FACTORS INFLUENCING HOSPITAL INFECTION PREVENTION AND CONTROL PRACTICES AMONG MEDICAL STAFF IN KISII LEVEL FIVE HOSPITAL, KISII COUNTY, KENYA

BY

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DECLARATION

This Research Project Report is my original work and has not been presented for the award of any degree in any University

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This Research Project Report has been submitted for examination with my approval as university supervisor.

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DEDICATION

This research Report is dedicated to my beloved parents, Mr. Daniel Masese and my mother Mrs. Teresa Masese for enlightening me about the importance of education. Lastly I do appreciate my siblings Henry Obare, Anne Kerubo , Janet Moraa and James Hokeri who ensured I registered for the course

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LIST OF ABBREVIATIONS AND ACRONYMS

HAIs	Hospital Acquired Infections
HCWs	Health Care Workers
IPC	Infection Prevention and Control
IPCCs	Infection Prevention and Control Committes
IRBs	Independent Review Boards
KL5H	Kisii Level 5 Hospital
G.o.K	Government of Kenya
MOMS	Ministry of Medical Services
MOPHS	Ministry of Public Health and Sanitation
RSA	Republic of South Africa

ABSTRACT

This was a descriptive survey study whose purpose was to determine the factors influencing infection prevention and control practices in Kisii Level Five Hospital, Kisii County. The study was guided by four objectives namely to establish the extent to which hand washing influences infection prevention and control practices in Kisii Level Five Hospital, Kisii County, to assess how waste segregation influences infection prevention and control practices in Kisii Level Five Hospital, Kisii County, to determine the extent to which injection safety influence infection prevention and control practices in Kisii Level Five Hospital, Kisii County and to establish the extent to which provision of policies and guidelines influence infection prevention and control practices in Kisii Level Five Hospital. four hypotheses were tested during the study namely; there is no significant relationship between hand washing and infection prevention and control practices in Kisii Level Five Hospital, there is no significant relationship between waste segregation and infection prevention and control practices in Kisii Level Five Hospital, there is no significant relationship between injection safety and infection prevention and control practices in Kisii Level Five Hospital and there is no significant relationship between provision of policies and guidelines and infection prevention and control practices in Kisii Level Five Hospital. The study population will consisted of all staffs working in the clinical area of Kisii Level Five Hospital. Systematic sampling method was used to select the study subjects. Two research instruments were used to collect data from the respondents; self-administered questionnaires were administered to 151 respondents and another ten respondents were subjected to an interview using the interview schedule to gather more information. The research instruments were pretested in RAM hospital before actual data collection was done by administering 5 questionnaires to staff working in clinical area of the particular hospital. Reliability of the research instruments was tested and improved by use of test-retest method. The researcher applied for a research permit from the Ministry of Higher Education, Science and Technology before embarking on data collection. Data will be collected by the researcher in person. Confidentiality of data collected was assured by ensuring that the research instruments remained anonymous. However, a questionnaire tracking form was used to facilitate collection of filled questionnaires thus improving the questionnaire return rate. Data collected from respondents was cleaned, coded and entered in to a computer. The questionnaire return rate was calculated. The data will be analyzed using descriptive statistics involving frequencies and percentages by use of SPSS (Statistical Package for social Scientists). The hypotheses were tested manually using the Chi-Square method. The information obtained was presented using tables from which recommendations and conclusions were derived.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Medical treatment is intended to save life and improve health, and all health workers have a responsibility to prevent transmission of health-care associated infections. Adherence to safe injection practices and related infection control is part of that responsibility – it protects patients and health workers (World Health Organization, 2010).

Numerous studies document the pivotal role of healthcare workers' (HCWs) hands in the propagation of micro-organisms within the healthcare environment and ultimately to patients. It has been shown that organisms are capable of surviving on HCWs' hands for at least several minutes following contamination. Thus, if hand hygiene practices are suboptimal, microbial colonization is more easily established and/or direct transmission to patients or a fomite in direct contact with the patient may occur. Based on this evidence and the demonstration of its effectiveness, optimal hand hygiene behavior is considered the cornerstone of healthcare associated infection (HCAI) prevention. Hand hygiene is the leading measure for preventing the spread of antimicrobial resistance and reducing healthcare-associated infections (HCAIs), but healthcare worker compliance with optimal practices remains low in most settings (Allegranzi, 2009).

In the same note, health care waste is a potential reservoir of pathogenic microorganisms and requires appropriate, safe, and reliable handling. Safe management of health care waste is a key issue in controlling and reducing HAIs. There should be a person or persons responsible for the organization and management (collection, storage, and disposal) of waste. Waste from health care facilities can be noninfectious, infectious, or highly infectious. Certain health care facilities may also generate hazardous waste. Noninfectious (non-contaminated) waste poses no infectious risk to persons who handle it. Examples of noninfectious waste include paper, trash, boxes, bottles, and plastic containers that contain products delivered to the health care facility. It is estimated that approximately 85 percent of the waste generated in hospitals is noninfectious. Infectious (contaminated) waste is potentially infectious or toxic if it is not disposed of properly (Ministry of Medical Services and Ministry of Public Health and Sanitation, 2010).

An investigation of four large outbreaks of HBV and HCV among patients in ambulatory care facilities in the United States identified a need to define and reinforce safe injection practices.

In one of these outbreaks, preparation of medications in the same workspace where used needle/syringes were dismantled also may have been a contributing factor. These and other outbreaks of viral hepatitis could have been prevented by adherence to basic principles of aseptic technique for the preparation and administration of parenteral medications. These include the use of a sterile, single-use, disposable needle and syringe for each injection given and prevention of contamination of injection equipment and medication. Outbreaks related to unsafe injection practices indicate that some healthcare personnel are unaware of, do not understand, or do not adhere to basic principles of infection control and aseptic technique. A survey of US healthcare workers who provide medication through injection found that 1% to 3% reused the same needle and/or syringe on multiple patients. Among the deficiencies identified in recent outbreaks were a lack of oversight of personnel and failure to follow-up on reported breaches in infection control practices in ambulatory settings. Therefore, to ensure that all healthcare workers understand and adhere to recommended practices, principles of infection control and aseptic technique need to be reinforced in training programs and incorporated into institutional polices that are monitored for adherence (Centre for Disease Control and Prevention, 2007).

In Zambia, nosocomial infections are still a major challenge as demonstrated by the increase in wound infections among patients with ceaserian section which is 30%. It is against this background that, the Government of Zambia through the Ministry of Health and its co-operating partners developed the Zambia Infection Prevention Guidelines in 2003. This was after a realization that infection prevention was a critical component of quality health care. High compliance with infection prevention and control guidelines was associated with inclusion of Guidelines in the Curricular, high knowledge of infection prevention/ hospital acquired infections, positive attitude towards infection prevention and availability of materials for infection prevention (Mukwato, 2007).

Poor hygiene practices and inadequate sanitary conditions play major roles in the increased burden of communicable diseases within developing countries. A study evaluated the knowledge, attitudes, and practices (KAP) of hygiene among rural school children in Ethiopia and assessed the extent to which proper knowledge of hygiene was associated with personal hygiene characteristics. This cross-sectional study was comprised of 669 students who were interviewed by trained staff. Participants were in grades 1-6 at Angolela Primary School, located in rural Ethiopia. Data consisted of hygiene and hand washing practices, knowledge about sanitation, personal hygiene characteristics, and presence of gastrointestinal parasitic

infection. Approximately 52% of students were classified as having adequate knowledge of proper hygiene. Most students reported hand washing before meals (99.0%), but only 36.2% reported using soap. Although 76.7% of students reported that washing hands after defecation was important, only 14.8% reported actually following this practice. Students with adequate knowledge of proper hygiene were more likely to have clean clothes (AOR 1.62, CI 1.14-2.29) and to have a lower risk of parasitic infection (AOR 0.78, CI 0.56-1.09) although statistical significance was not achieved for the latter. Study findings underscored the need for more hand washing and hygiene education in schools; and provided objective evidence that may guide the development of comprehensive health and hygiene intervention programs in rural Ethiopian schools. Successful implementation of these programs is likely to substantially attenuate the transmissible disease burden borne by school children in rural settings (Alyssa, 2011).

In Kenya and the world over, health-care services in rural or urban settings inevitably generate wastes that may be hazardous to health or have harmful environmental effects. Potentially infectious waste such as; sharps, cultures from medical laboratories or infected blood, carry a higher risk for infection and injury than any other type of waste. Other wastes of significant importance include; body fluids, all body parts, human tissues, placenta and radioactive waste among others. The absence of proper management measures to prevent exposure to hazardous health-care waste (HCW) results in important health risks to the general public, in- and out-patients as well as the medical and the supportive staff. Improper disposal of health care waste may result in syringes and needles being scavenged and reused thus leading to significant numbers of hepatitis B, hepatitis C, and HIV infections among others. Even after the formulation of policies and laws on health care waste management, many health care establishments in Kenya still lack enforcement of legislation for handling, and disposal of health care waste. Furthermore, improper treatment or disposal of HCW such as open-air burning can constitute a significant source of pollution to the environment through the release of substances such as dioxins, furans or mercury. Studies conducted earlier in Kenya by Japan International Cooperation Agency (JICA) and the Kenya Expanded Programme on Immunization (KEPI) in conjunction with WHO reveal that the health care waste management (HCWM) practices encountered in most of the health care facilities do not comply with the international requirements to guarantee a safe and environmentally sound management of HCW. The full spectrum of HCWM practices are found in the health-care facilities (HCFs), from the most hazardous ones where no segregation system is applied and the waste is simply dumped in the backyard of hospitals, to safer procedures where the waste is segregated and the part considered to be hazardous is incinerated separately. Kenya

has been grappling with the problem of poor and ineffective management of HCW from HCFs in the country (Ministry of Health, 2008).

1.2: Statement of the Problem

Most patient deaths and suffering attributable to health care-associated infections can be prevented. Low-cost and simple practices already exist to prevent these infections. Hand hygiene, a very simple action, remains the primary measure to reduce health care-associated infection and the spread of antimicrobial resistance, enhancing patient safety across all settings. Yet compliance with hand hygiene is very low throughout the world and governments should ensure that hand hygiene promotion receives enough attention and funding to succeed. Knowledge of measures to prevent health care-associated infections has been widely available for years. Unfortunately, for a number of reasons, preventive measures are often not being used. Poor training and adherence to proven practices on hand hygiene is one reason. Failure to apply infection control measures favours the spread of pathogens.

Uneven application of policies and practices across countries is another concern, as usage may vary largely between hospitals and countries (World Health Organization, 2005).

The acquisition of occupationally-acquired infections may pose a risk to health care providers. In both acute and long-term care, outbreaks result in significant cost to the organization. In order to protect clients/patients/residents and staff and to reduce the costs of HAIs, it is necessary to prevent infections before they occur. Recent studies suggest that at least 20% of HAIs could be prevented through infection prevention and control strategies. Infection prevention and control (IPAC) programs have been shown to be both clinically effective and cost-effective, providing important cost savings in terms of fewer HAIs reduced length of hospital stay, less antimicrobial resistance and decreased costs of treatment for infections (Ontario. Provincial Infectious Diseases Advisory Committee, 2010). Although health care providers know the importance of hand hygiene, studies continue to show health care providers perform hand hygiene less than half the time they should (Canadian Committee on Antibiotic Resistance, 2007).

Hospital acquired infections prolongs the duration of hospitalization, increases the cost of healthcare and noticeably add to mortality, mortality and economic burden (Odugbeni, 1999)

1.3: Purpose of the Study

The purpose of the study was to describe the factors influencing infection control and prevention practices in Kisii Level 5 Hospital

1.4: Objectives of the study

This study was guided by the following objectives:

1. To establish the extent to which hand washing influences infection prevention and control practices in KL5H, Kisii County
2. To assess how waste segregation influences infection prevention and control practices in KL5H, Kisii County
3. To determine the extent to which injection safety influence infection prevention and control practices in KL5H, Kisii County
4. To establish the extent to which provision of policies and guidelines influence infection prevention and control practices in KL5H.

1.5: Research Hypotheses

$H_0$1: There is no significant relationship between hand washing and infection prevention and control practices in KL5H

$H_0$2: There is no significant relationship between waste segregation and infection prevention and control practices in KL5H

$H_0$3: There is no significant relationship between injection safety and infection prevention and control practices in KL5H

$H_0$4: There is no significant relationship between provision of policies and guidelines and infection prevention and control practices in KL5H

1.6: Significance of the Study

The significance of this study was as follows:

First of all it was to generate data that could be used by the infection control committee of the hospital would use the study findings to develop and strengthen the infection control programme.

Secondly, it was hoped that the KEMSA would use the findings of the study for proper planning and decision making concerning the quantity and quality of safety boxes and other protective gear to be supplied to KL5H to aid in infection prevention and control within the hospital.

Thirdly, it was hoped that the Ministry of Health would use the study to allocate financial and material resources towards the implementation of infection control programme. These may include provision of drugs for post exposure prophylaxis, provision of policies and guidelines

for infection prevention and control, construction of infection prevention and control infrastructure within the hospital and deployment of staff to the hospital and allocation of other resources to aid in infection prevention and control within the hospital.

Fourthly, it was hoped that stakeholders in infection prevention and control will use the study findings to design training programs aimed at updating the staff on infection prevention and control policies.

Finally, the findings of the study were expected to add to the existing knowledge on infection prevention and control practices in KL5H. It was expected to generate knowledge that could be used to design the structure, process and outcome framework in infection prevention and control to be more effective and efficient.

