



# Knowledge of Emergency Preparedness among Nurses in Machakos Level Five Hospital in Machakos County, Kenya

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## Summary

### BACKGROUND

An emergency is an unexpected event that disrupts normal operations within a health facility and requires immediate interventions to address it. Knowledge of emergency preparedness is an important role of clinical nursing to enhance patient outcomes. This study aimed to determine the types of emergencies received at Machakos Level 5 Hospital (ML5H) and to assess the nurses' level of knowledge on emergency preparedness.

### MATERIALS AND METHOD

This was a descriptive cross-sectional research design. The study was conducted at Machakos Level 5 Hospital, Machakos County, Kenya. The sample included 132 nurses working at ML5H, who were randomly selected and consented to participate in the study. Data was collected using a self-administered questionnaire and an observation checklist. Data were coded and entered into SPSS version 25 software and the analysis included descriptive statistical tests.

### RESULTS

A little more than a half (56%) of the nurses were found to have adequate knowledge of emergency preparedness; 65% had attended training on emergency preparedness and 63% indicated that training had enhanced their competence.

### CONCLUSION

A higher proportion of nurses reported not participating in emergency drills that could be used to improve their knowledge and skills in emergency preparedness. The results of the study indicate that there is a need to enhance the knowledge of nurses' on emergency preparedness.

*Keywords: Emergency Preparedness, Types of Emergencies, Knowledge, Nurses.*

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## Introduction

Emergencies are serious, unexpected, and often dangerous situations that disrupt the normal operations within a health facility and require immediate action by nurses to address the situation without seeking external assistance (WHO, 2016). According to Turale and Veenema (2014), nurses globally have been reported to assume a noteworthy role in response to emergencies since the early periods of the nursing profession as

demonstrated by Florence Nightingale when she cared for the wounded soldiers during the Crimean War. Emergency preparedness is very important and a priority for nurses to be prepared to handle these emergencies. Emergencies are divided into natural and man-made (technological).

Natural incidents occur under natural circumstances and may include floods, earthquakes, volcanoes, landslide/mudslides, and disease outbreaks. Nurses need to be prepared enough for such victims who may



require emergency attention once at the health facility (CDC, 2017).

Man-made or technological incidents occur due to human activities including terrorist bombings, motor or road traffic accidents, fires, plane crashes, boat accidents, and aflatoxin poisoning. Countless acts of terrorism have been committed using explosives and firearms used in various parts of the world with a more recent attack in Kenya. The terrorist attack on Dusit D2 Hotel on January 15, 2019, where more than 700 were rescued and 21 others killed according to the Inspector General (IG) of Police- Kenya, Joseph Boinnet, and the Government of Kenya in a press briefing on 15 January 2019 at Jogo House, Nairobi.

The objective of emergency preparedness is to empower nurses by improving their capability in carrying out operations using the available resources in a convenient and timely manner. Understanding emergency preparedness enables nurses to take part in all stages of an emergency and to actively and effectively participate in emergency management plans included in the healthcare system. The study conforms with various descriptive cross-sectional studies that have reported wide gaps in emergency competencies and emergency preparedness among nurses.

Research from Hodge *et al.*, (2015) showed that in a study conducted in the USA on the readiness of nurses regarding emergency preparedness, half (50%) of the nurses reported that they were unprepared for emergencies. Baack and Alfred, (2013) conducted a study to assess 620 nurses in the USA on their knowledge of emergency preparedness. Tzeng *et al.*, (2016) argued of a Taiwanese study indicating that nurses who had trained in emergency preparedness handled emergencies more competently, and made quick decisions concerning the clinical management of victims involved in accidents. Research conducted by Al Thobaity *et al.*, (2015); Ibrahim (2014) showed that nurses

who worked in Accident and Emergency departments and the Intensive care units, were more competent in handling all forms of emergencies received within the hospital and performed their roles in a more coordinated manner, acted fast and each member of the response team was aware of his or her duties allocated to them. Without a physician, Nurses in Bangladesh and Laos could not attend to emergency victims, as they needed someone whom they could consult, as they felt incompetent, while another group of nurses in Cambodia and the Solomon Islands felt they could not carry out emergency-related biological and chemical agents' assessments, according to a study carried out by Usher *et al.*, (2015).

Nurses who had experience and attended to emergencies on mass casualty accidents and other forms of emergencies showed high levels of preparedness for emergencies.

The study aimed at determining the types of emergencies received at Machakos Level 5 Hospital and assessing the level of knowledge on Emergency Preparedness among nurses at Machakos Level 5 Hospital. This is part of my master's work where two objectives have been used.

