

KAMPALA INTERNATIONAL UNIVERSITY WESTERN CAMPUS



**KNOWLEDGE AND ATTITUDES ON HEALTH- CARE WASTE MANAGEMENT
AMONG NURSING PROFESSIONALS AT LIRA REGIONAL
REFERRAL HOSPITAL NORTHERN
UGANDA**

BY

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**A DISSERTATION SUBMITTED TO THE FACULTY OF MEDICINE OF KAMPALA
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REQUIREMENTS FOR THE AWARD OF THE DEGREE OF
BACHELORS OF MEDICINE AND
SURGERY**

DECLARATION

I, **PETER OMARA**, declare that I am the original author of this study dissertation and it is in my best knowledge that it has never been submitted to Kampala International University (KIU) western campus or any other institute of higher learning for the award of a Bachelors degree in medicine and surgery.

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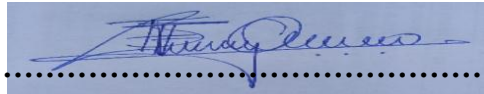
APPROVAL:

This research dissertation is being submitted to the Institutional Research Ethics Committee (IREC) of Kampala International University Western Campus with the approval of my supervisor.

NAME OF SUPERVISOR: Dr. JIMMY BEN FORRY.

DATE: 24 JUNE 2019.

SIGNATURE:



DEDICATION

I, dedicate this study to my mother Mrs. Kiboko Petua Olobo, my father Mr. Kiboko Olobo James, other family members Epobu Paul, Emmanuel, Sharon Anthony, Sarah and friends, who have supported, encouraged me financially, and spiritually and to the Almighty God who has always seen me through my studies. Am richly grateful for having all of you as my family and I pray the Almighty God continue blessing you.

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Am very grateful to God the Almighty for good health, wisdom, provision and protection. I humbly acknowledge the efforts of my research supervisor, for the guidance and support he rendered me during this study.

I express my sincere thanks to the Director and the entire staff of Lira Regional Referral Hospital for their hospitality and co-operation during the study. I am heavily indebted to all those people who inspired, motivated, prayed and supported me in various ways most especially my dear course mates, and the entire student body of Kampala International University Western campus.

LIST OF ABBREVIATIONS

AIDS:	Acquired Immune Deficiency Syndrome
BMW :	Biomedical waste Management
HCWM:	Health Care Waste Management.
HIV:	Human Immune Virus.
HSR:	Hospital Solid Residue.
IREC:	Institutional Research Ethics Committee.
LRRH :	Lira Regional Referral Hospital.
MBChB:	Bachelors of Medicine and Bachelors of Surgery.
NHWMP:	National Health Care Waste Management Plan.
RCN:	Royal College of Nursing.
SPSS:	Statistical Package for Social Scientist.
UK:	United Kingdom.
WHO:	World Health Organization.

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DEFINITIONS OF TERMS

Health: A state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.

Health Care Waste: The term health-care waste includes all the waste generated within health-care facilities, research centers and laboratories related to medical procedures.

Health care Waste management: Is the collection, handling, treatment, transportation, processing, disposal, and monitoring of waste materials.

Hospital Waste Management: The management of waste produced by hospitals using such techniques that will help to check the spread of diseases.

Variable: A variable is anything liable to or capable of change.

Dependent variable: This is the outcome. In this study, the dependent variable is Waste management.

Independent variables: These are factors that influence the outcome. In this study, the independent variables are Knowledge and Attitude.

Waste: An unusable or unwanted substance or material, such as a waste product.

Waste segregation: Waste segregation means dividing waste into dry and wet. Dry waste includes wood and related products, metals and glass. Wet waste, typically refers to organic waste usually generated by eating establishments and are heavy in weight due to dampness.

Sharps: Are objects or devices having acute rigid corners, edges or protuberances capable of cutting or piercing, including, but not limited to, hypodermic needles, blades and slides;

Sharps containers: These are leak-proof, rigid, puncture-resistant containers which, when sealed, cannot be reopened without great difficulty. These containers must be labeled with either biohazard or infectious waste on the outside of the container.

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ABSTRACT

BACKGROUND: The knowledge and attitude of nurses on effective and efficient methods of health care waste management is extremely important if serious health hazards to health care service providers and people living in the vicinity of these health units are to be avoided.

The main objective of this study was to describe the level of knowledge and attitude of nurses in Lira Regional Referral Hospital regarding health care waste management.

METHODOLOGY: The study design was qualitative, descriptive cross sectional on knowledge and attitude of 50 nurses chosen by systematic sampling method.

RESULTS: Findings established that the level of knowledge among nurses in the hospital was high, I.e [98%] knew about health care waste management and, [56%] acknowledged the presence of waste management policy documents in various wards and units of the hospital. The study also revealed that nurses had a positive attitude towards health care waste management in the hospital with 94.0% , supporting nurses' involvement in the waste management.

CONCLUSSION: Nurses in Lira regional referral hospital were knowledgeable and had a positive attitude towards Health care waste management.

We recommend that the management in LRRH ensures strict adherence to relevant waste management regulations and provide all resources needed. The positive attitude towards waste management portrayed by the nurses should be maintained by the hospital management through regular sensitization of staff on health care waste management policies, motivation of staff and refresher courses (workshops and seminars) on health care waste management.

CHAPTER ONE: INTRODUCTION.

Globally, several guidelines have been developed to deal with health care waste management, These include, WHO manual and the world bank guidelines note to complement the WHO efforts on HCWM. The Millennium Development Goal further provides a good basis for the unit Nation member states of which Uganda is one. To arouse public interest in environmental issues such as hazardous waste

In the United Kingdom, guidance is periodically written to support health care assistants, nurses and midwives with the management of waste generated as part of their role, regardless of the practice setting where they provide care. They recommend that training of staff on waste management should be strengthened with clear expectations made during induction. They come up with evidence based scenarios on how they can improve on HCWM in their various departments. (RCN Waste Guidance, 2014).

Health service delivery in Uganda is administered throughout the 112 districts, with 2 National Referral Hospitals – Mulago Hospital Complex and Butabika Mental Health Hospital, 13 Regional Referral Hospitals, 39 District Hospitals, 254 Health Sub-districts, and over 3,000 Lower Level Health facilities. The two National Referral Hospitals and the 13 Regional Referral Hospitals are under central government while the rest of the public health facilities are decentralized under local government. However there are Non-Government Organizations (NGOs) which supplement government efforts in health service delivery through their hospitals and lower health units which are distributed throughout Uganda. Traditional medical practice is well established in Uganda and they also give a significant contribution in health service delivery. These health facilities generate a considerable amount of health care waste that contributes to the spread of infectious diseases, which accounts for 60 to 80 percent of the disease burden in Uganda. (AID STAR-One, 2012).

In 2010, a health facility assessment conducted jointly by Ministry of Health and the AID-STAR-One Project showed that on average hospitals generate 92 kg of waste per day, 40% of which is hazardous, while Health Centres IV generate 42 kg of waste daily, and Health Centres III and Health Centres II generate 25kgs and 20kgs per day respectively. The study further revealed that waste is not segregated, making its management very expensive, and that there is inadequate waste management commodities, posing risks of exposure and subsequent transmission of infections. (AID STAR-One 2012).

Between 75% and 90% of the waste produced by health care providers is comparable to domestic waste and usually called “non-hazardous” or “general health-care waste”. It comes mostly from the administrative, kitchen and housekeeping functions at health-care facilities and may also include packaging waste and waste generated during maintenance of health-care buildings. The remaining 10–25% of health care waste is regarded as “hazardous” and may pose a variety of environmental and health risks. (WHO 2014).

There are seven classes of waste ranging from non-hazardous, highly hazardous (sharps), hazardous (infectious), pathological(anatomical tissue), chemical (chemotherapy),highly infectious(sputum cultures, contaminated blood clots) and radioactive waste.(NHWMP, 2009).

In Lira Regional Referral Hospital, health workers including nurses generate waste during patient care and 80% is non-infectious. It was observed that some nurses mix up infectious and non-infectious waste creating an increased amount of infectious waste and yet the segregation containers are available. This calls for an assessment of their knowledge and attitude towards waste management. (Lira Hospital Quarterly Survey Report, Jan – March 2014).

