred D. Nurses' preparedness and perceived competence in managing disasters. Journal of Nursing Scholarship. 2013; 45(3):281-7. [DOI:10.1111/jnu.12029] [PMID]

[19] Hung MSY, Lam SKK, Chow MCM, Ng WWM, Pau OK. The effectiveness of disaster education for undergraduate nursing students' knowledge, willingness, and perceived ability: An evaluation study. International Journal of Environmental Research and Public Health. 2021; 18(19):10545. [DOI:10.3390/ijerph181910545] [PMID] [PMCID]

[20] Choi HS, Lee JE. Hospital nurses' willingness to respond in a disaster. Journal of Nursing Administration. 2021; 51(2):81-8. [DOI:10.1097/NNA.0000000000000974] [PMID]

[21] Gebbie KM, Qureshi K. Emergency and disaster preparedness: Core competencies for nurses: What every nurse should but may not know. The American Journal of Nursing. 2002; 102(1):46-51. [DOI:10.1097/00000446-200201000-00023]

[22] Çelik F. Self reported disaster preparedness of nurses in Turkish Red Crescent. Istanbul University, Health Sciences Institute, Istanbul; 2010. [Link]

[23] International nursing coalition for mass casualty education (INCMCE). Educational competencies for registered nurses responding to mass casualty incidents. Nashville: International nursing coalition for mass casualty education; 2003. [Link]

[24] Pituch KA, Stevens J P. Applied multivariate statistics for the social sciences: Analysis with SAS and IBM's SPSS. New York: Taylor and Francis; 2016. [Link]

[25] Büyüköztürk Ş. [Manual of data analysis for social sciences (Turkish)]. Ankara: Pegem Academy Publishing; 2011. [Link]

[26] Kirk R. Statistics: An introduction. Belmont: Thomson Higher Education; 2008. [Link]

[27] The International Federation of Red Cross and Red Crescent Societies (IFRC). World disasters report 2020. Geneva: The International Federation of Red Cross and Red Crescent Societies; 2020. [Link]

[28] Kalanlar B. 2013. [Teaching disaster nursing and management to nursing students: The use of Jenning disaster nursing management model (Turkish)] [PhD Dissertation]. Ankara: Hacettepe University; 2012. [Link]

[29] Charney RL, Rebmann T, Flood RG. Hospital employee willingness to work during earthquakes versus pandemics. Journal of Emergency Medicine. 2015; 49(5):665-74. [DOI:10.1016/j.jemermed.2015.07.030] [PMID]

[30] Arbon P, Cusack L, Ranse J, Shaban RZ, Considine J, Kako M, et al. Exploring staff willingness to attend work during a disaster: A study of nurses employed in four Australian emergency departments. Australasian Emergency Nursing Journal. 2013; 16(3):103-9. [DOI:10.1016/j.aenj.2013.05.004] [PMID]

[31] Al-Hunaishi W, Hoe VC, Chinna K. Factors associated with healthcare workers willingness to participate in disasters: A cross-sectional study in Sana'a, Yemen. BMJ Open 2019; 9(10):e030547. [DOI:10.1136/bmjopen-2019-030547] [PMID] [PMCID]

[32] Lanzilotti SS, Galanis DJ, Leoni N, Craig B. Hawaii medical professionals assessment. Hawaii Medical Journal. 2002; 61(8):162-73. [PMID]

[33] Martens KA, Hantsch CE, Stake CE. Emergency preparedness survey: Personnel availability and support needs. Annals of Emergency Medicine. 2003; 42(4):S105-S6).

