

## THE ROLE OF A NURSE IN DISASTER MANAGEMENT AT KAPSABET DISTRICT HOSPITAL: A GLOBAL HEALTH CONCERN.

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### Abstract

A disaster is a catastrophic incident that commonly leads to immense damage and devastation. Whether the cause of the event is natural or man-made, the outcomes can be shocking (Coppla, 2011). Preparedness is one of the major components of disaster response. Nurses comprise the largest healthcare workgroup in most countries and are at the forefront of the healthcare response to disasters. The purpose of the study was to investigate the role of nurses in disaster management at Kapsabet District Hospital. A cross sectional survey was conducted. The study population consisted of nurses working at District Hospital in Nandi Country. Kenya. Structured questionnaires were used to collect data on nurses' levels of awareness regarding disaster preparedness, their attitudes on disaster management plans and drills, and the nurses' current practices regarding disaster preparedness. 61 nurses were given questionnaires to fill, 35 questionnaires were filled and returned. Descriptive statistics was used to summarise and analyse data into frequencies and percentages. The findings revealed that 74.3% knew what disaster was. 57.1% understood what disaster preparedness involved while 40% on the nurses understood their role in disaster drill. 86% reported that disaster planning was for few people in the hospital. 68% and 80% of the nurses reported that disaster drills and training were not done frequent respectively. The research recommended that hospital management should ensure disaster plans are in locations accessible to all health personnel and that there should be regular training and drills for the purposes of disaster preparedness.

**Key Words:** Disaster management, role of nurses, disaster preparedness, global health

### Introduction and Literature Review

A disaster is any event that leads to a response beyond which the affected community can deal with locally. Understanding the difference between a disaster and an emergency is important. An emergency is a situation where a sudden incident or event has occurred and normally used, local responses will suffice to care for the situation without calling in outside help (Adelma & Legg, 2009). The occurrence of catastrophic events can impact communities and hospitals negatively in both developed and industrialized countries. Many times, hospitals and healthcare facilities are not able to function during a disaster (Powers & Daily, 2010).

Zhang (2008) states that from the health effects of global warming to the implications of single nucleotide differences on disease, the factors that impact global health are extremely diverse and are changing constantly. Injuries are among the leading causes of death and burden of diseases all over the world. Everyday almost 16,000 individuals die from injuries. The burden of injuries in developing countries differs

from developed countries. China, Latin America, the Caribbean, Sub-Saharan Africa are among the highest injury burden countries. Unintentional injuries are responsible for 5.2 percent of total deaths and accounts for 10-30 percent of all hospital admissions.

With the growing threat of a naturally occurring or man-made global pandemic, many public, private, federal, state and local institutions have begun to develop some form of preparedness and response plans. Among those in the front lines of preparedness are hospitals and medical professions who will be among the first responders in the event of such a disaster (Moabi, 2008).

Boone and Moore (2011) state that, a nurse may play several roles during a disaster. This may include: preserving open lines of communications, ensuring quality patient care, providing current education, influencing policy and financial decisions and providing security for staff, patients and families. According to Jakeway, LaRosa, Cary, and Schoenfisch (2008), preventing, preparing for, responding to and recovering from disasters and emergencies has become a priority for everyone. Since Florence Nighting-



gale demonstrated to the world the important role that nurses play on the front lines of responding to disasters, the field of public health and disaster nursing has continued to expand its scope and define its significance. Public health nurses bring critical expertise to each phase of a disaster: mitigation, preparedness, response, and recovery.

Disaster nursing is provided in numerous environments and settings, each with unique conditions with which disaster nurses must be familiar. Essential nursing abilities needed for the appropriate management of disaster victims include critical thinking, adaptability, teamwork and leadership. Proper patient care and management in disaster settings mandates understanding of both individual care and mass patient care (Powers & Daily, 2010).

Traditionally, pre-planning for disasters and mass casualty incidents has been the responsibility of fire and emergency medical services. Nursing role has been to preplan for the effect that the disaster has on the hospital (Holleran, 2010). According to Stanhope and Lancaster (2008) the role of a nurse during disaster depends a great deal on the nurse's experience, professional role in a community disaster plan, specialty training, and special interest. The most important attribute for anyone working in a disaster, however is said to be flexibility.

