

**FACTORS INFLUENCING HEALTH WORKERS' ADHERENCE TO DISASTER
PREPAREDNESS MEASURES
A CASE STUDY OF KILEMBE MINES HOSPITAL IN KASESE DISTRICT**

BY

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2011-BSCPH-FT-018

**AN UNDERGRADUATE RESEARCH REPORT SUBMITTED TO THE INSTITUTE
OF HEALTH POLICY AND MANAGEMENT IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE AWARD OF BACHELOR OF SCIENCE
DEGREE IN PUBLIC HEALTH OF INTERNATIONAL
HEALTH SCIENCES UNIVERSITY**

DECEMBER 2014

DECLARATION

I Kareodu Ronald hereby declare that this dissertation and has not been presented to any University or institution in fulfillment of an academic award or publication. The works in here are original and where works of others are quoted, appropriate reference has been included.

I hereby submit it for the award of the degree in Public Health of International Health Sciences University.

Author

Signature.....

Date.....

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APPROVAL

The research topic on “Factors influencing health workers’ adherence to disaster preparedness measures, a case study of Kilembe Mines Hospital in Kasese district” was conducted by Ronald KAREODU under the close supervision of Mr. John Bosco ALEGE in accordance with the guidelines of International Health Sciences University.

Signature.....

Date.....

John Bosco ALEGE

International Health Sciences University

DEDICATION

This dissertation is dedicated to my parents Mr. Labite Thomas and Mrs. Vicky Labite, and my beloved uncle Eng. Ocaya Victor Labite who contributed significantly in raising and educating me.

ACKNOWLEDGEMENT

I am indebted to my supervisor Mr. John Bosco ALEGE for the guidance and technical input he accorded to me during the study period.

I wish to convey my sincere thanks to the staff of the Institute of Health Policy and Management for the dedication they exhibited while facilitating us

I also recognize the exertion of Jonathan IZUDI for his mentorship on research data analysis.

I would also like to extend appreciation to the Medical Superintendant of Kilembe Mines Hospital for having granted me the permission to carry out my study. I also strongly thank the Deputy Medical Superintendant Dr. Tiondi Hind Robert, the Hospital administrator and the research assistants Mr. Welinah Lazarus and Musoki Daphine for the support and corporation expressed.

Lastly, I would like to thank my colleagues the Public Health Students and BBA Health Management for the valuable contribution, support and team spirit demonstrated throughout the course.

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LIST OF ABBREVIATIONS AND ACRONYMS

AGCCR	Annual Global Climate and Catastrophe Report
ASDR	Annual Statistics Disaster Review
ECLAC	Economic Commission for Latin America and the Caribbean
GOI	Government of India
HAC	Humanitarian Aid Commission
IASC	Inter Agency Standing Committee
IFRC	International Federation of Red Cross
ISDR	Integrated Strategy for Disaster Reduction
JCAHO	Joint Commission on Accreditation of Healthcare Organisations
KI	Key Informant
MDGs	Millennium Development Goals
NPDPM	National Policy for Disaster Prevention and Management
PAHO	Pan American Health Organization
RTA	Road Traffic Accidents
UNDP	United Nations Development Programme
UNDRO	United Nations Disaster Relief Organization
UNISDR	United Nations Integrated Strategy for Disaster Reduction
WHA	World Health Assembly
WHO	World Health Organization
WPR	Western Pacific Region
HSSP	Health Sector Strategic Plan
NDMA	National Disaster Management Authority

ABSTRACT

Introduction: Public health disasters remain a significant problem for both developed and developing countries. The occurrences of such disasters are marked by widespread morbidity and mortality. With appropriate preparedness and adherence to disaster measures, its impact can be effectively mitigated. However, information on the level of preparedness to disasters is not readily available.

Objective: To assess health workers' adherence to disaster preparedness measures at Kilembe Mines Hospital in Kasese district.

Methods: The study used cross sectional study design that involved 122 respondents (health workers) at Kilembe mines hospital in Kasese district. The sample size was determined using Yamane's formula at 5% precision. Convenience sampling method was used and data was collected by structured questionnaire, key informant interview guide and observation check list. It was entered in Epi-Info v3.3.1 and exported to STATA v12 for statistical analysis at 95% confidence level. Fisher's exact test was used to analyze the relationship between the dependent and independent variables. Associations with probability values less than 0.05 were considered statistically significant for logistic regression analysis into odds ratios with subsequent 95% confidence intervals. Meanwhile, qualitative variables were analyzed via content analysis into themes.

Results: 43% of the respondents were males and 57% were females, 52% were aged 25-34 years, 75% were clinical staff and almost 29% had worked for between 5-10 years. 6 (4.9%) had adhered to disaster preparedness measures (4.9%, 95%CI: 1.8-10.4). At bivariate analyses, none of the socio-demographic and individual factors were associated with adherence to disaster preparedness measures. However, periodic staff meetings on disaster issues ($p < 0.005$), electrical checks ($p = 0.002$), periodic, risk and vulnerability assessments ($p < 0.001$) and knowledge of use of assessment results ($p < 0.044$) were significantly associated with adherence to disaster preparedness measures. Via logistic regression, conduct of periodic staff meetings on disaster issues (uOR=16, 95%CI: 2-147, $p = .012$) and periodic risk, hazard and vulnerability assessments (uOR=26, 95%CI: 3-231, $p = .004$).

Recommendation: Periodic hazard, risk and vulnerability assessment and correct use of the results, periodic staff meetings on disaster issues and sensitization and training of staff on disaster preparedness and management.

OPERATIONAL DEFINITIONS

- Adherence:** Entails having right activities of disaster preparedness that include; assessment of disaster hazards, development of hospital disaster plans and yearly updates, conduction of trainings, right frequency of drills, ensuring functional fire detectors and fire equipments and management of river banks among others.
- A Safe hospital:** is a facility whose services remain accessible and functioning at maximum capacity and in the same infrastructure, during and immediately following the impact of a natural hazard.
- Emergency:** is a sudden threatening event that requires immediate action to minimize its adverse consequences (ISDR, 2009).
- Hazard:** is defined as “a potentially damaging physical event, phenomenon or human activity, which may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation” (ISDR, 2002).
- Risk:** It is defined as the combination of the probability of an event and its harmful consequences (IASC, 2007).
- Vulnerability:** refers to the characteristics and circumstances of a community, system or emerging from broad, social, economic, physical and environmental factors that creates it susceptible to the damaging effects of a hazard (ISDR, 2009).

CHAPTER: ONE

1.0 Introduction

This chapter consists of the introduction, the study back ground, problem statement, study objectives, the research questions, significance of the study and the conceptual frame work.

1.1Background to the Study

Globally, natural disasters caused economic losses amounting to USD192 billion in 2013 out of which 35% were due to floods (Guha-Sapir, D., Hoyois P., & Below, R., 2013).

The global level resolution by World Health Assembly (1981) pointed out that “despite the known significance of relief in emergencies, preventive measures and preparedness are of primary importance” (WHO, 2007). While according to WHO (2011), disasters are obstacles to progress on the health-related MDGs, as they mess up the growth gains in health and other sectors.

The healthcare system contribute a significant role in emergency readiness efforts for all categories of events that include; natural or man-made disasters, disease outbreaks, or terrorist attacks by minimizing underlying vulnerability, protecting health infrastructures and addressing the health related issues of disasters (WHO, 2011).

According to PAHO/WHO (2012) in Latin America and Caribbean, 67% of the 18,000 hospitals located in areas with disaster hazards and previously 24 million people were prevented from health services for months as a result of disaster damage.

According to CDC, (2002) the terrorist attacks on Sept 11, 2001 revealed challenges in the US national public health infrastructure.

The health workers who responded to the situation never met the expected communication and unified command capabilities and were not well trained coupled with inadequate equipments to deliver their roles.

According to AGCCR (2013), floods in Central Europe were the costliest single event of the year causing an estimated USD5.3 billion insured loss and about USD22 billion in economic losses.

The Pakistan floods, from July to August 2010, affected 20 million people and destroyed health facilities. In another incidence in early August 2012, the Philippines encountered heaviest rains which affected up to four million people across the country with 112 people dead, at least 500,000 people displaced and some 14,000 houses damaged or destroyed (ADSR, 2012).

According to (UNICEF-USA, 2013) in 2013 the fatal Super Typhoon Haiyan killed more than 6,000 people, displaced 4 million and caused massive infrastructure damages.

According to Bayntun, C. *et al* (2012), the famine in the Horn of Africa in 2011 affected 10 million people across several countries and most of the countries have poorly developed health systems that lack disaster preparedness hence huge challenges were faced.

The World Bank (2013) reported that at least 200,000 Ugandans are affected by disasters annually and high incidence of the disasters have a negative impact on both the economy and people that negates the gains in poverty reduction and development.

According to IFRC, (2013), the Kasese floods in 1st May 2013 killed 8 people, damaged infrastructures, hospital equipments, water supply systems, and about 25,445 people were affected. On 3rd January 2014, the medical store of Kilembe Mines Hospital also caught fire and about 60% of the items were burnt (Ninsiima, E, 2014).

1.2 Statement of the Problem

Damages and losses arising from disasters are becoming a major public health problem in Kasese. In November 2012, two staff quarter blocks of Kilembe Mines Hospital were burnt by fire making a total of 7 houses lost to fire (Tumusiime, D. 2012). The Kasese floods of 1st May 2013 also led to destruction of staff quarters and medical equipments worth billions of shillings while others included bridges, roads and 8 people died while 25,445 people were affected. (IFRC, May 2013). Similarly on 3rd Jan 2014, the hospital's medical store was also gutted by fire claiming 60% of the items worth millions of Uganda shillings (Ninsiima, E. 2014).

The National Policy for Disaster Preparedness and Management (NPDPM), (2010) calls for disaster preparedness and management of fires and floods by conducting drills, and regular checks of electrical wiring, proper physical planning of infrastructures and risk lessening measures like managing river banks. While the HSSP III (2010) recommends health facilities to undertake vulnerability and risk mapping activity to aid emergency preparedness and response plans for appropriate management of disasters to reduce on the consequences.

Despite some of the preparedness measures in place there are still challenges with disaster preparedness and management and if this is not addressed, then consequences like destruction of infrastructures, injuries, mortality and disease outbreaks will continue which in turn will affect health workers' ability to deliver healthcare services hence resulting to low productivity and loss of lives.

Therefore this study assessed the health workers' adherence to disaster preparedness measures at Kilembe Mines Hospital in Kasese district.

1.3 Research Objectives

1.3.1 General Objective

To assess health workers' adherence to disaster preparedness measures at Kilembe Mines hospital in Kasese District.

1.3.2 Specific Objectives

- i. To determine the individual factors influencing health workers adherence to disaster preparedness measures at Kilembe Mines Hospital in Kasese district.
- ii. To assess the role of supervision on health workers' adherence to disaster preparedness measures at Kilembe Mines Hospital in Kasese district.
- iii. To determine the health system factors influencing health workers' adherence to disaster preparedness measures at Kilembe Mines Hospital in Kasese district.

