

Original Article

Rehabilitation Nurses' Opinions on Disaster Rehabilitation Services, Their Training Needs and Perceptions of Preparedness for Disasters

Bilge Kalanlar, PhD, RN

Assistant Professor, Department of Public Health Nursing, Hacettepe University Faculty of Nursing
Ankara, Turkey

Duygu Akcay, PhD, RN

Colonel, Ministry of National Defence, Military Health Services. Ankara, Turkey

Sefa Gumruk Aslan, MD

Physician, Department of Physical Medicine and Rehabilitation, Ministry of Health Ankara Education
and Research Hospital, Ankara, Turkey

Correspondence: Bilge Kalanlar, Assistant Professor, PhD, RN. Department of Public Health Nursing.
Hacettepe University Faculty of Nursing Ankara, Turkey. Hacettepe University Faculty of Nursing 06100-
Ankara, Turkey e-mail: bilgekalanlar@hacettepe.edu.tr bt.bilge@gmail.com

Abstract

Background: The increase in the number and intensity of disasters in recent years has shown the importance of victim-centered rehabilitation services in disaster management, and has given rehabilitation nurses important roles to play. This study aims to determine rehabilitation nurses' views on disaster rehabilitation services, their training needs, and perceptions of preparedness for disasters.

Method: The study was conducted with rehabilitation nurses working in a 200-bed education and research hospital specialized in physical medicine and rehabilitation services. A scale to measure nurses' perception of preparedness for disasters and a questionnaire to collect nurses' opinions on rehabilitation services were used.

Results: Rehabilitation nurses reported high levels of preparedness for the disaster preparedness phase, and moderate levels of preparedness for the disaster response and the recovery phases.

Conclusion: The total score for rehabilitation nurses' perceptions of preparedness for disasters was moderate and they needed to receive training on disaster rehabilitation services.

Keywords: rehabilitation nursing, disaster rehabilitation, training needs, disaster preparedness

Introduction

In 2018, 315 natural disasters were recorded in the world. 68.5 million people were affected by these disasters and 11,804 people lost their lives (CRED 2019). According to the results of the INFORM Global Risk Index, Turkey is considered at high and increasing risk from disasters (INFORM 2018). A major earthquake causing large-scale loss of life and property hits Turkey on average every five years (AFAD 2018). Thousands of people are injured or become disabled as a result of natural and man-made disasters. Disasters can cause loss of life from serious injuries such as spinal cord injury (SCI), traumatic brain injury, limb amputee, fracture, peripheral nerve injury (Rathore et al. 2012; Gosney 2010; Li et al. 2011, Mohebbi

2008; Zhang 2009). There is a significant increase in the number of serious injuries that cause mortality in disaster situations (Reinhardt 2011). Besides, short- or long-term disabilities occur due to inadequate treatment (Gosney et al. 2011). Especially people with disabilities and chronic diseases or disadvantaged individuals (women, children, elderly) may experience more physical and mental health problems in disaster situations (Kalanlar 2018). However, these individuals sometimes receive delayed assistance or inadequate intervention in disasters (CDC 2009). These people face unique challenges in disaster situations, which can be directly life-threatening for them.

One of the most effective methods of coping with disasters and reducing disaster-related

deaths, injuries, and disabilities is to ensure the highest level of disaster response supported with adequate rehabilitation services. Medical rehabilitation plays an important role in a comprehensive disaster management system (Dhameja 2008, Landry 2010). In this system, rehabilitation interventions need to be routinely monitored at the community level starting from the early stages of disaster response (Gosney et al. 2011; WHO 2014; WHO 2010; Mousavi et al. 2019; WHO 2011; Kalra, Dale P & Crome P. 1993; Khan 2003; National Health Report 2010).

There are various studies reporting the effectiveness of early medical rehabilitation interventions in the treatment of injured people in disaster events (Su Yi et al. 2019, Amatya et al. 2011; Li et al. 2011, Li et al. 2012; Ni et al. 2013). Findings indicate that positive health outcomes can be achieved if individuals in disaster-affected areas can access medical rehabilitation services (Mousavi et al. 2019, Khan et al. 2015, Amatya et al. 2017, WHO 2011, Gosney et al. 2011, Lezzoni 2010). The victims who were given treatment in rehabilitation centers because of a natural disaster had lower rates of hospital stay, fewer complications, and better clinical results (Gosney et al. 2011, Rathore et al. 2008, Amatya et al. 2017). Health professionals have important roles and responsibilities in achieving these positive outcomes.