The Government of Uganda developed a National Health Care Waste Management Action Plan to help improve the management of health-care waste in the country. The plan was developed along the following six strategic objectives; to develop the legal and regulatory framework for Health Care Waste Management, to rationalize the HCWM practices within health care facilities, to launch capacity building and training measures, to develop specific financial resources dedicated to HCWM, to set-up a monitoring plan for HCWM and to reduce the pollution associated with Health Care Waste Management.(NHWMP, 2009). Furthermore, the government of Uganda has published literature that is meant to guide health care workers on proper health care waste management. (Health Workers Guide 2013).

1.1 PROBLEM STATEMENT

Waste segregation has been proven to reduce hospital acquired infection. If the protocols are followed strictly, it has been observed that the amount of waste generated from a hospital environment decreases.

A study done in India reported that inadequate and inappropriate knowledge of handling of healthcare waste may have serious health consequences and a significant impact on the environment as well. It was estimated that annually about 0.33 million tons of hospital waste is generated in India and the waste generation rate ranges from 0.5 to 2.0 kg per bed per

day.(Suwama &Ramesh, (2012)). Therefore, if waste is not well managed, there are risks of injuries and infections to the health care staff, patients and their attendants and the people living in the surrounding community increasing levels of health care costs.

Ugandas current health care waste management practices are in appropriate and inadequate in the areas of segregation, handling and disposal in many health facilities throughout the country and these pose serious health hazards to health care service providers and people living in the vicinity of these health units.(NHWMP, 2009).

Despite all the dangers and hazards associated with poor hospital waste management, some nurses in Uganda are not complying with proper waste management procedures. This is in line with a study done where the Health Care Waste Management in Uganda was assessed. The results showed that there was poor segregation of waste, lack of waste management plan, inadequate waste management and coordination structure, ineffective and inefficient incineration equipment and lack of comprehensive waste management policies and guidelines leading to diverse ramifications which affects the health of patients, healthcare workers (doctors, nurses, attenders and housekeeping staff etc.) and the general public(Muhwezi, Kaweesa, Kiberu and Eyoku, 2014). There are many policies related to health care waste management (HCWM) in Uganda), but poor waste management practices in health facilities continue to put health workers, patients, and communities at risk for injuries as well as acquisition of diseases such as HIV, hepatitis B, and other blood-borne diseases. (AID STAR-One 2012).

Lira Regional Referral Hospital is one of the 13 regional referral hospitals in Uganda where it has been observed that some nurses do not comply with the health care waste management guidelines and standards. Color coded waste bins and safety boxes have been provided at each unit but waste is still inappropriately and inadequately managed. The hospital management has a well constituted health waste management committee (Infection Control Committee) which is ineffective in implementing policies that would help to boost nurses' knowledge and influence their attitudes on proper waste management. It has also been noted that in a year about three of these nurses get accidental injuries and needle pricks as a result of poor hospital waste management. The knowledge and a positive attitude of these nurses on effective and efficient methods of health care waste management is extremely important if serious health hazards to health care service providers and people living in the vicinity of these health units are to be avoided. In Lira Regional Referral Hospital, health workers including nurses generate waste during patient care and much of the waste 80% is non-infectious. It has been observed that

some nurses mix up infectious and non-infectious waste creating an increased amount of infectious waste and yet the segregation containers are available. This calls for an assessment of their knowledge and attitude towards waste management. (Lira Hospital Quarterly Survey Report Jan – March 2014). It is against this background that the researchers seek to determine the knowledge and attitudes of nurses in Lira Regional Referral Hospital towards health care waste management.

1.2 PURPOSE OF THE STUDY

The purpose of this non-experimental descriptive cross sectional quantitative study was to describe knowledge and attitude of nurses on health care waste management in Lira Regional Referral hospital using a self-administered questionnaire.

1.3 SIGNIFICANCE OF THE STUDY

This research was a baseline study in Lira Regional Referral Hospital owing to the challenges mentioned above. It will benefit the health care workers, patients, the hospital management and the community where the results of the study will be used in planning, developing a management framework for improving the implementation of health care waste management policies and practices by nurses leading to safety of health workers and the community, prevention of health hazards and improved health outcomes. The researcher will have partially fulfilled the requirement for the award of a Bachelor of Medicine and Bachelors of Surgery. (MBChB).From Kampala International University.

1.4 OBJECTIVES

1.4.1 BROAD OBJECTIVES

To describe the level of knowledge and attitude of Nurses in Lira Regional Referral Hospital regarding health care waste management.

1.4.2 SPECIFIC OBJECTIVES

1. To determine knowledge of health-care waste management among Nurses at Lira Regional Referral Hospital.
2. To asses the attitude towards health care waste management among Nurses at Lira Regional Hospital.

1.5 RESEARCH QUESTION.

What are the Knowledge levels of Nurses in Lira Regional Referral Hospital on health care waste management?

What are the attitudes of Nurses in Lira Regional Referral Hospital towards health care waste management?

1.6 STUDY SCOPE.

1.6.1 GEOGRAPHICAL SCOPE.

I choose this study area due to the fact that its easily accessible to me and am quite fluent in the native language used by the occupants of this district and above all the Lira regional referral hospital is easily accessible for me, am sure thus will enable me conduct a proper study The study will be conducted in Lira regional referral hospital located 110 km (68miles) by road southwest of Gulu, the largest city in the northern region, along the highway between Gulu and Mbale, it's about 320km (200 miles) by road north of kampala the capital of Uganda and its largest city, co-ordinates are (Latitude 02.54`00.0E; Longitude 02.2472;)

1.6.2 CONTENT SCOPE.

The study will assess the knowledge and attitude of nurses on the health care waste management in Lira regional referral hospital.

1.6.3 TIME SCOPE.

The actual data collection was from April 2019 to May 2019

1.7 CONCEPTUAL FRAME WORK

This conceptual framework was derived from the theory of planned behavior that is intended to explain all behaviors over which people have the ability to exert self-control. The key component to this conceptual framework is behavioral intentions that are influenced by the attitude about the likelihood that the behavior will have the expected outcome and the subjective evaluation of the risks and benefits of that outcome. (Health, 2013).

Figure 1;