1.7: Assumptions of the Study

A number of assumptions were made regarding this study. Firstly, that there will be financial resources to undertake the study. Secondly, it is assumed that respondents would be available and willing to participate in the study. Once the respondents consent to participate, it was assumed that they will give accurate information to facilitate objective generalization of findings to the population to this study. Lastly, it was assumed that weather conditions will be conducive to facilitate data collection.

1.8: Delimitations of the Study

This study was delimited to: qualified nurses, intern nurses, qualified doctors, intern doctors, qualified clinical officers, laboratory technologists, physiotherapists, occupational therapists P.I.T.C Counselors and intern clinical officers who work in KL5H, Kisii County. This is because these are the officers providing healthcare directly to the patient. By adhering to infection prevention and control guidelines, they can create a big difference in reducing the incidence of hospital acquired infections in hospitals.

Only those questions that were approved by an expert panel were included in the survey instruments. Further, test-retest reliability analysis was used to determine which questions on the self-efficacy instrument will be utilized in the final document.

1.9: Limitations of the Study

This study had the following limitations, namely:

First, the study was to concentrate on medical staffs only. The findings therefore may not be generalized to the non-medical staff working in the same hospital. Future researchers are encouraged to do further research in this area

Secondly, the hospital has many non clinical departments like stores, human resource department, Kitchen, tailoring, laundry, Hospital maintenance unit and administration department among others. Since the hospital operates like a system, it was possible that are chances of staff in these departments to spread infections from clinical areas to these nonclinical departments. This study did not focus on factors that influence infection prevention and control practices in these non clinical departments and researchers are encouraged to venture in to this area in future.

Thirdly, the study also concentrated more on structural factors affecting infection prevention and control. Staff factors like negative attitudes were not investigated. Other researchers are encouraged to study this area in future.

Fourth, the staffs would be too busy to create time to participate in the study. These would be allowed to fill the questionnaires later but followed up using the questionnaire tracking form to ensure the questionnaires are returned.

1.10: Definitions of Significant Terms

Hand washing	Means cleaning hands with soap and running water
Waste segregation	Categorizing clinical waste
Injection Safety	Putting used sharps and needles in a biohazard box immediately after the procedure
Provision of policy and guidelines	Active IPPC, availability of policies in departments in easy to read and understand language
Infection prevention and control practices	Hand washing, waste segregation, injection safety and provision of policies and guidelines

Government policy	Means the National Infection Prevention and Control guidelines
Staff attitudes	Negative or positive staff regard to infection prevention and control practices
Infection	Multiplication of micro-organisms in the body leading to disease
Healthcare Associated Infections	Any infection that arises as a result of healthcare, regardless of the care setting.

1.12: Organization of the study

The study was organized in to five chapters. Chapter one contains the following sections namely; background of the study, problem statement, objectives of the study, research questions, research hypotheses, significance of the study, basic assumptions of the study, limitations of the study , delimitations of the study and definition of significant terms used in the study.

Chapter two contains the literature related hand washing, waste segregation, injection safety, provision of policies and guidelines, theoretical framework, conceptual framework and the Operationalization table.

Chapter three has information on research design, target population, sample size and sampling techniques, data collection instruments, piloting of the research instruments, validity and reliability of research instruments, data collection procedures, data analysis procedures and ethical considerations.

Chapter four has data analysis, presentation and interpretation on the following themes; influence of hand washing on infection prevention and control practices in KL5H, influence of waste segregation on infection prevention and control practices in KL5H, influence of injection safety on infection prevention and control practices in KL5H and influence of provision of policies and guidelines on infection prevention and control practices in KL5H and hypotheses testing.

Chapter five contains the summary of the study findings, conclusions and recommendations, suggestions for further research and contributions to the body of knowledge.

CHAPTER TWO

LITERATURE REVIEW

2.1: Introduction

This chapter contains several sub sections namely; influence of hand washing on infection prevention and control practices, influence of waste segregation on infection prevention and control practices, influence of injection safety on infection prevention and control practices, provision of policies and guidelines on infection prevention and control practices, theoretical framework and conceptual framework, summary of literature review and the Operationalization table.

2.2: Hand washing and Infection Prevention and Control practices

Cleansing heavily contaminated hands with an antiseptic before patient contact can reduce nosocomial transmission of contagious diseases. This evidence was provided for some 150 years ago (Mukwato, 2007). Hand hygiene may be accomplished using an alcohol-based hand rub or soap and running water (Public Health Ontario-Regional Infection Control Networks). Keeping hands clean through improved hand hygiene is one of the most important steps we can take to avoid getting sick and spreading germs to others. Many diseases and conditions are spread by not washing hands with soap and clean, running water. If clean, running water is not accessible, as is common in many parts of the world, use soap and available water. If soap and water are unavailable, use an alcohol-based hand sanitizer that contains at least 60% alcohol to clean hands. On May 5, World Hand Hygiene Day is celebrated by the World Health Organization (WHO), CDC and other partners to encourage healthcare providers to promote and practice good hand hygiene measures to reduce the risk of infection among patients. (Centers for Disease Control and Prevention , 2012). Supervision, especially in a day care setting, is an essential element in forming good hand washing habits in children. Good hand washing technique is easy to learn and can significantly reduce the spread of infectious diseases among both children and adults (Ministry of Health and Longterm care, 2012). Availability of alcohol-based hand rubs is critical to promote effective hand hygiene practices, in particular in settings without access to running water. Introduction of an alcohol-based hand rub has led to increased hand hygiene compliance among healthcare workers and decreased healthcare-associated infections (World Health Organization, 2005).

Hand hygiene must occur before and after every patient contact and after personal hygiene. Wash hands thoroughly with soap and warm water for 15 to 20 seconds. Waterless (alcohol-based) hand rubs are also effective, but hand washing for 15 to 20 seconds with soap and water should be performed if hands are visibly soiled. Gloves can be used as an additional measure, but are not a substitute for hand hygiene (College of Physicians and Surgeons of Notia Scotia, 2011).

Evidence suggests that many healthcare workers do not decontaminate their hands as often as they need or use the right technique which means that areas of the hands can be missed. Nails should be kept short, clean and polish free, avoid wearing wrist watches and jewellery, especially rings with ridges or stones. Artificial nails must not be worn. Adequate hand washing facilities must be available and easily accessible in all patient areas, treatment rooms, sluices and kitchens. Basins in clinical areas should have elbow or wrist lever operated mixer taps or automated controls and be provided with liquid soap dispensers, paper hand towels and foot-operated waste bins. Alcohol hand gel must also be available at 'point of care' in all primary and secondary care settings (Clark, 2005)

Hand hygiene is a key intervention for reducing transmission of ARI and diarrhea in community settings. Hand hygiene, using antibacterial soap or alcohol-based sanitizers, has been reported to result in notable reductions in the incidence of diarrheal diseases. Hand hygiene has also been specifically recommended for prevention of diseases with pandemic potential, such as severe acute respiratory syndrome and for influenza A pandemic (H1N1) 2009 (Talaat, 2011)

Washing hands with soap at the right times – primarily after contact with feces, but also before handling food or feeding an infant – can significantly reduce the incidence of childhood infectious disease. Washing hands with soap at times of public health significance –primarily after contact with feces, but also before handling food or feeding an infant – has been shown to be effective in reducing the occurrence of diarrhea, trachoma and skin infections in poor settings, and also plays a role in reducing acute respiratory infections. Getting people to wash their hands with soap is therefore a promising strategy for promoting health. It is also one of the most cost-effective means of reducing the burden of infectious disease and child deaths in the developing world (Aungera, 2009).

Hand washing is more frequent if hand washing facilities, such as soap and water, are easily available in locations close to contaminating events. The best time to encourage the adoption of safe hand washing seems to be at life change events, such as at the birth of a child. Key motivations for hand washing include to nurture (a desire to care for children), to gain status

and social standing and to be clean and neat in order to avoid objects and smells that elicit disgust (Curtis, 2003)

Health care facilities must have adequate hand-washing basins, with a minimum of one per patient room, procedure room, and exam room. Each six-bed cubicle must have at least one sink. Each sink should be large enough to avoid splashing and prevent contamination by bacteria that are resident in the drain. Sinks must be sealed to the wall or placed far enough from the wall to allow effective cleaning. They should be located near the entrance or exit for easy access by HCWs. The surrounding area must be nonporous to resist growth of fungus. Taps and soap dispensers should be fitted with hands-off controls, that is, controls that can be operated by elbow, knee, or foot. Elbow-operated systems are preferable because they are less prone to breaking down. Where resources allow, electronically generated systems should be considered (Ministry of Medical Services and Ministry of Public Health and Sanitation, 2010)**.**

While no harm is likely to befall a patient as a result of hand washing, one potential adverse effect of hand washing for healthcare workers is skin irritation. Indeed, skin irritation constitutes an important barrier to appropriate compliance with hand washing guidelines. Soaps and detergents can damage the skin when applied on a regular basis. Alcohol-based preparations are less irritating to the skin, and with the addition of emollients, may be tolerated better. Another potential harm of increasing compliance with hand washing is the amount of time required to do it adequately. Current recommendations for standard hand washing suggest 15-30 seconds of hand washing is necessary for adequate hand hygiene. Given the many times during a nursing shift that hand washing should occur, this is a significant time commitment that could potentially impede the performance of other patient care duties. Interventions designed to improve hand washing may require significant financial and human resources. The costs incurred by such interventions must be balanced against the potential gain derived from reduced numbers of nosocomial infections (McDonald, 2001)**.**

According to the Centers for Disease Control (Centre for Disease Control and Prevention, 2002), hand washing is the simplest, most effective measure for preventing the spread of bacteria, pathogens, and viruses. Even with this knowledge, many Americans do not wash their hands. Recent studies by the American Society for Microbiology **(**2000) indicate that only 67% of Americans wash their hands after going to the bathroom, 78% after changing diaper 77% before handling or eating food. Forty-five percent of Americans report that they do not wash up after petting an animal, 31% after coughing or sneezing, and 20% after handling money (Clark, 2005).

There is ample evidence of the presence of nosocomial pathogens on the hands of HCWs. Such contamination may occur during contact with a patient's infected wounds, mucous membranes or with secretions, but also following contact with intact skin or contaminated objects in the patient's environment. The hands of HCWs have been shown to be contaminated during 'clean activities' e.g. taking a patient's pulse, lifting a patient or touching a patient's hand or shoulder. It is worth noting that certain patient groups e.g. those with diabetes, patients undergoing haemodialysis, those with chronic dermatitis are more likely to carry S. aureus on intact skin. Staphylococci and other organisms may easily contaminate the patient's environment such as bed linens, clothing and furniture during the normal process of skin shedding, from where they may transfer to the HCWs hand. Outbreak investigations have shown an association between hospital-acquired infections and understaffing or overcrowding which has been consistently linked with poor adherence to hand hygiene. There is evidence that antiseptic hand washing / hand hygiene reduces the rate of healthcare associated infection, and that increased frequency of hand washing / hand hygiene among HCWs has been associated with decreased transmission of nosocomial pathogens (SARI Infection Control Subcommittee, 2004).

Even healthcare professionals fail to wash their hands or wash long enough (WHO, 2006). Studies conducted by the CDC and several others found that nurses and doctors fail to wash their hands the recommended time 60% of the time between patient contacts and procedures. Such behavior results in approximately 2,400,000 nosocomial infections occurring in the U.S. each year, which cost over $4.5 billion annually in extended care and treatment (Centers for Disease Control and Prevention , 2012).

Hand washing guidelines set by regulatory agencies for hospitals, food preparation, preschools, and daycares have been in place for two decades. However regulation alone has not successfully changed hand-washing behaviors. Several investigative studies have concluded that adherence to recommended hand hygiene procedures of healthcare organizations have been unacceptably poor (Pittet, 2001). Other studies have determined that the factors affecting adherence to proper procedures is rooted in individuals' behavior, that hand cleansing patterns are most likely established in the first 10 years of life, and that an individual's religious and cultural background influences their perceptions about hand washing (WHO, 2006).

Hand hygiene, the most important and basic IPC practice was infrequently practiced in many of the assessed health care facilities in Kenya. Even though not all health care facilities have piped water, all of them are able to obtain water for use. Where the hospital administration

recognizes the importance of good IPC practices, the health care facilities have been able to improvise by adapting buckets or jerry cans to act as sources of running water in which HCWs can wash their hands. But not all health care facilities that had piped water practiced hand hygiene. In some facilities, the hand-washing basins were nonfunctional or not in use (Ministry of Medical Services and Ministry of Public Health and Sanitation, 2010).

2.3: Waste segregation and Infection Prevention and Control practices

Potentially hazardous waste materials arising from healthcare-related activities — usually referred to as healthcare risk waste — require special management and the use of costly handling and disposal arrangements to avoid causing infection or injury to those who come in contact with it, and to minimise negative impacts on the environment. Because of the scale and nature of the services they provide, hospitals also produce large volumes of non-risk waste. Hospitals also produce large volumes of non-risk waste. This includes waste from domestic, cleaning and catering operations within hospitals, packaging from medical supplies and equipment, material that must be treated as confidential (such as copies of old patient medical records), and non-infectious medical and other equipment. There are also categories of healthcare waste that, in most cases, do not represent health or safety risks, but which may be regarded as offensive e.g. nappies and incontinence pads. Different procedures need to be followed to deal with the different kinds of waste. Typically, waste is segregated into appropriate streams for handling and disposal — risk waste is sent for disinfection or incineration; non-risk waste is usually disposed of in landfill sites, or where suitable, may be recycled. Care has to be taken to avoid mixing risk and non-risk waste — this could result in risk waste being handled inappropriately, possibly leading to injury or infection, or to non-risk waste material having to be handled as if it were risk waste, at greater cost than is necessary. Active management of waste in all hospitals, but particularly in those that deal with large numbers of patients and procedures, will help to ensure that costs and environmental damage related to healthcare waste are minimised, and that patients, staff and local communities are protected from harm. Some good practice ideas already in use in individual hospitals are highlighted in this report to assist hospital and other health sector managers in developing and improving their strategies for dealing with waste. (Department of Health and Children, 2005).