Health personnel working in rehabilitation services can make significant contributions to improve the health of individuals, families, and communities in acute and post-disaster phases (Khan et al. 2015; Rathore et al. 2012; Gosney 2010). However, interdisciplinary cooperation is needed to help victims return to their everyday life as soon as possible. Creating a well-functioning interdisciplinary team is considered central to modern health philosophy (Reinhardt et al. 2011; Khan, Amatya & Hoffman 2012; Su Yi et al. 2019). Rehabilitation nurses, an important part of this team, are expected to adopt a “hands-off” approach instead of a “doing for” or “doing to” approach (Pryor & Buzio 2010).

Nurses have important roles to play in ensuring the physical well-being of patients, preventing complications, promoting motivation, hope, and behavioral change, detecting irrational beliefs, reducing uncertainties about diseases, and enhancing problem-solving skills (Akdemir 2006). To fulfill these roles, they need to have

sufficient knowledge, skills, and experience in every field where medical rehabilitation will be applied (Akdemir 2006, Brown, Hickling & Frahm 2010, Mauk 2011, Pryor & Smith 2002, WHO 2010). This need also shows itself in disaster situations.

All nurses have some general information on how to respond to emergencies, but rehabilitation nurses are specifically trained to respond in situations like disasters, which require more versatile and qualified interventions. Rehabilitation nurses have a key role in emergency planning, response and recovery efforts in disaster situations and can perform important activities on-site (Brown 2010, Akdemir 2006). Rehabilitation nurses' ability to solve problems during medical interventions can be reassuring and highly valuable to survivors. They can keep calmer in the face of emotional reactions of individuals in situations such as injuries and losses after disasters as they are familiar with them. Rehabilitation nurses play a vital role in disaster preparedness, response, and recovery efforts. Their preparedness for disasters should be improved through continuing in-service trainings to enable them to be proactive and provide effective health services (Brown, Hickling & Frahm 2010).

Most studies show that despite nurses' important roles and responsibilities in disaster management (Pourvakhshoori et al. 2017), their preparedness for disasters is not sufficient and needs to be improved (Spleski 2010; Pourvakhshoori et al. 2017). Research on disasters generally focus on primary health care nurses (Prodocimi & Witt 2018), postgraduate students (Rajesh et al. 2011), undergraduate nursing students (Alim, Kawabata & Nakazawa 2015, Usher & Mayner 2011) community health nurse coordinators (Sangkala & Gerdtz 2018), operating theater nurses (Sonneborn et al. 2018), hospital nurses (Tzeng et al. 2016, Shapira et al. 2016), and emergency nurses (Hammad, Arbon & Gebbie 2011) rather than rehabilitation nurses.

The number of people who need medical rehabilitation at each stage of disasters has been increasing continuously in Turkey (Erden 2013). This increase brings the need for qualified rehabilitation nurses to provide effective health services, especially in disaster situations. However, in Turkey few studies have examined the preparedness of nurses for disasters. They were mostly conducted with students or clinical

nurses and did not address the role of rehabilitation nurses in disasters (Oztekin et al. 2015; Özcan 2013; Taşkıran & Baykal 2019).

This study makes an important contribution to the literature by assessing rehabilitation nurses' perceptions of preparedness for disasters, their need for awareness and training in disaster rehabilitation services. The results will provide valuable insights for nurse managers, health institution managers, and decision-makers into what can be done to improve rehabilitation services for effective overall disaster response. This study aims to: assess rehabilitation nurses' perceptions of preparedness for disasters, determine rehabilitation nurses' views on disasters rehabilitation services, and identify rehabilitation nurses' training needs.

Method

This cross-sectional study was conducted in a leading 200-bed rehabilitation hospital in Turkey between January and March 2019. The study population consisted of 60 rehabilitation nurses. Five nurses who were on leave during the research period and 5 who did not agree to take part were excluded. Fifty nurses completed and returned the question forms (a return rate of 83.3%).

Three instruments were used to collect data:

Personal Information Form: This included questions about respondents' age, education, years of work, etc.. To identify the training needs of nurses related to disaster rehabilitation services, the form asked nurses their previous disaster experience and professional disaster response experience, their need and desire to participate in trainings, and views on providing rehabilitation before, during, and after disasters.