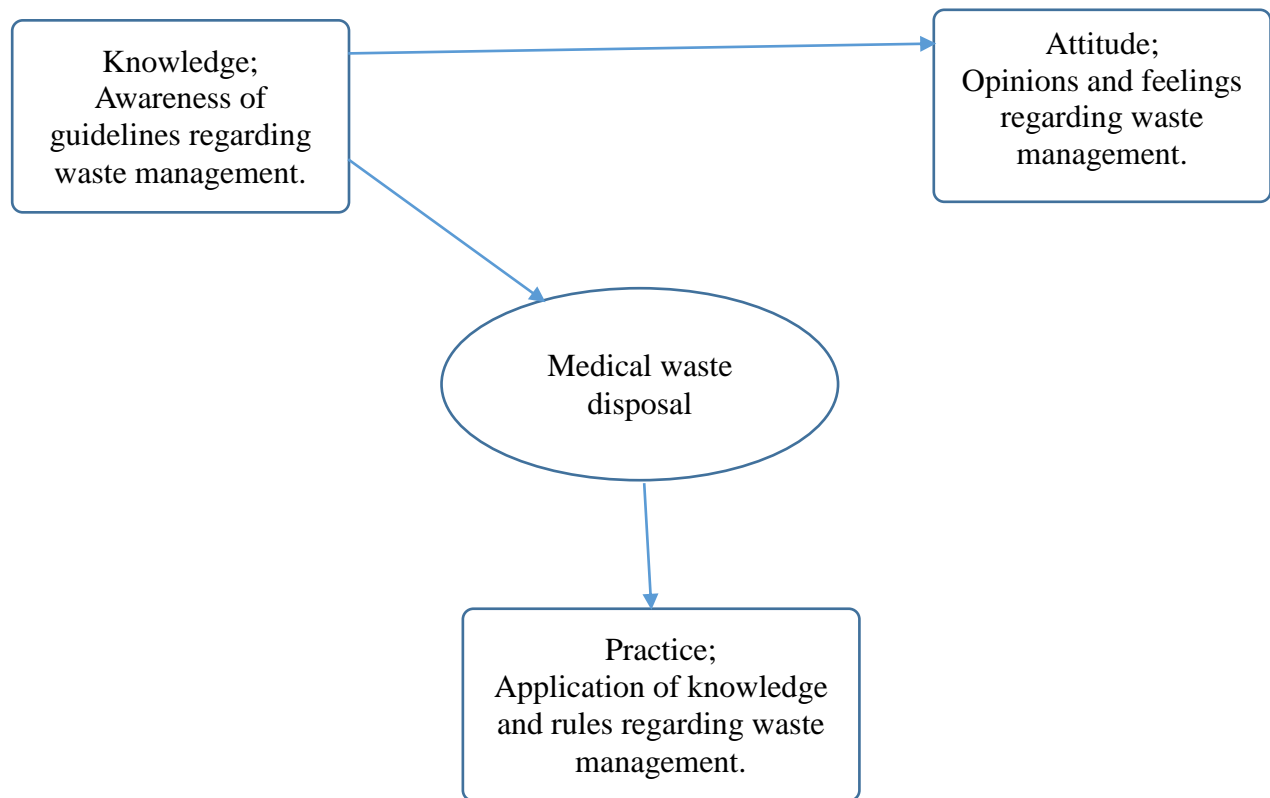


Table 1; Classification, description, and examples of healthcare waste classes

CLASSIFICATION AND DESCRIPTION	EXAMPLES
NON-HAZARDOUS	
<p>NON-RISK GENERAL WASTE</p> <p>Similar to normal household municipal waste and can be managed by the municipal waste services</p>	<p>Paper, cardboard, plastic, kitchen waste, ash, sawdust, pieces of wood segregated from hazardous waste at the point of generation</p>
HAZARDOUS	
<p>INFECTIOUS WASTE</p> <p>Generated by both inpatients/out-patients or animals, this waste is known or likely to contain pathogenic micro-organisms and can be dangerous or infectious to both patients, healthcare workers and the public. It therefore requires special management both inside and outside the hospital.</p>	<p>Laboratory waste, materials potentially infected blood, swabs, materials that have been in used in surgery or been in contact with patients.</p>
<p>PATHOLOGICAL / ANATOMICAL</p> <p>Includes amputations and other body tissues resulting from Surgical operations, autopsy (post-mortem), or delivery. Requires Special treatment for ethical and aesthetic reasons.</p>	<p>Internal body organs, amputated limbs, placentas, fetus. Also includes urine and blood products.</p>
<p>CHEMICAL,PHARMACEUTICAL, GENOTOXIC WASTE</p> <p>Wastes, including expired products, generated from the pharmacy, radiology and from chemotherapy.</p>	<p>Vials, connecting tubing, drugs, vaccines, Pharmaceutical products, disinfection solutions.</p>
HIGHLY HAZARDOUS	

SHARPS These are sharp-edged wastes that can cause cuts or puncture wounds (e.g. needle stick injuries). They are hazardous whether or not they are contaminated with blood. They must be segregated, packaged, and handled with specific procedures within the health facility.	Needles, syringes, surgical blades, scalpels, test tubes, ampoules, glass instruments, pipettes.
RADIOACTIVE WASTE Any solid, liquid, or pathological waste contaminated with radioactive isotopes of any kind	Radioactive papers, gloves, cotton swabs, Needles (sharps), liquid-patient excretion, spent radiation sources radium needles.

(National Health Care Waste Management Plan , 2009 /10- 2011/12).

Medical Waste, which is waste originating from hospitals as well as waste from commercial labs and medical industry, is often generated in greater quantities relative to other forms of solid waste. Therefore, the value of medical waste as a resource as well as its impact on the functioning of cities makes it one of the most important components of solid waste [Rami E et al , 2011].

Medical waste segregation is an important step in reducing the volume of hazardous waste as it offers the ability to make more accurate assessment about its composition with the use of labelled bags to separate infectious waste from domestic waste effectively (Longe, E.G., & Williams, A. 2006).

The segregation consists in separating the different waste streams based on the hazardous properties of the waste, the type of treatment and disposal practices that are applied. A recommended way of identifying Medical waste categories is by sorting the waste into color-coded and well-labelled bags or containers (Table 2). All the specific procedures of Medical waste segregation, packaging and labelling should be explained to the medical and ancillary staff and displayed in each department on charts located on the walls nearby the Medical waste containers that should be specifically suited for each category of waste.

Table 2; Recommended color-coding for Medical Waste.

Type Of Waste	Color Of Container And Marking	Type Of Container	Design Provision
Anatomical Waste	<i>Yellow</i>	Strong, leak-proof plastic bag or container	Make provision for store and adjacent room for decontamination within medical facility.
Noninfectious Waste.	<i>Black</i>	Leak -proof plastic bag or container	Make provision within the immediate vicinity and transport to remote location.
Sharps Waste.	<i>White</i>	Puncture-proof container	Make provision for store and adjacent room for decontamination within medical facility.
Infected plastics Waste.	<i>Green</i>	Plastic bag or container	Incinerators and pit located in remote area of the site or off site.
Infected Solid waste	<i>Red</i>	Strong, leak-proof plastic bag or container.	Make provision for store and adjacent room for decontamination within medical facility.

Adapted and revised from Khan (2004) Khan, S. M. (2004).

The theory of planned behavior shows the interrelationship between knowledge (positive or negative) which informs beliefs. Beliefs are reflected in attitudes and ultimately be shown in the practices. Each of the various identified stakeholders therefore respond to waste management practices largely as a response to their knowledge base attitudes and belief system which has an effect on their behavior (C. J. Armitage, 2003).

CHAPTER TWO: LITREATURE REVIEW.

Health care waste is waste generated by health care activities and includes a broad range of materials, from used needles and syringes to soiled dressings, body parts, diagnostic samples, blood, chemicals, pharmaceuticals, medical devices and radioactive materials. The waste produced in the course of healthcare activities carries a higher potential for infection and injury than any other type of waste. Inadequate and inappropriate knowledge of handling of healthcare waste may have serious health consequences and a significant impact on the environment as well. The review starts by looking at the knowledge on biomedical waste management among nurses.

2.1 Knowledge of Nurses on Health Care Waste Management

Mathew, Benjamin, and Sengupta, (2011) assessed knowledge on health care waste management in a tertiary care teaching hospital in Ludhiana, using non-experimental descriptive, observation study design. A sample size of 100 respondents: 48 doctors, 38 nurses and 14 paramedical staff were interviewed. They applied a stratified simple random sampling method with a 10% sample of each of the 3 categories of staff; that is 48 doctors, 38 nurses and 14 paramedical staff on rolls. The results showed that the knowledge of the doctors was least for identification of biohazard symbol (79.2%), and methods of segregation (87.5%); their knowledge was better about theoretical aspects, the fact that BMW should not be stored for more than 48 hours (91.7%), similar knowledge was observed regarding methods of waste disposal and knowledge of the colour coding system (93.7% each); and best for knowledge of the nurses was better for the more practical aspects of BMW management, where 100% knew the methods of waste disposal. The results further showed that the doctors' attitude towards BMW management is casual, while nurses and paramedical staff are more meticulous and careful. These results show that the doctors were sounder in theoretical knowledge than in the practical aspects of BMW management. This is true because their reading culture is better as shown by findings of a study in assessment of biomedical waste management practices in a tertiary care teaching hospital in Ludhiana Savan Sara by Mathew, Benjamin, Paramita and Sengupta (2011) which revealed that the doctors were sounder in theoretical knowledge than in the more practical aspects of BMW management. In practice it was observed that the doctors poorly managed waste generated in health facilities. The researcher's idea of identifying the need for education which is believed to be a key point in improving waste

management practices among the nurses was appropriate. He further recommended that the aspect of attitude towards medical waste needs to be brought out clearly since the knowledge was good and items for waste disposal were available and well colour coded.

In a related study done by Muhwezi, Kaweesa, Kiberu Luke, and Eyoku(2014) assessment of health care waste management was done in Uganda using a qualitative grounded theory design. The design involved interviews, observation, participatory methods and a convenience sampling method was used where a total of 13 workers were interviewed and these included administrators, nurses, waste handlers/cleaners and nursing assistants. Results established that 42.5% of the waste was highly infectious (RED), 27.8% was infectious (YELLOW) and 18.2% was non-infectious (BLACK) waste while the sharps were 11.5%. The results showed that there was poor segregation of waste, lack of waste management plan, inadequate waste management and coordination structure, ineffective and inefficient incineration equipment and lack of comprehensive waste management policies and guidelines. In this case, inadequate knowledge of health care waste management and poor health care waste management practices are major negative findings yet they are fundamental elements in waste management. The researcher recommends that everyone in the institution must be involved and share the responsibility of an environmentally sound and sustainable waste management program.