In Kenya and the world over, health-care services in rural or urban settings inevitably generate wastes that may be hazardous to health or have harmful environmental effects.

Potentially infectious waste such as; sharps, cultures from medical laboratories or infected blood, carry a higher risk for infection and injury than any other type of waste. Other wastes of significant importance include; body fluids, all body parts, human tissues, placenta and radioactive waste among others. The absence of proper management measures to prevent exposure to hazardous health-care waste (HCW) results in important health risks to the general public, in- and out-patients as well as the medical and the supportive staff. Improper disposal of health care waste may result in syringes and needles being scavenged and reused thus leading to significant numbers of hepatitis B, hepatitis C, and HIV infections among others. Even after the formulation of policies and laws on health care waste management, many health care establishments in Kenya still lack enforcement of legislation for handling, and disposal of health care waste. Furthermore, improper treatment or disposal of HCW such as open-air burning can constitute a significant source of pollution to the environment through the release of substances such as dioxins, furans or mercury. Safe management of HCW is key in controlling and reducing nosocomial infections inside a hospital and ensure that the environment outside is well protected. Studies conducted earlier in Kenya by Japan International Cooperation Agency (JICA) and the Kenya Expanded Programme on Immunization (KEPI) in conjunction with WHO reveal that the health care waste management (HCWM) practices encountered in most of the health care facilities do not comply with the international requirements to guarantee a safe and environmentally sound management of HCW (Ministry of Health, 2008)

It is possible that segregation can be achieved through training, and designing of clear standards to be followed by all players in waste generation in hospitals. Segregation consists of separating the different waste streams based on the hazardous properties of the waste, the type of treatment, and disposal methods that are applied to each. The current waste management practices observed was fair segregation posted from some hospitals (55%) who were observing good segregation practices in some departments and in some cases waste mixing was observed in some waste receptacles within the same hospitals and this needs to be captured as an attempt towards best practice. Poor segregation and poor choice of technology for treatment and disposal of waste are two problems identified that are due in part to inadequate management practices or simply because of absence of adequate provision of waste receptacles. The results analyzed showed that Kenya was still way below the WHO recommended standards, where 80% of waste should be non-infectious and can be recommended to join the municipal waste stream, while 20% is the infectious wastes that require special waste treatment methods. In best practices, segregation is expected to be

systematically maintained all along the waste stream for easy and cheaper treatment and final disposal. The benefits of waste segregation can be realized when secure internal and external transport system for waste is provided and the segregation practice is appreciated by the technical staff and waste collectors. Evidence shows that in hospitals such as; Nairobi hospital and Gertrude Children's Hospital, HCWM practices are institutionalized through continuing training programmes coupled with provision of the necessary resources. In these hospitals therefore, it is noteworthy that great levels of segregation and general hospital cleanliness have been achieved. However, if waste is segregated at the points of generation only to be mixed together by labourers as they collect it, or to have waste collection company workers mix it together upon a single collection, then the ultimate value of segregation is lost. In some hospitals, there is still evident failure to establish and follow segregation protocols and put in place the required infrastructure for handling waste. It is best practice in HCWM that items that could potentially be used illegitimately must be either rendered unusable after their use or secured for legitimate recycling by vendors or systems that can be monitored for compliance. The recommended way of identifying HCW categories is by sorting the waste into colour-coded, well packed and labeled containers. It is cardinal that segregation must always be applied at source (Ministry of Health, 2008).

It is important for each type of waste to be disposed of in an appropriate manner. Each facility should have written policies, indicating the treatment and disposal of each type of healthcare waste. Efforts should be made to minimize the amount of waste generated by the health facility, e.g., paper, unnecessary injections. The administration should provide means of waste disposal that are accessible and convenient for staff. There should be a system in place to ensure that staffs adhere to appropriate waste disposal. This could be done with the help of supervisors of respective units in the facility and included with other training to change staff's attitudes and behavior as regards to infection control practices. Clinical waste should be collected in separate containers from non-clinical waste; the containers should be lined with identifiable plastic bags (biohazard marker/ color coded). Different locally available containers can be used in place of costly equipment. Garbage should be collected daily, and transported in specific trolleys. There should be a designated restricted area in the facility for waste storage. Sharps, i.e., needles, cover glasses, glass slides, should be collected at the point of use, in non-collapsible, impenetrable, puncture resistant, narrow mouths containers (metal/ sturdy plastic/ thick cardboard), which are leak proof on the sides and bottom. The containers should not be overfilled; once two-thirds full, they should be closed and buried in a secure area-2-3 meters deep and 1.5 meters above the groundwater table, or

incinerated. Infectious, pathological, and laboratory waste (except mercury), should be incinerated. Mercury waste (i.e., batteries) should not be incinerated. Kitchen waste should be placed in a compost heap, which is properly maintained to prevent rats and other animals. HCWs responsible for handling waste should be trained on the hazards presented by healthcare waste and should wear appropriate PPE (Moturi, 2011)

2.4: Injection safety and Infection Prevention and Control practices in KL5H.

Injection is one of the most common health care procedures. Each year at least 16 billion injections are administered in developing and transitional countries. The vast majority, around 95%, are given in curative care. Immunization accounts for around 3% of all injections, with the remainder for other indications, including use of injections for transfusion of blood and blood products and contraceptives **(**Ministry of Health, 2006).

The main hazards of a sharps injury are blood borne viruses such as hepatitis B, hepatitis C and HIV. It is not uncommon for staff to be injured by the unsafe or poor practice of others; for example, cleaners who sustain injuries as a result of sharps being placed in waste bins. Sharps injuries are preventable and learning following incidents should be put in place to avoid repeat accidents. To reduce the risk of injury and exposure to blood borne viruses, it is vital that sharps are used safely and disposed of carefully, following your workplace's agreed policies on use of sharps (Royal College of Nursing, 2012).

Unsafe injections can result in transmission of a wide variety of pathogens, including viruses, bacteria, fungi and parasites. They can also cause non-infectious adverse events such as abscesses and toxic reactions. Reuse of syringes or needles is common in many settings. It exposes patients to pathogens either directly (via contaminated equipment) or indirectly (via contaminated medication vials). The risks of unsafe injection practices have been well documented for the three primary blood borne pathogens – human immunodeficiency virus (HIV), hepatitis B virus (HBV) and hepatitis C virus (HCV). The estimated global burden of disease for the year 2000 from unsafe injection practices for these pathogens included 21 million HBV infections (32% of new HBV infections), 2 million HCV infections (40% of new HCV infections), 260 000 HIV infections (5% of new HIV infections). These blood borne pathogens also contribute to illness among health workers – an estimated 4.4% of HIV infections and 39% of HBV and HCV infections are attributed to occupational injury. Among susceptible health workers who do not receive post-exposure prophylaxis (PEP), the risk of infection after needle-stick injury is 23–62% for HBV and 0–7% for HCV. Infections may also be transmitted (to other health workers and to patients) from cross-contamination of

health workers' hands, medications, medical equipment and devices or environmental surfaces. Thus, proper injection techniques and procedures contribute to the safety of both patients and health workers (Centre for Disease Control and Prevention, 2007)

A national assessment was done in October 2007 and was aimed at exposing legislative, institutional and infrastructural problems touching on health care waste management in Kenya. The practice of proper segregation of sharps materials in rigid, puncture proof containers was the commonest practice in the assessment conducted. It is noteworthy that only 10% or less portion of the waste stream that is potentially infectious, is the most immediate threat to human health (patients, workers, public) if indiscriminate disposal of sharps (needles, syringes, lancets, and other invasive tools) is allowed. However, beside the effort that has been shown by the Kenyan government in the provision of sharps boxes for use in most public and faith based facilities (95%), it is apparent that if proper sharps waste management were instituted in all health care facilities, most of the risk of disease transmission from health care waste would be reduced markedly (Ministry of Health, 2008).

2.5: Provision of Policy and Guidelines and infection prevention and control practices.

A quantitative rapid assessment of IPC practices in 12 health facilities in 5 provinces in Kenya revealed significant differences in IPC practices among the healthcare facilities. Across the various regions and levels of healthcare facilities, the presence of an IPCC and IPC lead persons recognized by the hospital administration was associated with good IPC practices. In these facilities, IPC lead persons had support from the hospital administration to acquire various supplies and mechanisms that are necessary for good IPC practices. The management team had integrated IPC in to the regular supervision of health care providers, and the IPC lead person was part of the supervision team. In addition, IPC activities were factored in to the annual planning and budgetary process, thereby ensuring consistent availability of IPC supplies and equipment. Health care facilities without active IPC committees performed poorly in IPC practices at both institutional and provider levels. Where the IPC lead person is not part of the hospital management team, IPC activities tend to be relegated to the back and to lose the prominence that is necessary for good practices. In Kenya, most lead persons are nurses and not all of them are part of the hospital management team (Ministry of Medical Services and Ministry of Public Health and Sanitation, 2010).

Although its existence may not be widely recognized by patients, the Infection Control Committee plays an integral part in the care of every patient. The Infection Control

Committee is generally comprised of members from a variety of disciplines within the healthcare facility. Representation may include: physicians, nursing staff, infection control practitioners, quality assurance personnel, risk management personnel as well as representatives from microbiology, surgery, central sterilization, environmental services, etc. The goal of this interdisciplinary team is to bring together individuals with expertise in different areas of healthcare. By creating a diverse group, issues can be addressed from several angles, and members can pool their expertise to develop the best solutions possible. Everyone knows that infection control is the responsibility of all healthcare workers. Patients and employees are only safe from infectious processes when everyone follows good infection control techniques. Through policies, procedures, and evaluation processes, the committee acts as a central clearing house for all infection control information and channels that information in a manner that will create the safest healthcare environment. It also helps to standardize infection control procedures throughout the facility so that the same level of care is provided in all departments. This standardization helps to control and maintain the facility's environment and ensures that patients receive the same level of infection control in all areas. Along with providing or recommending formal educational opportunities, the Infection Control Committee communicates with employees through the use of procedures. The committee is responsible to maintain written infection control procedures, which should be available to all employees. The committee also provides guidance for the prevention of incidents through other established informational channels within the facility. When problems arise, the committee will provide specific direction to a department or departments that details corrective action that is deemed necessary. The committee will meet regularly, and its meeting minutes should be available upon request. In addition to channeling information through itself, the committee often coordinates communication between departments to facilitate the sharing of information and procedures. In this way, the committee acts as a facilitator between other departments (Lee, 2010).

Hand washing guidelines set by regulatory agencies for hospitals, food preparation, preschools and daycares have been in place for two decades. However, regulation alone has not successfully changed hand washing behaviors. Several investigative studies have concluded that adherence to recommended hand washing procedures of healthcare organizations has been unacceptably poor. (World Health Organization, 2006) (Pittet, 2001). Other studies have determined that the factors affecting the adherence to the proper procedures are rooted in the individual’s behavior. Hand washing patterns are established in

the first 10 years of life and that and an individual's religious and cultural background influences their perceptions about hand washing (World Health Organization, 2006)

2.6: **Theoretical Framework**

The germ theory is a fundamental tenet of medicine that states that microorganisms, which are too small to be seen without the aid of a microscope, can invade the body and cause certain diseases. Until the acceptance of the germ theory, many people believed that disease was punishment for a person's evil behavior. The development of the germ theory was made possible by the certain laboratory tools and techniques that permitted the study of bacteria during the seventeenth and eighteenth centuries. The invention of primitive microscopes by the English scientist Robert Hooke and the Dutch merchant and amateur scientist Anton van Leeuwenhoek in the seventeenth century, gave scientists the means to observe microorganisms. During this period a debate raged among biologists regarding the concept of *spontaneous generation*. Until the second part of the nineteenth century, many educated people believed that some lower life forms could arise spontaneously from nonliving matter, for example, flies from manure and maggots from decaying corpses. In 1668, however, the Italian physician Francisco Redi demonstrated that decaying meat in a container covered with a fine net did not produce maggots. Redi asserted this was proof that merely keeping egg-laying flies from the meat by covering it with a net while permitting the passage of air into the containers was enough to prevent the appearance of maggots. However, the belief in spontaneous generation remained widespread even in the scientific community. In the 1700s, more evidence that microorganisms can cause certain diseases was passed over by physicians, who did not make the connection between vaccination and microorganisms. During the early part of the eighteenth century, Lady Montague, wife of the British ambassador to that country, noticed that the women of Constantinople routinely practiced a form of smallpox prevention that included "treating" healthy people with pus from individuals suffering from smallpox. Lady Montague noticed that the Turkish women removed pus from the lesions of smallpox victims and inserted a tiny bit of it into the veins of recipients.