Opinions on disaster rehabilitation services questionnaire: The researcher developed this questionnaire using information from the report of the World Health Organization titled *Emergency medical teams: minimum technical standards and recommendations for rehabilitation* (WHO 2016; Brown, Hickling & Frahm 2010, Mauk 2011). The questionnaire included statements on the roles and responsibilities of rehabilitation nurses in disaster preparedness, response, and recovery. Nurses were asked if they agree with these statements. The questions were reviewed by 3 methodology experts to ensure the quality and relevance of the questionnaire to the topic. Pilot testing was

conducted to check that the questionnaire was clear, understandable, and appropriate terminology was used. The results were analyzed and no changes were made. The final version of the questionnaire contained 9 items. The items were rated on a 5 point Likert-type scale ranging from strongly disagree (1) to strongly agree (5). Cronbach's alpha coefficient was used for testing the reliability of the results during pilot testing. It was found to be 0.780, which was considered acceptable.

Nurses perception of disaster preparedness scale: The nurses' perception of disaster preparedness scale (NPDP) was developed by Özcan to measure nurses' feelings of preparedness to professionally respond to disasters (Özcan 2013). The scale contained 20 items organized into 3 categories: disaster preparedness (questions 1-6), disaster response (questions 7-15), and disaster recovery (questions 16-20). The items were rated according to a five-point Likert-type scale ranging from strongly disagree (1) to strongly agree (5). A higher scale score indicates a higher level of perception of preparedness for disasters. The Cronbach's alpha value was 0.907 and the test-retest reliability coefficient was .98.

Data Analysis: Data analysis was performed using IBM SPSS (version 21.0). A 95% confidence interval was used for the statistical results. Descriptive statistics were used to analyze the data. Means and standard deviations were calculated for the questionnaire items.

Ethical considerations: Permissions and ethical approval were obtained from the research committee and the hospital to conduct the study. Oral and written informed consent from the nurses and their managers was obtained. They were informed that participation in the study was voluntary.

Results

Demographics of participants: The mean age of the participants was 40.84 ± 4.360 and the mean professional experience was 9.04 ± 6.972 ; all of them were women (Table 1).

Rehabilitation nurses' views on disaster rehabilitation services: Table 2 shows that the participants mostly agreed with the statements on disaster rehabilitation services. The highest mean was linked to the item 'a rehabilitation nurse provides the integrity of rehabilitation services during disaster preparedness, response, and recovery phases with the information obtained from rehabilitation teams and other resources'

(M = 4.20, SD = 0.833). The lowest mean was linked to the item 'with my knowledge of disasters, I can take an active role in disaster management (including preparedness, response, and recovery) in every disaster situation wherever I am' (M = 3.06 SD = 1.096).

Nurses' training needs regarding rehabilitation services in disasters: As shown in Table 3, 72% of the rehabilitation nurses have not experienced any disaster in their lifetime nor involved in disaster response in their professional life. On the other hand, 96% thought that rehabilitation services should be provided for individuals in disaster preparedness, response, and recovery phases. Ninety four percent felt that they need training in disaster rehabilitation services, and 90% were eager to receive training on this topic.

Perceptions of preparedness for disasters

NPDP scale: For the rehabilitation nurses, the mean scores on the five-point NPDP scale were 3.949 ± 0.671 for the preparedness phase, 3.644 ± 0.644 for the response phase, and $3.595 \pm$

0.698 for the recovery phase. The nurses reported moderate levels of preparedness for disasters on the NPDP scale (Table 4).

The one-way analysis of variance (ANOVA) showed that for the nurses, the mean scores of disaster preparedness, response, and recovery phases were linked to age (Anova). The results of the post-hoc analysis which was made to identify the sources of differences showed a significant difference in the mean scores between the nurses under 38 years and those over 44 years on the disaster response subscale ($F = 4.212$; $p = 0.021 < 0.05$).

The ANOVA analysis showed that the mean scores of disaster preparedness, response, and recovery phases were linked to years of work (Table 5). The post-hoc test showed a statistically significant difference in the mean scores between the nurses who had 2 or less years of work and those having 13 or over years of work on the disaster preparedness subscale ($F=5.184$; $p=0.009 < 0.05$).