Maroufi, Javadi, Yaghoubi, and Karimi (2012) emphasized that waste minimization is paramount in health care waste management as seen in their study where they investigated performance of nurses and other staff on minimization of hospital waste in selected hospitals in Isfahan. They used a quantitative descriptive cross-sectional study where 90 respondents were selected by random sampling. 51 (57%) of respondents were nurses, and 38 (42%) from other staff. Thirty-nine (43%) were working in private hospitals and fifty (56%) in public hospitals and findings showed that nurses mean score of waste management performance was 58.16 (12), and others was 58.56 (12.13) totally. There was no significant difference between nurses and others mean score of waste management performance according to *t*-test ($P. v = 0.6$), nurses did significantly better in source reduction area and other staffs acted better in waste segregation, the deficit in both group performances was attributed to lack of supervision, weakness in education programs, and specifically in nurses, related to unavailability of waste minimization instructions or booklets to be used as a nursing guide. This study emphasizes careful segregation of waste into different categories to minimize the quantities of hazardous waste and although the nurses

have a major role to play about waste minimization, all of health services staff in all departments must be sensitive in this concern.

Shafee, Kasturwar, and Nirupama,(2010) assessed the knowledge, attitude and practices regarding biomedical waste among paramedical workers in Karimnagar Town using a non-experimental, cross sectional, descriptive, quantitative study design. A total of 47 nursing homes and clinics were selected from which a sample size of 500 subjects was derived. of these 201 (40.2%) were male and 299 (59.8%) were female; 237 (47.4%) nurses, 132 (26.4%) laboratory technicians and 131 (26.2%) housekeeping staff. Selection was by systematic random sampling and the results showed that 266 (53.2%) study subjects knew about BMW correctly, of which 138 (51.8%) were nurses, 234 (48.8%) nurses were knowledgeable about various health problems caused by BMW and they had a better attitude towards separation of wastes at 236 (99.5%), proper disposal by the nurses was at 234 (98.7%), implementation of rules at 233 (98.3%) and cooperation in programs 149 (62.8%). 227 (47%) nurses segregated BMW,150 (50.5%) nurses collected waste in color coded bags. Segregation and separation of plastic waste was done better by the nurses. Nurses had a better knowledge, a positive attitude and practiced BMW management better when compared with the technicians and the house keeping staff. In reference to the study, a positive attitude is vital in improving the current situation in BMW management and regular training of nurses and other health staff plus system monitoring is vital in improving BMW management. The researchers recommended nursing staff who correctly practiced BMW management as role models for others to serve as a good motivating factor for the nurses.

Qureshi, Hassan, Wani, Baba, Kadri and Nazi, (2007) assessed the awareness of health care waste management amongst staff of a tertiary Level Government Hospital in Kashmir Valley using a non-experimental cross sectional, quantitative study design. A sample size of 150 respondents: 50 doctors, 50 nurses and 50 paramedical staff were used with the application of a non-experimental correlational study design. The results showed that the doctors were more knowledgeable about biomedical waste management, with a significant 86% positive response. Awareness of 58% was found among nursing staff whereas paramedical staff had 22% positive responses thus poor knowledge regarding biomedical waste management in these two categories. The researchers' idea that effective means of BMW management involves effective knowledge of the medical and paramedical staff thus the need to educate them through workshops/seminars

and provision of resources was appropriate as the results showed a knowledge gap in the paramedical staff and a need for creating more awareness in the nursing staff.

Tenglikak. Kumar, Kapate. Reddy, and Vijayanathan (2012), assessed knowledge, attitude and practices of healthcare waste management amongst staff of Nursing Homes of Gulbarga City. The study which was cross sectional quantitative targeted a total of 44 Nursing Homes; 3 staff members consisting of 1 doctor, 1 nursing staff and 1 housing staff selected randomly from each Nursing Home and used a pretested questionnaire to collect the data. In the assessment of the knowledge regarding general information about health care waste and attitude with respect to use of protective measures, the average score was highest in doctors(15.82), then nursing staff(12.45) and lastly housing staff(8.27) with a scores of 0-17. Practical information was maximum in housing staff followed by nursing staff and least doctors. According to the study, knowledge regarding health care waste management and attitude towards any health behavior depends primarily on the knowledge level of the subject though the people with very good knowledge had a relatively low kind of practice. The study relates to our own in a way that we want to assess the knowledge level of the Nurses in line with their practices and attitudes to health care waste management as they seem to be knowledgeable but relaxed in proper practice.

Suwarna (2012) in a study about awareness and practices about health care wastes management among hospital staff in a medical college hospital, Bangalore observed that the knowledge and practices in doctors and the nursing staff were good. Among the other study subjects the knowledge of interns, attenders and laboratory technician was satisfactory. The attitude of the study subjects towards segregation of infectious and non-infectious waste, proper disposal and implementation of rules was positive. Majority (82%) were in favour of implementation but only 63.6% of them committed themselves to cooperate with HCWM team. The nurses (91.5%) had a positive attitude toward segregation of wastes, proper disposal, implementation of rules and cooperation in programs.

Waste segregation has been proven to reduce hospital acquired infection. If the protocols are followed strictly, it has been observed that the amount of waste generated from a hospital environment decreases.

2.2 Attitude of Nurses on Health Care Waste Management

Soars, Camponogara, Terra, Santos, Trevisan (2012) assessed involvement of nurses in management of hospital waste using a qualitative, exploratory and descriptive research design. A

sample of fifteen nurses was obtained by purposive method. The inclusion criteria were: being an employee of the institution; who worked for more than one year in the sector; and agreed to participate in the study. Results showed that, despite little knowledge of the subject, nurses perceived an improvement related to the team's performance regarding the segregation of HSR. The nursing staff had improved a lot because it took greater responsibility on the issues of separation and segregation of garbage. In this case, the nurses felt a certain detachment from other professionals, and stated that the non-commitment to the management process, especially by the medical team, was a factor which generated stress amongst the nursing staff.

For some nurses, solid waste management is a simple task which refers only to following the rules established by the responsible department. Although, previously they expressed concerns about environmental problems and developing some actions on behalf of environmental conservation in the domestic sphere, these nurses seem not to transfer this knowledge to their daily work. In part, we can infer that they are waiting for knowledge; and waiting for regulations which can show them what can or cannot be done within the institution. This attitude is tied closely to a historical process of hospital management, inspired by the Fordist factory and capitalism. It focuses on bureaucracy and vertical and hierarchical processes of command. It leaves the workers at the mercy of institutional rules and the demands of the higher levels of command. Consequently, given the gap interposed between those who command and those who execute tasks, they see their autonomy to think and act being hampered.

CHAPTER THREE: METHODOLOGY.

3.1 STUDY SETTING

The study was conducted at Lira Regional Referral Hospital which is one of the 13 Regional Referral Hospitals (RRHs) in the country located in the northern region of the republic of Uganda which is 340km from Kampala the Capital City. It serves Lango sub-region which is comprised of Lira, Oyam, Amolatar, Otuke, Kole, Alebtong, Dokolo and Apac districts and the adjacent districts of Kaberamaido, Abim, and Kiryandongo. The hospital has a bed capacity of 400, an annual inpatient admission of 18,000 and an annual outpatient department attendance of 200,000 patients and is one of the teaching hospitals. It is predicted that the findings of the study could be generalized to hospitals of similar size. The researchers choose a large hospital as it was difficult to quantify the problems related to health care waste in smaller hospitals where smaller quantities of health care waste are generated and a central unit was responsible for managing that with little interactions from the health professionals working in the clinical wards. The Hospital has a committee dedicated for infection control. Its mandate encompasses management of health care waste within the Hospital. Among other things, the facility is responsible for conducting in service training for hospital staff. This training is offered upon first appointment and then conducted periodically to ensure continuity as well as impart new knowledge and skills to employees of the hospital as it becomes available. The researchers worked with this committee during the duration of the research study.

3.2 STUDY DESIGN.

The design was a quantitative, non-experimental descriptive cross sectional study. Descriptive study is used to obtain information concerning the current status of the phenomena to describe "what exists" with respect to variables or conditions in a situation. (James, 2002). This study design was used because the researchers sought to take a snap shot of how nurses perceived waste management and their level of knowledge without interventions to form a basis for other researches to be done regarding health care waste management. The fact that there was a limitation of time, a cross sectional design was used for this study where data were gathered at once.

