Assessment Nurses' Awareness Regarding Disaster Management at Mansoura General Hospital

Seham Ibrahim Hamouda[1]Sanaa Abdelazeem Ibrahim[2], Magdy Momadouh Mahmoud Atallah[3] Hind Abdullah Mohamed[4], Mona Abdelrahman Shawer [5].

1 Professor of Nursing Administration, Faculty of Nursing, Tanta University, Egypt
2 Professor of Nursing Administration, Faculty of Nursing, Port Said University, Egypt
3 Professor of Anesthesia and Intensive, Care and Pain Management, Faculty of Medicine, Mansoura University, Egypt
4 lecturer of Nursing Administration, Faculty of Nursing, Port Said University, Egypt
5 Master Degree in Nursing Administration, Faculty of Nursing, Port Said University, Egypt
Corresponding Author: Mona Abdelrahman Shawer

Abstract:
Background: A disaster is a sudden, calamitous event resulting in serious disruption of the functioning of a community or society. To meet the goal of preparing registered nurses regarding the provision of care during disasters. Aim: assessment of nurses' awareness regarding disaster management. Material and methods: A descriptive correlational design was applied in this study on 85 staff nurses working in inpatient units at Mansoura General Hospitals. Tool of data collection: A self-administered questionnaire sheet was used to collect data of this study. Results: the nurses' awareness regarding disaster and hospital strategies to prevent occurrence of disaster need to be improved. Also, there was statistically significant difference between nurses' awareness and personal and job characteristics in terms of qualification, department and training courses. Conclusion and Recommendation. In addition, further researches are suggested in this area.
Keywords: *Disaster, disaster management.*

I. Introduction

Disasters are event that threatening the community safety and sustainability of. Both natural and human-made disasters can cause everyday life disruption, resulting in economic loss, an injury or mortality. They not only create immediate damaged but also affect the in the long term (Timothy, Dongming, & Ziqiang, 2018). Hospital disaster defined as the ability of hospital to resist, absorb and respond to the shock of disaster and then to recover to adapt with new situation (Zhong, Clark, Yu Hou, & Zang, 2014).

Disaster plan is a systematic procedure that clearly detail what is essential to be done, how, when, and by whom- prior to and after the time an anticipated occurrence of disastrous event (Carolyn, 2006). Disaster management stages as an ongoing process to decrease the impact of disasters, react during and immediately following a disaster, and take steps to recover after a disaster has occurred, disaster management involves four stages: *mitigation, preparedness, response and recovery* (Alrein, 2017). *Mitigation* includes taking of any activity to prevent disaster occurrence whenever possible (Maurer and smith, 2005). *Preparedness* is all the activities and measures taken in advance of an event for ensuring effective response to the impact of disaster (WHO, 2007). Moreover, Drabek (2009) added that preparedness is the process of developing a formal program of response. It including training, staff development identification and classification of public health resources including personnel and supplies. *The emergency phase* (disaster phase) or *response phase* includes the primary and basic activities executed to save lives and decrease suffering immediately following a disaster. These activities include search-and-rescue, first aid, emergency medical assistance, restoration of communication and transportation networks, while the *recovery phase* are initiated for restoration of the community to normal (Ciottone, 2006)

Nurses have a role in each phase. As an active membership of their community, emergency nurses should take part in mitigation and preparedness to the hospital .Once disaster occurs their role continue into the response and recovery phases (Gregory and Cittone 2006).

Significance of the Study:

The impacts of disaster highlight the necessity for nurses to be ready for effective dealing with disasters. Although a variety of recent disasters have brought disaster education to the forefront, disaster nursing

knowledge has been considered as "inadequate" in several countries according to Powers & Daily (2010). Moreover, the issue of insufficient disaster nursing education and the deficient standard competencies of nurses regarding delivery of efficient nursing care when disasters strike became a political issue. (Couig, Watts Kelley & Kasper, 2012). On the same, line Veenema (2013) added that nurses were uniquely qualified to deliver disaster first aid and care for victims influenced by the disaster in any large-scale public health emergency.

Aim:
Assessment of nurses' awareness regarding disaster management
Research objectives:
1-   Assess nurses' awareness regarding disaster management
2-   Detect the relationship between personal and job characteristic and nurses levels of awareness.