According to Powers and Daily (2010) the ability of hospitals to improve their preparedness capability and to protect the lives of patients and healthcare workers often is linked to national and international planning initiatives and guidelines.

In his article, Mere (2011) states that government holds the responsibility of decision-making process such as economic policy formulation, disaster reduction policies, and then policy implementation at an administration level. He continued to add that government bears the primary role to ensure the safety and security of the community; but government cannot handle this on its own, hence civil society and private sector contribute to help in disaster risk reduction and disaster management especially at the local level.

When a disaster occurs, it is for governments to provide leadership, civil defense, security, evacuation and public welfare. The medical aspects of a disaster account for less than 10% of resources and personnel expenditure. Hospitals and health care provider teams respond to unexpected occurrences such as explosions, earthquakes, floods, fires, war or the outbreak of an infectious epidemic (Moabi, 2008)

Kenya's disaster profile is dominated by droughts, fires, floods, technological accidents, diseases and epidemics that disrupt people's livelihoods, destroy the infrastructure, divert planned use of resources, interrupt economic activities and retard development. In the pursuit of effective and timely response to disasters, the Government through the Ministry of State for Special Programs and National Disaster Operations Centre - Ministry of State for Provincial Administration and Internal Security has formulated the National Disaster Response Plan (Republic of Kenya, 2009). The aim of the Plan is to establish an understanding of the structure and operating procedures for addressing all aspects of disaster preparedness and response in Kenya. The plan seeks to ensure that disaster preparedness for response is carried in a coordinated and collaborative manner, ensuring the greatest protection of life, property, health and environment (Republic of Kenya, 2009).

The National Disaster Response Plan has stipulated four levels of operation in disaster response; level one is involved in localized emergency events dealt within the regular operating mode of the protective, emergency and health services in the district. Level two addresses disaster emergency events that overwhelm the capacity of the resources in the municipal/ district, but which do not overwhelm the capacity of the provincial resources to respond and recover.

Level three addresses disaster emergency events that requires the mobilizing of national resources to respond and recover (such an event may be designated as a national disaster). This will prompt seeking of assistance from other external partners. Level four addresses a disaster Emergency event that overwhelms the existing national response capacity, thus prompting the President to declare a national disaster to seek foreign/international assistance to support the country in the response and recovery initiatives (Republic of Kenya, 2009)

The purpose of the study was to investigate the role of nurses in disaster management at Kapsabet District Hospital

### **Problem Statement**

There is a rise in the number and frequency of disasters globally. SARS, Ebola, Avian flu, polio, HIV and TB are some of the diseases that have led to health crisis including acts of terrorism. The lead-

ing course of injury deaths is motor-vehicle accidents globally, then suicide, homicide, drowning, war-related injuries, falls, burns and poisoning.

Kapsabet has a population which is growing rapidly and its infrastructure is growing too. Upon the occurrence of a disaster and being the only hospital within the county, KDH will be forced to stretch its service provision beyond its limits and this raises concern on its preparedness and management strategy to disaster. Nurses' background however makes them ideal candidates for initiating disaster and mass casualty incidences planning in the community (Powers and Daily, 2013).

### Research Objectives

- To determine the knowledge of KDH nurses regarding disaster management.
- To determine the practices of KDH nurses regarding disaster management.

### Materials and Methods

A quantitative, descriptive research design was used in this study to collect and analyze data on the role of nurses in disaster management at KDH. The target population of the study comprised of nursing staff working in KDH who were 72 in number. KDH is a level 4 hospital with a capacity of 200 beds. It serves patients from across Nandi County. It is located in Kapsabet town and attends to referrals from health centers and sub-district hospitals and offers inpatient and outpatient services. It has a total of 72 qualified nurses. The outpatient department has 9 qualified nurses with 5 being Kenya Registered Community Health Nurses and 4 Kenya Enrolled Nurses. The sample size was calculated using the Cochran's formula (Mugenda & Mugenda, 2003). The desired sample size was 61.

A questionnaire with closed ended questions was developed and used to collect data. A pilot study was used to establish the reliability of the questionnaire using the Cronbach alpha coefficient. The reliability coefficient of 0.821 was obtained. A pilot study was conducted at the outpatient department of Uasin Gishu District Hospital (UGDH) on 30th October to 4th November 2012.

