IOSR Journal of Nursing and Health Science (IOSR-JNHS)
e-ISSN: 2320–1959.p- ISSN: 2320–1940 Volume 8, Issue 2 Ser. VII. (Mar. - Apr .2019), PP 26-35
www.iosrjournals.org

Healthcare Providers' Perception of Disaster Management Preparedness at Governmental Hospital in Jeddah City

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Abstract: *lately, the number of disasters has increased dramatically throughout the world. Saudi Arabia is at risk of natural disasters and those created by humankind. Health care providers, particularly the nurses and physicians, must be prepared with appropriate skills and knowledge in order to be able to manage the disaster events. Therefore, understanding their level of preparedness for disaster management purposes is important. This study aim to assess healthcare providers' perception of disaster management preparedness at governmental hospital in Jeddah. A quantitative, descriptive research design and a stratified probability sampling technique was used for healthcare providers; nurses (n=237) physicians (n=85).The study revealed that healthcare providers' perceived themselves as being moderately prepared for all disaster management stages. The highest mean was for healthcare providers' perception toward the evaluation stage in disaster management (4.02 ±1.021). While, the lowest one was for healthcare providers' perception toward mitigation/response stage (3.92 ±0.919). Also, significant differences were revealed in healthcare providers' perceptions toward disaster management stages preparedness, according to their job title, gender and working unit. In addition, **73%** of health care providers need more education about their role in disaster situations.*
The results of this study have important research, administration, and education implications.

Keywords: *Disaster, Disaster Management, Disaster Preparedness, Healthcare Providers and Perception.*

Date of Submission: 24-03-2019 Date of acceptance: 08-04-2019

I. Background

Disasters are occurring more frequently during the last few decades and they are threatening the safety and lives of people around the world. Moreover, result of researchers found that the number of disasters has increased in recent years (AL Khalaileh, Bond, & AL Asad, 2012; Tichy, Bond, Beckstrand, & Heise, 2009). Accordingly, health organizations and communities, both face a significant challenge in the issue of responding to these disasters (Hodge, Miller, & Skaggs, 2017).

Disaster is defined by Asian Disaster Reduction Center (ADRC, 2010), as "a serious disruption of functioning of society, causing widespread human, material, or environmental losses which exceed the ability of affected society to cope using only its own resources". In fact, disasters not only cause loss of life and destruction of public infrastructure, but moreover they may cause interruption of normal of healthcare delivery and appropriate response to disaster victims (Tichy et al, 2009).

Disasters are classified according to their cause into either natural, man-made or hybrid disaster which is a combination of the two. The natural disaster that the human has no control over mainly include earthquakes, floods, tidal waves, volcanic eruptions, tornadoes, and landslides. While, disasters that are man-made or human generated include biological, chemical, traffic accident, environmental pollution, wars, fire, structural collapse, and pandemic diseases (Veenama, 2013).

Hospitals and other healthcare facilities further classify disasters as "internal" or "external" disaster (Ciottone, Biddinger, Darling, Fares, Keim, Molloy, & Suner, 2015). The negative results of these disasters need to be managed through appropriate developmental and implement of management strategies (Al Thobaity, Plummer, Innes, and Williams, 2017).

Consequently, disaster management must be prepared, based on a clear plan and collaborative responding of different organizations (Alshehri, 2016). In other words, disaster management focuses on preparation for, mitigation of, and response to disaster as well as recovery and/or restoring communities to pre-disaster status and these are known as disaster management cycle.

Disaster preparedness is the first stage of managing disaster which defined as "all measures and plans taken before the occurrence of an event". Preparedness stage includes designing warning systems, planning for evacuation and transportation, storing water and food, holding disaster drills and exercises, building temporary shelters, and formulate management strategies. The second stage is the mitigation stage that involves activities undertaken in order to decrease the impact of a disaster, i.e. hazard and risk assessment, vulnerability, allocation of financial resources as well as cross training staff (Veenema, 2013).