## Materials and Methods

The study was conducted at Machakos Level 5 Hospital which is the largest referral public Health facility in the Eastern parts of Kenya. It utilized a descriptive cross-sectional design. The study involved 132 nurses' selected using stratified random sampling and systemic random sampling. Data was collected using a self-administered questionnaire with True/False statements and an observation checklist derived from Hospital Emergency Response Checklist. Types of emergencies were classified as Natural, man-made, food poisoning, fire tragedies, disease epidemics and chemical spillages.

## Results and Discussion

### Demographic characteristics of the respondents

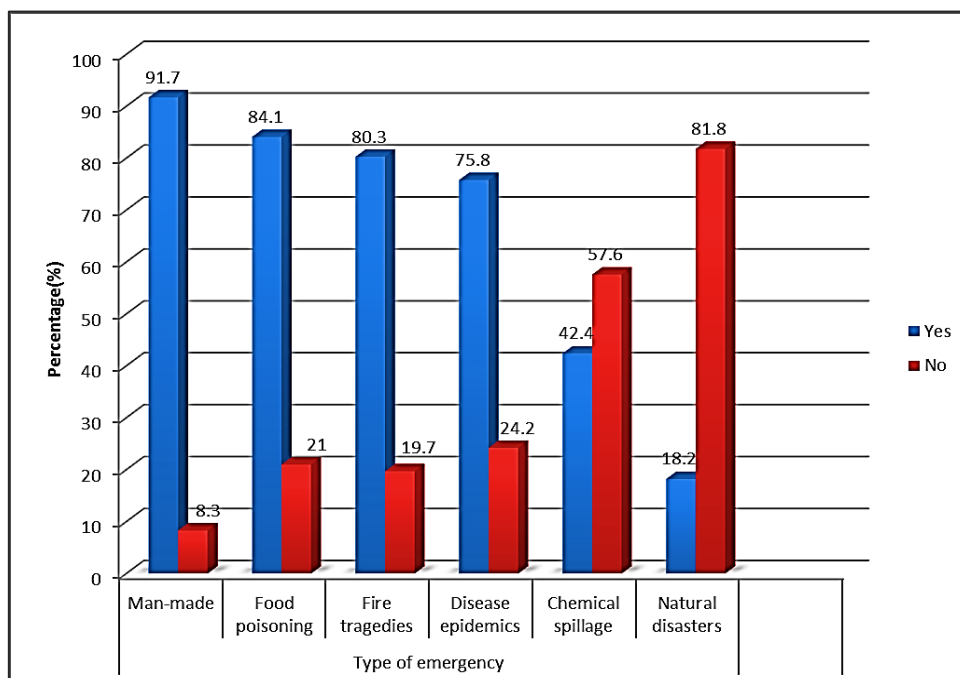
The response rate was 89%. Table 1 below shows that the majority of the respondents 84(64%) were female while 48(36%) were male. 108(82%) were aged 21-40 years. 93(70.5%) of the respondents had gone up to diploma level while 35(26.5%) had

gone up to degree level. The study showed that more than half, (60.6%) of the respondents worked in specialized areas that frequently deal with emergencies. 101(76.5%) of the respondents had worked for 1-10years.

Figure 1 demonstrates that 92% of the nurses had encountered emergencies due to man-made events such as accidents. Nurses who had not encountered emergencies due to natural causes were 82%.

**Table 1:**  
*Demographic Characteristics of the Respondents*

Characteristic	Frequency(n)	Per cent (%)
<b>Gender</b>		
Male	48	36.4
Female	84	63.6
<b>Age</b>		
21-40	108	82
<b>Academic qualification</b>		
Diploma	93	70.5
BScN	35	26.5
<b>Work experience</b>		
1-10 years	101	76.5



**Figure 1:**  
*Bar Chart Showing the Types of Emergencies Encountered in MLSH*



### *Training on emergency preparedness*

Table 2 below shows that 70(65%) of the respondents had attended training on emergency preparedness while 62(35%) had not attended training and 84(63%) reported that the training had enhanced their competence.

### *Knowledge of emergency preparedness*

Figure 2 shows that 76% of the respondents rated their knowledge of emergency preparedness as good and very