The questionnaires were distributed among the nurses and with clear instructions on how to fill them. The data was analyzed using the analyzed using Statistical Package for Social Sciences (SPSS). Descriptive

statistics was used to summarise and analyse data into frequencies and percentages.

Prior to conducting the study, ethical considerations were met. The permission to carry out the study was sought from the University of Eastern Africa Baraton Research Ethics Committee, Nursing Officer KDH and the District Health Management Team. Participation in the study was voluntary and the participants were required to sign an informed consent prior to participating in the study. The participants were assured of confidentiality and all the information will be treated with privacy. No harm or discomfort was subjected to the participants. The selection of the participants was fair (Burns & Grove 2007). Participants got the opportunity to ask questions that were not clear concerning the study; this ensured that participants gave informed, understood consent.

### Results and Discussion

There were a total of sixty one (61) questionnaires that were distributed via hand delivery. Thirty five (35) of them were completed and returned. The rate obtained was considered adequate since the participants rate was more than the minimum rate of 30% of the study population (72 nurses).

### Demographic Data

From the study findings, most of the respondents were female as indicated by 22 (62.9%) compared to male, 13 (37.1%). This study shows that majority of the nursing staffs are females. According to Grant, Robinson, & Muir (2004), nursing as a career has always been considered a female profession from the beginning because of the mothering aspect. In the recent past nursing as a profession has incorporated men into the nursing profession.

**Age.** A greater percentage of the respondents were aged between 20-29 (48.6%), followed by 20% who were aged between 40-49 years, then 17.1% who were aged 30-39 years and lastly 14.3% who were 50 years and above. This statistics indicates that majority of the nurses are still young and can be fast in the provision of health care upon occurrence of a disaster. They have also recently completed their training and incorporated into the field thus should have adequate knowledge on disaster management.



**Years of nursing experience.** The findings of the respondents indicates that most of the nurses had a working experience of between 1-5years as evidenced

by 54.3%, followed by 14.3% who worked for 6-10 years, then 20% who worked for 11-15 years and finally 11.4% who worked for 20 years and more.

