



Institutional Related Factors Influencing Emergency Preparedness among Nurses at Machakos Level 5 Hospital Machakos County, Kenya

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Summary

BACKGROUND

An emergency plan is a dynamic document that frequently set and adapt to the changing trends of emergencies. Prioritizing and anticipating for situations that are not easily predicted requiring immediate action can be challenging. Health care institutions should continually remain prepared in order to handle emergencies and disasters effectively. Machakos Level 5 Hospital serves as a link to health facilities in the Eastern part of Kenya and the main referral centre for it's neighbouring counties. With the overwhelming influx of patients, quality nursing care delivery is a hospital responsibility to support its professionals.

OBJECTIVES

To recognize an emergency management plan as an essential framework for providing quality nursing care to the affected victims in case of an emergency This study chose to determine the institutional related factors at Machakos Level 5 Hospital (ML5H).

METHODOLOGY

Utilizing a descriptive cross-sectional design between October and December 2018, 132 nurses' working at ML5H were enrolled using stratified and systemic random sampling after consenting to participate in the study. Data was collected using a self-administered questionnaire and an observation checklist. Cochran's formula was used to calculating the sample size, after which duty rosters were used to pick every third nurse on the roster. The questionnaire was divided into 2 parts; the first part consisted Institutional related factors influencing emergency preparedness and the second contained an observation checklist used to measure the level of emergency preparedness in the health facility. A pre-test was carried out at the Accident and Emergency Unit of Makueni Level 5 Hospital to measure the validity and reliability of the research instruments using the Cronbach alpha coefficient. The Data was coded and entered into Statistical Package for Social Science (SPSS) version 25.

RESULTS

The study highlight how the hospital management supported over 70% of emergency preparedness unlike 76.5% of the respondents reporting that the hospital did not provide regular emergency drills while 23.5% reported there were regular drills.

CONCLUSION

The results showed that, 83.3% of emergency preparedness measures were available while 16.7% of emergency preparedness measures were not available. The study recommends that the



hospital liaise with the County Government of Machakos to provide regular drills to all health workers working in the hospital.

RECOMMENDATION

The hospital management need to monitor and regularly review the contents of the emergency management plan; and regularly perform emergency drills and exercises to its healthcare professionals;

Key word: Institutional related factors, Hospital Emergency preparedness, nurses

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Introduction

Hospitals should continually remain prepared for emergencies at all times in order to handle emergencies and disasters of all kinds. Institutional related factors influencing emergency preparedness among Nurses at Machakos Level 5 Hospital Machakos County, Kenya. as any other health care facility (hospital) are quite a number.

Health care facilities need to recognize an emergency management plan as an essential framework for providing quality nursing care to the affected victims in case of an anticipated situations that are not easily predicted. Below are some of the ways this can be done:

1. Hospital administration must support the emergency response teams by providing the requirements needed during emergencies.
2. The hospital management need to monitor and regularly review the contents of the emergency management plan.
3. The hospital management should regularly perform emergency drills and exercises to its healthcare professionals.
4. Hospital Institutions should provide relevant equipments, for example, mechanical ventilators and other life sustaining equipments to safeguard the continuity of critically ill patients.
5. The hospital should ensure there is an adequate evacuation plan for doors and other exits.

FEMA (2016) recommended that hospitals globally should ensure that proper planning is put in place to ensure that operations are not interrupted in case of an emergency being received in the hospital setting [3]. An emergency plan is a dynamic document that frequently needs to set and adapt to the changing trend of emergencies, procedures, policies, roles and responsibilities of the nurses have to be reviewed regularly.

Emergency planning is an exploratory process that helps in coming up with new ideas and informed decisions that assist in prioritizing and anticipating for situations that are not easily predicted. Research from [7] showed that, emergency plans are not only required for handling emergencies and disasters, but they also ensure that, the hospital remains prepared at all times for any form of crisis and to effectively assist in recovery of the affected victims.