(Germ Theory)

2.7: Conceptual Framework

This study is guided by the following conceived conceptual framework

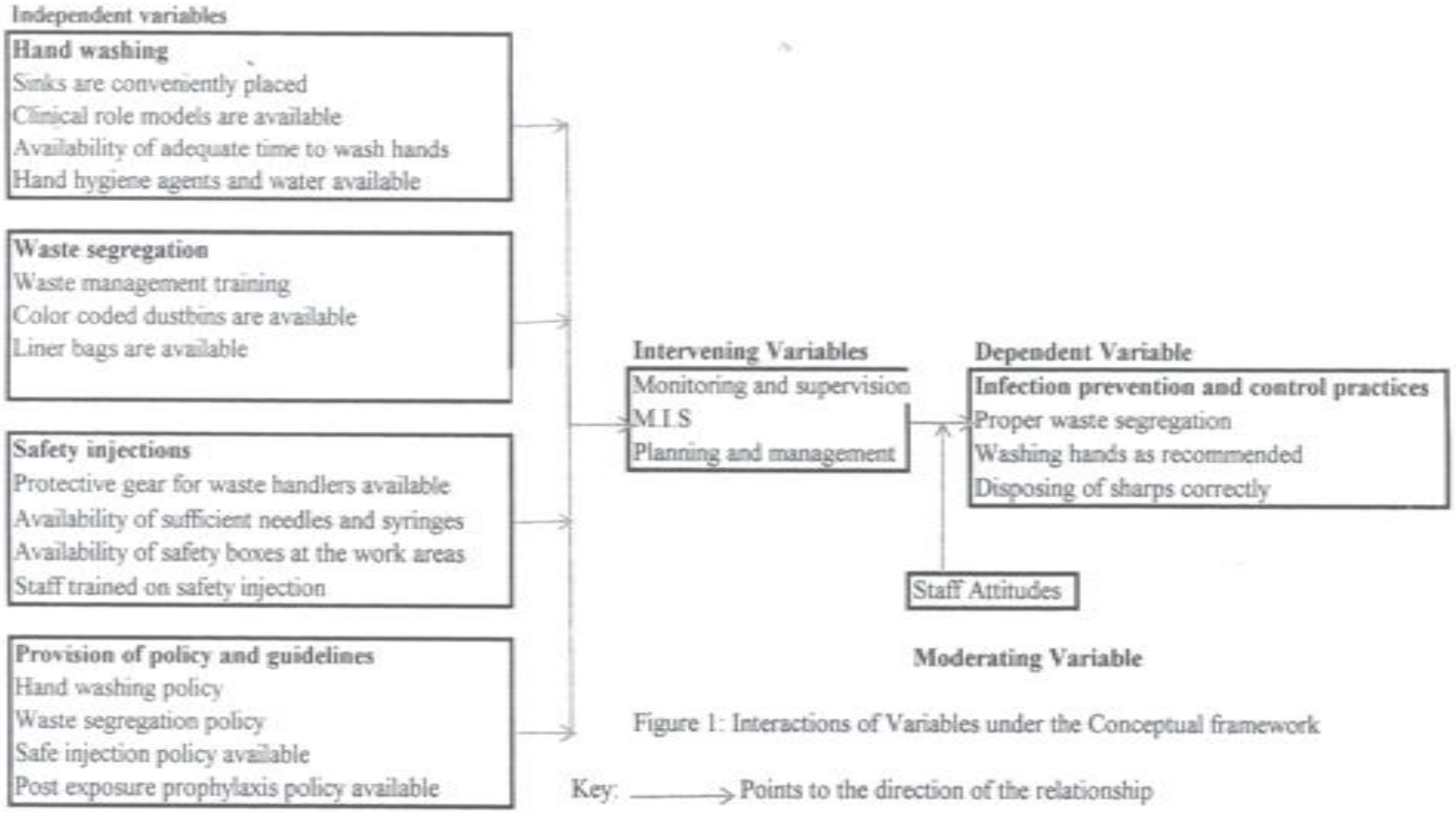

Figure 1: Interactions of Variables under the Conceptual framework

Key: ——→ Points to the direction of the relationship

From the framework, an independent variable is the variable that the researcher manipulates in order to determine its effect or influence on another variable. Independent variables are also called predictor variables because they predict the amount of variation that occurs in another variable (Mugenda, 2003). The variables hand washing, waste segregation, safety injections and provision of policies and guidelines are independent variables. Healthcare workers' hands are the most common vehicle for the transmission of healthcare-associated pathogens from patient to patient and within the healthcare environment (Allegranzi, 2009). Certain conditions are necessary to encourage healthcare workers to wash hands as recommended so as to comply with IPC recommendations. These include having sinks at convenient locations in the clinical area, having infection prevention and control clinical role models in the working area, availability of adequate time for the healthcare worker to wash hands and provision of soap and water at the place of work. Adequate staffing is necessary to ensure that work overload does not hinder healthcare workers from washing hands effectively. On the same note, waste segregation practices in hospitals are determined by a number of factors including availability of color coded dustbins and availability of right kind of waste segregation liner bags. The employees also need training from time to time on best practices on waste segregation. Waste education and training should include education of relevant staff on the importance of efficient waste management practices, including the relevance of the *Waste Minimisation in Healthcare kit*. The training should ensure appropriate waste separation practices are in place and that appropriate segregation signage and containers are used. Train and educate staff on their responsibilities through appropriate waste minimisation and segregation (Allegranzi, 2009). Eliminating unnecessary injections is the best way to prevent injection-associated infections. Vaccination of health workers with hepatitis B vaccine is important in protecting both health workers and patients. Methods for reducing exposure and preventing infection transmission include hand hygiene, barrier protection (gloves), minimal manipulation of sharp instruments (including injection equipment), and appropriate segregation and disposal of sharps waste (note: sharps are items such as needles that have corners, edges or projections capable of cutting or piercing the skin). Injections are unsafe when given with unsterile or improper equipment or technique. It is important to avoid contamination of injectable medications. Physically separating clean and contaminated equipment and supplies helps to prevent cross-contamination. For example, immediate disposal of a used syringe and needle in a safety box placed within arm's reach is the first step in safe waste management (Centre for Disease Control and Prevention, 2007).

Policies are formal, brief, and high-level statements or plans that embrace an organization's general beliefs, goals, objectives, and acceptable procedures for a specified subject area. Policies require compliance (mandatory) and failure to comply results in disciplinary action. They focus on desired results, not on means of implementation. Guidelines are General statements, recommendations, or administrative instructions designed to achieve the policy's objectives by providing a framework within which to implement procedures. A guideline can change frequently based on the environment and should be reviewed more frequently than standards and policies. A guideline is not mandatory, rather a suggestion of a best practice. Hence "guidelines" and "best practice" are interchangeable (Guel, 2007). For the purpose of this study, policies and guidelines should be available at the areas of clinical practice for easy reference by healthcare workers. Four guidelines will be given special focus. These are hand washing policy, waste segregation policy, injection safety policy and post exposure prophylaxis policy.

Intervening variable is considered to be a special form of extraneous variable (Mugenda, 2003). For the purpose of this study the government policy on IPC is considered to be the intervening variable. It has been subdivided in to three components: monitoring and supportive supervision, management information system and planning and management. Monitoring and supportive supervision by hospital, provincial and national level healthcare managers periodically ensures ensure that healthcare workers are supported to implement IPC guidelines correctly. Good management information system will ensure that proper data on progress is maintained for use by hospitals and government for planning infection prevention and control programs. Proper planning and management is needed to ensure to ensure efficient and effective IPC programs.

Staff attitudes are considered as moderating variable. A ***moderating variable*** is a variable that behaves like the independent variable in that it has a significant contributory or contingent effect on the relationship between the dependent and the independent variable (Gakuu, 2010). Staffs with negative attitude will have low levels of compliance to infection prevention and control guidelines whereas staffs with positive attitude will portray high levels of compliance to IPC policies and guidelines.

A dependent variable attempts to indicate the total influence arising from the effects of the independent variable (Mugenda, 2003). The infection prevention and control practices are the dependent variable. For the purpose of this study, they are determined by the degree to which hand washing, waste segregation, injection safety and provision of policies and guidelines are performed in a hospital set up.

2.8: Summary of Literature Review

Treating all patients in the health care facility with the same basic level of "standard" precautions involves work practices that are essential to provide a high level of protection to patients, health care workers and visitors. Appropriate hand hygiene can minimize micro-organisms acquired on the hands during daily duties and when there is contact with blood, body fluids, secretions, excretions and known and unknown contaminated equipment or surfaces. Take care to prevent injuries when using needles, scalpels and other sharp instruments or equipment. Place used disposable syringes and needles, scalpel blades and other sharp items in a puncture-resistant container with a lid that closes and is located close to the area in which the item is used. Take extra care when cleaning sharp reusable instruments or equipment. Never recap or bend needles. Uncollected, long stored waste or waste routing within the premises must be avoided. A sound waste management system needs to be developed and closely monitored.

Safe management of HCW is key in controlling and reducing nosocomial infections inside a hospital and ensure that the environment outside is well protected. Studies conducted earlier in Kenya by Japan International Cooperation Agency (JICA) and the Kenya Expanded Programme on Immunization (KEPI) in conjunction with WHO reveal that the health care waste management (HCWM) practices encountered in most of the health care facilities do not comply with the international requirements to guarantee a safe and environmentally sound management of HCW (Republic of Kenya: Ministry of Health, 2008-2012).

CHAPTER THREE:

RESEARCH METHODOLOGY

3.1: Introduction

The chapter describes methods used in carrying out this study. It is organized under the following subheadings: Research Design, Target Population, Sample Size and Sample Selection, Research Instrument, Piloting, Reliability and Validity of the Instrument, Data Collection Procedures, Data Analysis Technique, and ethical considerations.

3.2: Research Design

A descriptive survey was used to conduct the study. According to Mugenda Mugenda, (**2003**) a survey is an attempt to collect data from members of a population in order to determine the current status of that population with respect to one or more variables. A descriptive research is research study that has as its main objective the accurate portrayal of the characteristics of person, situations, or groups, and/or the frequency with which certain phenomena occur (Polit, 2004). A descriptive survey involves asking questions (often in the form of a questionnaire) of a large group of individuals either by mail, by telephone or in person. When answers to a set of question are solicited in person, the research is called an Interview (Gakuu, 2010). The greatest advantage of survey research is its flexibility and broadness of scope. It can be applied to many populations, it can focus on a wide range of topics, and its information can be used for many purposes. The information obtained for most surveys, however, tends to be relatively superficial (Polit, 2004)

3.3: Target Population

Population refers to the aggregate or totality of those conforming to a set of specifications (Polit, 2004). The target population for this study consisted of 278 Medical staff working at clinical areas of Kisii Level 5 Hospital.

3.4: Sampling Techniques

This section describes the sample size and sampling techniques that were used for the study

3.4.1 Sample Size

According to Braud (2010), sample size includes the number of participants or objects in a research study. The size of the population and the amount of error the researcher is willing to tolerate is what determines the size of the sample (Krejcie, 1970). The table in appendix 3

was developed for situations where the researcher wants to come within 5 percentage points (with 95 percent certainty) of what the results would have been if the entire population had been surveyed. Systematic random sampling method was used to obtain a sample of 151 to fill the questionnaires and 10 subjects to participate in the interview from the target population. This gave a total sample size of 161 respondents.

3.4.2: Sample Selection

Systematic sampling was used to sample respondents for the study. Systematic random sampling is achieved by selecting every K^{th} case from a list or group (Polit, 2004)**.** K is the sampling interval. It was determined by dividing the target population by the sample size (i.e. 278/161). This is approximately 2. Each department has a duty roster. The duty roster contains duties of all staff members working in that particular department. The list was numbered starting from the top and finishing at the bottom. The staff at the top of the list was assigned number 1 and the one at the bottom will be assigned the number corresponding to total staff in that department. All staffs assigned even numbers were selected for the study. The advantage of systematic sampling is that it can yield essentially the same results as simple random sampling but with less work involved (Polit, 2004). For departments without duty rosters, the subjects were selected using a different method. A yes or No criterion was used. The researcher used small pieces of papers. The number of papers used for each department was equal to the number of staff from which the sample was drawn. Each paper either had a "yes" or a "no" inscribed in it. However, the two categories were equal in size or had a difference of 1 subject depending on whether the sub-population has an odd or an even number of subjects. The staffs were then requested to select a piece of paper randomly. Those who will select a paper with a "yes" were included in the sample, while those who selected a paper with a "no" in it were excluded from the study. KMTC students and non medical staff were excluded from the sample.

3.5: Research instruments

A triangulation of two methods (a questionnaire and interview schedules) were used to collect information from respondents.

A questionnaire is a method of gathering self report information from respondents through self administration of questions in a written form (Polit, 2004). It is commonly used to obtain important information about the population (Mugenda, 2003). A questionnaire consisted of a set of structured questions that respondents will be expected to respond to them appropriately.

The items in the questionnaire were derived from the objectives of the study and research questions (Kothari, 1990).

An interview is an oral administration of a questionnaire or an interview schedule. Interviews are face-to-face encounters. To obtain accurate information, the researcher needs maximum cooperation from respondents. The researcher should establish a friendly relationship with the respondent prior to conducting the interview (Mugenda, 2003). 10 subjects will be interviewed during the research period. The responses of the subjects during the interview shall be recorded using note taking. The researcher took notes as the respondents talk.