II. Subjects and Methods

Study design:
    A descriptive correlational research design was utilized for the current study.
Settings:
This study was carried out at Mansoura general hospital in Egypt; it affiliated to the Ministry of Health,
Sample:
    The subjects of this study included all nursing categories; working in the study setting with total number eighty-five (85) staff nurses, who accepted participation and they had at least one year of experience in nursing.
Tool:
A developed Self-administration questionnaire was used to collect data for this study.
  This tool involved two parts:
Part I: included nurses' personal and job characteristics regarding name, age, sex, education level and years of experiences and attendance of training courses related to disaster management.
Part II: This part is self-administrated questionnaire that aimed to assess nurses' awareness regarding disaster management. It was developed by the researcher based on a literature review **(Mostfa, 2003; Abu Hussein, 2012& Ahmed, 2013).**This part consisted of **73** multiple choice questions assessing the content of disaster management.
Scoring System:
Each question took a score of "1" if correct and "0" if incorrect. Awareness was measured one or zero as, aware and not aware, then, according cut of point. total awareness was 60 scores divided into:
Low awareness ► when total score was less than 43 scores (< 60%).
Good awareness ► when total score was 46 to less than 44.62 (60<85%).
Excellent awareness► when total score was 63.73 score or more (≥85%).

Tool validity and Reliability:
        The self-administrated questionnaire of disaster management nurses awareness was submitted to a panel of seven experts in the field of study for confirmation of face and content validity.
The Cronbach Alpha reliability for this tool was found (0.92).

Pilot study:
        Ten staff nurses representing 10 % of the 95 who underwent random selection for participation in a pilot study before starting the collection of data in order to evaluate the feasibility, applicability, how clear the tool is and to allocate the time required for its filling. Exclusion of the 10 participants in the pilot study, from the current study, was done for assurance of answers stability.

Ethical consideration:
        An ethical approval was acquired from the medical and nursing directors of the hospital for data collection. Following explanation of the study aim and obtaining a verbal consent from every participant nurse, some ethical concerns were raised. Henceforth, assurance and maintenance of anonymity were achieved, no coercion or pressure was applied, and no risk or burden was imposed on participants. Confidentiality of the collected data was guaranteed and it was only utilized for the study purpose. Finally, all participants were informed about their right in participation refusal or even withdrawal at any time.

Field work:
        The data were collected from all staff nurses in the study settings using self-instructions questionnaires. This process of data collection was done in the period started since beginning of March 2016 to the end of July 2016. Firstly, an official agreement from the director of the studied hospital was obtained. Also, meeting with

the director of nursing service was conducted by the researcher on an individual basis to explain the study objectives and to get their cooperation. Data were collected at three days per week in three shifts after explaining the objectives of the study and how to complete the tool.

Statistical Design:

Analysis of data was done using SPSS version 22. The data normality was first tested with Kolmogorov Smirnov test. Qualitative data were described as number and percent. The correlation between categorical variables was tested using Chi-square test. When more than 25% of the cells have expected count less than 5, Fisher exact test was utilized.

III. Results

Table (1) displays personal and job characteristics of the studied staff nurses. According to study results, the age group between 20 to 30 years old was representing 67. 1 % of the total number of studied nurses. Slightly less than half of them (45.9%) had nursing diploma. In addition, the majority of them (87.1%) work as staff nurse and 12.9%work as head nurse. In relation to total experience, years in nursing, 40.0% of studied nurses had between five and ten years of experience, meanwhile 84.7% of them had no courses during these years of work. All of the studied nurses are female. **Table (2)** reflects awareness levels regarding disaster definitions and classifications. As regard to this table three quarter (75%) of studied nurses had good knowledge level about disaster definitions and calcifications. Whereas, the majority (94%) of them had excellent knowledge about Man–made disaster which includes bioterrorism, the low percent was 63.5% of them had good knowledge about classification of disasters. **Table (3)** shows the nurses awareness levels regarding disaster management stages less than half of them (47.5%) had satisfactory knowledge about disaster management stages with highest level of knowledge for mitigation stage 56.5%. On the other hand, Preparedness stage was the lowest level 42.7%. **Table (4)** illustrate that, nurses' total awareness levels regarding disaster management. About 40% of studied nurses had excellent knowledge about disaster definitions and calcifications of disaster Also, 14% had excellent knowledge regarding disaster stages. Regarding hospital strategies to prevent internal disasters it was found that, only 9% of them had excellent knowledge. So it is urgent need for disaster training program. **Table (5)** illustrates personal and job characteristics of studied nurses in relation to their levels of awareness about internal disaster. The table revealed a statically significant relation between nurse's awareness and demographic characteristics in terms of departments and training courses, while there was no statically significant relation between nurses' awareness and any of other demographic characteristics. Moreover there is no significant difference between nurses' awareness and their qualification. **Table (7)** concluded that, a statistically significant difference existed between nurses' total awareness level regarding disaster management The difference was found to be statically significant at p≥0.001 level of significance with excellent level in their awareness.