Table 1. Demographic characteristics of the participants (n = 50)

Variables	n	%
Age		
Mean \pm SD	40.84 \pm 4.360	
≤ 38	18	36.0
39-43	16	32.0
≥ 44	16	32.0
Years of work		
Mean \pm SD	9.04 \pm 6.972	
≤ 2 year	20	40.0
3-12	9	18.0
≥ 13	21	42.0

Table 2. Rehabilitation nurses opinions on disaster rehabilitation services

No	Statement	Mean	SD
1	A rehabilitation nurse ensures coordination during disaster preparedness, response, and recovery phases by communicating effectively with other members of the rehabilitation team.	4.16	0.738
2	A rehabilitation nurse raises awareness among individuals and educates them if necessary to encourage the usage of technology and various assistive tools for solving health problems and to help victims adapt to the environment in disaster response and recovery phases.	4.08	1.027
3	A rehabilitation nurse supports and motivates future development and learning in	3.74	1.046

individuals and families during disaster preparedness, response, and recovery phases.

4	A rehabilitation nurse delivers or ensures the delivery of needed education and services to individuals to help them achieve self-care and independence during disaster response and recovery phases and takes necessary actions.	3.94	0.956
5	A rehabilitation nurse offers advice to individuals on health services, resource and support services, agencies, and their future lives in the recovery phase.	4.00	0.833
6	A rehabilitation nurse ensures the environmental comfort and safety of an individual during the response phase and applies necessary measures to prevent new disabilities and infections that a person may develop because of his/her limitations.	4.14	0.756
7	A rehabilitation nurse provides the integrity of rehabilitation services during disaster preparedness, response, and recovery phases with the information (including data collection, planning, implementation, and evaluation) obtained from rehabilitation teams and other resources.	4.20	0.833
8	A rehabilitation nurse spends sufficient time listening to individuals' feelings and thoughts during the response and recovery phases, supports them or makes referrals to appropriate professionals when necessary.	3.50	1.165
9	With my knowledge of disasters, I can take an active role in disaster management (preparedness, response, and recovery) in every disaster situation wherever I am.	3.06	1.096

SD

Table 3. Nurses' training needs regarding rehabilitation services in disasters

	Yes		No	
	n	%	n	%
Have you ever experienced a disaster in your lifetime?	14	28.0	36	72.0
Have you ever been involved in a disaster/an emergency response in your professional nursing life?	14	28.0	36	72.0
Do you think that you need training in disaster rehabilitation services?	47	94.0	3	6.0
Do you want to receive training in disaster rehabilitation services?	45	90.0	5	10.0
Do you think that individuals should be provided with rehabilitation services in disaster preparedness, response, and recovery?	48	96.0	2	4.0

Table 4. Minimum, Maximum, Average, and Standard Deviation Values of the NPDP Subscales

NPDP Subscales	n	Mean \pm SD	Min.	Max.
Disaster Preparedness	50	3.949 \pm 0.671	2.0	5.0
Disaster Response	50	3.644 \pm 0.644	1.89	4.78
Disaster Recovery	50	3.595 \pm 0.698	1.80	5.0

Table 5. Distribution of mean scores by age and years of work on the subscales

NPPD Subscales	Age	n	mean	SD	F	P
Disaster Preparedness	≤ 38	17	23.058	3.732	0.590	0.558
	39-43	16	24.062	5.039		
	≥ 44	15	24.600	3.268		
Disaster Response	≤ 38	16	31.062	4.850	4.212	0.021
	39-43	16	32.187	6.695		
	≥ 44	15	36.666	5.232		
Disaster Recovery	≤ 38	17	17.470	3.809	3.052	0.057
	39-43	16	17.312	3.113		
	≥ 44	15	20.066	3.453		
NPPD Subscales	Years of work	n	mean	SD	F	P
Disaster Preparedness	≤ 2	13	21.538	3.230	5.184	0.009
	3-12	18	23.611	4.526		
	≥13	17	25.941	3.111		
Disaster Response	≤ 2	13	30.615	5.204	1.883	0.164
	3-12	18	34.722	6.017		
	≥13	16	33.687	6.353		
Disaster Recovery	≤ 2	13	16.769	3.192	1.586	0.216
	3-12	18	18.500	3.974		
	≥13	17	19.058	3.418		

F: Anova

Discussion

This study was conducted with rehabilitation nurses working in a leading rehabilitation hospital in the province of Ankara. The study determined rehabilitation nurses' views on disaster rehabilitation services, their training needs, and perceptions of preparedness for disasters. The overall study results show that rehabilitation nurses' perceptions of preparedness for disasters were moderate, they were aware of the importance of rehabilitation services in disasters, but they needed to receive training on this topic.