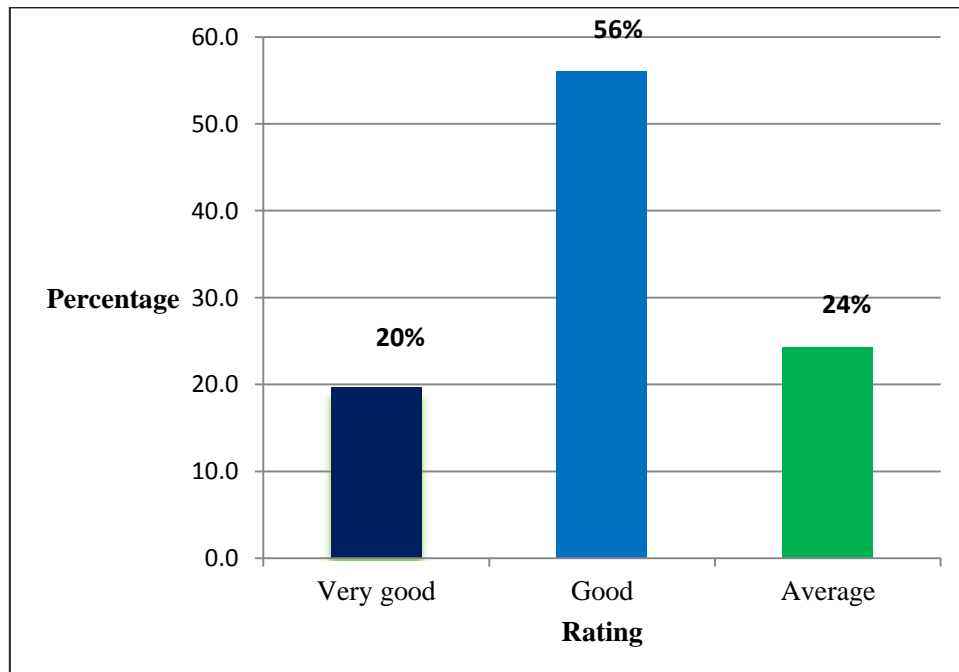
good while 24% rated their knowledge as average and below.

### *Knowledge of emergency management*

Table 3 presents results indicating the extent to which the respondents agreed or disagreed with certain interventions as measures of emergency preparedness. The results revealed that 80(61%) of the respondents understood the emergency preparedness plan. 80(61%) indicated they while 52(39%) did not understand the emergency preparedness plan.

**Table 2:**  
*Emergency Preparedness Training among Nurses in ML5H*

	Frequency(n)	Percent (%)
<b>Ever trained in Emergency preparedness?</b>		
Yes	70	65
No	62	35
<b>Total</b>	<b>132</b>	<b>100</b>
<b>Training enhances nurse competencies</b>		
Yes	84	64
No	48	36
<b>Total</b>	<b>132</b>	<b>100</b>



**Figure 2:**  
*Nurse Self-Rated Level of Knowledge on Emergency Preparedness*



On familiarity with the procedures, 102(77%) while 30(23%) were not familiar with the procedures during emergencies. Concerning knowledge of emergency crash cart, 92(70%) were familiar with the crash cart while 40(30%) were not familiar with the crash cart. On triaging technique during Emergencies, 104(79%) of the respondents were familiar with the technique while 28(21%) were not familiar with the triaging technique.

### ***Membership in an emergency response team***

From the study results in Table 4, two-thirds (68%) of the respondents were not members of the emergency response team while 42(32%) were members of the emergency response team.

### ***Participation in emergency drills***

Study results in Figure 3 established that nearly three-quarters (68%) of the

respondents had not participated in emergency preparedness drills.

### ***Level of knowledge and association with emergency preparedness***

Table 5 below shows that a higher proportion of 100(76%) of respondents rated their knowledge as either good or very good and this indicated that they were more likely to handle emergencies competently, compared to those who rated their knowledge as average and below 32(24%). Statistical tests performed showed a significant relationship between the level of knowledge and emergency preparedness ( $P=0.000$ ). The statistical tests performed also showed a significant relationship between familiarity with procedures and emergency preparedness ( $P=0.000$ ); familiarity with a crash cart and emergency preparedness ( $P=0.000$ ). There was no significant relationship between familiarity with triaging technique and emergency preparedness ( $P=0.283$ )

**Table 3:**  
***Knowledge of Emergency Management among Nurses in ML5H***

	<b>Frequency(n)</b>	<b>Per cent (%)</b>
<b>Understanding of emergency management plan</b>		
Yes	80	61
No	52	39
<b>Total</b>	<b>132</b>	<b>100</b>
<b>Familiarity with procedures during emergencies</b>		
Yes	102	77
No	30	23
<b>Total</b>	<b>132</b>	<b>100</b>
<b>Familiarity with the emergency crash cart</b>		
Yes	92	70
No	40	30
<b>Total</b>	<b>132</b>	<b>100</b>
<b>Familiarity with the triaging technique</b>		
Yes	104	79
No	28	21
<b>Total</b>	<b>132</b>	<b>100</b>

**Table 4:**  
***Membership with Emergency Response Team***

	<b>Frequency (n)</b>	<b>Percentage (%)</b>
Yes	42	32
No	90	68
<b>Total</b>	<b>132</b>	<b>100</b>



Our null hypothesis stating that there was no significant relationship between nurses' level of knowledge and emergency preparedness at Machakos Level 5 Hospital was therefore rejected.