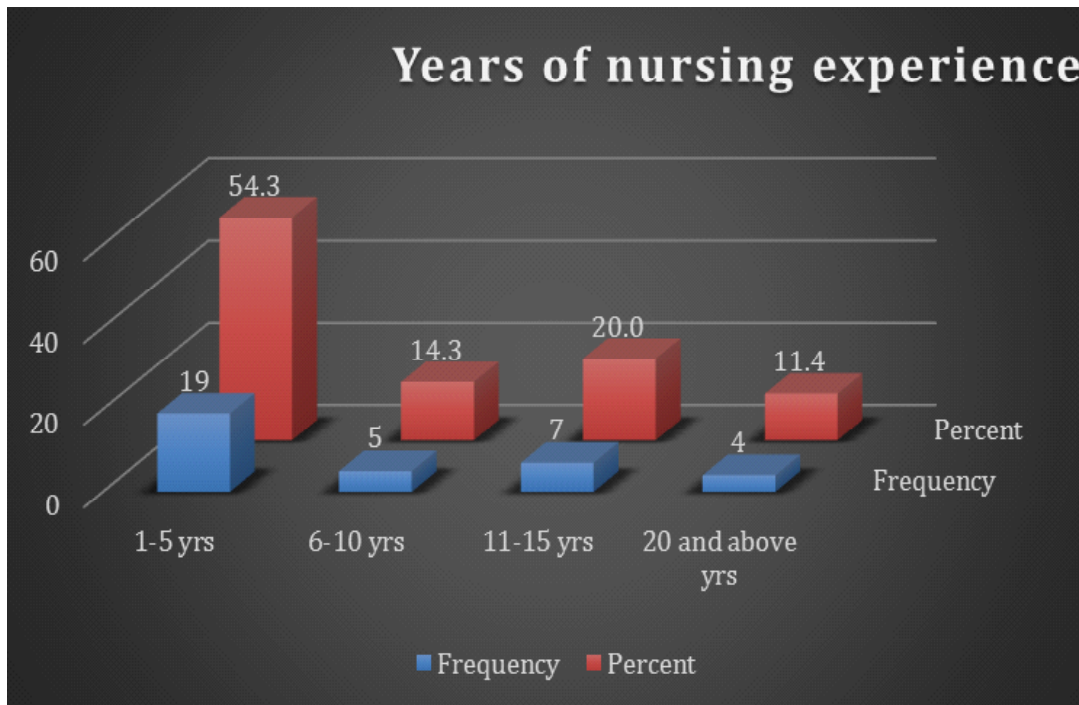


Fig. 1. Years of nursing experience

**Nurses’ Knowledge**

**Disaster management.** From the study findings as presented in table 1, majority of the nurses (74.3%) responded that a disaster is any natural or man-made destruction that warrants extra ordinary response, followed by 22.9% who responded that a disaster is a massive destruction of life and property and lastly 2.9%

who responded that it is an ecological disruption. There was no response on a disaster being the loss of human life. This indicates that most of the nurses are aware of what a disaster is and their background makes them ideal candidates for initiating disaster and mass casualty incidences planning in the community (Tsouros & Efstathiou, 2009).

Table 1

*Definition of a Disaster*

Definition statements	Responses %
Massive Destruction of life and Property	22.9
Ecological Disruption	2.9
Any natural or manmade destruction that warrants extra ordinary response	79.3
Total	100

In the study undertaken by nurses in Hong Kong, the conclusion was that nurses are not adequately prepared for disasters, but are aware of the need for such preparation. Also, that disaster management training should be included in the basic education of nurses (Moabi, 2008).

**Disaster planning.** The research findings, shown in table 2, indicate that (51.4%) nurses responded that a disaster plan is a formal written layout for coordinating response in the event of a disaster, followed by 31.4% who responded that it is a document that prepares an institution for a disaster,

then 14.3% who responded that it is a framework that describes activities in a disaster and lastly 2.9% who responded that it is actions laid down for recovery. This revealed that most of the nurses understood what a disaster plan is. Disaster plans representing a snapshot of

that process at a specific point in time, is probably the most effective for developing the coordination that response teams will need during an actual emergency (Moabi, 2008).

Table 2

*Definition of a Disaster Plan*

<b>Definition statements</b>	<b>Responses %</b>
A frame work that describes activities in a disaster	14.3
A formal written layout for coordinating response in the event of a disaster	51.4
A document that prepares an institution for a disaster	31.4
Actions laid down for recovery	2.9
Total	100

Hospitals need to review their plans and functionality openly and objectively to ensure that their perceived preparedness is consistent with reality. In addition, they urgently require guidance as to reasonable expectations of their capacity (Boone & Moore, 2008). The purpose of disaster planning is to provide the policies, procedures, and guidelines necessary to protect lives, limit injury, and protect property immediately before, during and after disaster event. A comprehensive emergency management plan addresses the phase of disaster management (Maurer & Smith, 2005).

Effective disaster planning addresses the problems posed by various potential events, ranging in scale from mass casualty incidents, such as motor vehicle collisions with multiple victims, to extensive flooding or earthquake damage, to armed conflicts and acts of terrorism. Participation by nurses in all phases of disaster planning is critical to ensure that nurses are aware of and prepared to deal with whatever these numerous other factors may turn out to be (Veenema, 2013). Good planning includes pre deployment medical review to ensure “fitness for duty” and considers the following: (1) personal risk factors, (2) hazards likely to be associated with particular field locations, and (3) risks involved with assigned tasks (e.g. workload and pace, work/rest cycles, available resources, and team/supervisor dynamics. Planning also should address worker health surveillance, medical monitoring, and availability of medical care (Moabi, 2008)

**Disaster preparedness.** From the study statistics in table 3, most of the nurses (57.1%) responded that disaster preparedness involves coordination, planning, surveillance, training and communication when disaster occurs, followed by 22.9% who responded that it is preparing for effective response to a wide spread disaster, then 11.4% who responded that it involves response, reconstruction and mitigation and lastly 8.6% who think that it is being able to being able to save lives. The statistics show that most of the nurses understand disaster preparedness, which involves activities and measures taken in advance to ensure effective response.