Rehabilitation nurses have important roles and responsibilities in all phases of disasters, including preparedness, response and, recovery.

They offer overall medical case management (Gosney et al. 2011). The goals of rehabilitation nursing are defined as promoting self-care, improving patients' impaired functions and quality of life. To achieve these goals, nurses seek to maintain individuals' present abilities and roles, improve their health, prevent possible disorders, complications, and impairments, and reduce disability (Pryor & Smith 2002, Mauk 2011; Brown, Hickling & Frahm 2010). Rehabilitation nurses have many roles to play. They are educators, caregivers, consultants, care coordinators, encouragers, researchers, and experts (Pryor & Smith 2002, Mauk 2011). Rehabilitation nurses in this study reported positive opinions about the roles and responsibilities they should carry out in disaster

preparedness, response, and recovery (Table 2). This result shows that rehabilitation nurses are well aware of what needs to be done at all phases of disasters.

During or after a disaster people may suffer from physical or mental health problems requiring medical rehabilitation services. Fractures or puncture wounds, for example, can be treated easily in disaster situations such as earthquakes and storms. On the other hand, exposure to chemicals, biological toxins, or pandemics can lead to chronic problems. Rehabilitation nurses have an important role in the care and treatment of patients in such acute and chronic cases. Almost all of the rehabilitation nurses believe that rehabilitation services should be provided to individuals during disaster preparedness, response, and recovery phases (Table 3). Many studies reported the need to equip nurses with basic knowledge and skills in disaster management (Rizqillah & Suna 2018, Kalanlar 2018, Nagar 2017, Wen 2016, Sonneborn et al. 2018). Although these studies have not discussed this issue within the context of rehabilitation nurses, they emphasized the need for education (Huh & Kang 2019; Sonneborn et al 2018, Negar 2017, Lam et al. 2018, Tzeng et al. 2016). Most rehabilitation nurses in this study reported that they needed training in disasters and wanted to receive some (Table 3).

Rehabilitation nurses should have basic competences, knowledge, and skills related to disaster preparedness, response, and recovery to be able to assess victims' acute and chronic health needs as a part of their nursing role. Education and experience are crucial in achieving these gains. There are many studies in the literature that report the link between previous professional disaster experience and greater levels of preparedness for disasters (Baack & Alfred 2013; Usher et al. 2015, Rizqillah & Suna 2018; Rizqillah & Suna 2018). However, consistent with the findings of previous studies, most nurses (72%) have not previously experienced any disaster nor professionally involved in disaster response (Hodge, Miller & Skaggs 2017; Usher et al. 2015).

The study found that age and years of experience had significant relationships with nurses' perceptions of preparedness for disasters (Table 4-5). Rehabilitation nurses who were 44 years or older and those having 13 years or more years of

work at the hospital reported higher perceptions of preparedness for disasters. Unlike this finding, it was reported in the literature that additional years of nursing experience were not related to disaster preparedness (Rizqillah & Suna 2018). Similarly, another study reported no relationship between years of experience and preparedness to respond to disasters (Seyedin, Dolatabadi & Rajabifard 2015). The reason for the positive correlation between years of nursing experience and the levels of perceived preparedness among the rehabilitation nurses in our study might be that nurses with greater experience feel more competent to address physical and mental health problems of disaster victims.

A study on nurses' perceptions of preparedness for disaster management reported moderate to low levels of disaster preparedness for nurses, and 65% of the nurses described their current disaster preparedness as weak, 18% medium, 12% good, and 5% very good (Al Khalaileh, Bond & Alasad 2011). In contrast to this finding, rehabilitation nurses reported in our study moderate levels of preparedness for disasters. The fact that nurses have relatively higher levels of perceived preparedness for disaster preparedness phase than for disaster response and recovery phases means that they do not feel that they are good enough in practice despite preparations. Besides, the lowest mean score was linked to the item 'with my knowledge of disasters, I can take an active role in disaster management in every disaster situation wherever I am'. The low rating of this statement indicates that rehabilitation nurses feel unprepared to respond to disasters. In similar studies, nurses reported moderate levels of perceived preparedness for disasters (Usher et al. 2015, Rizqillah 2018). Research shows that nurses are not prepared for disasters (Baack & Alfred 2013, Yane et al. 2015). Therefore, nurses' preparedness for disaster phases can be improved by keeping their knowledge and skills current through regular in-service trainings.