The third stage is response stage that includes the timely implementation of the disaster plan, activation of incident command, mobilization of staff kits and equipment, treatment and other relief activities such as medicines and shelter for the affected victims. The last stage is recovery stage and as for the activity of this stage, it includes action taken to promote human welfare and restore properties and services. Moreover, this stage could span from weeks to years before the affected area would be returned to normal livelihood (Veenema, 2013). In hospitals, healthcare providers make up the majority of the frontline responders in disaster, so they need to be actively involved and prepared to respond at all stages of disaster (Alkhaliaeh et al, 2012; Alrazeeni, 2015).

A successful disaster response by healthcare providers depends on appropriate disaster preparedness at all levels and resources in specific (Alrazeeni, 2015). Moreover, according to World Health Organization & International Council of Nurses (WHO & ICN, 2009), nurses and physicians -as a healthcare providers- play a vital role in disaster management and they all have abilities to rapidly and effectively detect, manage, and mitigate disaster events that can affect patients' physical, emotional, and psychological well-being.

Disaster management and preparation must take place since disasters strikes without any warning (National Association of EMS Physician, 2010). For this reason nurses and physicians must be prepared for disaster to improve their confidence, knowledges, and clinical skills (Chapman & Arbon, 2008).These preparedness can be achieved through extensive disaster management education programs, disaster drill and exercises, as well as incorporating disaster management in to health undergraduate curricula (AL Khalaileh et al, 2012).

Many authors internationally have reported that nurses lack confidence and do not have enough knowledges and skills and rated themselves as poorly prepared for disaster management (Al-Ali & Abu Ibaid, 2015; AL Khalaileh, et al, 2012; Al Thobaity, Plummer, Innes, & Copnell, 2015; Öztekin, Larson, Akahoshi & Öztekin, 2016). While, few studies done for physicians up to researcher knowledge. Considering these facts, it's necessary to assess the healthcare providers' perception toward disaster management stages in the Saudi Arabia.

II. Significance of the Study

Within the past, the kingdom of Saudi Arabia (KSA) has faced several disasters (Abosuliman, Kumar, and Alam, 2013, Alrazeeni, 2015). Recent examples of major disasters are Jeddah floods in January 2011 as an example of a natural disaster; 108 people lost their lives either drowning or from car crashes. Stampede inside Mena during Hajj 2015 as an example of mass casualties. This incident claimed the lives of 2121 people and injured 694 (Alamri, 2010). In addition, the Yemen war in March 2015 was man-made disaster and it resulted in the death of many people. Lastly, the massive fire in Jazan General Hospital in December 2015, was an internal disaster. The collapse killed 45 people and more than 123 were wounded (Alamri, 2010). In fact, an increased concern regarding a preparedness for disaster management has emerged because of the aforementioned.

Although, the significance of disaster preparedness has been recognized for many years, gaps in nation's disaster preparedness and response system still exist (American Nurses Association [ANA], 2010). Until now, little is known about skills and Knowledges that healthcare providers in Ministry of Health have and require to support disaster preparation and readiness effectively (AL Khalaileh et al, 2012). Accordingly, the study results would be a valuable contribution to understand the perception of disaster management stages preparedness for healthcare providers in Saudi context. And, increases nurses and physicians' knowledge about the stages of disaster management.

III. Aim of the Study

The aim of this research is to assess healthcare providers' perception of disaster management preparedness at governmental hospital in Jeddah.

IV. Methods

A quantitative, descriptive research design was used in this study. The study was conducted at governmental hospital in Jeddah. A stratified probability sampling technique was used to recruit nurses and physicians who provide direct patient care in all inpatients-units; nurses (n=237) physicians (n=85).

V. Measures

***The Disaster Preparedness Evaluation Tool* (DPET)** (Tichy *et al*., 2009) originally developed to examine the preparedness of participants in disaster management and in 2012 Arabic version of (DPET) done by Al Khalaileh et al. to assess perceptions of the disaster preparedness of registered nurses in Jordan. The tool contains 68 items. The modified DPET adopted by the researcher to collect the data from healthcare providers. It was used to assess healthcare providers' preparedness in managing disaster through 54 items grouped under two parts. The first part of tool were 9 items (open ended and close ended questions) about demographic data and additionally related to disaster preparedness as: gender, specialty, age, educational level, working unit, years of experience, attendance of previous real disaster and their qualification during response of this disaster and in addition, the training areas they need for disaster preparedness.

