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DISASTER PREPAREDNESS AMONG NURSES IN SELECTED HOSPITALS IN ONDO STATE

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ABSTRACT: *Background: The last few decades had witnessed a lot of natural disasters such as floods, Indian Ocean tsunamis in 2004, hurricanes, earthquakes, tornadoes etc. which were experienced by people in different countries across the globe. The study investigated nurses' preparedness for disaster in selected hospitals in Ondo state. Methodology: A descriptive design was adopted. Using a convenience sampling technique, a total of 248 respondents were selected from four hospitals in Ondo State, Nigeria. Data collection was done with the aid of an adapted structured questionnaire and an in-depth interview schedule. Results: Results revealed that only 12.5% of the nurses had good knowledge of disaster preparedness. The use of contingency plans, networking, use of worldwide web as well as multimedia were identified as available solutions by 12.5%, 11.7%, 10.5% and 9.3% of the nurses respectively. The study further identified the current roles played by nurses in achieving disaster preparedness as follows: facilitating communication and coordination of care (22.5%), acquisition of skills to give psychological support (17.7%), provision of quality health care (15.7%), giving first aid treatment (14.9%), and learning to triage victims (13.5%). The study also showed that there is a significant relationship between the nurses' level of knowledge on disaster preparedness and their years of experience (X^2= 3.11, P = 0.0001) and their rank (X^2= 2.46, P = 0.0001). Conclusion: It was concluded that disaster preparedness among nurses in selected hospitals in Ondo State was at low level and materials/equipments needed to rescue the victims were inadequate.*

KEYWORDS: Disaster, Preparedness, Nurses and Hospitals

INTRODUCTION

Background to the study

The world had witnessed high episodes of human induced and natural disasters in the last decade. The September 11, 2001 bombing of the World Trade Centre in the United State of America by the Terrorists was one of the human-made disasters that the whole world regarded to be a great disaster. (Richard & Iris, 2011; Garbutt, Peltier, & Fitzpatrick ,2008).The last few decades had witnessed a lot of natural disasters such as floods, Indian Ocean tsunamis in 2004, hurricanes, earthquakes, tornadoes etc. which were experienced by people in different countries across the globe. All these mishaps had led to loss of so many lives and many have become disabled. (WHO, 2007; National Disaster Management Division (NDMD), 2008; California Childcare Health Program (CCHP), 2006). Often times when disasters occurred, there are no warning signals, they are always sudden, unpredictable and uncontrollable. This makes tremendous human casualties in terms of loss of precious lives, resources and disability in

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addition to huge economic losses inevitable.(Magnaye, Munoz, Munoz, Munoz & Muro,2011;NDMD,2008; WHO,2013).

The loss of life and disability are aggravated by the lack of adequate disaster preparedness among nurses and other health care professional both qualitatively and quantitatively across many countries. (CCHP, 2006; WHO, 2007) In most cases of natural disasters, nature may not permit its avoidance but efforts should be made to control or take precautionary measures in order to save lives of people and alleviate the effects of these occurrences on human lives and properties.

According to WHO (2007) since three decades ago, a major shift had occurred in the pattern of response to disaster occurrences. Initially more emphasis used to be placed on humanitarian response and relief activities either nationally or internationally with little attention given to strategies and actions in place prior to disasters. It is now widely believed that more should be done to reduce the social, economic and human consequences of these disasters, which necessitate the need for placing greater attention on the implementation of proactive strategies and a call for a more comprehensive approach to building national capacities in disaster preparedness and response (WHO, 2007). Since the time of Crimean war that Florence Nightingale had laid the legacy for Nurses to be first responders during disasters, the field of public health and disaster nursing has continued to expand its scope and define its significance. (Magnaye et al., 2011). Nurses constitute the largest group of health workers that are needed in handling disaster cases and are frontline workers who provide a wide range of health care services, which include preventive, curative, rehabilitative and supportive care to individuals, families and groups. Nurses are routinely involved in disaster care. However, they need to be adequately prepared to operate under a validated framework in order for them to be fully engaged in a comprehensive and systematic response to disasters. (WHO, 2006; WHO, 2007)