1.4 Research Questions

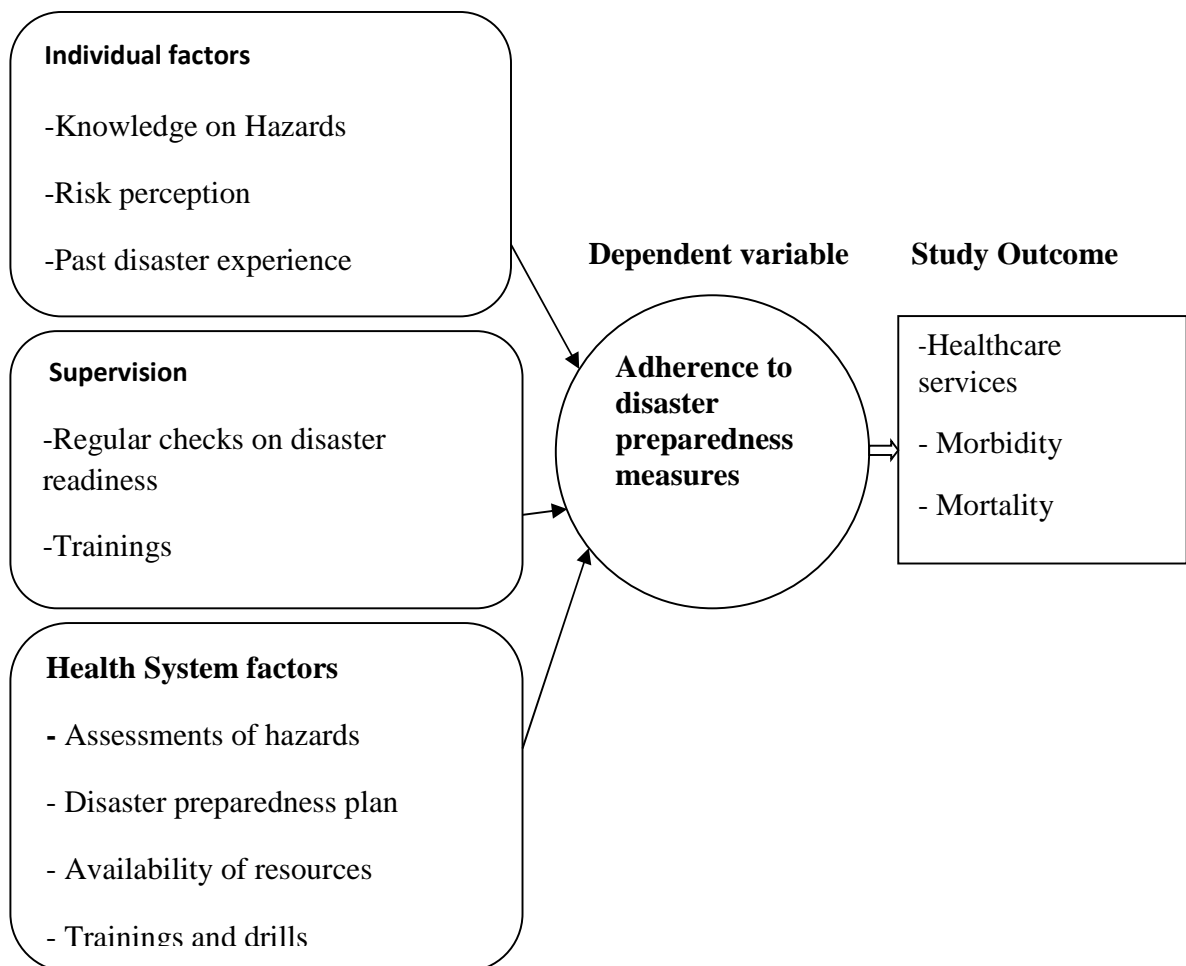
- i. What are the individual factors influencing health workers' adherence to disaster preparedness measures at Kilembe Mines Hospital in Kasese?
- ii. What role does supervision have on health workers' adherence to disaster preparedness measures at Kilembe Mines Hospital in Kasese district?
- iii. What are the health systems factors influencing health workers' adherence to disaster preparedness measures at Kilembe Mines Hospital in Kasese district?

1.5 Justification of the Study

This study focused on health workers' adherence to disaster preparedness measures at Kilembe Mines hospital. It is anticipated that Kilembe Mines Hospital will use the study findings and recommendations to strengthen their disaster preparedness measures and management of disasters in order to prevent or reduce the consequences of disasters. The findings may be used by policy makers in formulation of practical policies on disaster preparedness measures. This study is also important in providing baseline information for further research in this field.

1.6 Conceptual frame work

Independent Variables



Narrative of the conceptual framework

The dependent variable: Health worker's adherence to disaster preparedness measures.

The independent variables: Health workers' adherence to disaster preparedness measures can be influenced by independent variables at individual, supervision and health system levels.

The variables at individual level include; knowledge on hazards, risk perception, past disaster experiences.

The variables at supervision consist of; regular checks on preparedness activities, trainings and periodic staff meetings.

The health system factors in this regard included assessments of hazards, risks and vulnerability, disaster preparedness plan and its updates, frequency drills and rehearsals, and availability of fire equipments (fire detectors, fire alarming system and fire extinguishers).

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

This chapter comprises of a collection of information pertaining to the study area as well as related literature from similar studies, reports, policies, and resolutions of national and international agents.

2.1 Over view on disaster preparedness

The ISDR, (2009) defined a disaster as a serious disruption of the functioning of a society involving widespread human, material, economic or environmental losses and impacts, which surpass the ability of the affected society to cope using its own resources. According to UN (2009) Disasters bring indirect costs which at times are even higher than the direct costs which involve damage to hospital buildings, equipment and supplies. Similarly Disasters also result to the disruption of health services, rendering many without access to health care in times of emergency. Disaster also affect critical infrastructure such as water supplies and housing which are requisite for health (WHO, 2011).

According to UNISDR, (2009) disaster preparedness refers to “the knowledge and capacities developed by governments, professional response and recovery organizations, communities and individuals to effectively anticipate, respond to, and recover from, the impacts of likely, imminent or current hazard events or conditions.” The cardinal objective of disaster preparedness for hospitals is to guarantee that they remain functional and continue rendering vital healthcare services during and immediately after a disaster event NDMA (2013).

2.1 Individual factors

2.1.1 Knowledge on Hazards

Globally, according to UN/ISDR (2007) disasters can be greatly reduced if people are properly informed so that they are inspired in embracing a culture of disaster readiness, which in turn requires data gathering, assemblage and giving out appropriate knowledge and information on, vulnerabilities, hazards and competencies.

According to a study conducted in Colorado, USA by Sutton, J., & Tierney, K., (2006) asserted that all readiness actions must be based on knowledge about hazards, probability of occurrence and possible impacts on infrastructures and people. In addition, the types of data that provide a focus for preparedness measures include the potential for damaging impacts of the hazards on health and safety, health facilities and delivery of services, the environment and economic activities.

2.1.2 Risk perception

A study conducted in Netherlands by Kievik, M., & Gutteling, J., (2011) found that there is a strong relationship between perceived risk on the chance that individuals will conform with recommended measures to prepare for and respond to natural disasters. Similarly, according to Miceli *et al* (2008) also found that risk perception is strongly associated with disaster preparedness because individuals must perceive a risk to be motivated to initiate preparedness actions.

In another study carried out in Turkey by Tekeli-Yesil *et al* (2010) found that an individual's previous experiences with a hazardous event can enhance perception of risk and promote preparedness actions.

2.1.3 Past disaster experiences

A study carried out in Tehran, Iran by Seyedin, H., Ryan & Sedghi, S (2011) research showed that past experience of hazard events has positive impacts on understanding and preparedness for healthcare systems and organizations.

Similarly a study conducted in Netherlands by Kellens, W., *et al.*, (2013) reported that nearly all studies get a positive relationship between hazards exposure and disaster readiness or mitigation. However, controversial results put forward that past disaster exposure may in fact make an individual less likely to prepare (Lin, Shaw, & Ho, 2008), and that reasons for this are sometimes psychological in nature and are dependent on social, cultural, and religious context (Morrissey & Reser, 2003; Reale, 2010).

In another study conducted by McKay, (2012) people do not perform disaster readiness activities, even with adequate resources, have a history of disaster exposure and attend readiness training. While Chokshi, NK *et al* (2008) asserted that pediatric surgeons with previous disaster experience were four times more likely to be prepared than those with no experience ($p < 0.001$). Similarly he and other researchers also found that prior disaster experience is one of the predictors found responsible for their willingness to respond during disasters.

2.2 Role of Supervision

2.2.1 Conducting regular checks

Hospital management should conduct risk and vulnerability checks in order to anticipate any disaster events in the future which are fundamental for successful preparedness and risk management.

Therefore recognition and analysis of the transforming nature of compound threats and vulnerabilities are preliminary points for alerting the responsible people and disseminating awareness of the harmful consequences (WHO, 2007).

According to WHO-WPR, (2009) hospitals should also ensure that their smoke detectors should be well positioned among the entire building and should be regularly checked to ensure that they have adequate supply. In addition, the fire extinguishers should also be regularly maintained and its expired contents replaced regularly which is part of continuous preparedness measure that should be followed to prevent unwanted consequences of fire disasters.

In India, hospital management is to ensure that hospital building and its facilities are safe from a range of man-made and natural disasters. Management has to organize for periodic maintenance to ensure safety and quality of health care services. The work at hospitals, particularly after disaster event rely largely on continuous and planned maintenance. Therefore periodic checks are indispensable to ensure compliance with the service objectives of the hospital so that in case of an emergency, considerable consequences can be averted (NDMA, 2013).

In Uganda, the DDMC is mandated to ensure that hospitals among other institutions should develop their own Disaster Preparedness Plans and put in place smoke detectors, fire equipments and other necessary logistics required in an emergency (NPDPM, 2010). The NPDPM (2010) also directs the District Chief Administrative Officer to coordinate all disaster related operations in the district, and to chair the District Disaster Management Technical Committee, provide district input to national plans for disaster relief and post-disaster recovery and also check that training and preparedness for managing disasters are effective within the district.

2.2.2 Training on disaster and drills

Disaster preparedness measures can be achieved through education, training and technical guidance, strengthen the knowledge, skills and attitudes of health professionals and other sector for managing the health risks of disasters (WHO, 2011).

According to WHO-WPR, (2009) hospitals should conduct fire drills at least twice a year and simulation exercises or disaster drills at least annually so that the staff can maintain the preparatory cycle as part of their normal roles and responsibilities.

A study by Holder, D., Binns, M., (2007) on hurricane preparedness among Health workers in Haiti found that most respondents (67%) knew of the disaster plan but only 40% had been trained in disaster management. More nurses (68%) and para-medicals (51%) reported being trained than auxilliary (33%), medical (21%) or administrative or clerical (18%) staff. Most (96%) had participated in at least one disaster preparedness drill, especially a fire drill, but not in the previous two years.

According to the National Disaster Management Authority (2013) all hospital workers shall be frequently familiarised to the Hospital Disaster Management Plan (each time the plan is updated). Health workers who will implement disaster plan shall be trained every alternate month so that they comply with the continuous readiness measures (NDMA, 2013).

The NDMA, (2013) in India recommends that each hospital shall carryout periodic drills and rehearsals to check their competency to respond to disasters in actual time in order to give out opportunities for practical experience for the health workers that translate to continuous preparedness activities.

2.2.3 Periodic staff meetings

According to study conducted in Chicago, USA by Richter, P. (2011) recommended that hospital management should conduct quarterly disaster preparedness meetings to ascertain their progress towards their plans and make necessary changes where applicable.

Similarly, the committee will establish sub-committees to support its functions, and the committee will once in three months review the working contingency plan, challenges faced in recent disaster and perform modification to be adopted in future.

The Medical Superintendent leads the committee together with other specialists on supervision of the activities (Vardhman Mahavir Medical College & Safdarjung Hospital, 2013).

The Catholic Medical Center also has a disaster preparedness team that participates in regular emergency readiness meetings including exercise and drills.

<https://www.catholicmedicalcenter.org/emergency/disaster-preparedness.aspx>

California Hospital Association (2011) also recommended that health workers should hold hospital emergency readiness meetings so that information is shared for continuous implementation of disaster preparedness activities for appropriate future responses and management.