The second part of the tool included 45 items that were about disaster stages rated on a 6-point Likert-type scale, ranging from strongly disagree (1) to strongly agree (6). Out of these, 25 items were related to disaster preparedness stage and it's divided into three dimensions: disaster knowledge 16 items; skills seven items; and family preparedness two items.

The next 14 items were related to mitigation and response stage, which measures response to disaster and divided into two dimensions: knowledge three items; and patient management 11items. The last six items in the second section related to the recovery stage. These six items were divided into two dimensions: knowledge with one item; and patient management five items.

VI. Results and Discussion

In the context of this study, table 1 shows that 50.6% of the healthcare providers were below 30 years old. While, 16.8% of them were 40 years old and more. 80.7% of the healthcare providers were females. While, 19.3% of them were males. According to educational level, 73% of the healthcare providers had a bachelor degree in their field. The result shows that 73.6% of them were nurses and 26.4% were physicians.

In addition, 20.8%, 20.5% of the healthcare providers were working in emergency and medical units respectively. While only 9.0% of them were working in burn unit. In relation to years of experience, 41.3% of the healthcare providers had less than 5 years of experience. While only 18.9% of them had more than 10 years of experience. Moreover, 73.6% of health care providers did not participate in a real disaster.

Table 1: Frequencies and percentages for demographic characteristics of the healthcare providers

Demographic Characteristics		Frequency	Percentage (%)
Age	Below 30 years old	163	50.6
	30- > 40 years old	105	32.6
	40 years old and more	54	16.8
Gender	Male	62	19.3
	Female	260	80.7
Level of education	Diploma	83	25.8
	Bachelor	235	73.0
	Master	4	1.2
Job title	Nurses	237	73.6
	Physicians	85	26.4
Working Units	Emergency	67	20.8
	Medical	66	20.5
	Surgical	44	13.7
	Orthopedic	41	12.7
	CCU	38	11.8
	ICU	37	11.5
	Burn	29	9.0
Years of Experience	Below 5 years	133	41.3
	5-10 years	128	39.8
	More than 10 years	61	18.9
Participation in a Real Disaster	Yes	85	26.4
	No	237	73.6
	Total	**322**	**100.0**

Regarding health care providers' perception toward disaster management stages preparedness, the overall views of healthcare providers' perception toward disaster management in the preparedness, mitigation/response and evaluation stage had moderate preparedness with mean score (**4.00 ±0.826, 3.92 ±0.919, 4.02 ±1.021**) respectively. The finding indicated that healthcare providers are inadequately prepared for disaster management and have many gaps in their knowledges and skills that are necessary for healthcare providers including: lack of awareness of disaster management plans, lack of disaster education and training programs through undergraduate and professional practice.

This result is slightly different to a previous studies indicating that the majority of healthcare providers, including physicians and nurses have weak to moderate perception of their preparedness for disaster management (Al-Ali & Abu Ibaid , 2015, AL Thubaiti et al 2015; Al Khalaileh et al., 2012). This is reflected in the literature where many authors internationally found that healthcare providers are under prepared for disaster events (Hammad, Arbon, & Gebbie, 2011;Al Khalaileh et al., 2012; Oztekin, Larson, Yüksel, & Altun Uğraş, 2015).

In disaster management stages, evaluation stage represents the highest mean score from the three stages **(4.02 ±1.021)**. This result is inconsistent with Oztekin et al (2015) who found that the evaluation stage was the lowest and the one of the most overlooked parts of the most education courses and programs.

Table 2: Mean, and standard deviation scores of health care providers' perception toward disaster management stages preparedness

Disaster Stages	Mean	(±SD)
Preparedness	4.00	±0.826
Mitigation/ Response	3.92	±0.919
Evaluation	4.02	±1.021

SD= Stander Deviation

In respect to the stage of the preparedness which measured healthcare providers' perception toward disaster management in preparedness stage, the healthcare providers reported moderate levels of perception in all sub-items. This result may highly impact effective disaster preparedness and management.