3.4 STUDY POPULATION.

The study population was the group of subjects the researcher obtained information from. In this study, the population were nurses employed at Lira Regional Referral Hospital at the time of the study. It focused on nurses because these professionals form the majority of the professional staff at the Hospital who deal with the waste at the point of generation.

3.5 INCLUSION CRITERIA.

This were the nurses employed at Lira regional referral hospital, who were in the hospital at the time of the study, and who consented to take part in the study, it focused on nurses because these professionals form the majority of the professional staff at the hospital who dealt with the waste at the point of its generation.

3.6 EXCLUSION CRITERIA

This were the nurses employed at Lira regional referral hospital, but who at that material time and period of study were not available, or those who were present but refused to consent to the study and they were exempted from taking part in the study.

3.7 SAMPLING APPROACH.

The Head of Nursing Department was contacted and the objectives of the study explained and a staff list of all nurses was provided. The names of these nurses were written in alphabetical and numerical order from the first to the last one but instead these serial numbers were used during the study as respondents' numbers to conceal the identity and names of these nurses. Asystematic sampling method was used in selection of nurses where every 3rd nurse was chosen to participate in the study to minimize bias. The sample size was 50 nurses because of time limitation. The inclusion criteria were all appointed registered and enrolled nurses by public service who have at least worked in the hospital for one year.

3.8 SAMPLE SIZE DETERMINATION.

The sample size was calculated using the modified Kish Leslie's formula for sample size determination, as illustrated below

$$\text{Sample size (n)} = \frac{Z^2 (P (1-P))}{W^2}$$

Where;

P; Maximum confidence interval

W; margin of error. (0.05).

Z; normal standard deviation at 95% confidence interval. (1.96).

Substituting the values for each of these variables in the above formula,

$$n = \frac{1.96^2 (0.034 (1-0.034))}{0.05^2}$$

The sample size estimated to be 50.

3.9 DATA COLLECTION METHODS.

After literature review, a data collection tool was formulated using the concepts identified from literature. A self-administered questionnaire was used to collect the data. It was written in English only because all nurses are able to comprehend English. Respondents were approached and invited to participate in the study. Upon completion, questionnaires were collected and checked for completeness. Arrangements for follow up were made by the researchers.

3.10 DATA COLLECTION TOOLS AND PROCEDURES.

The self-administered questionnaire comprised mainly of close ended questions and was used to collect the data on the study variables. The tool assessed the socio demographics of the respondents, their knowledge and attitude on health care waste management. such parameters as presence of waste bins, and methods of waste disposal among others, the self-administered questionnaire's also contained demographic data such as age, sex, and a specifically tailored questionnaire.

3.10.1 PILOTING.

The questionnaires were piloted in one Public Health facility to enhance their validity and reliability. Their suggestions were used to modify questionnaires to avoid unclear questions.

3.10.2 DATA ANALYSIS.

Questionnaires were collected, verified, cleaned and entered in a computer. Data was coded and captured using SPSS where analysis was done. The results were discussed, conclusion drawn and recommendations made and the report disseminated to Aga Khan University and LRRH.

3.11 ETHICAL CONSIDERATIONS.

The research study was approved by Kampala International University Western campus, the International Research and Ethics committee (KIU). It was then authorized by the Director of

Lira Regional Referral Hospital who was assured of confidentiality by the researchers. Respondents' numbers were used instead of names in the questionnaires in order to ensure confidentiality and an informed consent for participation in the study was sought from each one of them.

CHAPTER FOUR: RESULTS.

In this chapter data collected from nurses of LRRH and the findings on concepts of demographics, knowledge and attitude on health care waste management are presented in form of tables and figures as illustrated below.

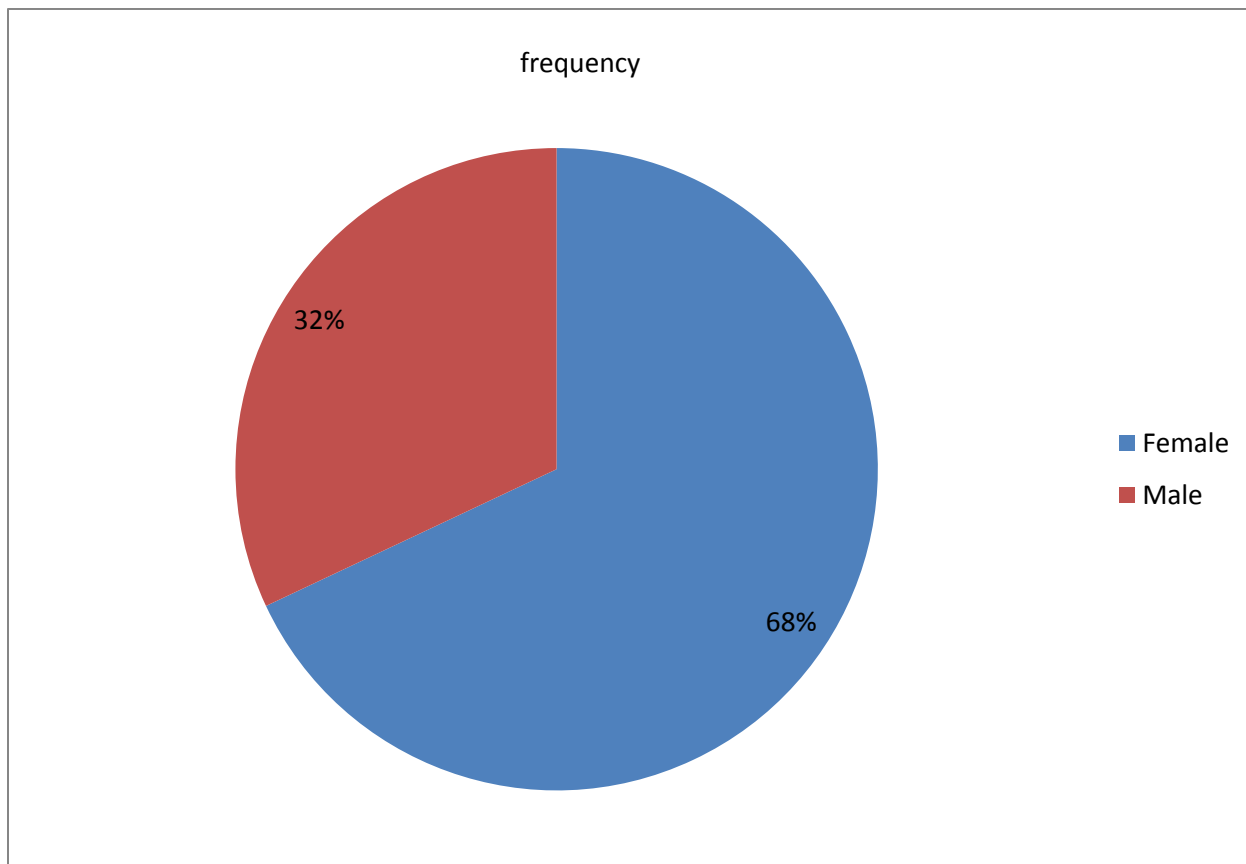
TABLE 3; The Socio demographic characteristics of respondents

Characteristics	Frequency (Percent)	Cumulative Percent
Gender		
Female	34 (68.0)	68.0
Male	16 (32.0)	100.0
Marital status		
Married	25 (50.0)	50.0
Single	14 (28.0)	78.0
Separated	09 (18.0)	96.0
Divorced	02 (4.0)	100.0
Region		
Anglican	23 (46.0)	46.0
Catholic	17 (34.0)	80.0
Muslim	06 (12.0)	92.0
Other	04 (8.0)	100.0
Education		
Degree	02 (4.0)	4.0
Diploma	25 (50)	54.0
Certificate	23(46.0)	100.0
Years in service		
≥10	23 (46.0)	46.0
5-9	12 (24.0)	70.0
1-4	15 (30.0)	100.0

According to the results illustrated in the table 1 above, respondents who have served more than 10 years are the majority 23/50 (46%) and those who have served between 5 to ten