Hospital refresher courses and Emergency Drills were important activities undertaken through strict and well-coordinated simulations to test certain specific operations. Simulations on new policies or procedures on new equipments was the most accurate and efficient measurements of emergency management and response. Drills and simulations were also excellent tools for training and assessing decision-making processes, teamwork, and coordination [8]

Assistant Secretary for Preparedness and Response (ASPR) developed the 2017-2022 Health Care Preparedness and Response Capabilities document stated that, "hospitals should develop and implement exit and evacuation plans that allow easy and free movement of victims involved in accidents in various points of care within the hospital". The policies also contained protocols on communication that clearly state the roles of a team leader in an emergency setting.

To ensure that these duties and responsibilities are performed effectively, there are essential supplies which include; intravenous fluids, syringes and needles, central venous catheters, among others. Information sharing in case of a patient in need of transfer to a higher level facility of care, essential equipment to include access to mechanical ventilation and life sustaining machines with medication to safeguard the continuity of critically ill patients.



Evacuation plans

Patient surge and managing mass casualties by provision of adequate work place with waiting and receiving areas. A good indicator of hospital preparedness is when it adequately anticipates for unforeseen incidents that could pose harm to the population [2]. An analysis of the current status of hospital emergency preparedness for infectious disease outbreak in a research conducted in Beijing, China to assess the state of hospital preparedness on infectious disease outbreak reported that, majority (93.3%) of the respondents reported of hospital providing with the personal protective equipment (PPEs) while 6.7% reported that the hospital did not provide PPEs to prevent against disease that spread over a very short period of time.

On network organizational structures, linkages between hospital departments are essential as it ensures continuity and provision of healthcare promptly and effectively. For example, Kenyatta National Hospital serves as the largest specialized health facility linking all countries in East and Central Africa, where patients involved in disasters are referred to for specialized care (KNH, 2012. Statutory Safety & Health Audit). Machakos Level 5 Hospital also links health facilities on the Eastern part of Kenya and serves as the main referral centre for the bordering counties. This is due to its availability of essential facilities such as Intensive Care Unit (ICU), and an operational trauma centre.

Materials and Methodology

The study was conducted between October and December, 2018 at Machakos Level 5 Hospital. Utilizing a descriptive cross-sectional design whereby 132 nurses' were enrolled using stratified random sampling and systemic random sampling. Cochran's formula was used to determine the sample size for a population less than ten thousand. After calculating the sample size, the researcher used duty rosters as the sampling frame to pick every third nurse on the roster.

Data was collected using a self-administered questionnaire that was developed by the researcher. Structured questionnaires were used where each questionnaire was divided into 2 parts: The first part consisted of the institutional related factors influencing emergency preparedness among nurses at ML5H and the second part contained an observation checklist.

A pre-test was carried out at the Accident and Emergency Unit of Makueni Level 5 Hospital to measure the validity and reliability of the research instruments using the Cronbach alpha coefficient. An observation checklist was used to measure the level of emergency preparedness in the health facility. The Data was coded and entered into Statistical Package for Social Science (SPSS) version 25.

Results and Discussion Institutional Related Factors Influencing Emergency Preparedness

Table 1 next page shows how the hospital management supported emergency preparedness. Two-thirds (79.5%) of the respondents reported that the hospital administration recognized emergency management plan as a framework for quality nursing care delivery while 20.5% did not. More than two-thirds (90.2%) of the respondents reported of the hospital administration supporting the emergency response team while 9.8% reported that the hospital administration did not support the emergency response team.

The study results showed that, nearly three quarters (70.5%) of the respondents reported the hospital administration of regularly reviewing the contents of emergency management plan while 29.5% said the hospital administration did not review the contents of the emergency management plan.

More than a half (62.1%) of the respondents indicated that the hospital administration did not support trainings for nurses while 37.9% reported that there were emergency management trainings for nurses.

Nearly two-thirds (74.2%) of the respondents reported there was existence of equipment relevant to enable nurses prepare for emergencies while 25.8% reported nonexistence of relevant equipment for emergency preparedness.