During major disaster events, the demand for nursing staff is much greater than the demands for any other health care professionals (Lavin, 2006). The role of nurses during disasters has expanded from simply caring for the sick and injured to development of the ability to react to a disaster in terms of preparedness, mitigation, response, recovery and evaluation (Gebbie & Qureshi, 2006). One of the issues influencing nursing response to disaster situations is a lack of research regarding disaster/emergency nursing, and poor understanding regarding nurses' perceptions of expectations during a disaster. (Fung, Lai & Luen, 2009; Garbutt , Peltier & Fitzpatrick, 2008). Nurses' perceptions of disaster relate to their awareness of vulnerability to unpredictable events and affects how prepared nurses should be (Fung et al, 2009). Hospitals are central to providing emergency care and hence when a disaster strikes, the society falls back upon the hospitals to provide immediate succour in the form of emergency medical care. (NDMD, 2008). This therefore necessitates the need for Surge Capacity which is defined ''as a health care system's ability to expand quickly to meet an increased demand for medical care in the event of bioterrorism or other large-scale public health emergencies'' (National Association of Public Hospitals, 2007, p. 1). Since disastrous events create an imbalance between the supply and demand for resources, Kaji & Lewis (2006) mentioned that planning for surge capacity is a way out for health care facilities to increase need for medical care. Hence the need for coordination of hospital policies to mobilize staff and, sometimes outside agencies because staffing is the most important component of surge capacity in which physicians, nurses, mental health staff, emergency medical technicians, and public health professionals are not excluded. (Bioterrorism and Health System Preparedness, 2006; Hanfling, 2006).

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Statement of the problem:

Increasing occurrence of natural and human-induced disasters demands for an adequately prepared health care system with informed health professionals. Nurses constitute the largest and first contact in most health care settings for patients and relatives in situations of emergency and disaster. This requires that Nurses are appropriately prepared to meet the demand of such situations. While the curriculum of the training of Nurses reflected contents in emergency nursing, first aid and disaster nursing, disaster preparedness goes beyond basic knowledge but encompasses detailed plan and protocols to have a rational response in real life cases of disasters/massive emergencies to avoid confusions, inefficiency and overwhelming demand on staff , resources, space and supplies.(NDMD,2008)

Researcher's experience has shown that many nurses do not like to work in casualty/ emergency unit because of the nature of the work there. This implies that many nurses may not be prepared when they are called to lend a helping hand during disasters and general emergencies. Many nurses lack adequate knowledge to prepare for disaster, a lot of people had lost their lives due to several occurrences of disasters and many of our health care facilities lack adequate materials/equipment needed to safe peoples' life. There are empirical studies in disaster preparedness of nurses in the Western World but there is a dearth of similar data in Nigeria, therefore the need for this study to answer the following questions.

Research questions:

This study is designed to answer the following Research questions:

1. To what extent are nurses knowledgeable in disaster preparedness?
2. What roles do nurses currently play in achieving disaster preparedness? and if not prepared;
3. What are the barriers to achieving disaster preparedness by nurses?

Objectives of the study:

Main objective.

This study aims at determining registered nurses preparedness for disaster in selected hospitals in Ondo State.

Specific objectives are to:

1. Investigate nurses' level of knowledge on preparedness for disasters in selected hospitals.
2. Identify the current roles played by nurses in achieving disaster preparedness.
3. Explore available solutions to the barriers encountered by nurses in achieving disaster preparedness during practice.

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METHODOLOGY

Research design: The study employs a descriptive design- mixed method consisting of qualitative and quantitative approaches to assess Disaster preparedness among nurses in selected hospitals in Ondo State.

Research Setting: The following hospitals in Ondo State, Nigeria were selected for the study:

1. Federal Medical Centre, Owo- This is the only Federal Hospital in the State.
2. State Specialist Hospital, Akure - Akure is central to Ondo State.
3. State Specialist Hospital, Ikare - This is the only state specialist hospital in the north east of Ondo State.
4. State Specialist Hospital, Ondo- This is the only state specialist hospital in the south west of Ondo State.

Target population: The target population for this study were the registered nurses in the above selected hospitals in Ondo State.

Sampling Technique and Sample size: Convenience sampling technique was adopted to select the 268 nurses that responded to the questionnaire calculated with Yamane's formula. Only the nurses that were available and agreed to take part in the study were given the questionnaires to fill and 248 were retrieved.

Instruments: Information was obtained from the respondents through the use of an adapted questionnaire and modified through literature review; an in-depth interview schedule was also conducted. The questionnaire is made of 7 sections with 48 items: socio-demographic data, readiness of respondents for disaster situations, the roles played by nurses in achieving disaster preparedness, assessment of nurses' knowledge of disaster, preparedness of nurses in disaster situations, barriers encountered by nurses in disaster situations and solutions to barriers encountered by nurses in disaster situations.