Regarding health care providers' perception toward the preparedness stage, the highest mean score was in skills and family preparedness dimensions (**4.47 ±1.31** and **4.45 ±1.20**) respectively, in healthcare providers' perception to "I participate in disaster drills or exercises at my workplace (clinic, hospital, etc.) on a regular basis". The possible explanation of this result may be due to increase in the awareness that there needed to participate in regular disaster drills at work in order to increase their level of preparedness. This result is consistent with Al-Ali & Abu Ibaid (2015) who noted that healthcare providers in Jordan, had a basic understanding of disaster drills. Holding disaster drills and exercise is one of the best strategies for taking healthcare providers to fulfill their obligations in disaster response. In addition, Halterman, (2018) stressed that it is important to have regular drills to test healthcare providers' preparedness for response to disaster events, then to improve their disaster plans. According to Joint Commission (2012), the regular disaster management drills require at least once or twice a year.

Moreover, for healthcare providers' perception to "I have an agreement with loved ones and family members on how to execute our personal/family emergency plans". This result could be due to the fact that healthcare providers without strong family preparedness the response or participate in disaster events will be increased. Various studies found that the nurses wouldn't participate in disaster situations and may be their concentrate and abilities to totally engage in disaster events will be affected because they wouldn't be able to find help in caring for their child's and families as well as they don't feel that their families are safe (Adams & Berry, 2012; Arbon, Cusack, Ranse, Shaban, Considine, Kako,... & Hammad, 2013; Tichy et al., 2009). These include; no planning of how to contact their child's and families, where to meet, as well as who will be responsible for what during a disaster situation. Mitani, Kuboyama & Shirakawa (2003) who reported that in a recent earthquake disaster in Japan, most of the nurses didn't participate because they couldn't have alternative care for their child's and families.

At the same stage, the lowest mean score was in disaster knowledge dimension (**3.44 ±1.33**), in healthcare providers' perception to "I am aware of what the potential vulnerabilities in my community are (e.g. earthquake, floods, terror, etc.)". This may due to lack of training which reflect the decreases of their awareness of the risk attach to their community. This finding in the same line with Motoyama and Sakaguchi (2003) who concluded that nurses were having slightly aware about the hazards and risks in their community, particularly natural disasters. According to Loke & Fung (2014), healthcare providers should understand the risks and the needs in serving their communities and equip themselves to support their community in disaster events.

Table 3: Mean and standard deviation scores of health care providers' perception toward preparedness stage

a.	Disaster Knowledge specific to Preparedness stage	Mean	±SD
1	I would be interested in educational classes on disaster preparedness that relate specifically to my community situation.	4.36	±1.15
2	I know the limits of my knowledge, skills, and authority as a Health care provider to act in disaster situations, and I would know when I exceed them.	4.20	±1.18
3	I participate/have participated in creating new guidelines, emergency plans, or lobbying for improvements on the local or national level	4.19	±1.09

4	I participate in one of the following educational activities on regular basis: continuing education classes, seminars, or conferences dealing with disaster preparedness.	4.17	±1.27
5	I find that the research literature on disaster preparedness is understandable.	4.07	±1.11
6	I am familiar with the local emergency response system for disasters.	4.06	±1.16
7	I am aware of classes about disaster preparedness and management that are offered for example at either my workplace, the university, or community.	4.04	±1.20
8	I find that the research literature on disaster preparedness and management is easily accessible.	3.99	±1.17
9	Finding relevant information about disaster preparedness related to my community needs is an obstacle to my level of preparedness	3.93	±1.13
10	I know where to find relevant research or information related to disaster preparedness and management to fill in gaps in my knowledge.	3.93	±1.11
11	I have a list of contacts in the medical or health community in which I practice. I know referral contacts in case of a disaster situation (health department, e.g.).	3.93	±1.21
12	I know who to contact (chain of command) in disaster situations in my hospital.	3.90	±1.23
13	I have participated in emergency plan drafting and emergency planning for disaster situations in my workplace.	3.87	±1.43
14	In case of a disaster situation I think that there is sufficient support from local officials on the county region or government level.	3.83	±1.09
15	I read journal articles related to disaster preparedness.	3.81	±1.21
16	I am aware of what the potential vulnerabilities in my community are (e.g. earthquake, floods, terror, etc.).	**3.44**	**±1.33**
b.	**Disaster Skills specific to Preparedness stage**	**Mean**	**±SD**
1	I participate in disaster drills or exercises at my workplace (clinic, hospital, etc.) on a regular basis.	**4.47**	**±1.31**
2	In case of a bioterrorism/ biological attack, I know how to use personal protective equipment.	4.29	±1.02
3	I am familiar with accepted triage principles used in disaster situation	4.16	±1.0
4	I consider myself prepared for the management of disasters	4.03	±1.14
5	In case of a bioterrorism/biological attack I know how to execute decontamination procedures.	3.88	±1.30
6	In a case of bioterrorism/biological attack I know how to perform isolation procedures so that I minimize the risks of community exposure.	3.75	±1.29
7	I would be considered a key leadership figure in my community in a disaster situation	3.66	±1.26
c.	**Family Preparedness for Disaster stage**	**Mean**	**±SD**
1	I have an agreement with loved ones and family members on how to execute our personal/family emergency plans.	**4.45**	**±1.20**
2	I have personal/family emergency plans in place for disaster situation.	3.89	±1.20