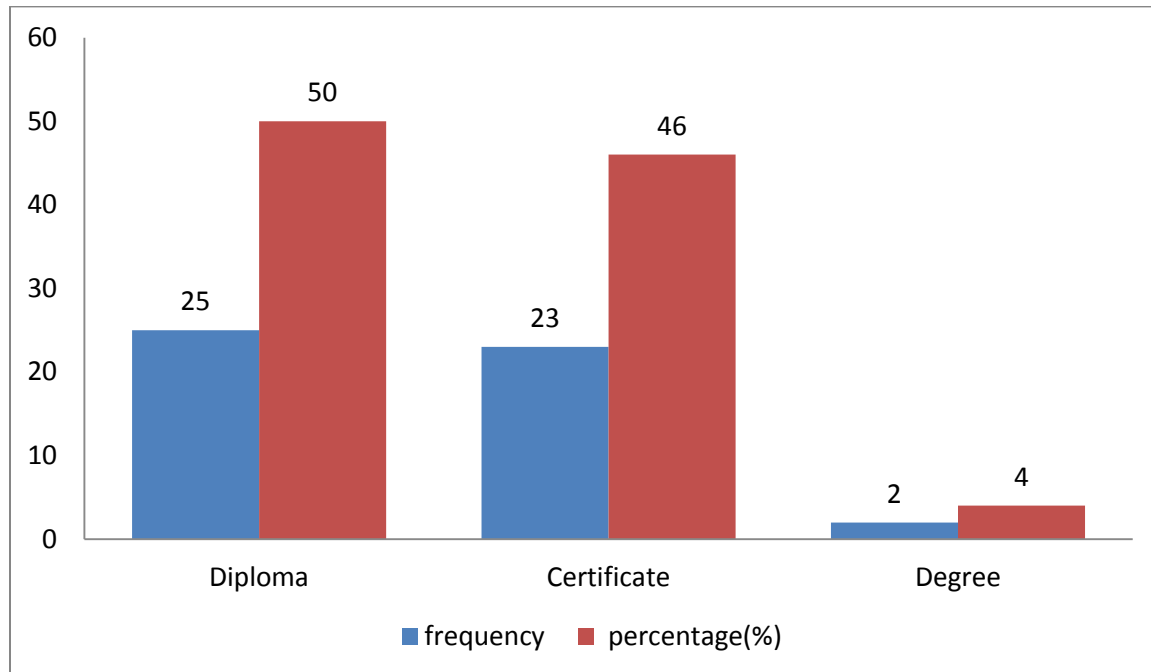
years are the least 12/50 (24%). This could be attributed to the ban of recruitment of health workers between 2006 and 2011 where the time frame of 5- 9 years falls.

Figure 2; Gender of respondents.



According to the figure above, majority of the respondents 34/50 (68.0%) were females and 16/50 (32%) were male. This is because the nursing profession is dominated by female.

Figure 3; Education level of Respondents



Majority 25/50 (50%) of the respondents were diploma holders, only 2/50 (4%) were degree holders. This is attributed to the dominance of the diploma as a highest level of nursing education for a long time until recently (1993) when the degree was introduced in Uganda.

Knowledge on Health-Care Waste Management among nurses in LRRH

Table 4; Knowledge of respondents about medical waste management in LRRH

Characteristics	Frequency (Percent)	Cumulative Percent
Definition of health care waste		
Waste generated within health- care facility	28 (56.0)	56.0
Something hazardous to human health	12 (24.0)	80.0
All unwanted materials from any human activity	10 (20.0)	100.0
Type of waste generated		
Both Infectious and non-infectious wastes	47 (94.0)	94.0
Infectious wastes only	01 (2.0)	96.0
Non-infectious wastes only	01 (2.0)	98.0
Do not know	01 (2.0)	100.0
Possible sources of wastes		

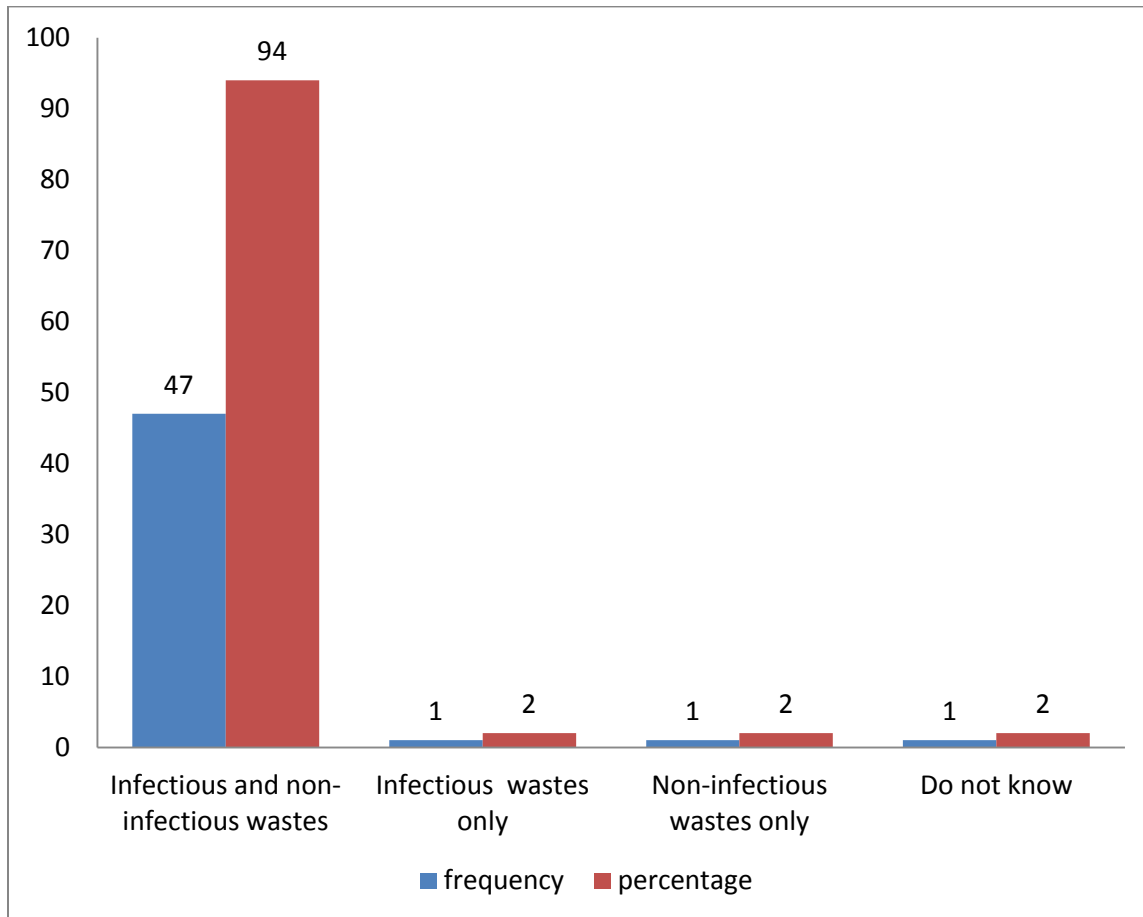
Health workers, patients, attendants and visitors	46 (92.0)	92.0
The patients	03 (6.0)	98.0
Do not know	01 (2.0)	100.0
Possession of waste containers in the respective wards		
Yes	49 (98.0)	98.0
No response	01 (2.0)	100.0
Waste containers being colour coded		
Yes	41 (82.0)	82.0
No	08 (16.0)	98.0
No response	01 (2.0)	100.0
How the waste containers are differentiated		
Container colour	26 (52.0)	52.0
Stickers/labels on containers	09 (18.0)	70.0
Liners with different colours	08 (16.0)	86.0
No response	06 (12.0)	98.0
Others	01 (2.0)	100.0
Person responsible for collecting the waste		
Support staff only	33 (66.0)	66.0
All (sister-in-charge, patients & support staff)	17 (34.0)	100.0
Presence of waste management policy		
Yes	28 (56.0)	56.0
No	14 (28.0)	84.0
Do not know	08 (16.0)	100.0
Attendance of in service training on waste management		
Yes	38 (76.0)	76.0
No	12 (24.0)	100.0
Who provided the training on waste management		
Health management workers	21 (42.0)	42.0
Officials from MOH	13 (26.0)	68.0
No response	09 (18.0)	86.0
Other	06 (12.0)	98.0