### Gap in literature

More than a half (68%) of respondents were not members of the Emergency Response Team while 32% were members. This showed a big gap since membership guaranteed members frequent training opportunities on Emergency Preparedness.

### Lessons learnt from the study

A high proportion of nurses have never participated in emergency drills that could be used to improve their knowledge and skills in emergency preparedness.

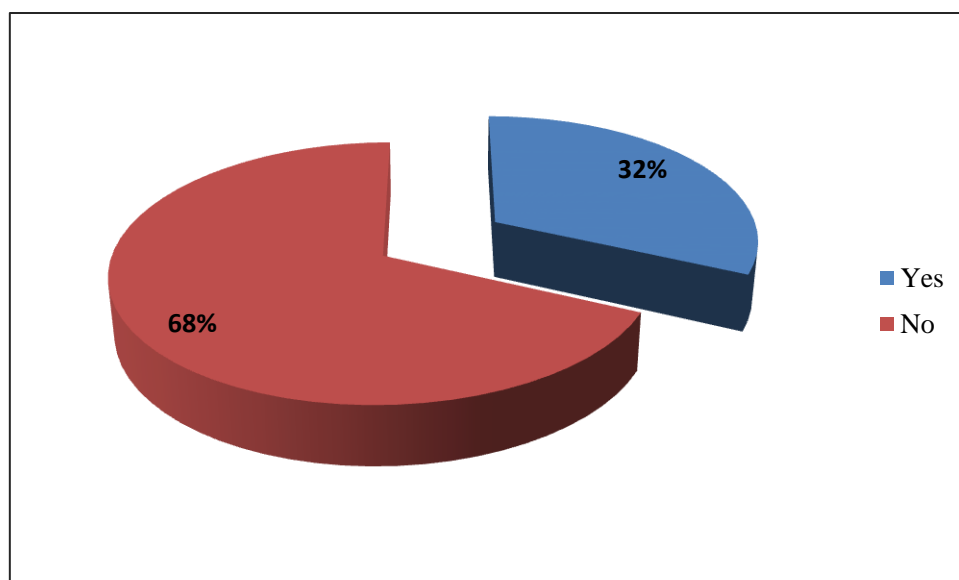
The results of the study will guide the institution in improving and enhancing emergency preparedness by developing evidenced informed strategies as the facility prepares to implement the Universal Health Coverage (UHC) in addressing challenges

brought about by road traffic accidents, the reason why the county was chosen as one of the pilot counties for UHC.

### Conclusion and Recommendations

The types of emergencies in Machakos level 5 hospital included emergencies caused by natural disasters such as floods and earthquakes, emergencies due to man-made occurrences such as road accidents, emergencies due to chemical spillage, fire tragedies and food poisoning. The majority of the nurses were more familiar with man-made emergencies than natural incidents.

The majority of the nurses had the necessary knowledge and had attended training on emergency preparedness and indicated that the training enhanced their competencies. However, a high proportion of nurses reported not participating in emergency drills that could be used to improve their knowledge and skills in emergency preparedness.



**Figure 3:**  
*Participation in Emergency Drills*



**Table 5:**  
*Association between Level of Knowledge and Emergency Preparedness*

	Emergency preparedness		Significance		
	Yes	No	( $\chi^2$ )	Df	P-value
<b>Self-rated knowledge on emergency preparedness</b>					
Very good	24(18.2)	2(1.5)	21.290a	2	0.000
Good	49(37.2)	25(18.9)			
Average and below	11(8.3)	21(15.9)			
<b>Familiarity with procedures</b>					
Yes	75(56.8)	27(20.5)	18.982a	1	0.000
No	9(6.8)	21(15.9)			
<b>Familiarity with the crash cart</b>					
Yes	66(50)	26(19.7)	8.614a	1	0.003
No	18(13.6)	22(16.7)			
<b>Familiarity with triaging technique</b>					
Yes	69(52.3)	35(26.5)	2.522a	2	0.283
No	14(10.6)	14(10.6)			

The study findings concluded that nurses who had prior experience with emergencies handled emergencies effectively, and made informed decisions concerning the actions and measures to take during emergencies. The null hypothesis that there is no significant relationship between nurses' level of knowledge and emergency preparedness at Machakos Level 5 Hospital was rejected. The hospital should conduct regular training for nurses on emergency preparedness. Training such as BLS/ACLS is therefore recommended on regular basis such as every 3-6 months. Continuous medical education sessions need to be reinforced in every unit in the hospital every week. Any updates on emergency preparedness will be shared during these sessions. During these sessions, demonstrations and return demonstrations will be done by the nurses.

#### **Data availability**

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

#### **Conflict of interest**

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

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