2.3 Health System Factors

2.3.1 Conducting of Hazard, Risk and Vulnerability assessment

Risk assessment involves the determination of the nature and extent of risk through analysis of the potential hazards and the evaluation of the existing conditions of vulnerability that could likely harm the people, property, livelihoods and the environment (ISDR, 2009).

According to WHO, (2011), there are three main elements usually considered in risk assessment and these are:- 1)Hazard Analysis: Identification of the hazards and assessment of the magnitude and probability of their occurrence, 2) Vulnerability Analysis: Analysis of vulnerability of individuals, populations, infrastructure and other community elements to the hazards and 3) Capacity analysis: Capacity of the system to manage the health risks, by reducing hazards or vulnerability, or responding to, and recovering from a disaster.

According to study conducted in United Arab Emirates by Fares, S., *et al* (2014) recommended that it is important for hospitals to conduct hazard and vulnerability assessment in order to identify potential threats, measure the likelihood of those threats occurring and guide disaster preparedness for appropriate response and management.

The WHO (2006) also added that a health facility's preparedness for emergencies should be based on a sound assessment of vulnerability.

According to Tozivepi, G. (2011) a study at Onandjokwe Lutheran Hospital in Zambia revealed that the hospital did not conduct its own but rather relied on a vulnerability assessment done by the WHO in 2009 hence causing irregularities in disaster preparedness measures.

In Uganda according to the HSSP III (2010) that during HSSP II mechanisms for disaster preparedness and response in all the districts were established but inadequate resources, logistics, human resources and lack of skills especially at lower levels and the fact that epidemic and disaster preparedness is not given priority at district level hindered the country's response system.

2.3.2 Development of disaster preparedness plan

According to Keim & Giannone (2006), a disaster plan is “an agreed set of arrangements for preparing for, responding to, and recovering from emergencies, and involves the description of responsibilities, management structures, strategies, and resource and information management with a view of protecting life, property and the environment”

The development of disaster readiness plan is crucial to all hospitals irrespective of their size since disasters do not discriminate in terms of size (UNISDR/GOI, 2008). Similarly that legislation should ensure health institutions develop disaster preparedness and response plans that should be made as part of their usual activities. In addition that simulation should be used to test the plans, and to allocate finances for their development and maintenance (PAHO, 2000).

According to Cynthia Saver (2014) Dr Gupta said that a disaster plan helps facilitate response by building a framework and he was also quoted saying “Because we had this existing plan we managed to place staff who had never taken part in a drill into a role.

The departmental heads in the hospital form the hospital disaster management committee and are responsible for the development of the hospital disaster plan. In addition, they are mandated to organize mock drills and do adjustments where necessary.

The disaster management committee is also to carry out yearly updates of disaster manual or the plan to meet the changing patterns of disasters (Talati *et al*, 2014).

According to NPDPM of Uganda (2010), one of the functions of District Disaster Management committee is to ensure that hospitals in the District develop its own Disaster Preparedness Plans and stock emergency logistics and put in place fire extinguishers and smoke detectors. The other institutions to adhere with the above policy guide lines include: - education (Primary, secondary and tertiary), hotels/recreational facilities, and factories and industries.

2.3.3 Availability of adequate resources (Human, financial, emergency logistics and equipments)

According to WHO, (2007) additional-budgetary resources are allocated for unforeseeable crisis to strengthen the capacity of WHO member states in emergency preparedness and risk reduction while other funding comes from relief and recovery funds overseas and fund mobilising for particular projects at building capacity in the area of emergency preparedness and response.

In Uganda the District Disaster Management Committee to ensure hospitals to have in place emergency logistics and equipment such as fire extinguishers and smoke detectors. The above is to be followed by other institutions such as education (Primary, secondary and tertiary), hotels/recreational facilities, and factories and industries (NPDPM, 2010). Similarly the Uganda HSSP III (2010/11-2014/15) established the strategy that allows advocacy for allocation of adequate resources for disaster prevention, preparedness and management.

2.3.4 Conducting education, training and drills

The key component of preparedness is to train and educate public health officials and community responders about the disaster plan. Training must provide the important skills and knowledge needed for the community in order to effectively participate in emergency management (IFRC, 2006).

According to UNISDR, (2006) it is significant for the healthcare providers to know about and get trained in using the hospital disaster/emergency manual. Similarly, regular staff training by suitable drills should be undertaken for effective response when disaster strikes.

UNDP/GOI, (2008) emphasized that every hospital is required to have a structure in place that has to be routinely tested in drills in order to improve response to emergencies and disasters.

The evaluation modules for hospital disaster drills are designed to be a part of that testing and this evaluations can provide a learning opportunity for all who participate in a planned drill. They should be used to identify strengths and weaknesses in hospital disaster drills, and the results gained from evaluation should be applied to further training and drill planning.

Training in disaster management program is essential for efficient and effective implementation of activities. In most cases the gaps that exist between different professions and lack of specific training for health workers leads to failures in disaster mitigation, preparedness, and response. Many health care providers have never had training, experienced a disaster situation, or took part in disaster management activities (PAHO, 2000).

A study conducted at Tohoku Hospital in Japan by Farah, M. *et al* (2013) emphasized the significance of performing routine disaster drills or training for different disaster situations for appropriate respond and management of disasters.

2.3.5 The challenges facing disaster preparedness within the district health systems

The HSSP III of Uganda pointed that during the HSSP II mechanisms for disaster preparedness and response in all districts were established but challenges like inadequate resources and logistics, weaknesses in planning for emergencies, understaffing and lack of skills especially at lower levels are being faced coupled with the fact that disaster preparedness is one of the areas where no or little priority is given at district level hence hampered and keeps on affecting local, regional and national response systems (HSSP III, 2010)

According to the HSSP III (2010) the strategy established to address the above challenges is to strengthen disaster prevention, preparedness, response and management at all levels.

The interventions for the above strategy includes; training of health workers at district level on early detection of epidemics, preparedness, response and management, establish appropriate coordination mechanisms within the country and with the neighbouring countries on management of epidemics, develop emergency preparedness and response plans including contingency planning at all levels, conduct vulnerability and risk mapping exercise to guide policy and strategy development, produce and make available Standard Operating Procedures (SOPs), formats and tools at all levels, ensure contingency stock piling at strategic sites for priority diseases and advocate for allocation of adequate resources for disaster prevention, preparedness and management.

CHAPTER THREE: METHODOLOGY

3.0 Introduction

This chapter describes how the study was conducted including; study population, sample size calculation, sampling technique, sampling procedure, study variables, data collection techniques, data collection tools, data management, analysis and presentation, quality control measures, ethical issues and plan for dissemination.

3.1 Study design

The study used descriptive cross sectional design to assess healthcare workers' adherence to disaster preparedness measures. This is the best suit study design because it was used to determine the relationship between dependent and independent variables of interest at a point in time and also it provided useful information about the characteristics of the health workers which was essential for informing planning and allocation of resources.

3.2 Sources of data

Primary data: The primary data constituted of data of the responses collected from the health workers on socio-demographics, individual, role of supervision and health system related factors presumed to influence health workers' adherence to disaster preparedness measures.

Secondary data: This consisted of search for related literature on individual, role of supervision and health related factors that influence health workers' adherence to disaster preparedness measures. The search for literature was done from internet and other journals, publications, policies and articles using google.com, google scholar, PubMed.

3.4 Study Population

The study populations were the health workers of different cadres working in Kilembe Mines hospital that comprised of both clinical and non-clinical staff.

3.5 Selection Criteria

3.5.1 Inclusion criteria

Health workers working in Kilembe Mines hospital

Health workers who accepted to participate in the study

3.5.2 Exclusion criteria

Health workers who were not willing to participate in the study

Health workers who were out of duty station on leave and other official reasons among others

3.6 Sample size Calculation

The population of the health workers in Kilembe mines hospital is 190, therefore the sample size was calculated from the formula below where N is known and the research considers 5% level of precision, and with proportion of attribute that is present in the population (p) of 0.5

$$n = \frac{N}{1+N(e)^2} \quad (\text{Yamane, 1967})$$

Where N- is the population size, n-is the sample size and e-is the acceptable margin of error.

$$\begin{aligned} n &= \frac{212}{1+ 212 (0.05)^2} \\ \text{Sample Size} &= 139 \end{aligned}$$

3.7 Sampling technique

In this study, respondents were sampled using convenience sampling method. Sampling was conducted in the male and female medico-surgical, pediatric and maternity wards, outpatient department and the young child clinic.

After obtaining authorization from each head of department, respondents were selected based on their availability and acceptability to participate in the study after consent acquisition.

This method was appropriate because it was quick, simple, flexible, inexpensive and less complex to conduct. Secondly, the respondents work patterns (absenteeism, leave schedules, day and night shifts) could not permit the use of other sampling methods than convenience.

3.8 Study Variables

3.8.1 Dependent variable

The dependent variable is adherence to disaster preparedness measures.

It was measured by; disaster preparedness plan, drills, staff training on disaster, trained staff on disaster issues and availability of fire equipments were used to measure Health workers' adherence to disaster preparedness measures.

A respondent who had at least answered three (3) of the above variables was considered to have adhered to disaster preparedness measures. Therefore any respondent who answered none, one or two, of the above variable was considered to have not adhered to disaster preparedness measures.

3.8.2 Independent variable

Individual factors: this includes; health workers' knowledge on hazards, risk perception, past disaster experiences and training on disaster preparedness.

Role of supervision: this involves regular checks on disaster readiness activities, trainings and periodic staff meetings.

Health system factor: this includes; frequency of assessment of hazards, disaster preparedness plan, availability of fire extinguishers, frequency of disaster training and drills and availability of funding for preparedness measures.

3.9 Data collection techniques and instruments

3.9.1 Data collection techniques

The study employed both quantitative and qualitative data collection methods. The quantitative data collection method involved questionnaires and qualitative data collection method consisted of key informant interviews and observations.

3.9.2 Data collection tools

The data for this study was collected through self administered questionnaires because all the participants were able to answer the questionnaire in English.

3.10 Data Management and analysis

3.10.1 Data management

The quantitative data were checked for completeness after being received from the respondents to minimize error. The coded data were then entered into data entry sheet developed using Epi-Info. The entered data were then exported to MS excel for cleaning and thereafter the cleaned data was imported using Stata.

The qualitative data was organized in major themes and assigned codes in order to organize them for their interpretation.

3.10.2 Data analysis

The quantitative data was analysed using STAT 12 to generate data where the results of univariate analysis were presented in frequency tables, pie-chart and bar graph.

The Pearson Chi-square test was used to determine the association between categorical independent variables and the dependent variable whenever the cell count was equal to or greater than five. On the other side, the Fisher's exact test was used whenever the cell count was less than or equal to five.

The strengths of the associations were determined using simple logistic regression analysis and the results were expressed using crude or unadjusted odds ratios with the subsequent probability values.

Finally, variables that were statistically significant at bivariate analysis using the simple logistic regression analyses were considered for adjusted analysis using the multiple logistic regression analyses and, the results were reflected using adjusted odds ratios. In all analyses, p-values of less than 5% were considered significant.

The qualitative data was analyzed using Thematic Content Analysis technique and findings were presented in a narrative form utilizing quotations from the respondents where applicable.

3.11 Quality control measures

Pre-test: in order to ensure validity and reliability of the instruments for data collection such as questionnaires and key informant guide was pre-tested after which appropriate adjustments were made.

Training: there were two research assistants trained on data collection methods and on the use of the data collection tools prior to the commencement of data collection.

Translation: the questionnaire was translated from English to Rukonjo by research assistants for respondents who could not read English well.

3.12 Ethical Issues

Informed consent: Consent was sought from the respondents prior to administration of questionnaires. The rationale for study was explained and the respondent clearly informed that his or her participation was voluntary.