Table (1): Frequency distribution of studied nurses personal and job characteristics (n=85)

Personal and job characteristic	No	%
Age		
20<30	57	67.1
30<40	27	31.8
≥40	1	1.2
Mean ± SD	28.16±3.53	
Min-Max	22-41	
Qualifications		
Nursing diploma	39	45.9
Nursing diploma plus specialty	3	3.5
Technical institute	13	15.3
Bachelor degree	30	35.3
Current Job		
Staff nurse	74	87.1
Head nurse	11	12.9
Total experience years		
1<5	23	27.1
5<10	34	40
10<15	21	24.7
≥15	7	8.2
Department		
Orthopedic Department	11	12.9
Gynecology Department	9	10.6
Surgery unit	11	12.9
Pediatrics care unit	10	11.8

Medical Department	9	10.6
Cardiac Care Unit	10	11.8
Incubator	25	29.4
Training about disaster		
No	72	84.7
Yes	13	15.3

All of the studied nurses are female

Table (2): Nurses' awareness levels regarding disaster's definitions and classification n=85

Nurses' awareness regarding disaster's definitions and classification	N=85		Test of Sig	
	n	%	X²	P
Disaster definition	60	70.5	5.05	.08
Classification of disasters	54	63.5	9.97	.007
Natural disasters	62	72.9	19.09	.001
Man–made disaster includes bioterrorism	80	94	1.88	.390
Total	64	75		

Table (3): Nurses' awareness levels regarding disaster management stages

Nurses awareness levels regarding to disaster management stages	N=85	
	No	%
Mitigation stage	48	56.5
Preparedness stage	36	42.7
Response stage	39.6	46.6
Recovery stage	35.8	44
Total	39.8	47.5

Table (4): The difference between nurses' awareness levels regarding disaster management n=85

Nurses awareness levels regarding to disaster management	Level of awareness		
	low	good	excellent
disaster's definitions and classifications	28	17	40
Mitigation	49	25	11
Preparedness	58	27	0
Response	82	-	3
Recovery	53	21	11
Total	52	19	14
Spread of Infection	28	14	43
Medical wastes management	22	42	21
Internal fire	62	21	2
Evacuation plan	49	28	8
Total	40	36	9
Total Score	50	28	7

Table (5): Nurses personal and job characteristic in relation to levels of awareness regarding disaster management

Personal and job characteristic	N=85				
	Low	Good	Excellent	X²	P
Age					
20:<30	29	22	6		
30:<40	20	6	1	4.91	.297
40:<50	1	0	0		
Qualifications					
Nursing diploma	24	10	5		
Diploma +specialty	2	1	0		
Technical institute	8	5	0	3.86	.696
Bachelor degree	16	12	2		
Current Job					
Nurse	44	24	6	.095	.953

Head nurse	6	**4**	1		
Total experience years in nursing					
1:<5	13	9	1		
5:<10	15	14	5	10.7	.098
10:<15	15	5	1		
More than 15	7	0	0		
Department					
Orthopedic	0	5	6		
Gynecology	3	6	0		
Surgery	10	1	0		
Pediatrics	7	3	0	55.08	<.001
Medical	9	0	0		
Cardiology	6	3	1		
Incubation	15	10	0		
Traning about disaster					
No	48	21	3	16.42	<.001
Yes	2	7	4		

Table (6): The difference between nurses' awareness levels regarding disaster management

	(n=85)		*Test of Sig*	
	No	%	X^2	P
Low **less than 60%**	50	59		
Good **from 60%:< 85%**	28	33	139.65	<.001
Excellent **≥85%**	7	8		

X^2= Chi square test
P= Significant at level < 5%.

IV. Discussion

Nurses, as the largest group of committed health personnel, often working in challenging circumstances with limited resources, play a crucial role in dealing with victims and disaster situations, considered as the first responders, triage officers, care coordinators, providers of services, information or education, and counselors. However, when disasters strike, a successful health systems and health care delivery depend on nurses' fundamental disaster competencies or their capabilities for rapid and effective response (Diab & Mabrouk, 2015).

Indeed, the research findings illustrated that a statistically significant difference existed between nurses' total awareness regarding internal disaster management. The findings of the current work showed that more than half of nurses (59%) had low awareness level followed by one third of them (33%) had good awareness level and the lowest percent of them only 8% had excellent level of awareness. This may be explained by the study results that, illustrated that about 85% of nurses did not attended any previous training program regarding disaster management. As well as, nearly 50% of nurses had nursing diploma where nursing diploma curricula did not give sufficient emphasis on disaster management.