SD= Stander Deviation

In relation to healthcare providers' perception toward mitigation and response stage of disaster management, the healthcare providers reported moderate levels of perception in all sub-items. However, moderate level of response are not sufficient to respond effectively.

The highest mean score was in patient management dimension (**4.09 ±1.12**), in the healthcare providers' perception to "As a health care provider, I would feel confident in my abilities as a direct care provider and first responder in disaster situations". This result may be due to the healthcare providers' interest in improving their confidence in disaster management, which may have indicated by their lack of preparedness to respond in their hospital.This matched with ALKalaileh et al (2012) who stated that possessor of high level of preparedness means having confidence in ability to perform specific actions in particular situations. Moreover, Arbon et al (2013) and Li & Sheng (2014) noted that disaster knowledge, skills and education affect the confidence or willingness of healthcare providers specially the nurses during disaster response. Yearly mock drills and including disaster programs in academic curriculum help health providers become more aware of what a disaster is and give them confidence and experience to respond to disaster situations quickly (Oztekin et al. 2015; Sangkala & Gerdtz, 2018).

At the same stage, the lowest mean score was in patient management dimension (**3.03 ±1.16**), in the healthcare providers' perception to "I am familiar with the main Groups (A, B, C) group A (i.e. Anthrax, Plague, Botulism, Smallpox, etc.), group B (i.e. Q fever, hepatitis A etc.), and group C (i.e. yellow fever, influenza virus etc.) of biological weapons, their signs and symptoms, and effective treatments". This result could be due to their rarity as in the Gulf War in 1991G (Alamri, 2010). Similar to O'Sullivan, Dow, Turner, Lemyre, Corneil, Krewski,...& Amaratunga (2008) who mentioned that nurses in Canada have low preparedness for disaster regarding to biological weapons and this may be related to inadequate education and training in responding to biological agents, inadequate facilities and equipment as well as unfamiliarity with personal protective equipment (PPE). Qureshi, Gershon, Sherman, Straub, Gebbie, McCollum, & Morse (2005) found that the lack of readiness of nurses to respond to biological agent disasters was related to insufficiency of training in PPE.

Table 4: Mean and standard deviation scores of health care providers' perception toward mitigation/response stage