Three quarters (76.5%) of respondents reported that the hospital management performed regular emergency drills in the hospital while 23.5% reported of the availability of regular drills in the hospital.

The study results established that more than two-thirds (86%) of respondents reported of the availability of personal protective equipment (PPE) in case of any



infectious disease outbreak while 13.6% reported of no PPEs in case of infectious disease outbreaks.

In relation to existence of an adequate evacuation plan and exit doors, more than three quarters (81.8%)

of respondents reported that the hospital management ensured existence of such plan while 18.2% said there was no adequate evacuation plan and exit doors. *Table 1* next page.

Table 1: Institutional Related Factors

Statement	Response	frequency	Percentage
Hospital administration recognizes emergency Management plan as a framework for quality nursing care delivery.	Yes	105	79.5
	No	27	20.5
Hospital administration supports emergency response Team	Yes	119	90.2
	No	13	9.8
Hospital administration regularly reviews the contents of emergency management plan	Yes	93	70.5
	No	39	29.5
Hospital management supports training of nurses on Emergency management	Yes	50	37.9
	No	82	62.1
Institution supplies the relevant equipment for Emergency Preparedness	Yes	98	74.2
	No	34	25.8
Administration regularly performs emergency drills	Yes	31	23.5
	No	101	76.5
Hospital administration avails PPE in case of an infectious disease outbreak	Yes	114	86.4
	No	18	13.6
Hospital administration has ensured adequate evacuation plan and exit doors	Yes	108	81.8
	No	24	18.2

Institutional Factors and the Association with Emergency Preparedness

Table 2 below presents the association between emergency preparedness and institutional related factors. Among the factors examined, two were related to emergency preparedness, namely;

- (a.) Hospital administration supported emergency response team 'P < 0.009'.
- (b.) Hospital management regularly reviewed the contents of emergency management plan 'P < 0.002'.

Other variables which included, hospital administration recognized emergency preparedness plan as a framework for quality nursing care delivery 'P < 0.154', management supports training of nurses on emergency management 'P < 0.659', administration regularly performs emergency drills 'P < 0.068', institution supplies relevant equipment to enable nurses prepare for emergencies 'P < 0.792', hospital administration avails personal protective equipment in case of infectious disease outbreak 'P < 0.811'; and hospital administration has ensured adequate evacuation plan and exit doors 'P < 0.55' were not significantly associated with emergency preparedness.

Table 2: Institutional Factors and the Association with Emergency Preparedness

Statement		Emergency Preparedness		Sig		
		Yes	No	(χ^2)	Df	Pvalue
Hospital administration recognizes emergency preparedness as a framework for quality nursing care.	Yes	70(53)	35(26.5)	2.037a	1	0.154
	No	14(10.6)	13(9.8)			
Hospital administration supports Emergency Response Team.	Yes	80(60.6)	39(29.5)	6.732a	1	0.009
	No	4(3)	9(6.8)			
Hospital management regularly reviews the contents of emergency management plan.	Yes	67(50.8)	26(19.7)	9.613a	1	0.002
	No	17(12.9)	22(16.7)			
Hospital management supports training of Nurses on emergency management.	Yes	33(25)	17(12.9)	0.194a	1	0.659
	No	51(38.6)	31(23.5)			
Institution supplies relevant equipment for Emergency preparedness	Yes	63(47.7)	35(26.5)	0.069a	1	0.792
	No	21(15.9)	13(9.8)			
Administration regularly performs emergency Drills	Yes	24(18.2)	7(5.3)	3.326a	1	0.068
	No	60(45.5)	41(31.1)			
Hospital administration avails PPE in case of infectious disease outbreak.	Yes	73(55.3)	41(31.1)	0.057a	1	0.811
	No	11(8.3)	7(5.3)			
Hospital administration has ensured adequate evacuation plan and exit doors.	Yes	70(53)	38(28.8)	0,356a	1	0.55
	No	14(10.6)	10(7.6)			



Level of Emergency Preparedness

Table 3 below showed that more than three quarters (83.3%) of emergency preparedness measures were

available while less than a quarter (16.7%) of emergency preparedness measures were not available. This proved that the institution was prepared for emergencies.