Strengths and limitations: This study contributes to the sparse literature on disaster rehabilitation services offered by rehabilitation nurses. One of the strengths of this study is that it was conducted in a leading rehabilitation hospital. The study group presents a typical sample for nurse groups in other rehabilitation hospitals. However, the data in this study can not be nationally generalized. Nurses who were not available during the research period due to long-

term health issues or leave for other reasons were not included in the study. The findings may provide guidance for improving rehabilitation nurses' preparedness for disasters.

Conclusion: The results showed that although the rehabilitation nurses reported moderate levels of preparedness for disaster phases, they had a high awareness of disaster rehabilitation services, but 94% said they needed training in disaster rehabilitation services. Rehabilitation nurses' knowledge, skills, and abilities in rehabilitation services provided before, during and after a disaster should be enhanced through continuing training (online, practical and in-service training).

References

- Akdemir N, Akkuş Y. (2006). Rehabilitation and Nursing. *Hemşirelik Yüksekokulu Dergisi*. 82–91.
- Al Khalaileh M.A., Bond E., Alasad J.A. (2011). Jordanian nurses' perceptions of their preparedness for disaster management. *International Emergency Nursing* 20, 14–23.
- Alim S., Kawabata M., Nakazawa M. (2015). Evaluation of disaster preparedness training and disaster drill for nursing students. *Nurse Educ Today*. 35, 25–31.
- Amatya B., Galea M., Khan F. (2017). Medical Rehabilitation In Disaster Relief: Towards A New Perspective. *J Rehabil Med*. 49, 620–628.
- Baack S. Alfred D. (2013). Nurses' preparedness and perceived competence in managing disasters. *Journal of Nursing Scholarship*, 45, 281–287.
- Brown LM, Hickling EJ, Frahm K. (2010). Emergencies, disasters, and catastrophic events: The role of rehabilitation nurses in preparedness, response and recovery. *Rehabilitation Nursing*, 35, 236–241.
- Centers for Disease Control and Prevention CDC (2009). Prevalence and most common causes of disability among adults–U.S., *MMWR Morbidity Weekly Report*, 58, 421–426.
- Centre for Research on the Epidemiology of Disasters (CRED). (2019). Natural Disasters 2018. <https://www.emdat.be/publications> (The International Disaster Database)
- Dhameja A. Disaster rehabilitation: towards a new perspective. (2008) In: Pinkowski J, editor. *Disaster management handbook*. Boca Raton: CRC Pr
- Erden Z. (2013). Physiotherapy and Rehabilitation Approaches in Disasters (Afetlerde Fizyoterapi ve Rehabilitasyon Yaklaşımları). Available at: <https://dergipark.org.tr/tr/download/article-file/388591>
- Gosney J, Reinhardt J, Haig A, Li J. (2011). Developing Post-Disaster Physical Rehabilitation: Role of the World Health Organization Liaison Sub-Committee on Rehabilitation Disaster Relief of the International Society of Physical and Rehabilitation Medicine. *J Rehabil Med*, 43, 965–968.
- Gosney JE. (2010). Physical Medicine and Rehabilitation: Critical Role in Disaster Response. *Disaster Med Public Health Prep*. 4, 110–2.
- Hammad KS, Arbon P, Gebbie KM. (2011). Emergency nurses and disaster response: An exploration of South Australian emergency nurses' knowledge and perceptions of their roles in disaster response. *Australasian Emergency Nursing Journal*. 14, 87–94.
- Hodge AJ, Miller EL, Skaggs MKD. (2017). Nursing self-perceptions of emergency preparedness at a rural hospital. *Journal of Emergency Nursing*, 43, 10–14.
- Huh SS, Kang, HY. (2019). Effects of an educational program on disaster nursing competency. *Public Health Nurs*. 36, 28–35.
- Iezzoni L. (2010). Disability Legacy of the Haitian Earthquake. *Ann Intern Med*. 152, 812–4.
- Inform (2018) Inform Global Risk Index Result 2018. Available at: <http://www.inform-index.org/Portals/0/InfoRM/2018/INFORM%20Annual%20Report%202018%20Web%20Spreads.pdf?ver=2017-11-29-171105-863>.
- International Federation of Red Cross and Red Crescent [IFRC]. World Disasters Report .2018. Leaving No One Behind. International Federation of Red Cross and Red Crescent Societies, Geneva. <http://media.ifrc.org/ifrc/wp-content/uploads/sites/5/2018/10/B-WDR-2018-EN-LR.pdf>
- Kalanlar B. (2019). The Challenges and Opportunities in Disaster Nursing Education in Turkey. *Journal of Trauma Nursing*. 26, 164–170
- Khan F, Amatya B, Gosney J, Rathore FA, Burkle FM. (2015). Medical rehabilitation in natural disasters: a review. *Arch Phys Med Rehabil*. 96, 1709–1727.
- Khan F, Amatya B, Hoffman K. (2012). Systematic review of multidisciplinary rehabilitation in patients with multiple trauma, *Br J Surg*. 99, 88–96.
- Khan F, Baquley IJ, Cameron ID. (2003). Rehabilitation after traumatic brain injury. *Med J Aust*, 178, 290–295.
- Lam RPK, et al. (2018). How Do Doctors and Nurses in Emergency Departments in Hong Kong View Their Disaster Preparedness? A Cross-Sectional Territory-Wide Online Survey. *Disaster Med Public Health Prep*. 12, 329–336.
- Landry MD, McGlynn M, Ng E, et al. (2010). Humanitarian response following the earthquake in Haiti: reflections on unprecedented need for rehabilitation. *World Health Popul*, 18–22.
- Li J, Xiao M, Zhang X, Zhao Z. (2011). Factors affecting functional outcome of Sichuan