Director of the hospital	01 (2.0)	100.0
Areas in which waste management training was received		
All (waste segregation bin, segregation according to colour coding, storage & disposal, minimization of waste generation)	27 (54.0)	54.0
Segregation according to colours coding	11 (2.0)	76.0
No response	09 (18.0)	94.0
Storage & disposal of waste	03 (6.0)	100.0
Problems associated with poor waste management		
Spread of infection	33 (66.0)	66.0
Occupational health hazards	15 (30.0)	96.0
Breeding of vectors	02 (4.0)	100.0

Knowledge on Health-Care Waste Management among nurses in LRRH

According to the findings in the table above, majority of respondents 28/50 [56%] defined health care waste as waste generated within the healthcare facility and only 10/50 (20%) of the respondents defined healthcare waste as all unwanted materials from any human activity. Most respondents 49/50 [98%] reported that waste containers were present in the wards and units of the hospital. Majority 41/50 [82%] of the respondents reported that waste containers were colour coded, whereas 8/50 (16%) did not know whether waste bins are colour coded. The respondents identified persons responsible for management of waste as follows; support staff only as reported by majority 33/50 [66%] and all the hospital staff who include nurses, other health workers, support staff and patients reported by 17/50 [34%]. The results further indicate that many of respondents 28/50 [56%] acknowledged the presence of waste management policy documents in the hospital wards and units while 8/50 (16%) did not know about the presence of the policy. All the nurses had earlier training on health care waste management during their initial training in the Ministry of Education and Sports, but still the majority of them 38/50 [76%] reported that they had in service training on health care waste management organized by the Ministry of Health. According to the respondents, the problems associated with poor health care waste management were; spread of infections reported by 33/50 [66%], occupational health hazards 15/50 [30%] and breeding of vectors 02/50 [04%].

Figure 4: Knowledge of respondents on types of health care waste generated.



According to figure 4 above, 47/50 (94%) of the respondents were knowledgeable about both infectious and non-infectious waste being generated in the hospital whereas 1/50 (2%) did not have any knowledge of types of waste generated in hospital.

Attitudes of nurses At LRRH towards Health Care Waste Management

Table 5: Attitude of respondents about health care waste management in LRR H

Characteristics	Frequency (Percent)	Cumulative Percent
Support of waste management practice in the hospital to be done by health workers		
Yes	44 (88.0)	88.0
No	06 (12)	100.0
Reasons for not supporting waste management practice in the hospital to be done by health workers		
Will increase workload for health workers	03 (50.0)	50.0
It will encourage spreading of infections	02 (33.0)	83.0
Anyone can be trained to manage wastes	01 (17.0)	100.0
Support of nurses involvement in waste management in the hospital		
Yes	47 (94.0)	94.0
No	02 (4.0)	98.0
Not sure	01 (2.0)	100.0
Satisfaction with current waste management in the health facility		
Yes	28 (56.0)	56.0
No	22 (44.0)	100.0

Most of the respondents, 44/50 (88.0%) supported waste management practice in the hospital to be done by health workers while 6/50 (12%) did not. 47/50 (94.0%) supported nurses' involvement in the waste management, 2/50 (4%) were against it while 1/50 (2%) was not sure.

CHAPTER FIVE: DISCUSSION, CONCLUSION AND RECOMENDATIONS.

Socio-demographic characteristics of respondents at LRRH

The socio-demographic characteristics of the respondents revealed that both sexes were considered to participate in the study, females (68%) dominate across all nursing cadres and the males (32%) are picking interest in this profession that's why we find their numbers increasing.

Knowledge of nurses at LRR H towards health care waste management

Results established that the level of knowledge among nurses in the hospital was high where 47/50 [94%] knew the types of healthcare waste generated as both infectious and non-infectious and 46/50 (92%) could identify the possible sources of healthcare waste as health workers, patients, attendants and visitors. This knowledge is very crucial if HCWM has to be successful. This is in agreement to Mathew, Benjamin, and Sengupta, (2011) who assessed knowledge on health care waste management in a tertiary care teaching hospital in Ludhiana, using non-experimental descriptive, observation study design. They identified education as vital in improving waste management practices among the nurses.

The results of this study conform to Suwarna (2012) who observed that the knowledge and practices in doctors and the nursing staff were good. Shafee, Kasturwar & Nirupama, in their study to assess knowledge, attitude and practices regarding BMW among paramedical workers in Karimnagar town also observed that Segregation and separation of plastic waste was done better by the nurses and concluded that Nurses had a better knowledge on BMW management when compared with the technicians and the house keeping staff.

The findings of this study are supported by Muhwezi, Kaweesa, Kiberu Luke, and Eyoku (2014) who conducted an assessment of health care waste management in Uganda and concluded that adequate knowledge and good practices are fundamental elements in waste management. They recommended that everyone in the institution must be involved and share the responsibility of an environmentally sound and sustainable waste management program.

The attitude of nurses at LRR H towards health care waste management

The study revealed that nurses had positive attitudes towards health care waste management in the hospital because 47/50 (94.0%) supported nurses' involvement in the waste management. This correlates with another study done by Suwarna about awareness and practices of HCWM among hospital staff in a medical college hospital Bangalore where they found out

that the nurses (91.5%) had a positive attitude toward segregation of wastes, proper disposal, implementation of rules and cooperation in waste management programs. In reference to the study, a positive attitude is vital in improving BMW management and regular training of nurses and other health staff plus system monitoring is vital. The researchers recommended nursing staff that correctly practiced BMW management as role models for others to serve as a good motivating factor for the nurses.

5.1 STUDY LIMITATIONS.

The limitation was that the study design being cross sectional did not provide time to employ other data collection techniques for example observation. Also the fact that a self-administered questionnaire was used, attitude on health care waste management.

5.2 CONCLUSION.

In conclusion, Nurses in LRRH were knowledgeable on the core concepts of health care waste management and had a positive attitude because they supported their involvement in the study of health care waste management.

5.3 RECOMMENDATIONS.

I recommend that the management of Lira Regional Referral Hospital ensures strict adherence to relevant waste management regulations and provide all resources needed.

The positive attitude towards waste management portrayed by the nurses should be maintained by the hospital management through regular sensitization of staff on health care waste management policies, motivation of staff and refresher courses (workshops and seminars) on health care waste management.

As a good motivating factor, I recommend nursing staff that excel in Health Care Waste Management to serve as role models for others.

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APPENDICES;

APPENDIX 1: RESEARCH QUESTIONNAIRE.

QUESTIONNAIRE FOR ASSESSING KNOWLEDGE AND ATTITUDE OF NURSES OF LRRH TOWARDS HEALTH CARE WASTE MANAGEMENT;

S/N0			
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Date _____. **Time** _____

This questionnaire is intended to assess the knowledge and attitude of Nurses in LRRH, on Health care waste management. The study is purely for academic purpose so the information will be kept confidential.

Instructions:

Names should not be written on this paper only serial numbers

Circle the correct alternatives that apply to you.

Section A: Socio-Demographic Data of Respondent

1. Sex

- a) Male
- b) Female

2. Age in years

- a) 18-25
- b) 26-35
- c) 36-50
- d) Above 50

3. Marital status

- a) Single
- b) Married
- c) Divorced
- d) Separated

4. What is your religion?

- a) Anglican
- b) Catholic

- c) Muslim
- d) Others (Specify).....

5. What is your level of qualification?

- a) A degree holder
- b) A diploma holder
- c) Certificate holder

6. How many years have you worked?

- a) 10 and above
- b) 5 to 9
- c) 1 to 4
- d) Less than 1 year

7. What position are you holding in the hospital?

- a) Senior Nursing Officer
- b) Ward in-charge
- c) General Nurse,
- d) Midwife

Section B: Knowledge of Respondents

8. How do you define Health care waste?

- a) It is all unwanted materials from any human activity.
- b) Something hazardous for human health.
- c) Waste generated within health-care facilities
- d) Human excreta

9. What type (s) of waste do you usually generate in your hospital?

- a) Infectious waste only
- b) Non-infectious waste only
- c) Both infectious and non- infectious waste
- d) I don't know

10. What do you think are the possible sources of waste in your hospital / ward?

- a) The patients
- b) The health workers
- c) The health workers, patients, attendants and visitors
- d) I don't know

11. Do you have the containers for keeping waste in your ward?

- a) Yes
- b) No

12. If so how many are in your ward?

- a) 1
- b) 2
- c) 3
- d) Others specify.....