A key to disaster preparedness is that the plan must be kept both realistic and simple with backups contingencies integrated throughout. The reason for this are that, plans never exactly fit the disaster as it occurs and all plans never must be implemented no matter which key members of the disaster team are present at that time (Stanhope and Lancaster, 2008). According to Amin and Goldstein (2008), the major weakness to dealing with disaster response is the lack of adequate preparedness.



Table 3

*Definition of Disaster Preparedness*

Definition statements	Responses %
Preparing for an Effective response to a wide spread disaster	22.9
Involves response reconstruction and mitigation	11.4
involves coordination, planning, surveillance, training and communication when disaster occurs	57.1
Being able to save lives	8.6
Total	100

**Disaster drill.** The study findings showed that there was a tie (37.1%) in the number of nurses who responded that a drill is a simulation of a disaster to assess and improve disaster preparedness and response and those who responded that a drill is a guideline tool on disaster response and management. They were

followed by 14.3% who responded that it is a health care disaster preparedness plan and lastly 11.4% who responded that it is a form of training. From the findings obtained it showed that many (62.9%) of the nurses do not know what is a drill.

Table 4

*Definition of a Drill*

Definition of a drill	Responses %
A form of training	11.4
A simulation of a disaster to assess and improve disaster preparedness and response	37.1
A health care disaster preparedness plan	14.3
A guideline tool on disaster response and management	37.1
Total	100.0

According to Veenema (2013) drills usually highlight and closely examine a limited portion of the overall emergency management plan and should be designed to clarify the roles and responsibilities of those who are expected to respond to a disaster and to improve coordination among those responding. Disaster drills are a valuable means of training health care providers to respond to mass casualty incidents from acts of terrorism or public health crises (Moabi, 2008).

**Disaster management.** Table 5 illustrates that 80% of the nurses reported that did not need to know whether they needed to know about disaster plans while 17% felt that it was not necessary and 3%

neither agreed nor disagreed. Majority (83%) of the nurses thought it was important for the management to be adequately prepared should a disaster occur and 14% did not see this as important while 3% had no idea whether it was important or not. Most of the nurses (86%) agreed that disaster planning should be for a few people and 14% disagreed. With regards to whether potential hazards should be identified and dealt with before they caused a disaster 91.4% of the nurses agreed, 2.9% disagreed and 5.7% of the nurses did not know. Majority of the nurses (94%) agreed that training was necessary for all health management while 6% disagreed. Almost all the nurses (97.1%)

agreed that it was necessary to have a disaster plan and 2.9% disagreed. All (100%) the nurses agreed that it was necessary to regularly update the disaster plan. 82.9% of the nurses had the view that it was likely for a disaster to happen in their hospital, 14.3% thought it to be unlikely and 2.9% did not know whether it

was likely or not. Majority (91.4%) of the nurses disagreed that disaster management was for doctors and nurses only while 2.9% agreed and 5.7% neither agreed nor disagreed. 80% of the nurses agreed that disaster simulations should occur frequently, 14.3% disagreed and 5.7% did not know.

Table 5

*Questions on Disaster Management*

Questions	Agree	Disagree	Do not know
I do not need to know about disaster plans	17%	3%	80%
Management should be adequately prepared should a disaster occur	83%	14%	3%
Disaster planning is for a few people in the hospital	86%	14%	-
Potential hazards likely to cause disaster should be identified and dealt with.	91.4%	2.9%	5.7%
Training is necessary for all health management	94%	6%	-
It is necessary to have a disaster plan	97.1%	2.9%	-
Disaster plans need to be regularly updated	100%	-	-
Disasters are unlikely to happen in our hospital	14.3%	82.9%	2.8%
Disaster management is for nurses and doctors only	2.9%	91.4%	5.7%
Disaster simulations should occur frequently in the hospital	80%	14.3%	5.7%

The fact that the majority (86%) of the nurses thought that disaster planning is for a few clearly demonstrates that nurses are not necessarily involved in disaster management activities. Holleran (2010), says that traditionally disaster planning and mass casualty incidents had been the responsibility of fire and emergency medical services. (Stanhope and Lancaster, 2008) states that professional preparedness requires that nurses become aware of and understand the disaster plans at their workplace and community.