Data analysis: Data was analysed with both descriptive and inferential statistics and depicted in frequency distribution such as percentages to summarize and provide description of the data from sample.

Ethical considerations: Permission was obtained from the Ethical Committee of Federal Medical Centre Owo and Ondo State Hospital Management Board. Informed consent was obtained from each of the respondents. They were informed that their names were not required and the information given is only for academic purpose.

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RESULTS

Table 1: Socio-demographic data of the respondents

S/N	VARIABLES	HEALTH INSTITUTIONS									
		FMC Owo N= 115		SSH Akure N= 72		SSH Ikare N= 31		SSH Ondo N= 30		TOTAL N= 248	
1.	**Age in Years**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**
	21-30	21	8.5	20	8.1	11	4.5	10	4.0	62	25.0
	31-40	71	28.6	20	8.1	8	3.2	8	3.2	107	43.1
	41-50	23	9.3	16	6.4	6	2.4	8	3.2	53	21.4
	51-60	-		16	6.4	6	2.4	4	1.6	26	10.5
	TOTAL	**115**	**46.4**	**72**	**29.0**	**31**	**12.5**	**30**	**12.1**	**248**	**100.0**
2.	**Gender**										
	Male	20	8.1	2	0.8	11	4.4	-		33	13.3
	Female	95	38.3	70	28.2	20	8.1	30	12.1	215	86.7
	TOTAL	**115**	**46.4**	**72**	**29.0**	**31**	**12.5**	**30**	**12.1**	**248**	**100.0**
3.	**Marital Status**										
	Single	28	11.3	11	4.4	9	3.6	10	4.0	58	23.4
	Married	87	35.1	60	24.2	21	8.5	20	8.1	188	75.8
	Separated	-		1	0.4	-		-		1	0.4
	Widow	-				1	0.4	-		1	0.4
	TOTAL	**115**	**46.4**	**72**	**29.0**	**31**	**12.5**	**30**	**12.1**	**248**	**100.0**
4.	**Religion**										
	Christianity	107	43.2	69	27.8	27	10.9	30	12.1	233	94.0
	Islam	8	3.2	2	0.8	4	1.6	-	-	14	5.6
	Others	-	-	1	0.4	-	-	-	-	1	0.4
	TOTAL	**115**	**46.4**	**72**	**29.0**	**31**	**12.5**	**30**	**12.1**	**248**	**100.0**
5.	**Ethnic group**										
	Yoruba	93	37.5	61	24.6	29	11.7	29	11.7	212	85.5
	Igbo	14	5.7	5	2.0	-	-	-	-	19	7.7
	Ebira	2	0.8	-	-	2	0.8	-	-	4	1.6
	Ibibio	-	-	4	1.6	-	-	-	-	4	1.6
	Bini	5	2.0	-	-	-	-	-	-	5	2.0
	Ijaw	-	-	1	0.4	-	-	1	0.4	2	0.8
	Efik	1	0.4	-	-	-	-	-	-	1	0.4
	Ukwanni	-	-	1	0.4	-	-	-	-	1	0.4
	TOTAL	**115**	**46.4**	**72**	**29.0**	**31**	**12.5**	**30**	**12.1**	**248**	**100.0**

Majority of the respondents were between the ages of 31 and 40 years (43.1%), females (86.7%), married (75.8%), Christians (94%), Yorubas (85.5%).

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Table 2: Respondents' knowledge of disaster situations

	Hospital						
Knowledge of disaster	**Hospital A**	**Hospital B**	**Hospital C**	**Hospital D**	**Total**	**X^2**	**P value**
Good	13	8	4	6	31(12.5%)	34.92	0.08
Fair	42	1	10	9	62(25%)		
Poor	60	63	17	15	155(62.5%)		
Total	115	72	31	30	248(100%)		

Table 2 shows that majority of the participants (62.5%) had poor knowledge; few (25%) had fair knowledge while only 12.5% had good knowledge of disaster situations. It also shows that there is no relationship in the knowledge of disaster possessed by nurses and the hospital where they work. (X^2cal = 34.92, X^2tab = 12.59, P > 0.05)

Table 3: Respondents' identification of nurses' roles in disaster situations

	Hospitals				
Roles identified	A	B	C	D	Total
Providing quality care	21	10	3	5	39
Triaging victims	17	13	3	4	37
Giving psychological support	19	15	6	4	44
Giving first aid	18	12	5	3	38
Addressing women and children's needs	23	14	10	9	56
Facilitating communication /coordination	17	8	4	5	34
Total	115	72	31	30	248

As reflected in table 3, 39 respondents said that providing quality health care for people is one of the nurses' roles in disaster situations. 37 respondents identified triaging victims as one of the nurses' role in disaster situation. Other identified roles are as shown in the above table according to each of the selected hospitals.