3.5.1: Validity of the research instruments

The questionnaire should be pretested to a selected sample which is similar to the actual sample which the researcher plans to use in the study. Subjects in the actual study should not be used in the pretest. Procedures used in pre-testing the questionnaire should be identical to those which will be used during the actual data collection. This will allow the researcher to make meaningful observations. The pretest sample is between 1% and 10% depending on the sample size (Mugenda, 2003). For respondents, we want to know if they understand the words, terms, and concepts being used. Do they understand the question or the task being asked of them and the answer choices from which they are to select? Does the respondent's interpretation of what the question is asking coincide with what the researcher wants the question to measure? Does the respondent use different response categories or choices than those offered in the question? Are respondents attentive and interested in the questions? This last point is important and its purpose may not be obvious. Attentiveness and interest may be indicators of how hard the respondent is working to provide complete and correct answers. While we do not know this with certainty, we feel more confident when the respondent shows an interest. Many respondent-related problems are not directly. Observable, but they can be identified by using specific techniques. The ability of interviewers to perform their tasks is equally important. It is important to determine whether interviewers have difficulty pronouncing certain words or reading particular sentences. Do they read the question as written or do they leave out words or modify the question wording? Are they neutral in reading questions and probing? Do they understand the instructions presented in training sessions and those written on the questionnaire? Do they record complete answers? While training sessions are designed to address these problems, we know that after interviewing commences, some interviewers do modify their behaviors (Czaja, 1998). 5 questionnaires were used for pretesting at RAM Hospital. These questionnaires were analyzed to see

whether the methods proposed to be used for data analysis will be appropriate (Mugenda, 2003)

3.5.2: Reliability of Research Instruments

Reliability is a measure of the degree to which a research instrument yields consistent results or data after repeated trials. Reliability in research is influenced by random error. As random error increases, reliability increases. Random error is the deviation from a true measurement due to factors that have not effectively been addressed by the researcher (Mugenda, 2003). Errors may result from inaccurate coding, ambiguous instructions to subjects, interviewer's fatigue, interviewer's bias, etc. Random error will always exist regardless of the procedures used during the study. The research process attempts to minimize random error and hence increase the reliability of data collected. In a research study, a reliability coefficient can be computed to indicate how reliable the data are. A coefficient of 0.80 or more indicates that there is a high degree of reliability of data (Mugenda, 2003)**.**

Test retest method was used to determine the reliability of the study instrument. The questionnaire was administered to a group of 5 subjects at two different occasions. A period of 7 days was allowed between the two administrations of the instrument. Pearson's product moment reliability coefficient was calculated using the formula $r_{= 1-6d^2 / n (n^2-1)}$ and found to be 0.83, confirming that the instrument was reliable.

3.6: Data Collection Procedures

Data collection started by the researcher obtaining a letter of introduction from the University of Nairobi. The introductory letter was used to apply for a research permit from the Ministry of Higher Education. Thereafter, I introduced myself to the Medical superintendent (Kisii Level 5 Hospital) before embarking in data collection. Sampling of the subjects was done and research instruments administered after consent was secured. The questionnaires were collected from the respondents as soon as they were completed. The respondents who were busy and not able to complete the questionnaires immediately were noted in the questionnaire tracking form and allowed to complete the process later. The interview schedules were administered to the respondents by the researcher herself.

3.7: Data analysis procedures

The completed questionnaires and interview schedules were reviewed for completeness and the return rate calculated. The data was then cleaned, classified, coded and entered in to the data input window of SPSS (Statistical Package for Social Sciences). Thereafter the data was analyzed using descriptive statistics involving frequencies and percentages. The summary of

these results were presented using frequency tables. Qualitative data was grouped in to classes and the quantitative data obtained will be described using direct quotation.The information was presented in form of tables from which conclusions and recommendations were made. The Chi-square method was used to test the hypotheses.

3.8: Ethical considerations

These are principles that protect the rights of participants in a research study. They are actions that were taken to ensure rights of participants were not violated. These considerations are usually made to ensure that research work involving humans and animals are carried out in accordance with high ethical standards. These standards include voluntary participation, informed consent, confidentiality of information, anonymity to research participants and approval by relevant authorities such as IRBs to conduct the research study (Resnik, 2005). The research was subjected to approval by University of Nairobi research Board. A research permit was sought for and permission to conduct data collection will be sought from the Medical Superintendent, KL5H.

3.9: Operationalization Table

Table 3.1:Operationalization table

Research objective	Variable	Indicators	Scale	Data collection methods	Type of analysis
1. To establish the extent to which hand washing influences infection prevention and control practices in KL5H, Kisii County	Independent variable Hand washing Dependent variable Infection prevention and control practices	Sinks are conveniently placed water available staff trained on hand washing sinks are in working order soap for washing hands available staff trained on hand washing	Ratio scale and ordinal scale	Questionnaire and interview schedule	Quantitative and qualitative Chi square
2. To assess how waste segregation influences infection prevention and control practices in KL5H	Independent variable Waste segregation Dependent variable Infection prevention and control practices	Waste management training to staff Color coded dustbins are available Liner bags are available Each employee's role in waste segregation is clear Staff trained on waste segregation	Ordinal and ratio scale	Questionnaire and interview schedule	Quantitative and qualitative Chi square

3.	To determine the extent to which injection safety influence infection prevention and control practices in KL5H	Independent variable Injection safety Dependent variable Infection prevention and control practices	Protective gear for waste handlers available, Availability of sufficient needles and syringes Availability of safety boxes at the work areas Staff trained on safety injection at least once pin 6 Months	Ratio scale	Questionnaire and interview schedule	Quantitative and qualitative Chi square
4.	To establish the extent to which provision of policies and guidelines influence infection prevention and control practices in KL5H	Independent variable Provision of policies and guidelines Dependent variable Infection prevention and control practices	Hand washing policy Waste segregation policy Safe injection policy and post exposure prophylaxis policy are available at the department Infection control committee is active Policies are easy to read Policies are easy to read and understand	Ratio scale Ordinal scale	Questionnaire and interview schedule	Quantitative and qualitative Chi square

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION, INTERPRETATION AND DISCUSSION

4.1: Introduction

This chapter presents the study findings which have been analyzed, presented and interpreted. The chapter is discussed under the following thematic and sub-thematic areas namely; response return rate, demographic characteristics of respondents, Hand washing and infection prevention and control, waste segregation and infection prevention and control, injection safety and infection prevention and control, provision of policies and guidelines and infection prevention and control and hypothesis testing

4.2: Response Return Rate

The study sought to know the response return rate in order produce accurate and useful results. A survey's response rate is the result of dividing the number of people who responded by the total number of people in the sample who were eligible to participate and should have been responded (American Association for Public Opinion Research, 2008). Many observers presumed that higher response rates assure more accurate survey results. A high survey response rate helps to ensure that the survey results are representative of the survey population (Surveymonkey, 2009). The questionnaires and interview schedules were administered in a period of three weeks. A total of 135 questionnaires and 5 interview schedules were successfully completed and returned. This represents a response rate of 87%. Holbrook (2005) assessed whether lower response rates are associated with less unweighted demographic representativeness of a sample. By examining the results of 81 national surveys with response rates varying from 5 percent to 54 percent, they found that surveys with much lower response rates were only minimally less accurate (Holbrook, 2007). This implies that the quality of data collected is a key determinant of a survey research quality; even low response rates can yield accurate data. For my study two instruments were combined and the data obtained was complementary and ensured the findings could be generalized to the general population.

4.3: Personal data of respondents

This section describes the personal data of respondents who participated on the study. The part is subdivided in to several subheadings namely sex of respondents, designation of respondents and years of experience of respondents.

4.3.1: Gender of respondents

The respondents were asked to state their sex. Their responses are shown in table 4.1 below:

Table 4.1: Gender of respondents

Gender	Frequency	Percentage (%)
Male	40	28.6
Female	99	70.7
No response given	1	0.7
Total	**140**	**100.0**

28.6% (40) of the respondents were male while 70.7% (99) of the respondents were female. The remaining 0.7% (1) of the respondents did not give a response to this question. This implies that majority of the medical staff in Kisii Level Five Hospital are females. More than two thirds of the staffs were female.

4.3.2: Designation of respondents

The respondents were asked to indicate their designation. Their responses are displayed in table 4.2 below:

Table 4.2: Designation of respondents

Designation	Frequency	Percentage (%)
Nurse	83	59.3
Medical Officer	7	5.0
Clinical Officer	5	3.6
Nurse Intern	14	10.0
Medical Officer Intern	6	4.3
Clinical Officer Intern	11	7.9
Physiotherapist	1	0.7
Laboratory Technologist	7	5.0
Other	6	4.3
Total	**140**	**100.0**

59.3% (83) of the respondents were nurses, 10% (14) were nurse interns, 7.9% (11) were clinical officer interns, 5% (7) were laboratory technologists, 5% (7) were medical officers, 4.3% (6) were medical officer interns, 4.3% (6) were other cadres, 3.6% (5) were clinical officers and 0.7% (1) of the respondents were physiotherapists. This implies that majority of the medical staffs in Kisii Level Five Hospital are nurses followed by medical officers and clinical officers. The physiotherapists were the least common cadre.

4.3.3: Years of experience of respondents

The respondents were asked to state the length of their experience in years as workers in the clinical area since graduation from college. Their responses are shown in table 4.3 below:

Table 4.3: Experience of respondents

Experience in years	Frequency	Percentage (%)
Less than one year	36	25.7
One to three years	19	13.6
Three to five years	18	12.9
More than five years	56	40.0
Other (more than 20 years)	10	7.1
No response given	1	0.7
Total	**140**	**100.0**

From the table, 40% (56) of the respondents had worked for more than 5 years, 25.7% (36) of the respondents had worked for less than 1 year, 13.6% (19) had worked for 1-3 years, 12.9% (18) of the respondents had worked for 3-5 years, 7.1% (10) had worked for more than 20 years and 0.7% (1) of the respondents did not respond to this question. This implies that majority of the respondents had worked in the system for more than one, understood the system well and hence were likely to give the root factors influencing infection prevention and control practices in Kisii Level Five Hospital. Twenty five percent of respondents had worked for less than one year in the hospital and therefore might not have had enough time to understand how the hospital operates in regard to infection prevention and control.

4.5 Hand washing and infection prevention and control.

The section is discussed under the following subheadings namely training on hand washing, emphasis of hand washing in departmental meetings, hand washing is done before and after all procedures, the department has a running water source, the running water source is in working order, the running water source is easily accessible from the working areas, whether sinks are situated near the entrance or exit of the working area, whether the department had adequate supply of soap and detergents, whether the respondents thought hand washing was of any benefit to them, whether the respondents thought of hand washing has having any benefits to the patient, whether they thought of hand washing as a challenge or not and what the respondents thought could be done to improve hand washing practice in her department.

4.4.1: Training on hand washing in the last 6 Months

The study sought to know whether the respondents had undergone any training on hand washing within a period of 6 months prior to the study period. The responses of respondents are shown in the table below:

Table 4.4: Training on hand washing in the last 6 Months

Rating	Frequency	Percentage (%)
Strongly agree	19	13.6
Agree	18	12.9
Neither agree nor disagree	3	2.1
Disagree	42	30.0
Strongly disagree	56	40.0
No response	2	1.4
Total	**140**	**100.0**

From the table, 13.6% (19) of the respondents strongly agreed that they had received training on hand washing within 6 months prior to the study period, 12.9% (18) agreed, 2.1% (3) neither agreed nor disagreed, 30% (42) disagreed, 40% (56) strongly disagreed and 1.4% (2) of the respondents did not respond to this question. This implies that majority of the respondents do not undergo On-Job-Training on hand washing as frequently as it is necessary to sustain the practice of hand washing in the hospital.

4.4.2: Emphasizing hand washing practice in departmental meetings

The study sought to establish whether hand washing practice was given emphasis in meetings taking place within the hospital departments. The responses of the respondents are shown in the table below:

Table 4.5: Hand washing is emphasized in departmental meetings

Rating	Frequency	Percentage (%)
Strongly agree	40	28.6
Agree	48	34.3
Neither agree nor disagree	9	6.4
Disagree	24	17.1
Strongly disagree	18	12.9
No response given	1	0.7
Total	**140**	**100.0**

From the table, 28.6% (40) of the respondents strongly agreed that hand washing was being emphasized in their departmental meetings, 34.3% (48) agreed, 6.4% (9) neither agreed nor disagreed, 17.1% (24) disagreed, 12.9% (18) strongly disagreed and 0.7% (1) of the respondents did not respond to this question. This implies than majority of the departments value hand washing and emphasize its practice in departmental meetings. There are however some departments which have not set hand washing as an agenda in their meetings to act as a reminder to the medical staffs working in the departments.

4.4.3: Washing hands before and after every procedure is done

The respondents were asked to state whether they were able to wash their hands before and after performing procedures to all patients as recommended. The responses the respondents gave are shown in the table below:

Table 4.6: Hand washing is done before and after all procedures by staff

Rating	Frequency	Percentage (%)
Strongly agree	30	21.4
Agree	47	33.6
Neither agree nor disagree	13	9.3
Disagree	38	27.1
Strongly disagree	11	7.9
No response given	1	0.7
Total	**140**	**100.0**

From the table, 21.4% (30) of the respondents strongly agreed that they were able to wash hands before and after all procedures done to patients, 33.6% (47) agreed, 9.3% (13) neither agreed nor disagreed, 27.1% (38) disagreed, 7.9% (11) strongly disagreed and 0.7% (1) of the respondents did not give an answer to this question. This implies that half of the medical are able to meet the recommended standard of washing hands before and after each procedure, while the other half is acting below the standard.

4.4.4: The department has a running water source

The respondents were asked to indicate whether their department had a running water source. Their responses are shown in the table below

Table 4.7: Department has a running water source

Rating	Frequency	Percentage (%)
Strongly agree	79	56.4
Agree	30	21.4
Neither agree nor disagree	5	3.6
Disagree	12	8.6
Strongly disagree	14	10.0
Total	**140**	**100.0**

From the table, 56.4% (79) of the respondents strongly agreed that their departments has a running water source, 21.4% (30) agreed, 3.6% (5) neither agreed nor disagreed, 8.6% (12) disagreed and 10% (14) strongly disagreed. Running water sources are necessary to facilitate hand washing. The fact that many departments have running water sources implies that the hospital prioritized hand washing in many departments. It also implies that the departments without a running water source are not washing hands as recommended.