- earthquake survivors with tibial shaft fractures: A follow-up study. *J Rehabil Med.* 43, 515-520.
- Li Y, Reinhardt J, Gosney J. (2012). Evaluation of functional outcomes of physical rehabilitation and medical complications in spinal cord injury victims of the Sichuan earthquake. *J Rehabil Med.* 44,534-540.
- Mauk KL. (2011). *Rehabilitation Nursing A Contemporary Approach To Practice.* Jones & Bartlett Learning.
- Menegat PR, Witt R. (2018). Primary health care nurses' competencies in rural disasters caused by floods. *Rural Remote Health.* 18, 4450.
- Ministry of Interior Disaster and Emergency management Presidency (AFAD),.(2018).Natural Disaster Management and Natural Disaster Statistics in Turkey. <https://www.afad.gov.tr/>
- Mohebbi HA, Mehrvarz S, Saghafinia M. (2008). Earthquake related injuries: assessment of 854 victims of the 2003 Bam disaster transported to tertiary referral hospitals. *Prehosp Disaster Med.* 23, 510–515.
- Mousavi G, Ardalan A, Khankeh H, Kamali M, Ostadtaghizadeh A. (2019). Physical Rehabilitation Services in Disasters and Emergencies: A Systematic Review. *Iran J Public Health,* 48 (5); 808-815.
- Ni J, Reinhardt J, Zhang X.(2013). Dysfunction and Post-Traumatic Stress Disorder in Fracture Victims 50 Months after the Sichuan Earthquake. *PLoS On.* 8, e77535
- Ozcan F. (2013). Disaster Preparedness and Perception for Preparedness in Nurses. Unpublished master's thesis, *Marmara University Institute of Health Sciences, Istanbul*
- Oztekin SD, Larson EE, Yuksel S, Altun UG. (2015). Undergraduate nursing students' perceptions about disaster preparedness and response in Istanbul, Turkey, and Miyazaki, Japan: a cross-sectional study. *Jpn J Nurs Sci.* 12, 145-153.
- Pourvakhshoori N, et al. (2017). Nurse in limbo: A qualitative study of nursing in disasters in Iranian context. *PLoS One.* 12, 7.
- Pourvakhshoori N, Norouzi K, Ahmadi F, Hosseini M, Khankeh H. (2017). Nursing in disasters: A review of existing models. *International Emergency Nursing.* 31, 58–63
- Pryor J, Buzio A. (2010). Enhancing inpatient rehabilitation through the engagement of patients and nurses. *Journal of Advanced Nursing.* 66, 978-987.
- Pryor J, Smith C. (2002). A framework for the role of registered nurses in the specialty practice of rehabilitation nursing in Australia. *Journal of Advanced Nursing.* 39, 249-257
- Rajesh MG, et al., (2011). A survey on disaster management among postgraduate students in a private dental institution in India. *American Journal of Disaster Medicine,* 6, 309-318.
- Rathore FA, Gosney JE, Reinhardt JD, Haig AJ, Li J, DeLisa JA.(2012).Medical rehabilitation after natural disasters: why, when, and how?*Arch Phys Med Rehabil* 93, 1875-81.
- Rathore MF, Butt AW, Aasi MH, Farooq F. (2008). Complications in patients with spinal cord injuries sustained in an earthquake in northern Pakistan. *J Spinal Cord Med.* 31,118.
- Reinhardt JD, Li J, Gosney J, et al. (2011). Disability and health-related rehabilitation in international disaster relief. *Glob Health Action,* 7191.