a.	**Disaster Knowledge specific to response stage**	**Mean**	**±SD**
1	I am able to describe my role in the response phase of a disaster in the context of my workplace, the general public, media, and personal contacts	3.96	±1.11
2	I am familiar with psychological interventions, behavioral therapy, cognitive strategies, support groups and incident debriefing for patients who experience emotional or physical trauma	3.84	±1.11
3	I am familiar with the organizational logistics and roles among local, and national agencies in disaster response situations.	3.67	±1.23
b.	**Patient Management specific to response stage**	**Mean**	**±SD**
1	As a health care provider, I would feel confident in my abilities as a direct care provider and first responder in disaster situations	**4.09**	**±1.12**
2	As a health care provider, I would feel reasonably confident in my abilities to be a member of a decontamination team.	4.05	±1.13
3	I can identify possible indicators of mass exposure evidenced by a clustering of patients with similar symptoms	4.03	±1.09
4	I can manage the common symptoms and reactions of disaster survivors that are of affective, behavioral, cognitive, and physical nature	4.01	±1.03
5	As a health care provider, I would feel confident as a manager or coordinator of a shelter	3.98	±1.20
6	In case of a bioterrorism/biological attack, I know how to perform focused health history and assessment, specific to the biological or chemical agents that are used	3.98	±1.16
7	I would feel confident providing patient education on stress and abnormal functioning related to trauma	3.98	±1.16
8	I feel confident discerning deviations in health assessments indicating potential exposure to biological agents	3.78	±1.17
9	I would feel confident implementing emergency plans, evacuation procedures, and similar functions	3.76	±1.08
10	I am familiar with the main Groups (A, B, C) group A (i.e. Anthrax, Plague, Botulism, Smallpox, etc.), group B (i.e. Q fever, hepatitis A etc.), and group C (i.e. yellow fever, influenza virus etc.) of biological weapons, their signs and symptoms, and effective treatments	**3.03**	**±1.16**
11	As health care provider, I feel reasonably confident that I can care for patients independently in disaster situation.	3.46	±1.27

SD= Stander Deviation

In the light of healthcare providers' perception toward the evaluation stage of disaster management, the healthcare providers reported moderate level of perception in all sub-items. This moderate levels of preparedness is not sufficient to respond effectively and completely to disaster situations.

The highest mean score was in management dimension (**4.20 ±1.07**), in the healthcare provider's perception to "I would feel confident providing education on coping skills and training for patients who experience traumatic situations so they are able to manage themselves". This result may be due to the fact that healthcare providers believed that in addition to good care to patients, they also need to be good in psychological and mental health, since the psychological stress level in disaster events was found to be higher than normal. Moreover, it's seen as part of the healthcare providers role in their daily bases. This finding in the same line with Oztekin et al (2015) who reported that Japanese nurses are not able to handle patients who experience emotional and physical trauma due to education is still reactive not proactive. In addition, Sangkala & Gerdtz (2018) stressed that integrating this issue into nursing competencies to ensure that they have sufficient knowledge and skill to help them in delivering effective psychological intervention.

At the same stage, the lowest mean score was in management dimension (**3.87 ±1.27**) and (**3.84 ±1.24**) respectively, were in the healthcare providers' perception to "I am able to differentiate the signs and symptoms of Acute Stress disorder and Post Traumatic Stress Syndrome (PTSD)" and "I am familiar with how to perform focused health assessment for PTSD" correspondingly. This result may be because that healthcare providers felt, they are still unable to perform a focused health assessment for PTSD patients due to lack of knowledge on disaster psychology. This finding is in agreement with those of Al Ali & Abu Ibaid (2015) who reported that healthcare providers in Jordan perceived themselves as being unprepared for holistic assessments for PTSD and they indicate the need to promote the healthcare providers preparedness in relation to psychological and mental health after disaster since psychological and mental health problems, especially after disasters are one of the great burdens. Couing, Martinelli & Lavin (2005) strongly recommended that health providers should attend mental health disaster courses, which provide health providers with a general idea of disaster mental health, and psychosocial reactions to disaster.

Table 5: Mean and standard deviation scores of health care providers' perception toward evaluation stage

a.	**Disaster Knowledge specific to recovery**	**Mean**	**±SD**
1	I am familiar with what the scope of my role as a health-care provider in a post-disaster situation would be	4.14	±1.15
b.	**Management specific to recovery**	**Mean**	**±SD**
1	I would feel confident providing education on coping skills and training for patients who experience traumatic situations so they are able to manage themselves	**4.20**	**±1.07**
2	I participate in peer evaluation of skills on disaster preparedness and response	4.12	±1.04
3	I feel confident managing (treating, evaluating) emotional outcomes for Acute Stress Disorder or PTSD following disaster or trauma in a multi-disciplinary way such as referrals, and follow-ups and I know what to expect in ensuing months.	3.93	±1.20
4	I am able to differentiate the signs and symptoms of Acute Stress disorder and Post Traumatic Stress Syndrome (PTSD)	**3.87**	**±1.27**
5	I am familiar with how to perform focused health assessment for PTSD	**3.84**	**±1.24**