4.4.5: The running water source is in working order

The respondents were asked to state whether the running water source in their departments were in working order. The respondents gave the responses shown in the table below:

Table 4.8: The running water source is in working order

Rating	Frequency	Percentage (%)
Strongly agree	64	45.7
Agree	36	25.7
Neither agree nor disagree	5	3.6
Disagree	12	8.6
Strongly disagree	20	14.3
No response given	3	2.1
Total	**140**	**100.0**

From the table, 45.7% (64) of the respondents strongly agreed that the running water source in their departments was in working order, 25.7%v(36) agreed, 3.6% (5) neither agreed nor disagreed, 8.6% (12) disagreed, 14.3% (20) strongly disagreed and 2.1% (3) of the respondents did not give an answer to this question. This implies that majority of the running water sources are in use. However, there are some departments with out of order running water sources. These departments cannot afford to wash hands as recommended.

4.4.6: The running water source is easily accessible from the working area

The respondents were asked to indicate whether the running water source in their departments was easily accessible from the working area. The respondents responded as shown in the table below:

Table 4.9: The running water source is easily accessible from the working area

Rating	Frequency	Percentage (%)
Strongly agree	58	41.4
Agree	33	23.6
Neither agree nor disagree	7	5.0
Disagree	23	16.4
Strongly disagree	18	12.9
No response given	1	0.7
Total	**140**	**100.0**

From the table, 41.4% (58) of the respondents strongly agreed that the running water sources in their departments were easily accessible from the working areas, 23.6% (33) agreed, 5% (7) neither agreed nor disagreed, 16.4% (23) disagreed, 12.9% (18) strongly disagreed and 0.7 % (1) of the respondents did not respond to this question. This implies that in majority of the departments medical staffs are able to access the running water easily from the working area hence facilitating the practice of hand washing by the staff while working. There are a minority of medical staff for whom hand washing has been made impossible by lack of easy accessibility to a running water source from the working areas.

4.4.7: The sink is near the entrance or exit of the room or working area

The respondents were asked to state whether the sinks in their departments were located near the entrance or exit of the room or working area. The responses given are shown in the table shown below:

Table 4.10: Sink is near entrance or exit of the room or working area

Rating	Frequency	Percentage (%)
Strongly agree	34	24.3
Agree	45	32.1
Neither agree nor disagree	5	3.6
Disagree	25	17.9
Strongly disagree	26	18.6
No response given	5	3.6
Total	**140**	**100.0**

From the table, 24.3% (34) of the respondents strongly agreed that the sinks in their departments were near the entrance or exit of the rooms or working areas, 32.1% (45) agreed, 3.6% (5) neither agreed nor disagreed, 17.9% (25) disagreed, 18.6% (26) strongly disagreed and 3.6% (5) of the respondents did not give a response to this question. This implies that only half of the medical staffs are prompted to wash their hands because of the strategic location of the sinks near the entrances or exits to the working areas. Locating sinks at these places enables the staffs to wash hands as they come in and as they go out, thus promoting infection prevention and control in the hospital.

4.4.8: The department has adequate supply of soap or detergent for washing hands

The respondents were asked to state whether their departments had adequate supply of soap or detergent for washing hands. The respondents answered as shown in the table shown below:

Table 4.11: The department has adequate supply of soap or detergent

Rating	Frequency	Percentage (%)
Strongly agree	38	27.1
Agree	56	40.0
Neither agree nor disagree	10	7.1
Disagree	17	12.1
Strongly disagree	19	13.6
Total	**140**	**100.0**

From the table, 27.1% (38) of the respondents strongly agreed that the departments in which they worked had adequate supply of soap or detergents for washing hands, 40% (56) agreed, 7.1% (10) neither agreed nor disagreed, 12.1% (17) disagreed, and 13.6% (19) strongly disagreed. This implies that two thirds of medical staffs are able to wash hands using soap and water as recommended while a third of the medical staff are not able to wash hands properly due to lack of reliable access to soap and detergents.

4.4.9: Hand washing is for the healthcare provider's own good

The respondents were asked to indicate whether hand washing was for the good of the healthcare provider. The respondents responded as shown in the table below:

Table 4.12: Hand washing is for the healthcare provider's own good

Rating	Frequency	Percentage (%)
Strongly agree	94	67.1
Agree	28	20.0
Neither agree nor disagree	3	2.1
Disagree	6	4.3
Strongly disagree	8	5.7
No response given	1	0.7
Total	**140**	**100.0**

From the table, 67.1% (94) of the respondents strongly agreed that hand washing was for the good of the healthcare worker, 20% (28) agreed, 2.1% (3) neither agreed nor disagreed, 4.3% (6) disagreed, 5.7% (8) strongly disagreed and 0.7% (1) did not give an answer to this question. This implies that majority of medical staffs appreciate the positive benefits that hospital hand washing provides to the staffs themselves and hence take the practice seriously while a small percentage do not appreciate that these benefits exist and therefore do not take the practice seriously.

4.4.10: Hand washing is for the good of the patient

The respondents were asked to state whether hand washing was for the good of the patient. The responses given are shown in the table below.

Table 4.13: Proper hand washing is for the good of the patient

Rating	Frequency	Percentage (%)
Strongly agree	75	53.6
Agree	25	17.9
Neither agree nor disagree	5	3.6
Disagree	12	8.6
Strongly disagree	20	14.3
No response given	3	2.1
Total	**140**	**100.0**

From the table, 53.6% (75) of the respondents strongly agreed that proper hand washing is for the good of the patients, 17.9% (25) agreed, 3.6% (5) neither agreed nor disagreed, 8.6% (12) disagreed, 14.3% (20) strongly disagreed and 2.1% (3) of the respondents did not answer this question. This implies that majority of the medical staffs appreciate the importance of hand washing practice to the patients while a small but significant fraction of these staff do not appreciate these benefits and therefore might not be practicing hand washing as recommended.

4.4.11: Hand washing is a challenge in the department

The respondents were asked to state whether they considered hand washing to be a challenge in their department. They responded as shown in the table shown below:

Table 4.14: Hand washing is a challenge

Response	Frequency	Percentage (%)
Yes	87	62.1
No	52	37.1
No response given	1	0.7
Total	**140**	**100.0**

From the table, 62.1% (87) said yes, 37.1% (52) said no while 0.7% (1) of the respondents did not give and answer to this question. This implies that for majority of the respondents, washing hands as recommended is not possible because their departments do not have adequate capacity to sustain proper hand washing. A third of the respondents do not experience any challenges with hand washing in their departments and therefore their departments have adequate capacity to implement proper hand washing practice

4.4.12: How hand washing practice can be improved in the departments

The respondents were asked to state how they thought the practice of hand washing could be improved in the departments in which they worked. Their responses are outlined in the statements below:

‘’*……..due a lot of work in our department we sometimes forget to wash our hands as we concentrate on saving the lives of many critically ill patients in our department. Regardless of availability of soap, most staffs do not use it. There is an acute shortage of staff and heavy work load. More staffs need to be employed to enable staff wash hands’’*

‘’……..we only have one sink situated in the staff room; it is not possible to access it easily so as to wash hands before and after every procedure done to patients. The place for washing hands is far from the working area.’’

‘’…….there is no running water. We are forced store water in containers. There is contamination of the same when one fetches using a cup to wash hands. Running water sources and sinks are not accessible. Provide enough water sources in every working station. Let the supply of soap and detergent be made consistent at every water source.’’

‘’…….some people forget to wash hands before and after handling patients. Encourage and remind people to be washing hands frequently. Trainings should be done frequently so that

all cadres of staff and patients are involved especially on the techniques of hand washing. Avail necessary guidelines in the departments. Posters and pictures can be used to show how hand washing is done to staffs in all departments.''

''……..towels to wipe hands after washing are missing. We waste time drying our hands in the air before putting on gloves. Provide hand towels to promote drying of hands after washing them in the hospital.''

'……..*The same handle is used before and after washing hands; the hands remain contaminated even after being washed. Recruit more staff, supply the right equipment and provide training to all staff.''*

These responses imply that the right equipments must be procured for hand washing to be done as recommended. The right taps must be put in place to ensure that once the hands are washed they do not get contaminated by touching contaminated taps afterwards. The results also imply that the staff will not comply with hand washing recommendations until disposable towels are availed to dry hands after washing them. Putting in place reminders in the work place will help the staffs to be reminded from time to time about the importance of hand washing before and after all procedures. There has to be adequate staffing in work places to enable the workers to find time to wash hands. The sinks and water must be available and conveniently located to ensure compliance to hand washing is maximized in all departments.

4.5: Waste segregation and infection prevention and control practices.

This section contains several sub sections namely; training of staff on waste segregation, emphasis of waste segregation in departmental meetings, availability of adequate color-coded dust bins in departments, availability of adequate color-coded liner bags in departments, accessibility of the dust bins from the working areas in departments, labeling of dust bins in departments, whether waste segregation is for the good of the healthcare provider, whether waste segregation is for the good of the patient, whether waste segregation is considered as a challenge in the departments where respondents worked and how the respondents thought waste segregation practice could be improved in their departments.

4.5.1: Training of staff on waste segregation within 6 months prior to the study

The respondents were asked to indicate whether they had received any training on waste segregation within six months prior the time the study was carried out. Their responses are shown in table 4.15 below:

Table 4.15: Received training on waste segregation in the last 6 Months

Rating	Frequency	Percentage (%)
Strongly agree	21	15.0
Agree	22	15.7
Neither agree nor disagree	5	3.6
Disagree	39	27.9
Strongly disagree	52	37.1
No response given	1	0.7
Total	**140**	**100.0**

From the table15% (21) of the respondents strongly agreed that they received training on waste segregation within 6 months prior to the time the study was carried out, 15.7% (22) agreed, 3.6% (5) neither agreed nor disagreed, 27.9% (39) disagreed, 37.1% (52) strongly disagreed and 0.7% (1) did not respond to this question**.** This implies that majority of the medical staff do not receive frequent on-job-training on waste segregation from time to time to enable them update their knowledge and skills on waste segregation for proper practice. Only a third of the workers receive updates in a period of six months!

4.5.2: Waste segregation is emphasized in departmental meetings

The respondents were asked to state whether the practice of waste segregation was emphasized in departmental meetings in the place where they worked. The responses given are shown in table 4.16 below:

Table 4.16: Waste segregation is emphasized in meetings

Rating	Frequency	Percentage (%)
Strongly agree	49	35.0
Agree	50	35.7
Neither agree nor disagree	15	10.7
Disagree	15	10.7
Strongly disagree	10	7.1
No response given	1	0.7
Total	**140**	**100.0**

From the table, 35% (49) of the respondents strongly agreed that waste segregation was being emphasized in meetings in the departments where they worked, 35.7% (50) agreed, 10.7% (15) neither agreed nor disagreed, 10.7% (15) disagreed, 7.1% (15) strongly disagreed and 0.7% (1) of the respondents did not answer this question. This implies that many departments in the hospital value waste segregation and emphasize it in meetings whereas a few departments do not use their departmental meetings to encourage members to segregate clinical waste well.

4.5.3: The department has adequate supply of color-coded dustbins

The respondents were asked to indicate whether their departments had adequate supply of color-coded dustbins for waste segregation. Their responses are shown in table 4.17 below:

Table 4.17: Supply of color coded dustbins is adequate

Rating	Frequency	Percentage (%)
Strongly agree	38	27.1
Agree	52	37.1
Neither agree nor disagree	8	5.7
Disagree	27	19.3
Strongly disagree	13	9.3
No response given	2	1.4
Total	**140**	**100.0**

From the table, 27.1% (38) of the respondents strongly agreed that there was adequate supply of color-coded dust bins to aid in waste segregation, 37.1% (52) agreed, 5.7% (8) neither agreed nor disagreed, 19.3% (27) disagreed, 9.3% (13) strongly disagreed and 1.4% (2) of the respondents did not give a response to this question. This implies that half of the respondents mixed waste due to lack of adequate supply of color-coded dust bins. This is very dangerous if indeed this is the case.

4.5.4: The supply of color-coded liner bags is adequate

The respondents were asked to state whether their departments had adequate supply of color-coded liner bags for waste segregation. The respondents answered as shown in table 4.18 below:

Table 4.18: The supply of color coded liner bags is adequate

Rating	Frequency	Percentage (%)
Strongly agree	34	24.3
Agree	57	40.7
Neither agree nor disagree	9	6.4
Disagree	25	17.9
Strongly disagree	13	9.3
No response given	2	1.4
Total	**140**	**100.0**

From the table, 24.3% (34) of the respondents strongly agreed that the departments in which they worked had adequate supply of color-coded liner bags to aid in waste segregation, 40.7% (57) agreed, 6.4% (9) neither agreed nor disagreed, 17.9% (25) disagreed, 9.3% (13) strongly disagreed, and 1.4% (2) of the respondents did not give an answer to this question. This implies that in majority of the departments waste handlers are able to differentiate the different kinds of clinical wastes due to the availability and use of the color-coded liner bags while for the departments without these bags, the wastes are likely to be mixed thus putting the waste handlers and staff at risk of infections.