Table 4: Respondents' solutions to barriers encountered in disaster situations

	Hospitals				
Solutions	A	B	C	D	Total
World Wide Web	11	8	4	3	26
Multi-media	10	6	3	4	23
Attending conferences	13	6	3	3	25
Networking	12	9	4	4	29
Reading journals	13	10	4	3	30
Taking courses	10	7	3	4	24
Disaster planning	12	7	4	3	26
Clear communication	18	10	3	3	34
Contingency plans	16	9	3	3	31
Total	115	72	31	30	248

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As reflected in table 4 the respondents solutions to barriers encountered by nurses in disaster situations according to each of the hospitals are shown above.

DISCUSSION

The majority of the Nurses in this study were females with age range of 21 to 60 years with the mean age of 36.10. This is significant to the study in that majority of the respondents are still in their active age, meaning that they have the ability and strength to put in efforts required to acquire skills needed for them to prepare for disaster situations. Their years of experience ranged from 1-34 years with a mean of 11.25 years. This is significant because the more their years of experience the more the skills and knowledge acquired to handle disaster situations successfully. These findings agreed with O'Sullivan, Dow, Turner, Lemyre, Corneil, Krewski & Phillips (2008) and Fung, et al. (2008) studies in which majority of the nurses were females. Majority of the nurses (77.2%) said they have hospital disaster plan in their hospitals. This is not in consonance with O'Sullivan et. al.(2008) study in which approximately 40% of respondents were unaware if their hospital had an emergency plan for a large-scale outbreak. Considering the level of knowledge on disaster, most of the nurses (62.5%) had poor knowledge of disaster. This finding is in line with the result of the study conducted by Chimenya (2011) that majority of nurses (62.7%) perceived their knowledge of managing mass casualty incidents to be fair to poor. It was found that 35.1% of nurses knew the meaning of incident command system, this is similar to the findings of Abdelalim & Ibrahim (2014) that 37.2% of nurses are very familiar with disaster terms such as incident command system and the role within it. Few nurses (32.3%) knew that their institution had disaster drills performed. This finding is not consistent with the finding of Chimenya (2011) that only 7.7% of nurses knew that their institution had performed disaster drills. Only 25% of the respondents know that the incident command system is the same as central command structure. NDMD (2008) agreed with this that incident command system is the same as central command structure. Only 32.8% of the respondents agreed that their institutions perform disaster drill exercise at least twice in a year in preparation for disaster. This is corroborated by WHO (2010) and CCHP (2006) which stated that ''Often, exercises are only done as frequently as standards for accreditation require. However, emergency exercises (drills) should be done as often as necessary to keep all staff members up-to-date on the emergency response''; ''Practice emergency drills every month (although California regulations only require a fire drill every six months). Hold drills at different times of the day, from different exits, during varied activities including naps. Discuss drills afterward to explore any concerns that need to be remedied''. (CCHP, 2006, p.2). Only 15.4% of the respondents have practised cardiopulmonary resuscitation without bending their elbow on the sternum of the victims successfully. This is in line with Mayo Clinic Staff (2014) findings that in carrying out cardiopulmonary resuscitation place the heel of one hand over the centre of the person's chest, between the nipples then place your other hand on top of the first hand. Keep your elbows straight and position your shoulders directly above your hands and use your upper body weight (not just your arms) as you push straight down on (compress) the chest at least 2 inches (approximately 5 centimetres). Majority of Nurses (86.1%) believe that there is a lack of disaster preparedness in some institutions and instances where nurses are involved. This correlates with the findings of Magnaye et. al.(2011) that majority of nurses believed that disaster preparedness is lacking in some institutions and there are instances where nurses were involved.

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Many nurses expressed that low level of disaster knowledge is a barrier to disaster preparedness among nurses. This is in consonance with study conducted by Hammad, Arbon, and Gebbie (2011) which stated that nurses had a low level of disaster knowledge.