SD= Stander Deviation

In regard to the health care providers' perception toward disaster management stages preparedness, according their demographic characteristics, the results reveal that there is a significant difference between the health care providers' perception toward the preparedness, mitigation/response and evaluation stages in disaster management and their job title. Where nurses had significantly higher perception mean score toward the preparedness, mitigation/response and evaluation stages in disaster management than physicians (**P= 0.001, 0.001, 0.001**) respectively. This result may due to the fact that nurses spend more time with patients and felt a greater responsibility than other healthcare providers. This result inconsistent with finding reported by Al-Ali & Abu Ibaid (2015) among healthcare providers in Jordan who found that physicians perceived themselves as having more skills and knowledge than nurses did in disaster management. The result for physicians may be anomalous due to the small sample size (n=85), but the importance of this group should not be underplayed because they are the ones involved in planning and policy around the disaster response.

The results of the current study reflect that there is a significant difference between the health care providers' perception toward the preparedness, mitigation/response and evaluation stages in disaster management and their gender. Where females healthcare providers had significantly higher perception mean score toward the preparedness, mitigation/response and evaluation stages in disaster management than males (**P=0.001**, **0.003**, **0.003**) respectively. This result may not be easily argued that participation during disaster differs according to gender. However, the current study found that disaster preparedness to be higher in females healthcare providers than in males and there is no evidence to support this result and requires further investigation. This result is different to that of Al-Ali & Abu Ibaid (2015) who found that males healthcare providers were more likely to perceive themselves as being prepared, having better knowledges and better skills than did females healthcare providers.

However, the results reveal that there is a significant difference between the health care providers' perception toward the preparedness, mitigation/response stages in disaster management and working unit. Where, emergency unit had significantly higher perception mean score regarding preparedness and mitigation/ response stages in disaster management than other units (**P=0.001, 0.001**) respectively. This result may be due to the fact that emergency healthcare providers play a significant role during disaster. On the other hand, this role could be familiar with some of the tasks required during their daily duty. Also, disasters that exposed in the emergency department are varied. This finding is in the same line with Nilsson, Johansson, Carlsson, Florin, Leksell, Lepp,... & Gardulf (2016) who found that there were association between registered nurses (RNs) readiness for disaster and their work area. The study indicated that it is very important to work in an environment where the possibility of being exposed to disaster situation is more helpful to competence development.

Table 6: The health care providers' perception toward disaster management stages according their demographic characteristics

Stages		**Specialty**		**Gender**		**Stages**		**Working Units**						
		Physician	***Nurses***	***Male***	***Female***			***ER***	***ICU***	***CCU***	***Burn***	***Med.***	***Sur.***	***Orth.***
Preparedness	**Mean**	57.28	**69.99***	58.94	**68.47***	**Preparedness**	**Mean**	**56.35***	51.72	54.15	53.24	46.74	54.95	56.24
	±SD	14.61	**11.79***	15.29	**21.74***		**±SD**	**10.48***	11.23	7.99	11.02	11.64	8.95	7.74
	***t*(df)**	-7.216 (125.35)		-4.453 (82.33)			**F(df)**	6.692 (6.315)						
	P	**0.001***		**0.001***			**P**	**0.001***						
Mitigation/ Response	**Mean**	56.97	**68.43***	59.56	**66.80***	**Mitigation/ Response**	**Mean**	**47.04***	42.70	43.44	44.10	38.18	43.63	46.13
	±SD	16.88	**13.53***	17.21	**14.53***		**±SD**	**6.80***	9.73	7.58	11.26	10.82	9.13	10.41
	***t*(df)**	-5.643 (124.83)		-3.064 (82.93)			**F(df)**	3.058 (6.315)						