4.5.5: The dustbins are easily accessible

The respondents were asked to indicate whether the dust bins in their departments were situated in areas easily accessible from the working areas. The respondents responded as shown in table 4.19 below:

Table 4.19: Dust bins are easily accessible

Rating	Frequency	Percentage (%)
Strongly agree	43	30.7
Agree	62	44.3
Neither agree nor disagree	7	5.0
Disagree	20	14.3
Strongly disagree	6	4.3
No response given	2	1.4
Total	**140**	**100.0**

From the table, 30.7% (43) of the respondents of the respondents strongly agreed that the dust bins in the departments where they worked were easily from the working areas, 44.3% (62) of them agreed, 5% neither agreed nor disagreed, 14.3% (20) disagreed, 4.3% (6) strongly disagreed and 1.4% (2) of them did not give a response to this question. This implies that healthcare workers who are not able to access the dust bins easily travel long distances to put waste in the dust bins thus wasting time and energy or they could be putting the waste in the

wrong places. Those healthcare workers who are able to access the dust bins easily are able to do proper waste segregation.

4.5.6: The dust bins are well labeled

The respondents were asked to state whether the dust bins in their departments were well labeled to facilitate waste segregation. The respondents answered as shown in table 4.20 below:

Table 4.20: Dust bins are well labeled

Rating	Frequency	Percentage (%)
Strongly agree	31	22.1
Agree	45	32.1
Neither agree nor disagree	7	5.0
Disagree	36	25.7
Strongly disagree	17	12.1
No response given	4	2.9
Total	**140**	**100.0**

From the table, 22.1% (31) of the respondents strongly agreed that the dust bins in departments where they worked were clearly labeled, 32.1% (45) agreed, 5% (7) neither agreed nor disagreed, 25.7% (36) disagreed, 12.1% (17) strongly disagreed and 2.9% (4) did not respond to this question. Labeling enables workers to easily classify the clinical waste in to non infectious, infectious and highly infectious categories and put these categories of waste in the corresponding dust bins. These findings imply that half of the staffs have access to labeled dust bins and hence are able to put the wastes in the right dust bins. Those with un labeled dust bins are not likely to do proper waste segregation.

4.5.7: Waste segregation is for the good of the healthcare provider

The study sought to find out whether the respondents considered hand washing to be of benefit to the healthcare provider. The respondents were asked to state whether waste segregation is for the good of the healthcare provider. The respondents' answers are shown in table 4.21 below:

Table 4.21: Waste segregation is for the good of the healthcare provider

Rating	Frequency	Percentage (%)
Strongly agree	79	56.4
Agree	33	23.6
Neither agree nor disagree	12	8.6
Disagree	5	3.6
Strongly disagree	8	5.7
No response given	3	2.1
Total	**140**	**100.0**

From the table, 56.4% (79) of the respondents strongly agreed that proper waste segregation is for the good of the healthcare provider, 23.6% (33) agreed, 8.6% (12) neither agreed nor disagreed, 3.6% (5) disagreed, 5.7% (8) strongly disagreed and 2.1% (3) did not respond to the question. This implies that most healthcare workers will practice proper waste segregation because of the perceived benefits to self while a few of the staff do not practice proper waste segregation because they do not see the practice as being beneficial to them. Poor waste segregation by these staff will put at risk the lives of staff and the patients they take care of.

4.5.8: Waste segregation is for the good of the patient

The study sought to find out whether the respondents considered waste segregation to be beneficial to the patients. They were asked to state whether waste segregation was good for the patient. The respondents answered as shown in table 4.22 below:

Table 4.22: Waste segregation is for the good of the patient

Rating	Frequency	Percentage (%)
Strongly agree	63	45.0
Agree	37	26.4
Neither agree nor disagree	14	10.0
Disagree	10	7.1
Strongly disagree	14	10.0
No response given	2	1.4
Total	**140**	**100.0**

45% (63) of the respondents strongly agreed that proper waste segregation was for the good of the patient, 26.4% (37) agreed, 10% (14) neither agreed nor disagreed, 7.1% (10) disagreed, 10% (14) strongly disagreed and 1.4% (2) did not respond to this question. Those workers who agree that waste segregation is for the good of the patient are likely to practice waste segregation properly than those who disagree. Therefore, the findings implies that majority of the respondents understand the benefits of proper waste segregation to the patients they take care of and are likely to segregate the waste well. The small fraction of the respondents who do not perceive any benefits that waste segregation provides to patients are less likely to practice proper waste segregation and therefore putting the lives of patients at risk.

4.5.9: Waste segregation is the work of the casual workers only

The study sought to establish whether the respondents considered waste segregation to be the role of the casual workers only. They were asked to state whether waste segregation is the work of only the casual workers. Their responses are shown in table 4.23 below:

Table 4.23: Waste segregation is the casual workers' job

Rating	Frequency	Percentage (%)
Strongly agree	4	2.9
Agree	3	2.1
Neither agree nor disagree	2	1.4
Disagree	19	13.6
Strongly disagree	111	79.3
No response given	1	0.7
Total	**140**	**100.0**

From the table, 2.9% (4) of the respondents strongly agreed to the opinion that waste segregation in the departments where they worked was the duty of the casual worker, 2.1% (3) agreed, 1.4% (2) neither agreed nor disagreed, 13.6% (19) disagreed, 79.3% (111) strongly disagreed and 0.7% (1) did not respond to this question. All workers participate in generation of clinical waste within the hospital and it is the responsibility off all to segregate the waste generated well. The responses to this question imply that majority of the respondents appreciate the fact that waste segregation cannot be accomplished by one person alone. They also imply that there are a few workers who do not want to take responsibility for waste segregation in their departments.

4.5.10: Waste segregation is everybody's job

The study sought to know whether the respondents considered waste segregation to be a collective responsibility. They were asked to state whether waste segregation was everybody's job. They responded as shown in table 4.24 below:

Table 4.24: Waste segregation is everybody's job

Rating	Frequency	Percentage (%)
Strongly agree	128	91.4
Agree	9	6.4
Strongly disagree	2	1.4
No response given	1	0.7
Total	**140**	**100.0**

From the table, 91.4% (128) of the respondents strongly agreed, 6.4% (9) agreed, 1.4% (2) strongly disagreed and 0.7% (1) did not answer this question. The results imply that many people take responsibility for waste segregation in their departments whereas a small percentage of the workers do not take responsibility for waste segregation in their departments.

4.5.11: waste segregation is a challenge

The study sought to establish whether the respondents considered waste segregation to be a challenge in their departments. Their responses are shown in table 4.25 below:

Table 4.25: Waste segregation is a challenge

Rating	Frequency	Percentage (%)
Yes	99	70.7
No	40	28.6
No response given	1	0.7
Total	**140**	**100.0**

From the table, 70.7% (99) of the respondents stated that waste segregation was a challenge in the departments where they worked, 28.6% (40) stated that it was not a challenge and 0.7% (1) did not respond to this question. The results imply that waste segregation is more of a challenge than a smooth ride in many departments.

4.5.12: Improving waste segregation practice in departments

The study sought to determine the strategies that the respondents considered important in improving waste segregation practice in their departments. They were asked to indicate what needed to be done to improve waste segregation in their departments. Their responses are outlined in the statements below:

''……Sorting out the waste is a challenge because dust bins are either inadequate or absent altogether. Some dust bins are smaller and cannot accommodate the large amounts of waste we produce. The dust bins are not well labeled and most healthcare workers confuse the dust bins. It is hard to know what should be segregated where. More training and labeling of dust bins is needed.'' This implies that enough dust bins must be available and well labeled for waste segregation to be done properly.

''……Sometimes waste collection is not done in time. It leaks and produces foul smell in the ward. More casuals need to be employed to assist in quick collection of the waste from the wards.'' This implies that when waste is left in the work stations for a long time, it releases a bad smell and hence should be removed as soon as possible to make workers more comfortable in the work areas.

''.....There is adequate supply of dustbins and liners. The dust bins are well labeled and hence there is no confusion.''

''....Most people don't see it as a problem when mixing waste. Most staffs do not participate in waste segregation because it is not their duty. Many people have not developed the right attitude towards waste segregation. Train all cadres of staff on waste management for each one to participate actively. Remind everybody of the importance of waste segregation.'' This implies that negative attitude of staff could be having a negative impact on waste segregation.

4.6: Injection and infection prevention and control practices.

This section is divided in to the following areas namely; training on injection safety within 6 months prior to the study, emphasis of injection safety in departmental meetings, departments had adequate supply of safety boxes, safety boxes are easily accessible from the working areas, the departments had adequate supply of needles and syringes, injection safety is for the good of the healthcare provider, injection safety is for the good of the patient, waste handlers have adequate protective gear, injection safety is a challenge in departments and how injection safety can be improved in departments.

4.6.1: Training on injection safety in the last six months

The study sought to establish whether the respondents had been trained on injection safety within six months prior to the study. The respondents were asked to state whether they had received training on injection safety within 6 Months from the time the study was being carried out. The responded answered as shown in the table below:

Table 4.26: Received training on injection safety

Rating	Frequency	Percentage (%)
Strongly agree	12	8.6
Agree	14	10.0
Neither agree nor disagree	4	2.9
Disagree	50	35.7
Strongly disagree	57	40.7
No response given	3	2.1
Total	**140**	**100.0**

From the table, 8.6% (12) of the respondents strongly agreed, 10% (14) agreed, 2.9% (4) neither agreed nor disagreed, 35.7% (50) disagreed, 40.7% (57) strongly disagreed and 2.1% (3) did not give an answer to this question. The results imply that there is in adequate on-job-training on injection safety in most departments within the hospital.

4.6.2: Injection safety is emphasized in departmental meetings

The study sought to find out whether injection safety was emphasized frequently in departmental meetings in the departments where the respondents worked. The respondents were asked to state whether injection safety was emphasized in meetings in the departments in which they worked. The responses given by respondents are displayed in table 4.27 below:

Table 4.27: Injection safety is emphasized in meetings

Rating	Frequency	Percentage (%)
Strongly agree	33	23.6
Agree	57	40.7
Neither agree nor disagree	12	8.6
Disagree	21	15.0
Strongly disagree	15	10.7
No response given	2	1.4
Total	**140**	**100.0**

From the table, 23.6% (33) of the respondents strongly agreed, 40.7% (57) agreed, 8.6% (12) neither agreed nor disagreed, 15% (21) disagreed, 10.7% (15) strongly disagreed and 1.4% (2) did not respond to this question. The results imply that two thirds of the departments emphasize the importance of injection safety to workers during departmental meetings. A third of the departments do not have frequent sensitization of their workers on the importance of injection safety Infection prevention and control within the departments concerned.

4.6.3: The departmental has a regular and adequate supply of safety boxes

The study sought to know whether the departments where the respondents worked had regular and adequate supply of safety boxes to facilitate safe disposal of sharps. The respondents were asked to indicate whether the department where they worked has adequate and regular supply of safety boxed. The respondents answered as shown in table 4.28 below:

Table 4.28: The department has regular and adequate supply of safety boxes

Rating	Frequency	Percentage (%)
Strongly agree	38	27.1
Agree	38	27.1
Neither agree nor disagree	11	7.9
Disagree	31	22.1
Strongly disagree	17	12.1
No response given	5	3.6
Total	**140**	**100.0**

From the table, 27.1% (38) strongly agreed, 27.1% (38) agreed, 7.9% (11) neither agreed nor disagreed, 22.1% (31) disagreed, 12.1% (17) strongly disagreed and 3.6% (5) did not respond to the question**.** Safety boxes are important for disposal of used needles, blades and other clinical sharps. Half of the departments had regular and adequate supply of safety boxes, implying that workers in these departments were able to dispose of sharps properly. The other half of the departments did not have regular and adequate supply of safety boxes. This implies that workers in these departments were not able to dispose of sharps as per recommendations.

4.6.4: The safety boxes are easily accessible from the working areas

The study sought to find out whether safety boxes were easily accessible from the working areas in the departments in the departments where the respondents worked. The respondents were asked to indicate whether the safety boxes were easily accessible from the working areas in the departments in which they worked. The respondents answered as shown in table 4.29 below:

Table 4.29: Safety boxes are easily accessible

Rating	Frequency	Percentage (%)
Strongly agree	39	27.9
Agree	51	36.4
Neither agree nor disagree	7	5.0
Disagree	26	18.6
Strongly disagree	14	10.0
No response given	3	2.1
Total	**140**	**100.0**

From the table, 27.9% (39) strongly agreed, 36.4% (51) agreed, 5% (7) neither agreed nor disagreed, 18.6% (26) disagreed, 10% (14) strongly disagreed and 2.1% (3) did not respond to this question. When safety boxes are easily accessible workers are likely to comply in using them. The fact that slightly more than half of the respondents had easy access to safety boxes implies that these were the only with a conducive conditionality for proper disposal of sharps in their workstations. Therefore, the respondents without easy access to safety boxes did not dispose of sharps as recommended.

4.6.5: The department has adequate supply of needles and syringes

The study sought to establish whether the departments in which the respondents worked had adequate supply of needles and syringes to promote injection safety practices in those departments. The respondents were asked to state whether the departments in which they worked hard adequate supply of needles and syringes. The responses given are shown in table 4.30 below:

Table 4.30: The department has adequate supply of needles and syringes

Rating	Frequency	Percentage (%)
Strongly agree	67	47.9
Agree	49	35.0
Neither agree nor disagree	7	5.0
Disagree	10	7.1
Strongly disagree	4	2.9
No response given	3	2.1
Total	**140**	**100.0**

From the table, 47.9% (67) strongly agreed, 35% (49) agreed, 5% (7) neither agreed nor disagreed, 7.1% (10) disagreed, 2.9% (4) strongly disagreed and 2.1% (3) did not respond to the question. Majority of the departments had adequate supply of needles and syringes, implying that there was no sharing of needles and syringes by more than one patient receiving care in the work stations. This is the recommended practice. A small percentage of departments did not have adequate supply of needles and syringes, implying that there might have been sharing of needles and syringes for some patients in these departments. This practice is discouraged. This is an issue that however needs further investigation for certainty in conclusion.