In the same line the study of disaster preparedness in Philippine nurses in Philippine by Leodoro, Labrague, Begonia, Yboa & Denise (2015) concluded that studied nurses were insufficiently prepared for disasters nor were they aware of disaster management protocols in the workplace. In addition, the risks associated with crisis response can be minimizing by interaction between knowledge and performance. Similar finding was reported by Ibrahim (2014) who evaluated nurses' knowledge, attitudes, practices, and familiarity about disaster and emergency preparedness in Saudi Arabia, and found that the knowledge and practical levels in disaster were below average, with acceptable levels of attitudes concerning disaster preparedness.

As regard to disaster definitions and classification it was found three quarter 75% of studied nurses had good knowledge level about disaster definitions and classification. Whereas, this finding was in accordance with Marskole et al., (2018) who proved that 87.2% of studied sample had good knowledge about disaster definitions by their characteristic features .on the other hand, Tuladhar, Yatabe, Dahal& Bhandary, (2014) assessed knowledge about disaster and risk reduction in Nepal and found that knowledge about disaster definition among participants was unsatisfactory level.

The result of present study revealed that about 47.5% of nurses had satisfactory knowledge about disaster management stages. In this context, Marskole et al., (2018) concluded that knowledge regarding to disaster stages were less than half of studied nurses had good knowledge regarding disaster stages this means it is important to focuses on the need of imparting knowledge of disaster stages in curriculum to enhance nurses awareness regarding disaster stages .

In addition, it is clear from results of the study that nurses' awareness concerning hospital strategies to prevent occurrence of internal disasters it was only 12% of studied nurses had excellent knowledge this due to lack of dills and training. The results is in agreement with Al Khalaileh, Bond & Alasad (2012) who investigated Jordanian nurses' perceptions of their preparedness for disaster management, and suggested that additional training through courses and facility drills would be valuable in enhancing the preparedness level.

Regarding nurses' awareness about hospital strategies concerning infection control in the hospital, the current study findings showed that the majority of nursing staff were unaware of the most items of infection control methods. The responsibility of the preventive care placed primarily on the nurses rather than on the other health care givers as she/he is the first person responsible for rending care and had a long contact with the patient.

The responsibility of the preventive care placed primarily on the nurses rather than on the other health care givers as she/he is the first person responsible for rending care and had a long contact with the patient. This point of view upheld by Abu Shady, Ibrahim & Salem (2001) who implement and evaluate the effect of educational program regarding nosocomial infection control at Al-Mansoura University Hospital, and clarified that nurses have a professional and legal responsibility to integrate such infection control practices into their nursing care. As primary caregivers, nurses are also involved in identifying, preventing, controlling and teaching the patient about infection.

Additionally, the current work found that most of nurses have deficient awareness regarding hospital evacuation plan, the result is similar to that revealed by Ibrahim & El Hosany (2010) who studied the awareness of nurses of disasters' preparedness at Suez Canal University Hospital, and claimed that slightly more than one fourth of nurses' evacuation process during internal were aware with disaster components .

Generally, the current study showed that, there was statistically significant difference between nurses' total awareness level regarding disaster management. The difference was found to be statically significant at p≥0.001 level of significance with excellent level in their awareness.

V. Conclusion

In the light of the main study results, it was concluded that; the nurses' awareness regarding definition, classification and stages of disaster and nurses' awareness regarding hospital strategies to prevent occurrence of disaster need to be improved.

Moreover, a statistically significant difference existed between nurses' awareness and personal and job characteristics in terms of qualification, department and training courses.

Finally, there was statistically significant difference between nurses' total awareness level regarding disaster management. The difference was found to be statically significant at p≥0.001 level of significance with excellent level in their awareness.

Recommendations

Based on the current study findings, it can be recommended that,

1. The concept of disaster must be included in the undergraduate as well as the postgraduate curricula to prepare candidates utilizing the established programs where they play.
2. The hospital should develop a disaster team that includes nurses, which should be available 24 hours in the hospital and verify the role of every one of the team.
3. Disaster preparedness plans should be designed and applied at all hospital departments, disaster plan should be regularly updated
4. Training programs are necessary for all nursing categories to enhance their awareness about management of a disaster.
5. Future researches should be conducted in this area from another perspective.