**Nurses’ Practices of Disaster Management**

Ongoing training on disaster management. From the research findings as presented in figure 1, majority of the nurses (80%) responded that there is no ongoing training, followed by 11% who responded that there is ongoing training and then, 9% who don’t know of any ongoing training.

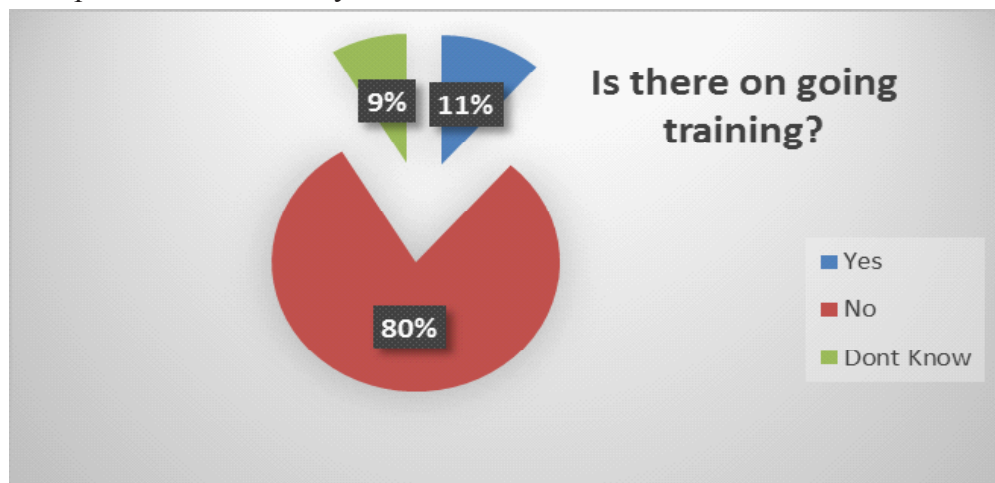


Figure 2. Ongoing training on disaster management.



Hospitals should train their employees to follow each type of disaster plan. They should also have routine “mock disaster training” with other departments throughout their community to ensure that each division understands what to do in an emergency (Langan, 2009). Adelman and Legg (2009) add to this by saying that disaster training should be included in all staff orientation sessions, included in annual competency updates, practiced under real-life circumstances, evaluated for changes, and plans redesigned based on lessons learned during drills to ensure continuous quality improvement. Having plans tailored to different types of disasters can ensure that hospitals are well prepared for any type of emergency and by being prepared, facilities can decrease the miscommunication and confusion during a real disaster. Making sure your employees get the training they need is extremely important (Schneid, 2010). Tsourous and Efstathiou (2009) go on to say one needs to make sure that every employee involved in disaster management is fully trained so they know exactly what to do.

Identifying an effective means of teaching hospital disaster preparedness to hospital-based employees is an important task (Cernea & McDowell, 2008). The need for effective evidence-based disaster training of healthcare staff at all levels, including the development of standards and guidelines for training in the multi-disciplinary health response to major events, has been designated by the disaster response community as a high priority (Andrews & Halcomb, 2009). Nurses have demonstrated their value in numerous disaster situations because they possess the knowledge, skills and abilities that support the humanitarian efforts and positively contributed to a disaster response. However, the challenges

faced in dealing with the complexity of disasters requires that each nurse acquire a knowledge base and minimum set of skills to enable them to plan for and respond to a disaster in a timely and appropriate manner (Veenema, Walden, Feinstein, & Williams, 2008).

The need for qualified individuals ready to respond to disasters and to participate in preparedness and disaster recovery activities is well documented. However, training is often fragmented or not available. Over the last several years, organizations and groups have begun to address the issue by developing competencies to describe the role of the responders and by developing specialized education and training programmes. Therefore, disaster education for all nurses is vital. The fundamental attributes of nursing practice consist of providing nursing care to the injured and ill, assisting individuals and families to deal with physical and emotional issues, and working to improve communities (WHO, 2008). Although training and education have long been accepted as integral based nor standardized, the need for effective evidence based disaster training of healthcare staff at all levels, including the development of standards and guidelines for training in the multi-disciplinary health responses in major events, has been designated by the disaster response community as a high priority (Moabi, 2008).