13 . Are the containers colour coded?

- a) Yes
- b) No

14. If yes, how are they differentiated?

- a) According to container colour.
- b) Using liners with different colours.
- c) Using stickers/labels.
- d) Others. Specify.....

15. Where are the waste containers placed?

- a) In sister's office
- b) In the ward with patients
- c) In the treatment room
- d) Others specify

16. Who is responsible for collecting waste in your ward?

- a) The sister in-charge of the ward
- b) **The support staff**
- c) The patients
- d) All the above

17. Does your hospital have a waste management Policy?

- a) Yes
- b) No
- c) I don't know

18. If yes, is it displayed in such a way that every staff can see?

- a) Yes

- b) No
- c) Some times

19. Have you ever attended training on waste management?

- a) Yes
- b) No

20. If yes, who trained you?

- a) Health management workers
- b) Officials from ministry of Health
- c) The director of the hospital
- d) Others specify.....

21. Briefly mention what you were taught

- a) Waste segregation bins
- b) How to segregate waste according to designated colour coding
- c) How to store and dispose waste
- d) How to minimize the waste generated
- e) All the above

22. Mention some of the problems associated with poor waste disposal?

- a) Spread of infections
- b) Occupational health hazard
- c) Breeding for vectors
- d) There is no problem

23. What do you understand by hazardous waste?

- a) Rotten food
- b) Contaminated cotton, gauze, wound dressings etc.
- c) Broken ward items
- d) Patient's property

24. What is the percentage of hazardous/ infectious waste in your health facility?

- a) 50%
- b) 10- 15%
- c) 85 – 90%
- d) I don't know

Section C: Attitude of Respondents

25. Do you support waste management practice in the hospital to be done by health workers?

a) Yes

b) No

26. If No, give reasons

.....

27. Should nurses be involved in health care waste management?

a) Yes

b) No

c) Not sure

28. Are you satisfied with the current waste management in your facility?

a) Yes

b) No

Thank you for participating.

APPENDIX 2: INFORMED CONSENT.

I hereby confirm that Ihave been informed by the investigator about the nature, conduct, benefits and risks of the study: Knowledge and Attitude on Health-Care Waste Management among Nursing Professionals of Lira Regional Referral Hospital – Uganda.

I am aware that the results of the study, including personal details regarding my initials will be anonymously processed into a study report.

In view of the requirements of research, I agree that the data collected during this study can be processed in a computerized system by Kampala International University Western Campus or on their behalf. I may, at any stage, without prejudice, withdraw my consent and participation in the study.

I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study. I understand that strict confidentiality will be maintained and that only codes will be used.

PARTICIPANT:

Signature/ Mark or Thumbprint

Date.....Time

I, OMARA PETER, here with confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.






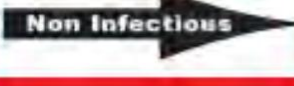






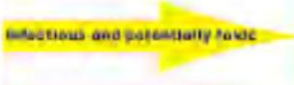







INVESTIGATORS

Printed Name.....

Signature

Date Time

APPENDIX 3: WASTE SEGREGATION CHART.

TYPES OF WASTE		RECOMMENDED COLOUR CODED WASTE BIN
FOOD ITEM <ul style="list-style-type: none"> Left over food Food Peelings 		 BLACK BIN WITH LINER
GLASS BOTTLES <ul style="list-style-type: none"> Empty Bottles for drinks Glass bottles (for other fluids) 		  BLACK BIN WITH LINER CRATE
OTHER NON-INFECTIOUS MATERIALS <ul style="list-style-type: none"> Discarded paper/Packing materials 		 BLACK BIN WITH LINER
NON INFECTIOUS PLASTICS <ul style="list-style-type: none"> Empty Mineral Water Bottles Empty Plastic Cups and plates <p><i>Notes: Plastic bottles for infusion fluids that are not contaminated with blood or body fluids can be recycled</i></p>		  GREEN BIN WITH LINER GREEN BAG
SHARPS WASTE <ul style="list-style-type: none"> Used syringes and needles Needles cut off used infusion sets Used blades/scapels Broken glass/slides, ampoules, canulae 		 SAFETY BOX
INFECTIOUS WASTE THAT SHOULD NOT BE INCINERATED <ul style="list-style-type: none"> Used gloves Nasal gastric tubes Catheter tubes Used infusion giving sets 		 YELLOW BIN WITH LINER
OTHER INFECTIOUS WASTE <ul style="list-style-type: none"> Used gauze Used cotton, pads and cloth Contaminated bottles for infusion fluids 		 YELLOW BIN WITH LINER
HIGHLY INFECTIOUS WASTE <ul style="list-style-type: none"> All anatomical waste like amputated limbs Placenta, extracted teeth Used test tubes and test kits Used blood bags All food items from highly infectious patients 		 RED BIN WITH LINER
PHARMACEUTICAL WASTE <ul style="list-style-type: none"> Expired or damaged drugs like tablets, syrups, creams, capsules, solutions & suspensions Lab reagents Empty vials Heavy metals like lead, mercury and silver 		 BROWN BIN WITH LINER <i>(Please see more details in the guidelines for sorting pharmaceutical waste)</i>

Uganda National Guidelines: Managing Healthcare Waste Generated from Safe Male Circumcision Procedures

APPENDIX 4: BUDGET AND JUSTIFICATION.S

Item	Quantity	Unit cost	Total cost (UGX)
Reams of paper	2	18,000=	36,000=
Pens	1 dozen	8,000=	8,000=
Pencils	12	500=	6,000=
Photocopying the tool for data collection	300	200=	60,000=
Photocopying the proposal	4 copies (45 pages)	200=	36,000=
Printing proposal and tools	2 copies	10,000	20,000=
Envelopes	10	1,000=	100,000=
Binding proposal	2	2,500=	5,000=
Piloting the tool in G			100,000=
Sub total			371,000=

Printing the dissertation	2 copies	10,000=	20,000=
Sub total			20,000=
Grand Total			391,000=

APPENDIX 5: MAP OF THE REPUBLIC OF UGANDA.



APPENDIX 6: MAP OF LIRA REGIONAL REFERRAL HOSPITAL.





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OFFICE OF THE DEAN
FACULTY OF CLINICAL MEDICINE & DENTISTRY

Dr Mark Nise aduni
[Signature]

03/04/2019

23/04/2019

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

RE: OMARA PETER (BMS/0261/123/DU)

The above named person is a fifth year student at Kampala International University pursuing a Bachelor of Medicine, Bachelor of Surgery (MBChB) Programme.

He wishes to conduct his student research in your hospital.

Topic: Knowledge and attitude on health care waste management among nursing professionals of Lira Regional Referral Hospital

Supervisor: Dr. Forry Jimmy

Any assistance given will be appreciated.

Yours Sincerely,

S-O. Akib

Dr. Akib Surat

Deputy Executive Director/Assoc Dean FCM&D



Approved
Dr Data Collection
Unit - REC
29/4/2019
[Signature]
Chair

"Exploring the Heights"

Assoc. Prof Ssebuufu Robinson, Dean (FCM & D) 0772 507248 email: ssebuufu@gmail.com
Dr. Akib Surat Associate Dean FCM & D) 0752574699 email: doctorakib@yahoo.com

OMARA PETER

BMS/0261/123/DU

0774 083608

Date.26/April/2019

The Director

Lira regional referral hospital, Uganda

Dear sir,

REF; REQUEST TO CONDUCT A RESEARCH STUDY IN THE HOSPITAL

I Omara peter a fifth year student at Kampala International University pursuing a Bachelors of Medicine, Bachelors of Surgery (MBChB) programme wishes to conduct a student research in your hospital, the topic of my research is **KNOWLEDGE AND ATTITUDE ON HEALTH CARE WASTE MANAGEMENT AMONG NURSING PROFESSIONALS OF LIRA REGIONAL REFERRAL HOSPITAL**. my supervisor is Dr. Forry Jimmy who is currently working at the University of KIU/WC, the research am going to conduct will be of great benefit to both me and the hospital staff at large, therefore i hereby request the hospital to grant me the necessary permission to conduct this research n data collection.

Your positive response towards this request is already highly appreciated.

Yours sincerely,

OMARA PETER



29/APRIL 2019

Done
Dr. M. C. J
29/4/2019
Rech