Majority of Nurses (96.3%) *agreed that* one of the challenges faced by nurses is poor communication of disaster plan expectations to nurses. This is supported by Good (2007) which stated that many nurses expressed concern that disaster plan expectations were not clearly communicated, and a clear connection between the plan itself and those expected to carry it out was not conveyed. Majority of nurses expressed that lack of standardized and coordinated emergency-related educational efforts within health care agencies, changing recommendations and planning procedures is a barrier to disaster preparedness among nurses. This is in congruent with Buyum et. al.(2009) study which stated that the challenges expressed by many nurses include, but are not limited to, the lack of standardized and coordinated emergency-related educational efforts within health care agencies, changing recommendations and planning procedures, curriculum revisions, and lack of flexible time within existing curricula. It was found that many nurses responded that the use of World Wide Web, multi-media, conferences, networking with community partners, academic courses, and current professional journals by nurses can be a solution to lack of knowledge on preparedness for disaster. This was supported by Jakeway et al. (2008) study which stated that ‘‘It is incumbent upon nurses to be prepared using the World Wide Web, multi-media, conferences, networking with community partners, academic courses, and current professional journals’’.(p.355)

This study confirms that the use of disaster planning to identify gaps by nurses can provide knowledge of what must be improved upon. This finding is in consonance with Douglas (2007) study which stated that ‘‘Gap analysis provides knowledge of what must be improved and can serve as a framework for contingency planning’’. (p.528)

This study also found that there is a need for clear communication down the line and the use of contingency plans that are easy to follow when disaster strikes. This is corroborated by Castro et al. (2008) and Good (2007) studies which stated that nurses voiced a need for clear communication down the line, and contingency plans that are easy to follow. The study found that provision of quality health care for people regardless of their age, gender and type of disease or reason for seeking medical attention is one of the role of nurses during disaster. This is supported by Magnaye et. al. (2011) that nurses are to provide quality health care for people regardless of their age, gender and type of disease or reason for seeking medical attention.

This study also identified triaging victims as nurses’ role during disaster. This is in consonance with the study of Magnaye et. al. (2011) which stated that nurses are routinely assigned to assist in triaging victims and screening for health problems during disaster.

The study found that giving psychological support to the victims of disaster is one of the roles of nurses during disaster. This corroborates the findings of Magnaye et. al. (2011) that nurses are routinely assigned to give psychological support to the victims of disaster.

It was also found that giving first aid treatment to the victims of disaster is one of the roles of nurses. This is in line with Magnaye et. al. (2011) study which stated that nurses are routinely assigned to give first aid treatment to the victims of disaster.

The study found that addressing the needs of women and infants during disasters and giving reassurance to their families is part of nurses’ role. This is supported by Badakhsh, Harville, & Banerjee (2010) study which stated that nurses’ role extends to addressing the needs of women

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and infants in disasters and they are well situated to reassure women and their families when disaster occurs. The study also found that facilitating communication and coordinating care among members of the health care team, patients, and their families during a disaster is part of nurses' role. This corroborates the findings of Badakhsh et.al. (2010) that nurses often facilitate communication and coordinate care among members of the health care team, patients, and their families during a disaster.

Implication for Nursing

The study has added to the body of existing knowledge in disaster nursing and preparedness. The findings from this study can provide solutions to the barriers hindering nurses from adequate preparation for various disasters.

Only few nurses have fair and good knowledge of disaster situations, this implies that many nurses in Ondo state lack knowledge of disaster situations. A little above average number of nurses lack the necessary technical know- how to handle disaster situations, this means they are not prepared for disaster situations.

Therefore it is necessary that nurses equipped themselves with appropriate knowledge of disaster situations and attend training on disaster preparedness in order to acquire necessary and basic skills to save lives when disasters strike.

Recommendations

Based on the findings from this study, the following recommendations are made:

1. There should be training and retraining of nurses in clinical practice on disaster preparedness especially those working in accident and emergency unit and those that are likely to be posted there.
2. Disaster drill exercise should be conducted by each of the institutions at least four to five times in a year and lapses should be identified each time and the gap breached through adequate preparation.
3. Government should provide adequate equipment/ instruments needed to safe lives of victims of disaster into all the hospitals so as to improve the quality of nursing care provided at such times.
4. Nurses should make use of World Wide Web, multi-media, conferences, networking with community partners, academic courses, and current professional journals to acquire knowledge and skills needed to be prepared for disaster.
5. Further studies are recommended to assess disaster preparedness among health workers.

CONCLUSION

This study showed a lack of disaster preparedness among nurses in the setting. Only few nurses have fair and good knowledge of disaster preparedness and necessary skills needed to safe lives of victims during disaster.

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