Confidentiality: The information collected were kept confidential, only code numbers appeared on the questionnaire, respondent's identification like name were not included on the questionnaire to maintain anonymity of the respondents giving out the data.

Respect: The researcher also ensured that due respect was given to the respondents during the study.

3.13 Limitation of the Study

The study sample size was small, therefore the study findings could not be generalized to the entire study population.

3.14 Plan for dissemination

The study report shall be disseminated as follows; a copy to the institute of health policy and management of International Health Sciences University, a copy to the University Library for academic purposes, reference and future study undertakings and a copy was be presented to the Kilembe Mines hospital staff and administration.

CHAPTER FOUR: RESULTS

4.1 Socio-demographic characteristics

A total of 122 respondents participated in this study.

Age of respondent

There were more female respondents than males with representation of 70 (57.38%) and 50 (42.62) respectively. The age category results showed that majority 64 (52.46%) of participants were within the age range of 25-34 years of age, followed by 33 (27.05%) between 35-44 and least 13 (10.66%) between 15-24 years.

Staff category

In terms of staff category, the finding revealed that the majority 92(75.41%) of the respondents were clinical staff while Non-clinical staff accounted for 30(24.59%).

Profession of respondents

The result on profession of the respondents indicated that the majority of the respondents belonged to other profession that was enrolled nurse, comprehensive nurse, allied health professionals, and other non-clinical professions which accounted for 103(84.43%). This was followed by nursing officer 15(12.30%) and medical officer profession 4(3.27%) respectively.

Duration of work

The study finding revealed that many of the respondents worked in Kilembe Mines Hospital from 1-5 years and 5-10 years which accounted for 46(37.7%) and 36 (28.7%) respectively. It also found out that 23(18.85%) worked for less than a year and 16(13.11%) worked for 10-20 years. On the other hand, least 2(1.64%) health workers worked for more than 20 years.

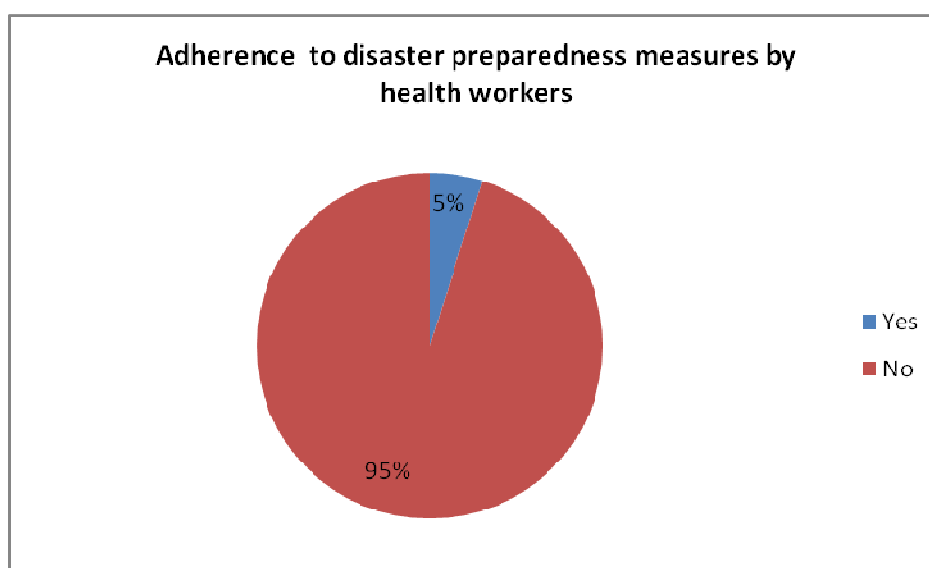
Table 1: Univariate analysis for socio-demographic characteristics of respondents

Variable	No. (N=122)	Percentage (%=100)
Sex of respondent		
Male	52	42.62
Female	70	57.38
	122	100.00
Age category (Years)		
15-24	13	10.65
25-34	64	52.46
35-44	33	27.05
45-54	12	9.84
	122	100.00
Staff category		
Clinical	92	75.41
Non-clinical	30	24.59
	122	100.00
Your profession		
Medical doctor	4	3.27
Nursing officer	15	12.30
Others	103	84.43
	122	100.00
Duration worked		
<1	23	18.85
1-5	46	37.70
5-10	35	28.70
10-20	16	13.11
>20	2	1.64

4.2 Adherence to disaster preparedness measures

In this study, about 5% of the respondents had adhered to disaster preparedness measures while the majority (95%) of them did not adhere to the above measures.

Figure 1: Showing percent of health workers' adherence to disaster preparedness measures



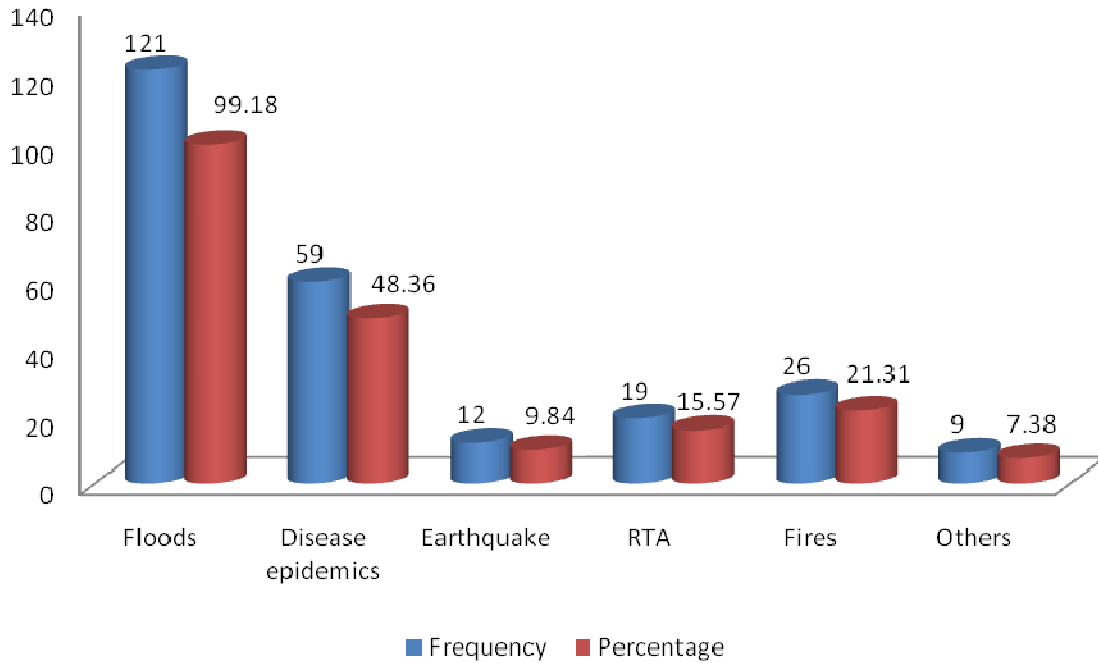
4.3 Individual factors

The result from the respondents indicated that 100% (122) of the respondents selected the right definition of disaster that 'is serious disruption that leads to destruction of properties and loss of lives'. While none of the definition of disaster as 'anything that kills people' and 'any event that affects only roads, bridges and buildings' have been selected by the respondents respectively.

Respondents' ideas on disasters likely to occur in Kilembe

The result on the bar graph indicated that majority 121 (99.18%) out of 122(100%) respondents reported that floods are likely to occur around Kilembe. The respondents anticipated the second likely disaster to arise was disease epidemics 59(48.36%) out of the entire participants. The third disaster or emergency according to the respondents was fires that accounted for 26(21.31%) out of 122(100%). On the other hand, the least disaster that were predicted were road traffic accidents 19(15.57%), earthquake 12(9.84%) and others (conflicts) 9(7.38%).

Figure 2: A bar graph showing responses of the respondents on disasters likely to occur in Kilembe (Multiple choice answers)



4.4 Relationship between socio-demographic characteristics and adherence to disaster preparedness measures

More than 1 in 2 (57.38%) of the respondents were females. However, more females (3.28%) were found adhering to disaster measures than the males (1.64%) much as there was no significant observation (p=1.000)

In terms of age, the finding found that older persons were none adhering to disaster preparedness measures compared to those in 15-24 years (1.64%), 25-34 years (2.46%) and 35-44 years (0.82%). However there was no statistically significant association between age of respondents and their adherence to disaster preparedness measures (p=0.321)

The majority of respondents belonged to the clinical cadre (75.4%) relative to non clinical (24.6%) cadre. Importantly, more of the respondents in the clinical cadre (3.28%) compared to non-clinical staff (1.64%) adhered to disaster preparedness measures. However, there was no statistically significant relationship between staff category and adherence to disaster preparedness measures ($p=0.635$)

The finding revealed that there were fewer medical doctors (3.28%) than either nursing officers or other healthcare cadres. Though no statistically significant association was noted between the types of profession and disaster preparedness measures, surprisingly, none of the medical doctors in the hospital was adhered to disaster preparedness measures ($p=0.321>0.05$)

Slightly over half (56.55%) of the respondents had worked for between 1-10 years. Interestingly, respondents that had worked for less than a year (3.28%) were adhering more compared to those that had worked for over one year.

None of the respondents that had served for over 10 years adhered to disaster preparedness measures. Nevertheless, there was no statistically significant relationship between duration of work and adherence to disaster preparedness measures ($p=0.321$)

Table 2: Bivariate analysis for relationship between socio-demographic characteristics and adherence to disaster preparedness measures

Variable	Adherence to disaster preparedness measures		Total (N=122) No. (%)	Fisher's exact test P-value
	No (n=116) No. (%)	Yes (n=6) No. (%)		
Sex				1.000
Male	50 (40.98)	2 (1.64)	52 (42.62)	
Female	66 (54.10)	4 (3.28)	70 (57.38)	
	116 (95.08)	6 (4.92)	122 (100.00)	
Age (Years)				0.371
15-24	11 (9.01)	2 (1.64)	13 (10.66)	
25-34	61 (50.00)	3 (2.46)	64 (52.46)	
35-44	32 (26.23)	1 (0.82)	33 (27.05)	
45-54	12 (9.84)	0 (0.00)	12 (9.84)	
	116 (95.08)	6 (4.92)	122 (100.00)	
Staff category				0.635
Clinical	88 (72.13)	4 (3.28)	92 (75.41)	
Non-clinical	28 (22.95)	2 (1.64)	30 (24.59)	
	116 (95.08)	6 (4.92)	122 (100.00)	
Profession				0.321
Medical Doctor	4 (3.28)	0 (0.00)	4 (3.28)	
Nursing Officers	13 (10.65)	2 (1.64)	15 (12.30)	
Others	99 (81.15)	4 (3.28)	103 (84.43)	
	116 (95.08)	6 (4.92)	122 (100.00)	
Duration worked				0.096
<1 years	19 (15.57)	4 (3.28)	23 (18.85)	
1-5	45 (36.89)	1 (0.82)	46 (37.71)	
5-10	34 (27.87)	1 (0.82)	35 (28.69)	
10-20 years	16 (13.11)	0 (0.00)	16 (13.11)	
>20 years	2 (1.64)	0	2 (1.64)	

4.5 Relationship between individual factors and adherence to disaster preparedness measures

In terms of use of disaster knowledge, 58 (47.54%) of the respondents reported that knowledge on disasters be used for conducting disaster preparedness activities. 40(32.79%) reported that they wait to respond to disaster when it strikes. While 17(13.93%) of the respondents said they continue to perform their normal duties and 7(5.74%) of the respondents reported they had nothing to do with disaster preparedness. It emerged that 6(4.92%) of the respondents who adhered to disaster preparedness measures came from group who reported that disaster knowledge can be used for conducting readiness activities. However, there was no statistically significant relationship between an individual's use of disaster knowledge and disaster preparedness measures ($p= 0.174$).