Table 3: Level of Emergency Preparedness

Emergency Preparedness Measures	Available
Hospital disaster plan	Yes
Emergency Response Team	Yes
Regular disaster/emergency preparedness drills	No
Emergency response packs	Yes
Triage team	Yes
Triage flow charts in the departments	Yes
Resuscitation team	Yes
Updated inventory of resuscitation equipment, supplies and pharmaceuticals	Yes
Personal protective equipment	Yes
Adequate waiting and receiving areas for casualties	Yes
Fire fighting equipment	Yes
Fire exits	No

Conclusion

The purpose of this study was to determine the institutional related factors that influence emergency preparedness among nurses at Machakos Level 5 Hospital Machakos County, Kenya. Among the factors examined, hospital administration supported emergency response team and hospital management regularly reviewed the contents of emergency management plan

were significantly associated with the hospital (ML5H) being prepared for emergencies. Two-thirds (76.5%) of the respondents reported that the hospital did not provide regular emergency drills while 23.5% reported there were regular drills provided by the hospital. A study finding that collaborate with [4, 6] that, emergency exercises and drills have been found to be of high importance in preparing nurses for emergencies. The results showed that more than three quarters (83.3%) of



emergency preparedness measures were available while less than a quarter (16.7%) of emergency preparedness measures were not available. This proved that the institution was prepared for emergencies.

List of Abbreviations

ML5H: Machakos Level 5 Hospital

UHC: Universal Health Coverage

Data availability:

The data that was generated to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this article.

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Declarations

Ethics approval and consent to participate- not applicable

Consent for publication- not applicable

Data availability-

The data sets used and/ analyzed during the current study are available from the corresponding author on reasonable request

Competing interests-

Authors declare that they have no competing interests

Authors contributions-

All authors read and approved the final manuscript

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Appendix 1: Study Questionnaire

Questionnaire Serial Number _____ Questionnaire Status _____ (1=Complete; Partially Complete. Interview ID _____
Date of Interview ___ / ___ / ___

Your honest responses on the following questionnaire will greatly assist in the attempt to identify gaps on Emergency Preparedness. All responses will be coded by an identifying number only, kept confidential, and analysed in group form so that no personal information is revealed. Thank you for taking your time to complete the questionnaire.

PART A: Institutional Related Factors Influencing Emergency Preparedness

Does the hospital administration recognize the following as the major components of Emergency preparedness as a framework of nursing care delivery?

Description		Response	
		YES	NO
1	Hospital recognizes emergency management plan as a framework for quality nursing care delivery.		
2	Hospital administration supports Emergency Response Team.		
3	Hospital management regularly reviews the contents of the emergency management plan.		
4	Hospital management supports trainings for all nurses on emergency management.		
5	Institution supplies relevant equipment/resources to enable nurses prepare for emergencies (vehicles for patient transport, blood banks, reagents etc.)		
6	Administration regularly performs emergency drills.		
7	Hospital administration avails personal protective equipment in case of an infectious disease outbreak (facemasks, caps, overall coats, boots, gloves, etc.)		
8	Hospital administration has ensured adequate evacuation plan and exit doors.		



PART B: Level of Emergency Preparedness

This was a direct observation without interacting with the people under study.

Emergency Preparedness Measures	Available
Hospital disaster plan	
Emergency Response Team	
Regular disaster preparedness drills	
Emergency response packs	
Triage team	
Triage flow charts in the departments	
Resuscitation team	
Updated inventory of resuscitation equipment, supplies and pharmaceuticals	
Personal protective equipment	
Adequate waiting and receiving areas for casualties	
Fire fighting equipment	
Fire exits	

Source: WHO, 1948. Hospital Emergency Response Checklist.

Thank you for your responses.