**Periodic updating of the disaster plan.** The study findings reveal that most of the nurses (65.7%) responded that disaster plans are not periodically updated, followed by 28.6% who responded that they don't know if they are regularly updated and then 5.7% who responded that they are updated regularly.

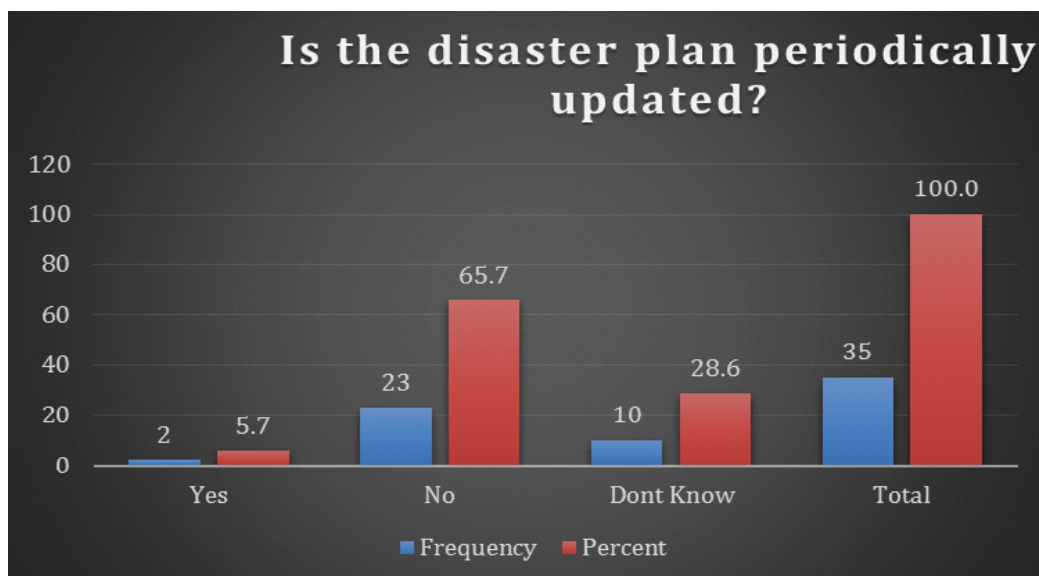


Figure 3. Periodic update of the disaster plan.



From the findings a large number of nurses reported that disaster plans are not regularly up dated may because they are not involved in disaster plan preparations. Adelman and Legg (2009) mention that it is unfortunate that disaster plans are often created by those who have limited knowledge of clinical services and impact, they concluded by saying this are the reasons why paper plans fail when exposed to an actual event. Data keeps changing with passing time, which makes keeping pace with the changing data one of the most important challenges before disaster recovery (Wallace, 2008). Disaster recovery plan therefore need to be constantly updated and refined. Maintaining A disaster recovery plan can be challenging. Some disaster recovery plans require a review once a year, some once a month and some require a review each week (Wallace, 2008).

An annual assessment of the emergency plan is required to assure emergency preparedness. Preparedness assessments should include: Elements of disaster planning; Emergency coordination; Communication;

Training; Expansion of hospital surge capacity; Personnel; Availability of equipment; Stockpiles of medical supplies (Moabi,2008).

**Disaster Drills at Kapsabet District Hospital.** The study findings indicates that most of the nurses (68.6%) responded that drills are not done at the hospital, followed by 22.9% who don't know whether drills are done and then 8.6% who responded that drills are done.

Adelman and Legg (2009) say that disaster plans provide the framework for disaster response, but without practice and drills, these disaster plans are worthless. As a part of the emergency management plan, every hospital is required to have a structure in place to respond to emergencies. This structure is routinely tested during drills (Holleran, 2010). The evaluation modules for hospital disaster drills are designed to be a part of that testing. Drills can be costly and complex to organize; to maximize the value of such endeavours, evaluation plans must be included (Coppola, 2011).