On disaster risk though majority 121(99.18%) of the respondents agreed that disaster can be dangerous to human life and infrastructures surprisingly with 6(4.92%) of the respondents adhered to disaster preparedness measures. In addition, the result also showed that out of 27(22.32%) of the respondents who needed measures to be undertaken by external agents regarding disaster preparedness, only 1(0.83%) of them adhered to disaster preparedness measures. However there was no statistically significant relationship between an individual's perception on disaster risks and adherence to disaster preparedness measures ($p= 1.000$).

The study finding also showed that the majority 82(66.72%) out of 122(100%) of the respondents would like disaster readiness activities to be conducted with 5(4.13%) who adhered to disaster preparedness measures.

Nevertheless, there was no statistically significant relationship between what should be undertaken in relation to disaster risk perception and adherence to disaster preparedness measures ($p= 1.000$).

In terms of past disaster experience, the result revealed that out of 122 (100%) of the health workers who participated, 108(88.52%) had experienced disaster in the past.

In terms of proportion, 4(3.28%) in 108(88.52%) and 2(1.64%) in 14(11.48%) of them adhered to disaster preparedness measures respectively. Nonetheless, there was no statistical relationship between past disaster experience and adherence to disaster preparedness measures ($p= 0.141$)

The study findings on measures to be undertaken based on past disaster experience showed that 65(60.18%) of the respondents wanted training and periodic drills to be conducted, 3(2.78%) of them adhered to disaster preparedness measures. The result also indicated that 25(23.15%) of the respondents would like the hospital to be relocated based on the past disaster experience with 1(0.93%) individual who adhered to disaster preparedness measures. However there was still no statistically significant relationship between what measure to be undertaken and adherence to disaster preparedness measures ($p= 1.000$)

Table 3: Bivariate analysis for relationship between individual factors and adherence to disaster preparedness measures

Variable	Disaster preparedness measures		Total No. (%)	(Fisher's exact test) P-value
	No No. (%)	Yes No. (%)		
Use of disaster knowledge				0.174
Do my normal duties	17 (13.93)	0 (0.00)	17 (13.93)	
Do disaster preparedness activities	52 (42.62)	6 (4.92)	58 (47.54)	
Wait to respond	40 (32.79)	0 (0.00)	40 (32.79)	
Others	7 (5.74)	0 (0.00)	7 (5.74)	
	116 (95.08)	6(4.92)	122 (100.00)	
Do you agree on disaster risk				1.000
Yes	115 (94.26)	6 (4.92)	121 (99.18)	
No	1 (0.82)	0 (0.00)	1 (0.82)	
	116 (95.08)	6 (4.92)	122(100.00)	
<i>If yes, what should be done?</i>				1.000
Measures by external agents	26 (21.49)	1 (0.83)	27 (22.31)	
Only respond when disaster strikes	11 (9.09)	0 (0.00)	11 (9.09)	
Conduct readiness activities	77 (63.64)	5 (4.13)	82 (67.77)	
Others	1 (0.83)	0 (0.00)	1 (0.83)	
	115 (95.04)	6 (4.96)	121 (100.00)	
Past disaster experience				0.141
Yes	104 (85.24)	4 (3.28)	108 (88.52)	
No	12 (9.84)	2 (1.64)	14 (11.48)	
	116 (95.08)	6 (4.92)	122 (100.00)	
<i>If yes, what should be done</i>				1.000
Relocate the hospital	24 (22.22)	1 (0.93)	25 (23.15)	
Training and periodic drills	62 (57.40)	3 (2.78)	65 (60.18)	
No opinion	1 (0.93)	0 (0.00)	1 (0.93)	
Others	17 (15.74)	0 (0.00)	17 (15.74)	
	104 (96.29)	4 (3.71)	108 (100.00)	

Note p<.05* p<.001**

4.6 Relationship between role of supervision and adherence to disaster preparedness measures

The study findings indicated that 7(5.74%) out of 122 reported river bank checks being conducted but none of them did adhere to disaster preparedness. While 115(94.26%) reported that checks are not conducted with 6(4.92) of them adhering to disaster preparedness measures.

There is also no statistically significant relationship between conducting checks on river bank and adherence to disaster preparedness measures ($p=1.000$).

The majority of the key informants when asked reported that checks on river bank have never been undertaken.

“The hospital management did not do checks on river banks because we never thought of any disaster like flood could occur initially although it necessary because it will help prevent damages and loss of lives” (KI 1)

In regards to this river, what I can say is that we the health workers or the hospital management can do something on this river bank but the challenge is the machine and its cost...for me the government should come in and help us. (KI 2)

‘Concerning river Nyamwamba, there management and the board are planning to build a perimeter wall to prevent overflow into the hospital during such floods’ (KI 3)

In terms of electrical wiring checks, 46(37.7%) agreed that the checks were conducted with 6(4.92%) of them who adhered to disaster preparedness measures while majority 76(62.30%) said that the checks are not conducted, none of them adhered to disaster preparedness measures. The test confirmed that there was statistically significant relationship between checks on electrical wiring and adherence to disaster preparedness measures ($p=0.002$).

The majority of the key informants are aware that concerning electrical wiring on some occasions, the electrician makes rectification when necessary”.

For sure though not often, the hospital electrician usually checks on the electrical wiring... but practices to improve on our skills for handling fire disasters are limited and if training is organized on this... then I think it will help us.”(KI 4)

The hospital electrician normally perform his duties....especially carrying out repairs and replacement of other electrical parts among others (KI 3).

The result on influence of supportive training on disaster issues for those who underwent training showed that 18 staffs were trained and 6 of them adhered to disaster preparedness measures. Therefore, specifically, 5(27.78%) out of 13(72.22%) of those who said the training increased their knowledge on disasters adhered to disaster preparedness measures. However there was no significant relationship between influence of supporting training and health workers’ adherence to disaster preparedness measures ($p=1.000$).

In terms of training what I can say is that training of health workers on disasters is vital empowering us with information and skills for preparedness and management of disasters (KI 5).

Honestly, most of the staffs have limited skills necessary for preparing and managing disasters ...but I think training staff will help us (KI 6).

The result further indicated that there were 32(26.23%) respondents agreed that periodic staff meetings on disaster issues are conducted and out of which 5(4.10%) did adhere to disaster preparedness measures.

The majority 90(73.77%) of the respondents did not participate in periodic staff meetings on disaster issues whereby only 1(5.56%) of a respondent adhered to disaster preparedness measures.

The result also revealed that there was statistically significant relationship between conducting periodic staff meetings and adherence to disaster preparedness measures ($p=0.005$).

The importance of periodic staff meetings as per the result showed that 5(15.63%) out of 25(78.13%) of the respondents who answered that the training empowers them with information for better preparation adhered to disaster preparedness measures. While 5(15.63%) of the respondents reported that periodic meetings on disaster issues can help when disaster occurs and 2(6.25%) mentioned that such meetings enable the staff to make joint decisions on disaster issues. But none of the above two groups adhered to disaster preparedness measures. Nevertheless, there was no statistically significant relationship between the influence or importance of training and adherence to disaster preparedness measures ($p=0.680$).

Table 4: Bivariate analysis for relationship between role of supervision and adherence to disaster preparedness measures

Variable	Disaster preparedness measures		Total =No. (%)	Fisher's exact test P-value
	No (116) No. (%)	Yes (6) No. (%)		
River bank checks				1.000
Yes	7 (5.74)	0 (0.00)	7 (5.74)	
No	109 (89.34)	6 (4.92)	115 (94.26)	
Total	116 (95.08)	6 (4.92)	122 (100.00)	
Checks on electrical wiring				0.002*
Yes	40 (32.78)	6 (4.92)	46 (37.70)	
No	76 (62.30)	0 (0.00)	76 (62.30)	
Total	116 (95.08)	6 (4.92)	122 (100.00)	
Importance of supportive training (trained staff only)				1.000
Never	1 (5.56)	0 (0.00)	1 (5.56)	
Increased disaster knowledge	8 (44.44)	5 (27.78)	13 (72.22)	
Participation in disaster drills	3 (16.67)	1 (5.56)	4 (22.22)	
Total	12 (66.67)	6 (33.33)	18 (100.00)	
Periodic staff meetings on disaster issues				0.005*
Yes	27 (22.13)	5 (4.10)	32 (26.23)	
No	89 (72.95)	1 (0.82)	90 (73.77)	
Total	116 (95.08)	6 (4.92)	122 (100.00)	
<i>If yes, how importance is it to you?</i>				0.680
Helps when disaster strikes	5 (15.63)	0 (0.00)	5 (15.63)	
Information for preparation	20 (62.50)	5 (15.63)	25 (78.13)	
Others	2 (6.25)	0 (0.00)	2 (6.25)	
Total	27 (84.38)	5 (15.63)	32 (100.00)	

Note p< .05* p<.001**

4.7 Relationship between health systems related factors and adherence to disaster preparedness measures

The results in table 6 indicated that 24(19.67%) out of 122 (100%) of the health workers reported that they do conduct hazard, risk and vulnerability assessments at the hospital. The result also showed that 5(4.10%) out of 24(19.67%) of the health workers adhered to disaster preparedness measures.

For those who answered that the assessment is not conducted, only 1(0.82%) respondent out of 98(80.33) adhered to disaster preparedness measures. The study result showed that there was statistically significant association between hazard, risk, and vulnerability assessment and health worker's adherence to disaster preparedness measures. (Fisher's exact test $p=0.001$)

The findings on utilization of Hazard, risk and vulnerability assessment indicated that 1(4.17% in 3(12.50%) of respondents who reported that such results can be used for relocation of the hospital adhered to disaster preparedness measures. While the majority 20(83.33%) of the participants responded that the result can be used for proper planning for disaster preparedness measures and out of this 4(16.67%) of them adhered to disaster preparedness measures. However there was no statistically significant association between use of assessment results and adherence to disaster preparedness measures ($p=0.635$)

The study result on whether training was necessary for staff established that 6(5.08%) in 117(95.09%) of the health workers who reported that training is necessary adhered to disaster preparedness measures. While 5(4.10%) reported that it necessary when disaster strikes and none of them adhered to the above measures. Nonetheless there was no statistically significant association between training being necessary and adherence to disaster preparedness measures ($p=1.000$)

In terms of funding, 4(3.28%) of the respondents reported that the hospital has enough funding for disaster preparedness and management.

Although none of them adhered to the preparedness measures. On the other hand, 6(4.92%) out of 118(96.72%) of the respondents who reported that funding is not enough adhered to disaster preparedness measures. However, Fisher's exact test showed that there was no statistically significant association between having enough funding and adherence to disaster preparedness measures ($p=1.000$)

The study also discovered that 6(4.92%) out of 115(94.26%) of respondents who reported that funding was necessary adhered to the disaster preparedness measures. On the other hand, 6(4.92%) reported that it was quite necessary and 1(0.82%) and 1(0.82%) stated it as not necessary and none of them did not adhere to the measures respectively. Nevertheless there was no statistically significant association between funding being necessary for hospital for disasters and health workers' adherence to disaster preparedness measures ($p=1.000$).

Table 5: Bivariate analysis for relationship between health systems related factors and adherence to disaster preparedness measures.