[34] Shapira Y, Marganitt B, Roziner I, Shochet T, Bar Y, Shemer J. Willingness of staff to report to their hospital duties following an unconventional missile attack: A state-wide survey. Israel Journal of Medical Sciences. 1991; 27(11-12):704-71. [PMID]

[35] Irvin CB, Cindrich L, Patterson W, Southall A: Survey of hospital healthcare personnel response during a potential avian influenza pandemic: Will they come to work? Prehospital and Disaster Medicine. 2008; 23(4):328-35. [DOI:10.1017/S1049023X00005963] [PMID]

[36] Grimes DE, Mendias EP. Nurses' intentions to respond to bioterrorism and other infectious disease emergencies. Nursing Outlook. 2010; 58(1):10-16. [DOI:10.1016/j.outlook.2009.07.002] [PMID]

[37] PKF Istanbul. [Flexible working and administrative leave circular (Turkish)] [Internet] 2022 [Updaded 2021 April 15]. Available from: [Link]

[38] Burke RV, Goodhe CJ, Chokshi NJ, Upperman JS. Factors associated with willingness to respond to a disaster: A study of healthcare workers in a tertiary setting. Prehospital and Disaster Medicine. 2011; 26(4):244-50. [DOI:10.1017/S1049023X11006492] [PMID]

[39] Dimaggio C, Markenson D, T Loo G, Redlener I. The willingness of U.S. emergency medical technicians to respond to terrorist incidents. Biosecurity and Bioterrorism. 2005; 3(4):331-7. [DOI:10.1089/bsp.2005.3.331] [PMID]

[40] Ozcan F. [Nurses' disaster preparedness and perception of preparedness (Turkish)] [MA Thesis]. Istanbul: Marmara University; 2013. [Link]

[41] Inal E, Kaya E. Health care students' willingness to work during disasters in Turkey. International Emergency Nursing. 2021; 56:101002. [DOI:10.1016/j.ienj.2021.101002] [PMID]

[42] Qureshi KA, Merrill JA, Gershon RR, Calero-Breckheimer A. Emergency preparedness training for public health nurses: A pilot study. Journal of Urban Health. 2002; 79(3):413-16. [DOI:10.1093/jurban/79.3.413] [PMID] [PMCID]

[43] Dalton CB, Durrheim DN, Conroy MA. Likely impact of school and childcare closures on public health workforce during an influenza pandemic: A survey. Communicable Diseases Intelligence Quarterly Report. 2008; 32(2):261-2. [PMID]

[44] Ehrenstein BP, Hanses F, Salzberger B: Influenza pandemic and Professional duty: Family or patients first? A survey of hospital employees. BMC Public Health 2006; 6:311. [DOI:10.1186/1471-2458-6-311] [PMID] [PMCID]

[45] Seale H, Leake K, MacIntyre CR. Will they just pack up and leave? Attitudes and intended behavior of hospital health care workers during an influenza pandemic. BMC Health Services Research. 2009; B9(1):30. [DOI:10.1186/1472-6963-9-30] [PMID] [PMCID]

[46] Zeren H. [Preparedness to disasters of nurses who works at Bezmialem foundation university hospitals (Turkish)] [MA Thesis]. Istanbul: Bezmialem Vakıf University; 2019. [Link]

[47] Karakıs S.0 [Disaster preparedness of nurses who works at hospitals of public and their psychological resilience (Turkish)] [MA Thesis]. Istanbul: Marmara University; 2019. [Link]

[48] Taskıran G. [Preparedness to disasters of nurses who works at A hospital of state university (Turkish)] [MA Thesis]. Istanbul: Istanbul University; 2015. [Link]

[49] Jiang L, He HG, Zhou WG, Shi SH, Yin TT, Kong Y. Knowledge, attitudes and competence in nursing practice of typhoon disaster relief work among Chinese nurses: A questionnaire survey. International journal of Nursing Practice. 2015; 21(1):60-9. [DOI:10.1111/ijn.12214] [PMID]

[50] Adams LM, Berry D. Who will show up? Estimating ability and willingness of essential hospital personnel to report to work in response to a disaster. The Online Journal of Issues in Nursing. 2012; 17(2). [DOI:10.3912/OJIN.Vol-17No02PPT02] [PMID]

[51] Chilton JM, McNeill C, Alfred D. Survey of nursing students' self-reported knowledge of Ebola virus disease, willingness to treat, and perceptions of their duty to treat. Journal of Professional Nursing. 2016; 32(6):487-93. [DOI:10.1016/j.profnurs.2016.05.004] [PMID]

This Page Intentionally Left Blank