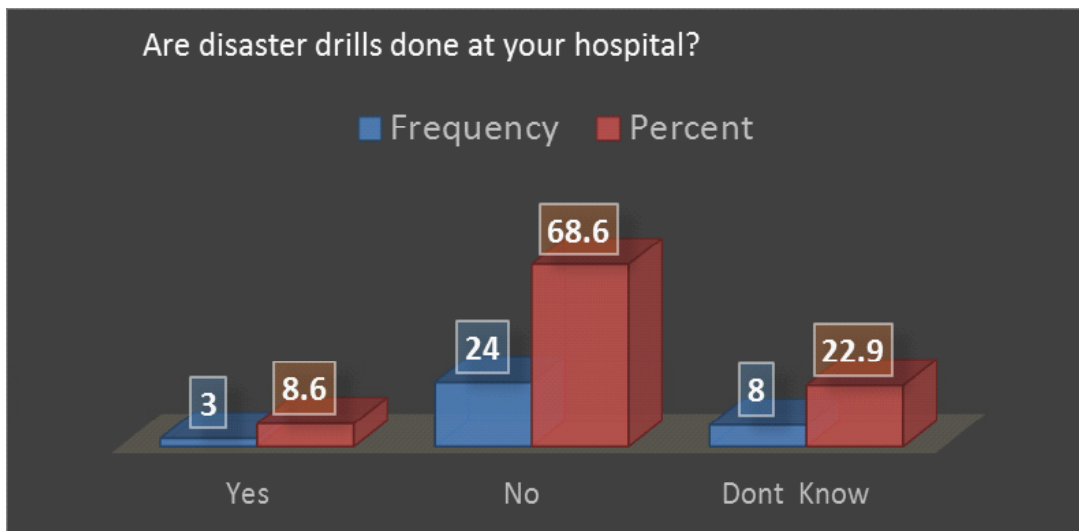


Figure 4. Presence of drills at KDH.

Disaster drill evaluations then can help hospitals to further their level of disaster preparedness. The value of this approach is to identify specific weaknesses that can be targeted for improvement and to promote continuing efforts to strengthen hospital disaster preparedness (Schneid, 2010). In Hawaii, it was recommended by a nationally commissioned report that more frequent interagency drills, increase funding for family emergency preparedness and local community response teams, and continuous training by emergency response coordinators could improve state and country preparedness. The report concludes that, overall, Hawaii is adequately prepared in emergency response capability, particularly

in the area of medical services and interagency coordination (Wong et al., 2006).

**Nurses' views on importance of carrying out regular drills at KDH.** The study findings revealed that all the nurses (100%) responded that carrying out regular drills is important. This indicated that the nurses recognized the need to have drills carried out and none thought otherwise. Drills and exercises are an excellent means of determining whether a health care organization functions as anticipated in a disaster and, if not, as a way to identify opportunities for improvement. They also provide an opportunity for nurses to practice their



skills and to identify future areas for training (Tappen, 2011). According to Moabi (2008) drills at regular intervals are conducted to ensure that the nurses are fully prepared and aware of their responsibilities. Disaster drills are also a valuable means of training health care providers to respond to mass casualty incidents from acts of terrorism or public health crises (Tappen, 2011).

### Conclusion

The nurses at Kapsabet district hospital were found to have a reasonable knowledge on disaster and its management. They believed that disasters are likely to happen at their hospital and that they need to be prepared. They also agreed that disaster plans need to be regularly updated. Though they had good knowledge on disaster management, their practices in terms of the frequency of ongoing and the frequency of regularly updating the plans was inadequate. The findings revealed that KDH management needs focus its attention on disaster management, nurses need ongoing training on disaster management, performance of drills and there is a need for regular updating of the plans. Should a disaster occur at the Kapsabet district hospital, majority of the nurses are not adequately prepared to handle it.

### Recommendations

1. Disaster management committee should be instituted, if not already in place and should be operational and should take responsibility of ensuring that the hospital is adequately prepared should a disaster occur.
2. Nurses should be part of disaster management plan of the hospital and the disaster plan should be regularly updated.
3. Nurses ought to have ongoing training on disaster management and the disaster drills need to be done regularly.
4. Nursing Council of Kenya ought to ensure that all nursing training institutions and hospitals emphasize disaster nursing and preparedness in their programs.

### Areas of Further Research

1. An evaluation of nursing training institutions programs on disaster management and prepared

ness.

2. An extensive assessment of hospitals management and preparedness towards disaster need to be done.

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