Variable	Adherence to disaster preparedness measures		Total No. (%)	(Fisher's exact test) p-Value
	No No. (%)	Yes No. (%)		
Does hospital conduct hazard, risk and vulnerability assessment?				
				0.001*
Yes	19 (15.57)	5 (4.10)	24 (19.67)	
No	97 (79.51)	1 (0.82)	98 (80.33)	
Total	116 (95.08)	6 (4.92)	122 (100.00)	
If yes, for what use are the results				
				0.044*
Record purposes	1 (4.17)	0 (0.00)	1 (4.17)	
Relocation of the hospital	2 (8.33)	1 (4.17)	3 (12.50)	
Proper planning for disaster preparedness measures	16 (66.67)	4 (16.67)	20 (83.33)	
Total	19 (79.17)	5 (20.83)	24 (100.00)	
If yes, to disaster plan what influence does it have?				
				1.000
Acts as reminder	4 (20.00)	1 (5.00)	5 (25.00)	
Has no influence	2 (10.00)	0 (0.00)	2 (10.00)	
Helps in readiness activities	8 (40.00)	5 (25.00)	13 (65.00)	
Total	14 (70.00)	6 (30.00)	20 (100.00)	
Is training necessary before disasters?				
				1.000
Very necessary	111(90.98)	6 (4.92)	117 (95.90)	
Necessary when disaster strikes	5 (4.10)	0 (0.00)	5 (4.10)	
Total	116 (95.08)	6 (4.92)	122 (100.00)	
Hospital has enough funding for disaster preparedness				
				1.000
Yes	4 (3.28)	0 (0.00)	4 (3.28)	
No	112 (91.8)	6 (4.92)	118 (96.72)	
Total	116 (95.08)	6 (4.92)	122 (100.00)	
Is funding necessary for disasters?				
				1.000
Quiet necessary	6 (4.92)	0 (0.00)	6 (4.92)	
Not necessary	1 (0.82)	0 (0.00)	1 (0.82)	
Very necessary	109 (89.34)	6 (4.92)	115 (94.26)	
Total	116 (95.05)	6(4.92)	122 (100.00)	

P<.05 p<.001**

4.8 Association between significant variables and disaster preparedness measures

Four variables were significantly associated with adherence to disaster preparedness measures from the above cross tabulations. The strengths of the associations were examined through logistic regression analysis. It emerged that;

Presence of periodic disaster preparedness measures was associated with more unadjusted odds of adherence to disaster preparedness measures than the absence of such meetings. The association was statistically significant (uOR=16, 95% CI: 2-147, p=0.012).

Periodic conduct of hazard, risk and vulnerability assessment was significantly associated with twenty six times more likelihood of adhering to disaster preparedness measures relative to absence of such assessments (uOR=26, 95% CI: 3-231, p=0.004).

Respondents that reported that the assessment results would be used for relocation of the hospital were 59% less likely to adhere to disaster preparedness measures (uOR=0.41, 95% CI: 0.004-3.93, p=0.006) compared to those that had said it would be used for record purposes.

Related to the above, respondents that reported the results would be used for the purposes of proper planning were more likelihood to adhere to disaster preparedness measures (uOR=2, 95% CI: 1.43-28) compared to those that had said it would be used for record purposes. This relationship however was insignificant (p=0.67).

Table 6: Bivariate analysis for strength of association between significant variables at chi-squared analysis and disaster preparedness measures

Variables	Disaster preparedness measures		uOR (95%CI)	P-value
	No No. (%)	Yes No. (%)		
Hospital holds periodic disaster preparedness meetings				
No	89 (72.95)	1(0.82)	1	
Yes	27 (22.13)	5(4.10)	16 (2-147)	.012*
Hospital conduct assessment on hazard, risk and vulnerability				
No	97 (79.51)	1(.82)	1	
Yes	19 (15.57)	5(4.10)	26 (3-231)	.004*
Use of assessment results				
For record purposes	1 (4.17)	0 (0.00)	1	
For relocation of the hospital	2 (8.33)	1 (4.17)	.41 (.004-3.93)	.006*
For proper planning	16 (66.67)	4 (16.67)	2(1.43-28)	.67

* $P < .05$

4.9 Results from the Observation Checklist

The result indicated that 3 (30%) out of 10 (100%) of the items observed were available.

Table 7: Results from the Observation Checklist

S/No	ITEM	Yes	No	Comment
1	Disaster Alarming system		√	Hospital needs to procure 1.
2	Fire detector		√	If possible the hospital can also put in place one.
3	Fire extinguisher	√		2 out of 6 are empty 1 in Store is also empty. -Should be placed at every department -Refilling should be done promptly and be easily accessible.
4	Buckets of sand		√	-Bucket of sand was not seen anywhere including the store. -Sand and carbon dioxide fire extinguisher.
5	Exit routes with clear labels	√		Need for clear labels
6	Assembly area (point)	√		Enough space/points but not labeled.
7	Disaster plan		√	Hospital has to form Hospital Disaster Management committee and develop the plan
8	Flood resistant wall fence		√	Necessary hence need to mobilize material/financial resources to put it up especially behind the hospital.
9	River bank management		√	Necessary to have routine removal of stones at the river bank to pave smoother channel for water to flow.
10	Hospital site map		√	There is need to draw the map for guidance and pro-active response mechanism
		3	7	

CHAPTER FIVE: DISCUSSIONS

5.0 Introduction

This chapter discussed the findings of the study in relation to previous research conducted. It further expounded on the applications of the research results to disaster preparedness and management. The discussions were arranged as per the objectives of the study.

5.1 Adherence to disaster preparedness measures

The study results indicated that 6(4.9%) of the respondents had adhered to disaster preparedness measures. This implied that 116(95.1%) of health workers do not adhere to disaster preparedness measures.

This finding therefore confirmed the statement by Uganda's Ministry of Health that there is generally low involvement of most Ugandan districts in disaster preparedness and response. This could probably be due to pathetic disaster preparedness and response mechanisms across the country, inadequate logistics, human resources and lack of the required skills (MoH, 2009).

Disaster preparedness and adherence to disaster measures therefore remains a neglected public health intervention as it is less prioritized at both district and national levels (MOH Uganda, 2009). In the Health sector strategic plan III, the MoH acknowledged that disaster preparedness and adherence in Uganda is faced with many challenges. The low adherence to disaster preparedness measures could as well be indicative of the strength of such challenges.

Mitigation of such low adherence to disaster preparedness measures therefore necessitate nationwide conformity to disaster preparedness and management particularly of fires and floods, conducting drills, regular checkup of electrical wiring, proper physical planning of infrastructure and risk lessening measures (NDPM, 2010).

5.2 Factors influencing adherence to disaster preparedness measures

5.2.1 Socio-demographic factors

Results on sex indicated that females (57.38%) were more than males (42.62%). It also found out that females (3.28%) were found adhering to disaster preparedness measures than the males (1.64%). Although the difference in adherence is small, it still implies that female health workers valued safety more than their male counterparts. However there was no significant observation (Fischer's exact test $p=1.000$). This therefore means that gender does not influence in health workers' adherence to disaster preparedness measures.

In terms of age, the study finding found out that older persons were none adhering to disaster preparedness measures compared to those in 15-24 years (1.64%), 25-34 years (2.46%) and 35-44 years (0.82%). However there was no statistically significant association between age of respondents and their adherence to disaster preparedness measures ($p=0.321$). This result also implies that age does not play significant role in adherence to disaster preparedness measures.

The majority of respondents belonged to the clinical cadre of healthcare workers (75.4%) relative to non clinical (24.6%) staff category. Importantly, more of the respondents in the clinical cadre (3.28%) compared to non-clinical staff (1.64%) adhered to disaster preparedness measures.

This implies that the clinical staffs were more informed on issues pertaining to disasters and this might be either during in-service trainings or information acquired in course of professional training. However, there was no statistically significant relationship between staff category and adherence to disaster preparedness measures ($p=0.635$). This therefore means that staff category does not matter much in regards to health workers' adherence to disaster preparedness measures.

The finding also showed that there were fewer medical doctors (3.28%) than either nursing officers (12.3%) or other professional categories (84.43%).

The other healthcare cadres (3.28%) were found to be more adhering to disaster preparedness measures followed by nursing officers (1.64%). While none of the medical doctors adhered to the above measures. It was also noted that there was no statistically significant association between health workers' profession and adherence to disaster preparedness measures ($p=0.321$). This finding also entails that staff profession does not determine adherence to the above measures.

The result revealed that slightly over half (56.55%) of the respondents had worked for between 1-10 years. Interestingly, respondents that had worked for less than a year were adhering more (3.28%) compared to those who had worked for over one year. On the other hand none of the respondents that had served for over 10 years adhered to disaster preparedness measures. Nevertheless, there was no statistically significant relationship between duration of work and adherence to disaster preparedness measures ($p=0.321$). This therefore means that duration of work was not important in terms of adherence to disaster preparedness.

5.2.2 Individual factors

Knowledge of respondents on definition of disaster indicated that 100% (122) of the respondents selected the right definition of disaster that 'is serious disruption that leads to destruction of properties and loss of lives'. This means that at least majority of the health workers understood and witnessed disaster incidences hence were able to identify the right definition.

In addition, the respondents were also subjected to multiple choice answers on natural and manmade disasters and were made to select disasters likely to occur in Kilembe.

It emerged that the majority 121 (99.18%) out of 122(100%) respondents reported that floods are likely to occur around Kilembe. This was followed by disease epidemics 59(48.36%) out of 122 (100%) and fires that accounted for 26(21.31%) out of 122(100%). On the other hand, the least disasters predicted were road traffic accidents 19(15.57%), earthquake 12(9.84%) and others (conflicts) 9(7.38%).

In terms of use of disaster knowledge as per the above responses, 58 (47.54%) of the respondents who reported that knowledge on disasters be used for conducting disaster preparedness activities. 40(32.79%) reported for them they wait to respond to disaster when it strikes. While 17(13.93%) of the respondents said they continue to perform their normal duties and 7(5.74%) of the respondents reported they have nothing to do. It emerged that 6(4.92%) of the respondents who adhered to disaster preparedness measures came from a group who reported that disaster knowledge can be used for conducting readiness activities.

The above finding agreed with Sutton, J., & Tierney, K., (2006) study that all readiness actions must be based on knowledge about hazards, probability of occurrence and possible impacts on infrastructures and people.

In addition, the types of data that provide a focus for preparedness measures include the potential for damaging impacts of the hazards on health and safety, health facilities and delivery of services, the environment and economic activities. However, there was no statistically significant relationship between an individual's use of disaster knowledge and disaster preparedness measures ($p= 0.174$).

The above result implies that knowledge on disaster is not important in health workers' adherence to disaster preparedness measures. But the fact that all the respondents who adhered to the above measures reported knowledge on disasters should be used to conduct readiness activities. Thus it means that empowering health workers' knowledge on disasters, disaster preparedness and management should not be overlooked.

Regarding disaster risk, though the majority 121(99.18%) of the respondents agreed that disaster can be dangerous to human life and infrastructures, surprisingly, 6(4.92%) of them adhered to disaster preparedness measures.

However, there was no statistically significant relationship between an individual's perception on disaster risks and adherence to disaster preparedness measures ($p= 1.000$). This finding was in contrast with that of Miceli et al (2008) that found risk perception is strongly associated with disaster preparedness because individuals must perceive a risk to be motivated to initiate preparedness actions.

In terms of past disaster experience, the study finding disagreed with Seyedin, H., Ryan & Sedghi, S (2011) research that showed past experience of hazard events has positive impacts on disaster preparedness. And his study was supported by Kellens, W., et al., (2013) where nearly all studies get a positive relationship between hazards exposure and disaster readiness or mitigation.

While in contrast the findings are in agreement with Lin, Shaw, & Ho, (2008) study that past disaster exposure may in fact make an individual less likely to prepare and according to (Morrissey & Reser, 2003; Reale, 2010) that reasons for this are sometimes psychological in nature and dependent on social, cultural, and religious context.

However, the study results from Kilembe Mines hospital revealed that majority of those who at least adhered to disaster preparedness measures were from individuals who had initially experienced disaster events in the past.