References

[1]. Abou Shady, N.A., Ibrahim, Y.M. & Salem, Y.M. (2001). Implementation and Evaluation of Educational Program Regarding Nosocomial Infection Control at Al-Mansoura University Hospital. The Egyptian Journal of Medicine; 24(5), 226-233.
[2]. Al Khalaileh, A., Bond, E., Alasad, A. (2012). Jordanian nurses' perceptions of their preparedness for disaster management. International Emergency Nursing Journal . 14-23. Retrieved from http://dx.doi.org/10.1016/j.ienj.2011.01.001.
[3]. Alrein,p. (2017). What is disaster management cycle Retrieved from: https://www.quora.com/What-is-disaster-management-cycle.
[4]. Carolyn, J. (2006). Disaster planning report of tornado casualties. Journal of Kansas Medical Society, 68-153.
[5]. Ciottone, G.R. (2006). Disaster Medicine.Canada 2(8)1021-1044. Retrieved from: https://www.elsevier.com/books/ciottones-disaste medicine/.

[6].   Couig, M.P., Watts Kelley, P., Kasper, C. (2012). Annual Review of Nursing Research, Disasters and Humanitarian Assistance. Springer Publication Company, LLC, New York, 172.

[7].   Diab, G., Mabrouk,S. (2015). The effect of guidance booklet on knowledge and attitudes of nurses regarding disaster preparedness at hospital. Faculty of Nursing, Menoufia University, Journal of Nursing Education and Practice 2015, 5 (9), 27-39.

[8].   Drabek, H. (2009). Critical Care Nursing, A Holistic Approach. (9th ed.), Lippincott Williams& Wilkins. pp201-1340.

[9].   Gregory, R. & Ciottone (2006): Occupational Safety and health Administration (OSHA): Emergency response Safety Series, US Department of Labour

[10].   Ibrahim, F. (2014). Nurses' knowledge, attitudes, practices and familiarity regarding disaster and emergency preparedness–Saudi Arabia. American Journal of Nursing Science, (3), 18–25.

[11].   Ibrahim, S.A., El Hosany, W.A. (2010). Nurses Awareness Regarding Disasters' Preparedness at Suez Canal University Hospital, Zagazig Nursing Journal. ; 6(10), 18-27.

[12].   Leodoro, J., Labrague, M., Begonia, C., Yboa, Denise, M. (2015). Disaster Preparedness in Philippine Nurses. Journal of Nursing Scholarship, (48)1, 1–8.

[13].   Marskole, P., Mishra, A., Kumar, P., Gaur, P., Aharwar, P., Patidar, P. (2018). A study to assess awareness on disaster management among school going children in Gwalior (M.P.). Int J Community Med Public Health ,(5) 1371-5.

[14].   Maurer F.A. & Smith C.M. (2005): Community health nursing practice, health for families and population, 3rd ed., USA: Elsevier Saunders, P.p. 497- 499.

[15].   Powers, R. & Daily E. (2010). International disaster nursing. Melbourne, Australia: Cambridge University Press.

[16].   Timothy, S, Dongming, W& Ziqiang, H. (2018). Assessing the Disaster Resilience of Megacities: The Case of Hong Kong /journal/sustainability.

[17].   Tuladhar, G., Yatabe, R., Dahal, R.K., Bhandary, N.P,(2014). Knowledge of disaster risk reduction among school students in Nepal, Geomatics, Natural Hazards and Risk. (5) 190-207.

[18].   Zarei,V (2016). Emergency preparedness of hospitals in Tehran and its relation with crisis management measures International Journal of Medical Research & Health Sciences, (9), 471-478.

[19].   Veenema, T.G. (2013). Disaster Nursing and Emergency Preparedness for Chemical, Biological, and Radiological Terrorism and Other Hazards. Springer Publishing Company, New York

[20].   WHO Expert Consultation (2007). Emergency preparedness for the Health sector and communities- Challenges and the Way forward, Pre-hospital Disaster Medication, 188- 197.

[21].   Yang, C., Yen, Z., McGowan, J., Chen, H., Chiang, W., Mancini, M., Soar, J., Lai, M., & Ma, M. (2012). A systematic review of retention of adult advanced life support knowledge and skills in healthcare providers. Resuscitation, 83(9), 1055–1060. Retrieved from https://doi.org/10.1016/j.resuscitation.2012.02.027.

[22].   Zhong,S., Clark,M.,Yu Hou,X.,and Zang,Y (2014). Validation of a   framework for measuring hospital disaster resilience using factor analysis .International .Journal public health 11 ISSN 1660-4601.