- Rizqillah AF, Suna J (2018). Indonesian emergency nurses' preparedness to respond to disaster: A descriptive survey. *Australasian Emergency Care.* 21, 64–68.
- Sangkala MS, Gerdtz, MF (2018). Disaster preparedness and learning needs among community health nurse coordinators in South Sulawesi Indonesia. *Australas Emerg Care,* 21, 23-30.
- Seyedin H, Abbasi Dolatabadi Z, Rajabifard F (2015). Emergency nurses' requirements for disaster preparedness. *Trauma Mon* 20, 4.
- Shapira S, Aharonson Daniel L, Bar Dayan Y, Sykes D, Adini B (2016). Knowledge, perceptions, attitudes and willingness to report to work in an earthquake: A pilot study comparing Canadian versus Israeli hospital nursing staff. *Int Emerg Nurs.* 25, 7-12.
- Spleski LA, Littleton-Kerney MT (2010). Disaster nursing educational competencies. In R. Powers, & E. Daily (Eds.), *International Disaster Nursing* (pp. 549–561). New York, NY: Cambridge University Press.
- Su Yi Lee, Bhasker Amatya, Rodney Judson, Melinda Truesdale, Jan D, Reinhardt Taslim, Uddin, Xiang-Hu Xiong, Fary Khan (2019). Applicability of traumatic brain injury rehabilitation interventions in natural disaster settings, *Brain Injury* 33, 1293-1298
- Taskiran G, Baykal U (2019). Nurses' disaster preparedness and core competencies in Turkey:a descriptive correlational design. *International Nursing Review* 66, 165–175.
- Tzeng WC et al (2016).Readiness of hospital nurses for disaster responses in Taiwan: A cross-sectional study. *Nurse Educ Today.* 47, 37-42.
- Tzeng WC, Feng, HP, Cheng WT, Lin CH, Chiang LC, Pai L, Lee CL (2016). Readiness of hospital nurses for disaster responses in Taiwan: A cross-sectional study. *Nurse Education Today.* 47, 37–42
- Usher K, et al. (2015). Cross-sectional survey of the disaster preparedness of nurses across the Asia-Pacific region. *Nursing & Health Sciences.* 17, 434–443.
- Usher K, Mayner L (2011).Disaster nursing: A descriptive survey of Australian undergraduate nursing curricula. *Australasian Emergency Nursing Journal.* 14,75-80.

- World Health Organization. (2016). Emergency medical teams: minimum technical standards and recommendations for rehabilitation. Geneva. Licence: CC BY-NC-SA 3.0 IGO.
- World Health Organization. Community-based rehabilitation guidelines. (2010). Geneva: World Health Organization.
- World Health Organization.(2014).WHO global disability action plan 2014- 2021: better health for all people with disability. Geneva: World Health Organization.
- World Health Organization.(2011). World report on disability. www.who.int/disabilities/world_report/2011/
- Yane YE, Turale S, Stone T, Petrini M (2015). Disaster nursing skills, knowledge and attitudes required in earthquake relief: implications for nursing education. *International Nursing Review* 62, 351–359
- Zhang L, Li H, Carlton J, Ursano R (2009). The injury profile after the 2008 earthquakes in China. *Injury*. 40, 84-86.