5.2.3 Role of supervision on adherence to disaster preparedness measures

In this study 32(26.23%) out of 122(100%) of the health workers reported that the hospitals held periodic disaster preparedness meetings. The findings furthermore indicated that whenever hospitals hold periodic disaster preparedness meetings, respondents were significantly more likely to adhere to disaster preparedness plans.

The above finding implies that periodic hospital meetings are very critical in ensuring adherence to disaster preparedness measures.

Indeed such meetings may catalyze progress towards planned interventions and pave way for initiating possible changes (Richter, 2011). Secondly, the meetings would help to ensure readiness of health workers for any emergency disaster situations.

In agreement with the recommendations of the California Hospital Association (2011), periodic hospital meetings are facilitative in sharing of information for continuous implementation of disaster preparedness activities and hence adherence.

Beyond that, through meetings, people get better informed on disaster issues and therefore get inspired to embrace a culture of disaster readiness as earlier on stated by UN/ISDR (2007).

The study found that periodic check on electrical wiring is significant in terms of ensuring the staffs get prepared for fires especially in taking corrective measures on use of electricity and use of gadgets like fire fighting equipments. Surprisingly, all the respondents who adhered to the above measures reported that the checks were conducted. This further implies that checks on electrical wiring enable respondents to be cautious in order to prevent or undertake readiness mechanism to reduce the consequences that may result as result of electrical fires.

There was statistically significant association between checks on electrical wiring and health workers' adherence to disaster preparedness ($p=0.002$)

This finding therefore agreed with the recommendation by the NPDPM (2010) that institutions like hospitals among others like schools, hotels should ensure regular checks on electrical wiring. This means that it is necessary to perform the checks for making informed decisions.

5.2.4 Health system factors

The study found out that two health systems related factors significantly influenced adherence to disaster preparedness measures. These were routine assessment for hazard, risks ($p=0.001$) and vulnerability and use of information arising from such assessments ($p=0.044$).

Regarding the assessments, 24 (19.67%) out of 122 (100%) of the health workers reported that the hospital usually conduct routine hazard, risk and vulnerability assessments. This implied that the hospital was concerned with safety of its workers through risk analysis, hazard evaluation and assessment of the extent of vulnerability to such risks and hazards.

This finding was in agreement with ISDR (2009) that risk assessment involves the determination of the nature and extent of risk through analysis of the potential hazards and the evaluation of the existing conditions of vulnerability that could likely harm the people, property, livelihoods and the environment.

Related to the above, the presence of hazard, risk and vulnerability assessment was associated more likelihood to health workers adhering to disaster preparedness measures ($OR=26(3-231)$ $P=0.004$).

A systematic review of empirical research of risk analysis by Kellens (2013) also indicated that nearly all previous studies showed optimistic relationship between disaster readiness and hazard assessments.

This finding confirmed that such assessments are very vital in identifying potential threats, measuring the likelihood of those potential threats and guiding preparation for appropriate disaster response and management.

Furthermore, the findings were consistent with the recommendations of Fares *et al* (2014) and that of WHO (2006), that such periodic risk, hazard and vulnerability assessment would ensure sound preparedness for disasters and hence adherence to measures.

Based on using results of such assessments, 83% of the respondents correctly stated that the findings would be used for proper planning for disaster preparedness measures and 12.5% stated incorrectly that the results would be used for relocation of the hospital.

Further analysis suggested that respondents reporting correct use of the assessments results were double folds more adhering to disaster measures compared to those that stated it would be used for record purposes.

Correct knowledge is very paramount in effective engagement of individual participation in emergency management including but not limited to adherence to disaster preparedness measures (UNISDR, 2006). Actually in this study, of the respondents that gave correct use of the assessment results, 25% of them were initially trained on disaster issues whereas, of those that gave incorrect use of the assessment results, merely 4% were trained on disaster issues.

This signified that training was important in enhancing health workers knowledge and therefore adherence to disaster preparedness measures (IFRC, 2006; UNISDR, 2006).

Earlier study in Tohoku hospital by Faras *et al* (2013) was consistent with this finding and they stated that ‘it is important for hospitals to conduct hazard and vulnerability assessment in order to identify potential threats, measure the likelihood of those threats occurring and guide disaster preparedness for appropriate response and management’.

The key informant interviews conducted also revealed that majority of the Key Informants reported that conducting periodic training of health workers on disaster preparedness and management is significant. They based their reasoning on the fact that training would empower them with information and skills pertaining disasters hence will be able to prevent or manage them should they strike.

In terms of training what I can say is that training of health workers on disasters is vital empowering us with information and skills for preparedness and management of disasters (Deputy Medical Superintendent).

5.3 Observation on key items at Kilembe Mines Hospital

The observation established that 3 (30%) out of 10 (100%) items listed were available. This result implies that the hospital is not prepared enough for disasters that may necessitate the prior existence of such measures. These items included; fire extinguishers, however 2 in 6 of the extinguishers present were full with gas and functional.

According to NPDPM of Uganda (2010), the District Disaster Management committee is mandated to ensure that hospitals among others should put in place fire extinguishers and maintain the functionality. However this still appears to be challenge since preparedness at hospital level in relation to the above items was not being embraced yet.

The hospital buildings have exit routes but they were not labeled for safe evacuation of patients by health workers and the caretakers during emergencies.

In terms of Assembly point; the result found that the hospital has many assembly points should disasters like fire; floods among others are to occur. However, these points were not labeled as well hence there is high likelihood of confusion during disaster incidences.

The other 7(70%) items found unavailable and are significant as disaster preparedness measures are the fire detectors, bucket of sand as alternative option to fire extinguisher (Carbon dioxide or liquid), disaster plan, flood resistant perimeter wall, sign of river bank management and hospital site map.

In Uganda, the hospitals among other institutions are expected to develop their own Disaster Preparedness

Plans and put in place smoke detectors, fire equipments and other necessary logistics required in an emergency (NPDPM, 2010).

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

6.0 Introduction

This chapter consists of the key findings of the study and respective appropriate recommendations on disaster preparedness and management.

6.1 Conclusion

- i. The study in found that adherence to disaster preparedness measures was significantly very low 6(4.9%) out of 122(100%) hence in case of disaster then there is high likelihood of consequences like destruction of infrastructures, materials and, drugs, disruption of work and loss of lives to be encountered.
- ii. Adherence to disaster preparedness measures was enhanced by periodic staff meetings on disaster issues and the periodic operationalization of hazard, risk and vulnerability assessments.
- iii. However, incorrect use of hazard, risk and vulnerability assessment results particularly its use for relocation of the hospital was significantly associated with less likelihood of adherence to disaster preparedness measures.
- iv. Adherence to standard disaster preparedness in terms of safety measures was found to be very low with 3 (30%) out of 10(100%) of items subjected to observation and physical check.

6.2 Recommendation

- i. There is a critical need to improve adherence to disaster preparedness measures through health workers sensitization and training on disaster preparedness and management.
- ii. Conduct periodic staff meetings on disaster issues in order to make informed decisions.
- iii. Periodic risk, hazard and vulnerability assessments and the correct use of assessment results for mitigation of disasters.
- iv. There is need to allocate financial resources to cater for both basic materials and equipments necessary for use during disasters.
- v. There is need to ensure that Carbon dioxide fire extinguishers, enough water and sand for fire are available, functional and maintained when necessary, construction of perimeter wall, development of the hospital site map, well labeled fire or any other emergency assembly point, and exit routes and functional alarming systems.

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APPENDIX 1: CONSENT FORM

My name is Kareodu Ronald a student at International Health Sciences University in Kampala. As part of my Studies for Bachelor of Science in Public Health, I am required to conduct a research and my topic is: **Factors influencing healthcare workers’ adherence to disaster preparedness measures at Kilembe Mines Hospital.**

In addition to the academic purpose, the information gathered will also be used for provision of better hospital disaster preparedness measures at Kilembe Mines Hospital including other hospitals in Uganda.

You have been chosen to participate in this study and the information you will give shall be kept confidential as your name shall not also appear on the questionnaire.

Filling the questionnaire will take only 10 minutes

If you are willing to participate in filling the questionnaire, please sign in the space provided below;

Signature.....

Name of Research Assistant.....

Date of data collection.....

APPENDIX 2: STRUCTURED QUESTIONNAIRE

This questionnaire is aimed at collecting information about the factors influencing health workers' adherence to disaster preparedness measures. Please fill in the questionnaire accurately and fully.

Instructions: Please select your answer by ticking or writing in the spaces provided.

SECTION A: SOCIO-DEMOGRAPHICS

1.	Sex		Tick
	1=	Male	
	2=	Female	
2.	Age		Tick
	1=	15-24	
	2=	25-34	
	3=	35-44	
	4=	45-54	
	5=	55 and above	
3.	Staff category		Tick
	1=	Management	
	2=	Clinical	
	3=	Support staff	
4.	Your profession		Tick
	1=	Orthopedic Surgeon	
	2=	Medical doctor	
	3=	Senior Nursing Officer	
	9=	Others (Specify).....	
5.	How long have you worked in Kilembe Mines Hospital?		Tick
	1=	< 1 year	
	2=	1-5	
	3=	5-10	
	4=	10-20	
	5=	>20 years	
	9=	Others (Specify).....	

SECTION B: INDIVIDUAL FACTORS

Knowledge on disaster

5.	What is disaster?		Tick
	1=	Anything that kills people	
	2=	Serious disruption that leads to destruction of properties and loss of lives	
	3=	Any event that affects only roads, bridges and buildings	
6.	To your knowledge, which of the following disasters are likely to occur in your area? (Ticking of Multiple Responses is possible)		Tick
	1=	Floods	
	2=	Disease epidemics	
	3=	Earth quake	
	4=	Traffic accidents	
	5=	Fires	
	9=	Others (Specify).....	
7.	What do you do with your current knowledge on disaster?		Tick
	1=	Do my normal duties	
	2=	Do disaster readiness activities	
	3=	Wait to respond to disasters	
	9=	Others specify.....	

Risk perception

8.	Do you agree that disasters can be dangerous to human life and infrastructures?		Tick
	1=	Yes	
	0=	No	
9.	If yes in (8) above, what do you think should be done?		Tick
	1=	Measures by external agents	
	2=	Only respond when disaster strikes	
	3=	Conduct disaster readiness activities	
	9=	Others (Specify).....	

Past disaster experience

10.	Have you ever experienced and responded to disasters in the past 3 years?		Tick
	1=	Yes	
	0=	No	
11.	If yes in (10) above, what do you think should be done at the hospital?		
	1=	Relocate the hospital	
	2=	Training and periodic disaster drills/exercises,	
	3=	No opinion	
	9=	Others (specify)	

SECTION C: ROLE OF SUPERVISION

Regular checks

12.	Does the management regularly check on disaster preparedness measures? Checks on river banks		Tick
	1=	Yes	
	0=	No	
13	Checks on electrical wiring		
	1	Yes	
	0	No	
14	Checks on fire equipments		
15.	If yes in (12), who is responsible for the checks on the above activities?		Tick
	1=	My supervisor	
	2=	Medical superintendant	
	3=	Safety officer	
	4=	Hospital electrician	
	9=	Others (Specify).....	
16.	How often are the above measures conducted?		
	1=	Quarterly (3 times a year)	
	2=	Biannually (twice a year)	
	3=	Annually (Once a year)	
	4=	Not conducted	
	9=	Others (Specify).....	

Trainings

17.	Are you trained during supportive training on disaster issues?		Tick
	1=	Yes	
	0=	No	
18.	If yes in (15) above, what influence does it have on you?		
	1=	Never	
	2=	Increased disaster knowledge	
	3=	Participation in disaster drills or exercises prior to disasters	
	9=	Others (Specify).....	