	P	**0.001***		**0.003***			**P**	**0.001***						
Evaluation	**Mean**	58.62	**69.93***	60.34	**68.52***	**Evaluation**	**Mean**	87.58	81.89	83.71	84.34	75.54	83.97	88.51
	±SD	18.61	**15.42***	19.86	**15.94***		**±SD**	21.03	17.82	14.96	18.96	20.98	17.89	14.40
	***t*(df)**	-5.016 (127.70)		-3.017 (80.73)			**F(df)**	2.123 (6.315)						
	P	**0.001***		**0.003***			**P**	0.050						

*Independent sample *t* test. P <0.05* *One way ANOVA. P <0.05*

In this study, when healthcare providers were asked what they would most like to have in terms of education in disasters**,** the participants listed the area as nearly **73%** of participants need to receive additional information in their roles as healthcare providers in disaster situation. And respectively around **40%** of participants need more education to recovery state, community risk, resources than diagnosis, treatment, symptoms and signs of biological disasters. While, only **21.4%** perceived themselves as being well prepared for a disaster.

Education and training for disaster management is a very important issues in preparing all healthcare providers to respond effectively to disaster situations. In order to prepare healthcare providers to disaster events, disaster must be incorporated in education courses (Hammad et al. 2011; Al Khalaileh et al. 2012). Based on that, it is a clear that healthcare providers in this study feel the importance of disaster preparedness and they need more education in all identified areas. These findings were similar to those of (Al Khalaileh et al. 2012; Al Thobaity et al., 2015; AL Ali & Abu Ibaid, 2015, Alrazeeni, 2015).

Table 7: Frequencies and percentages of healthcare providers' who need more education in specific areas (n=322)

No	**Area**	**Yes**		**No**	
		Frequency	**(%)**	**Frequency**	**(%)**
1	Their role as health care providers in a disaster situations	235	73.0	87	27.0
2	Recovery state: acute stress disorder, posttraumatic stress disorder, and crisis intervention (focused assessment, debriefing strategies, and behavioral, cognitive, or medication therapy)	150	46.6	172	53.4
3	Potential vulnerabilities exist in the community in case of a disaster	145	45.0	177	55.0
4	Resources in the community such as agencies for referral, health departments, emergency contacts, the chain of command, and community shelters	142	44.1	180	55.9
5	Biological agents and their differential diagnosis and treatments	136	42.2	186	57.8
6	Biological agents and ways to identify their signs and symptoms	131	40.7	191	59.3
7	Feeling well prepared for a disaster	69	21.4	253	78.6

VII. Conclusion

The results of this study concluded that healthcare providers' at KFHJ perceived themselves as being moderately prepared to all disaster management stages. Moreover, the healthcare providers perceive a positive statistical significant difference between disaster management stages and with gender, job title as well as a working unit.

VIII. Recommendations

The results of this study contribute to a growing body of knowledge regarding disaster preparedness and suggested the following recommendations for:

1- Recommendations for Administration:

- Provide administrative support and encouraged staff to participate in education and training courses that related to disaster management and preparedness.
- Encourage the healthcare providers to participate in disaster planning to help in creating policies and understanding their roles that are expected to play in disaster as well as to implement disaster plan correctly.

2- Recommendations for Education and training:

- Provide effective and updated disaster education program for healthcare providers that are designed based on their learning needs to achieve the optimal level of disaster management and preparedness, to improve the knowledge and perceived self-efficacy in disaster management.

- Integrate the disaster preparedness and management into undergraduate, postgraduate healthcare curricula to prepare the next generation of healthcare professionals for disaster events in future.
- Provide regular disaster drills and exercises are a valuable and should be part of all healthcare training to respond confidently in disaster events.
- Develop core competence for all hazard disaster is essential to ensure that healthcare providers acquire standardized knowledge and skills.

3- Recommendations for Future research:

- Future research is required in replicating the study at different settings in Saudi Arabia with the aim of generalizing the results.
- Research needs to be replicated with other healthcare teams as managers, educators, disaster teams and policy makers to identify their perception toward the effectiveness of current disaster preparedness as well as their learning needs for disaster preparedness and management in general.
- Further research that would be considered pre and post-training studies may necessary to evaluate and improve the knowledge and skills that developed based on these study findings.

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