Periodic staff meetings on disaster issues

19.	Does the hospital organize for joint staff meetings on disaster issues?		Tick
	1=	Yes	
	0=	No	
20.	If yes in (17) above, how important is it to the staff including you?		
	1=	It enables us to get allowances	
	2=	It helps only when disaster occurs	
	3=	Empowers us with information for better preparation for disasters	
	9=	Others specify.....	

SECTION D: HEALTH SYSTEM FACTORS

Hazard, risk and vulnerability assessment

21.	Do you or the management conduct multi-hazards, risk and vulnerability assessments? (Hazard=destructive event -fire/flood, risk=possibility of loss, injury, death and vulnerability=susceptibility to damage or harm by hazard)		Tick
	1=	Yes	
	0=	No	
22.	If yes to (19) above, the assessment results can be used for?		
	1=	Record purposes	
	2=	Relocation of the hospital	
	3=	Proper planning for disaster preparedness measures	
	9=	Others (Specify)	

Disaster Preparedness plan

23.	Does the hospital have a disaster preparedness plan?		Tick
	1=	Yes	
	0=	No	
24.	If yes in (21) above, what influence does disaster preparedness plan has to the health workers?		
	1=	Acts as a reminder	
	2=	It has no influence on the staff	
	3=	Allows disaster preparedness activities like drills, trainings, electrical wiring checks to be undertaken as planned.	
	9=	Others (Specify).....	

Availability of adequate resources (human, financial and emergency logistics and equipment

25.	Have you been trained to prepare and manage various types of disasters?		Tick
	1=	Yes	
	0=	No	
26.	How necessary do you think training health workers prior to disaster is?		
	1=	Not necessary	
	2=	Very necessary for better preparation and future management	
	3=	Only necessary when disaster strikes	
27.	Does the hospital have enough financial resources (funding) to prepare for disasters?		Tick
	1=	Yes	
	0=	No	
28	Do you think adequate funding is necessary for hospital disaster preparedness?		
	1=	Quite necessary	
	2=	Not necessary	
	3=	Very necessary	

29.	Does the hospital have fire equipments like fire detectors and fire extinguishers (fire-fighting equipment)		
	1	Yes	
	0	No	
30.	If yes to (21) above, of what importance is the availability of the equipment?		
		Staff learn how to use and get prepared	
		It causes relaxation	
		Makes us not to check for fire vulnerability	
		Others (Specify).....	

Disaster drills and rehearsals

31.	Does the hospital management organize regular disaster drills and rehearsals for you?		Tick
	1=	Yes	
	0=	No	
32.	If yes in (26) above, what contribution does it have on you?		Tick
	1=	It improves on my skills	
	2=	It becomes part of my normal activity	
	3=	It wastes time	
	9=	Others (Specify).....	

Thanks for your participation

APPENDIX 3: KEY INFORMANT INTERVIEW GUIDE

Name of Interviewer:**Date of Interview:**.....

Introduction: My name is Kareodu Ronald, a student offering Bachelor of Science in Public Health at International Health Sciences University in Kampala. I am conducting a research on the **factors influencing health workers' adherence to disaster preparedness measures at Kilembe Mines Hospital**. This is in partial fulfillment of the requirements of the degree. I would like to ask you some questions on disaster preparedness. The information you give will be helpful in the strengthening of healthcare disaster preparedness not only at Kilembe Mines Hospital but also other hospitals in Uganda.

1. What is your current position at the hospital?
2. How long have you worked in this hospital?
3. Have you ever responded to disaster events in this hospital? According to your experience, what do you think should be done now?
4. Has vulnerability assessment been conducted for possible hazards in this hospital?
5. Does your hospital have a disaster plan?
6. What do you think could be the advantages having such a plan?
7. Does the hospital organize disaster drills and rehearsals? For which specific hazards?
8. How significant is conducting training and drills on disaster to you?
9. What can you say about resources like human, financial and emergency logistics and supplies/fire equipments? How necessary are they in relation to disaster preparedness and response?
10. Does the management conduct supervisory checks on electrical wiring, river banks, and drills?

APPENDIX 4: OBSERVATION CHECKLIST

Name of the Researcher:Date.....

Introduction:

My name is Kareodu Ronald a student of Bachelor of Science in Public Health at International Health Sciences University (IHSU). I am carrying a research on **factors influencing health workers' adherence to disaster preparedness measures**. The study is using three data collection tools and observation checklist being one of them.

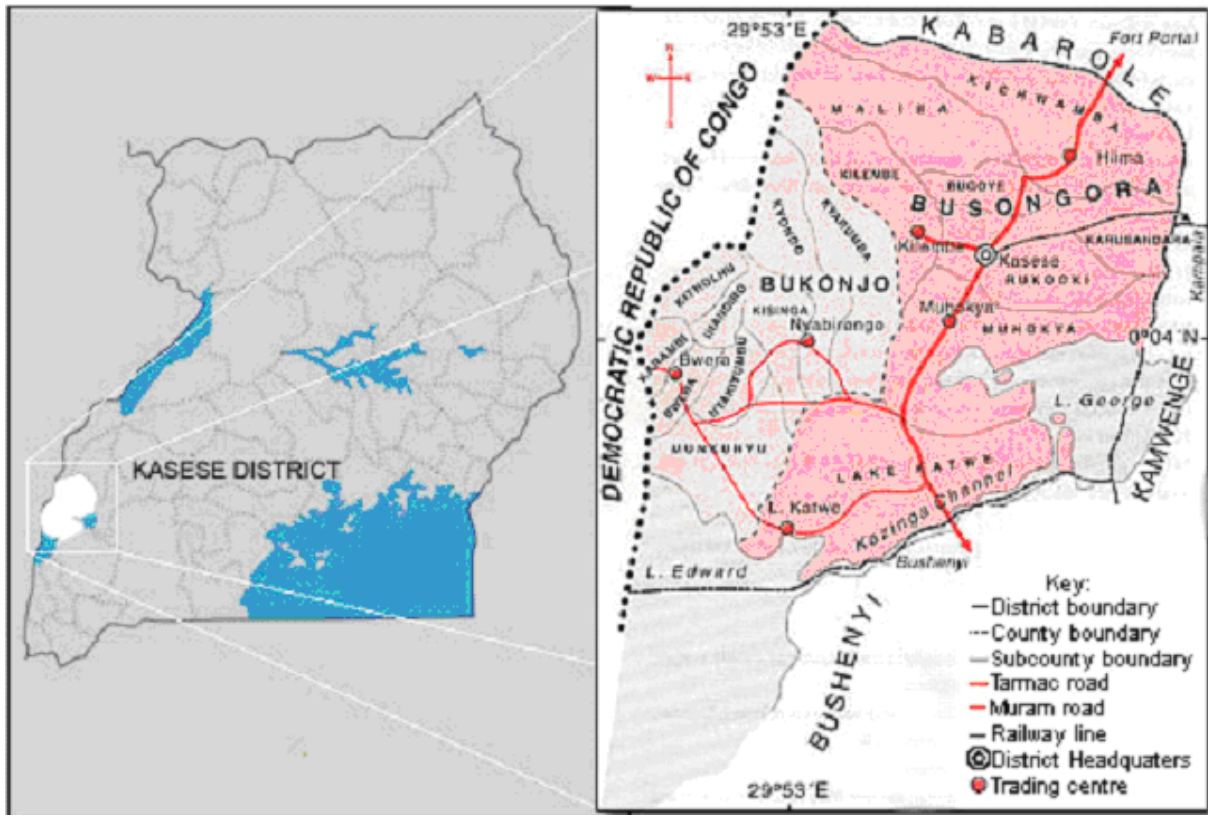
This is basically for academic purposes but it also contributes towards strengthening of the hospitals preparedness measures.

Part 1: Observation Checklist

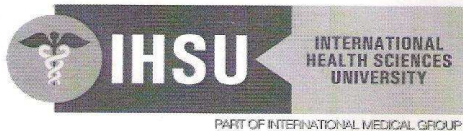
S/No	ITEM	Yes	No	Comment
1	Disaster Alarming system			
2	Fire detector			
3	Fire extinguisher			
4	Buckets of sand			
5	Exit routes with clear labels			
6	Assembly area (point)			
7	Disaster plan			
8	Flood resistant wall fence			
9	River bank management			
10	Hospital site map			

Partially adopted from Carley & Mackway Jones (2006:28)

APPENDIX 5: MAP OF UGANDA SHOWING KASESE DISTRICT



APPENDIX 6: INTRODUCTION LETTER AND RESEARCH APPROVAL



Office of the Dean, Institute of Health Policy & Management

Kampala, 6th June 2014

The Medical Superintendent
Kilembe Mines Hospital
Kasese District, Uganda ✓

Dear Sir/ Madam,

Re: Assistance for Research

Greetings from International Health Sciences University.

This is to introduce to you **Kareodu Ronald, Reg. No. 2011-BSCPH-FT-018** who is a student of our University. As part of the requirements for the award of a Bachelors Degree of Public Health of our University, the student is required to carry out field research for the submission of a Research Project

Kareodu would like to carry out research on issues related to: **Factors Influencing Health Workers' Adherence to Disaster Preparedness Measures; A Case study of Kilembe Mines Hospital in Kasese District**

I therefore request you to render the student such assistance as may be necessary for his research

I, and indeed the entire University are thanking you in anticipation for the assistance you will render to the student

Sincerely Yours,

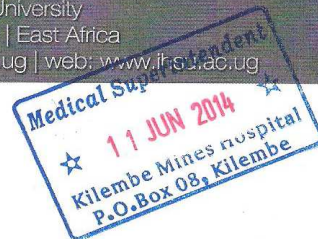

Prof. David Ndungutse Majwejwe
Dean, Institute of Health Policy & Management



The student is allowed to carry out his research work in this facility, but provide a copy of the Results/Dissertation to the Hospital Administration, the Hospital Administrator, Edward N. Nefuly

MAKING A DIFFERENCE IN HEALTH CARE

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APPENDIX 7: ESTIMATED BUDGET FOR THE RESEARCH ACTIVITIES

S/No.	Item	Qty	Unit Cost (Sh)	Amount (Sh)
	A: Proposal Writing			
1	Printing 1 st proposal draft	35 pages	50	1,750
2	Printing 2 nd proposal draft	35	50	1,750
3	Printing 3 rd proposal draft	40	50	2,000
4	Printing 4 th proposal draft	40	50	2,000
5	Printing final proposal copy	40	50	2,000
6	Binding	1	1,500	1,500
7	Printing data collection tools	150x6	50	45,000
	B: Data Collection			
8	Training research assistants	2	45,000	90,000
9	Transport	2	30,000	60,000
10	Communication	1	10,000	10,000
	C: Research Report			
11	Printing 1 st draft-all chapters	1x60 pages	50	3,000
12	Printing 2 nd draft	1x60	50	3,000
13	Printing 3 rd draft	1x60	50	3,000
14	Printing final copy	1x60	50	3,000
15	Binding hard copies	2	10,000	20,000
16	Miscellaneous	1	32,000	32,000
	TOTAL			280,000

APPENDIX 8: WORK PLAN FOR THE RESEARCH ACTIVITIES

Activities	March	April	May	June	July	Aug	Sept	Nov	Responsib. Person
Presentation of concept paper									Researcher
Writing research proposal									Researcher
Approval of the research proposal									Supervisor/ Faculty office
Training research assistants and Data collection									Researcher
Data entry, analysis, report writing and Submission of 1 st full draft									Researcher
Submission of 2 nd draft									Researcher
Submission of 3 rd draft									Researcher
Submission of 3 spiral bound copies									Researcher
Submission of 2 hard cover bound copies									Researcher