4.6.6: Injection safety is for the good of healthcare workers

The study sought to determine whether the respondents thought injection safety was of any benefits to healthcare workers in the departments where they worked. The respondents were asked to state whether injection safety was for the good of the healthcare workers. The respondents responded as shown in table 4.31 below:

Table 4.31: Injection safety is for the good of the healthcare providers

Rating	Frequency	Percentage (%)
Strongly agree	93	66.4
Agree	22	15.7
Neither agree nor disagree	5	3.6
Disagree	8	5.7
Strongly disagree	8	5.7
No response given	4	2.9
Total	**140**	**100.0**

From the table, 66.4% (93) of the respondents strongly agreed, 15.7% (22) agreed, 3.6% (5) neither agreed nor disagreed, 5.7% (8) disagreed, 5.7% (8) strongly disagreed and 2.9% (4) of the respondents did not respond to this question. Many respondents were of the opinion that injection safety was for the good of the healthcare provider, implying that they had a positive

attitude towards injection safety while a small percentage of workers disagreed thus demonstrating a negative attitude towards the practice of injection safety.

4.6.7: Injection safety is for the good of the patient

The study sought to establish whether the respondents perceived injection safety has having any benefits to the patients. The respondents were asked whether injection safety was for the good of the patients. The respondents responded as shown in table 4.32 below

Table 4.32: Injection safety is for the good of the patient

Rating	Frequency	Percentage (%)
Strongly agree	78	55.7
Agree	29	20.7
Neither agree nor disagree	5	3.6
Disagree	8	5.7
Strongly disagree	16	11.4
No response given	4	2.9
Total	**140**	**100.0**

From the table, 55.7% (78) of the respondents strongly agreed, 20.7% (29) agreed, 3.6% (5) neither agreed nor disagreed, 5.7% (8) disagreed, 11.4% (16) strongly disagreed and 2.9% (4) did not respond to the question. This implies that many respondents acknowledge the importance of injection safety to patients. There are a few respondents who disagreed with the statement, implying that they did not understand the injection safety to patients and hence needed frequent sensitization.

4.6.8: Waste handlers have adequate protective gear

The study sought to establish whether waste handlers in the departments where the respondents worked were well protected. The respondents were asked to state whether the waste handlers in their departments had adequate protective gear. The respondents responded as shown in table 4.33 below:

Table 4.33: Waste handlers have adequate protective gear

Rating	Frequency	Percentage (%)
Strongly agree	11	7.9
Agree	40	28.6
Neither agree nor disagree	19	13.6
Disagree	39	27.9
Strongly disagree	28	20.0
No response given	3	2.1
Total	**140**	**100.0**

From the table, 7.9% (11) of the respondents strongly agreed, 28.6% (40) agreed, 13.6% (19) neither agreed nor disagreed, 27.9% (39) disagreed, 20% (28) strongly disagreed and 2.1%

(3) gave no response to this question. The results imply that majority of the waste handlers are at risk of infections due to inadequate supply of protective gear for use during final disposal of waste from the clinical areas.

4.6.9: Injection safety is a challenge in the departments

The study sought to find out whether the respondents perceived injection safety as a challenge in the departments where they worked. The respondents were asked to indicate whether injection safety was a challenge in the departments where they worked. The respondents answered as shown in table 4.34 below:

Table 4.34: Injection safety is a challenge

Rating	Frequency	Percentage (%)
Yes	70	50.0
No	64	45.7
No response	6	4.3
Total	**140**	**100.0**

From the table, 50% (70) of the respondents stated that injection safety was a challenge in their departments, 45.7% (64) stated that injection safety was not a challenge in their departments while 4.3% (6) did not give a response to this question. This implies that injection safety is a challenge to have of the respondents and needs addressing for everyone to be brought on board.

4.6.10: To improve injection safety in the departments

The respondents were asked to suggest ways through which injection safety could be improved in the departments where they worked. Their responses are contained in the statements below:

‘’……*sometimes injections are prescribed as routine even when one can take oral medication and get well. People should change their attitude of believing that injections work well than oral medications.’’* This implies that staff attitude has a role to play in influencing injection safety in working areas.

‘’.....provide protective gear to waste handlers. Waste handlers should have heavy duty gloves.’’ This implies that waste handlers need to be protected by being supplied with adequate protective gear.

‘’.....safety boxes are adequate. Add manpower to promote clearance of the ones full.’’ This implies that more staffs are needed to clear already full safety boxes from the working areas.

''……..safety boxes are never available; if available they are over filled. Make safety boxes easily accessible and train people on injection safety. Some staffs put sharps in dust bins where they can injure other staff. There is a challenge in supply of safety boxes. Improve supply of these to every work station to ensure good and safe disposal of sharps.'' This implies that when safety boxes are not available and easily accessible, staffs put the contaminated sharps at the wrong places, thus putting the safety of staffs and patients at risk.

''.....some people forget to dispose used needles and syringes immediately after use or in the correct place. Remind each other of risks involved if safe injection practices are not adhered to.'' This implies that staffs need to be reminded form time to time on the importance of injection safety practices.

''…….injections are administered without proper cleaning of the areas with a spirit. Avail spirit always to avert this.'' This implies that the right procedures must be adhered to while administering injections to ensure the injections remain safe to patients and that surgical spirit is important for cleaning injection sites.

4.7: Provision of policies and guidelines and infection prevention and control Practices

This section is divided in to the following sub sections namely; the hospital has active infection prevention and control committee, waste segregation policy is available in the departments, hand washing policy is available in departments, injection safety policy is available in departments. Post exposure prophylaxis policy is available in departments and the policies are written in a language that is easy to understand.

4.7.1: The hospital has an active infection prevention and control committee

The study sought to establish whether the respondents perceived the infection prevention and control committee of the hospital as being active. The respondents were asked to state whether the infection prevention and control committee of the hospital was active. The respondents responded as shown in table 4.35 below:

Table 4.35: The hospital has an active infection prevention and control committee

Rating	Frequency	Percentage (%)
Strongly agree	18	12.9
Agree	47	33.6
Neither agree nor disagree	47	33.6
Disagree	13	9.3
Strongly disagree	10	7.1
No response given	5	3.6
Total	**140**	**100.0**

From the table, 12.9% (18) strongly agreed, 33.6% (47) agreed, 33.6% (47) neither agreed nor disagreed, 9.3% (13) disagreed, 7.1% (10) strongly disagreed and 3.6% (5) did not respond to the question. The results imply that there is inadequate co-ordination of infection prevention and control activities within the hospital.

4.7.2: Waste segregation policy is available in the departments

The respondents were asked to state whether the waste segregation policy was available in the departments where they worked. The respondents were asked to indicate whether the waste segregation policy was available in the departments where they worked. The respondents answered as shown in table 4.36 below

Table 4.36: Waste segregation policy is available in the departments

Rating	Frequency	Percentage (%)
Strongly agree	28	20.0
Agree	57	40.7
Neither agree nor disagree	19	13.6
Disagree	16	11.4
Strongly disagree	16	11.4
No response given	4	2.9
Total	**140**	**100.0**

From the table, 20% (28) of the respondents strongly agreed, 40.7% (57) agreed, 13.6% (19) neither agreed nor disagreed, 11.4% (16) disagreed, 11.4% (16) strongly disagreed and 2.9% (4) of the respondents did not answer the question. The results imply that majority of the departments had the waste segregation policy readily available for their workers to refer to. The results also imply that there were still a significant number of workers who did not have a proper guideline on how to segregate waste due to unavailability of waste segregation policy in the departments where they worked.

4.7.3: Hand washing policy is available in the departments

The study sought to determine whether the hand washing policy was available in the departments where the respondents worked. The respondents answered as shown in table 4.37 below:

Table 4.37: Hand washing policy is available in the departments

Rating	Frequency	Percentage (%)
Strongly agree	26	18.6
Agree	48	34.3
Neither agree nor disagree	14	10.0
Disagree	32	22.9
Strongly disagree	14	10.0
No response given	6	4.3
Total	**140**	**100.0**

From the table, 18.6% (26) of the respondents strongly agreed, 34.3% (48) agreed, 10% (14) neither agreed nor disagreed, 22.9% (32) disagreed, 10% (14) strongly disagreed, and 4.3% (6) of the respondents did not respond to the question. This implies that a substantial number of the respondents do not have access to a written policy in their departments on how to wash hands and hence do not wash hands as recommended. It also implies that those with readily available policy in their departments are able to refer to the policy from time to time hence improving their knowledge, skills and compliance to hand washing as recommended.

4.7.4: The injection safety policy is available in the departments

The study sought to establish whether the injection safety policy was available in the departments where the respondents worked. The respondents were asked to indicate whether the injection policy was available in the departments where they worked at the time of the study. The respondents responded as shown in table 4.38 below:

Table 4.38: Injection safety policy is available in the departments

Rating	Frequency	Percentage (%)
Strongly agree	32	22.9
Agree	58	41.4
Neither agree nor disagree	10	7.1
Disagree	19	13.6
Strongly disagree	15	10.7
No response given	6	4.3
Total	**140**	**100.0**

From the table, 22.9% (32) of the respondents strongly agreed, 41.4% (58) of the respondents agreed, 7.1% (10) of the respondents neither agreed nor disagreed, 13.6% (19) disagreed, 10.7% (15) strongly disagreed, and 4.3% (6) did not respond. This implies that majority of the respondents are able to easily refer to the injection safety policy available in their departments on proper disposal of sharps and hence reduce cases of needle stick injuries and unsafe injections in their departments. It also implies that those departments without the policy have a low compliance rate due to lack of policy guideline.

4.7.5: Post exposure prophylaxis policy is available in departments

The study sought to find out whether the post exposure prophylaxis policy was available in the departments where the respondents worked. The respondents were asked to state whether post exposure prophylaxis policy was available in the departments where they worked. The respondents responded as shown in table 4.39 below:

Table 4.39: Post exposure prophylaxis is available in the departments

Rating	Frequency	Percentage (%)
Strongly agree	25	17.9
Agree	39	27.9
Neither agree nor disagree	13	9.3
Disagree	39	27.9
Strongly disagree	18	12.9
No response given	6	4.3
Total	**140**	**100.0**

From the table, 17.9% (25) of the respondents strongly agreed, 27.9% (39) agreed, 9.3% (13) neither agreed nor disagreed, 27.9% (39) disagreed, 12.9% (18) strongly disagreed and 4.3% (6) did not give a response to the question. This implies that many of the respondents did not know what to do in case they were accidentally pricked by unsafe needles and other sharps.

4.7.6: The policies are written in a language that is easy to understand

The study sought to establish whether the policies that were available in the departments where the respondents worked were written in a language easy to understand. The respondents were asked to indicate whether the policies on IPC in their departments were written in a language that was easy to understand. The respondents responded as shown in table 4.40 below:

Table 4.40: The policies are written in a language easy to understand

Rating	Frequency	Percentage (%)
Strongly agree	31	22.1
Agree	53	37.9
Neither agree nor disagree	16	11.4
Disagree	18	12.9
Strongly disagree	16	11.4
No response given	6	4.3
Total	**140**	**100.0**

From the table, 22.1% (31) of the respondents strongly agreed, 37.9% (53) agreed, 11.4% (16) neither agreed nor disagreed, 12.9% (18) disagreed, 11.4% (16) strongly disagreed and 4.3% (6) did not respond to the question. This implies that not all workers are able to understand the meaning of the policies due to complex language and hence needed to be simplified for all to understand and implement them.

4.8: Hypotheses testing

There were four hypotheses to be tested in this section namely; there is no significant relationship between hand washing and infection prevention and control practices in KL5H, there is no significant relationship between waste segregation and infection prevention and control practices in KL5H, there is no significant relationship between injection safety and infection prevention and control practices in KL5H and there is no significant relationship between provision of policies and guidelines and infection prevention and control practices in KL5H. The hypotheses were tested were tested at 0.05 significance level and the results are shown in the table below:

Table 4.41: Hand washing, Waste segregation, Injection safety, Policies and guidelines

	Degree of freedom	Calculated Chi-Square value at 0.05 significance level	Table Chi-Square value
Hand washing	5	83.3750	11.07
Waste segregation	3	88.7750	7.82
Injection safety	28	82.6425	41.34
Policies and guidelines	20	67.7250	31.41

The first hypothesis stated that there was no significant relationship between hand washing and hospital infection prevention and control practices in Kisii Level Five Hospital. From the table shown above, at 5 degrees of freedom, the calculated value is 83.375 and the table value was 11.07. Since the calculated value is greater than the table value, the hypothesis was accepted.

The second hypothesis stated that there is no significant relationship between waste segregation and Hospital infection prevention and control practices in Kisii Level Five Hospital. The hypothesis was tested at 3 degrees of freedom. The calculated value was 88.7750 while the table value was 7.82. The hypothesis accepted as the calculated value was greater than the table value.

The third hypothesis stated that there is no significant relationship between injection safety and hospital infection prevention and control practices in Kisii Level Five Hospital. The hypothesis was tested at 28 degrees of freedom. The calculated value was 82.7250 and the table value was 41.34. The hypothesis was therefore accepted.

The last hypothesis stated that there was no significant relationship between provision of policies and guidelines and Hospital infection prevention and control practices in Kisii Level Five Hospital. The hypothesis was tested at 20 degrees of freedom. The table value was 31.41 while the calculated value was 67.7250. Therefore, the hypothesis was accepted.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of findings, conclusions and recommendations. The chapter is organized by objectives.

5.2: Summary of findings

The first objective of the study was to establish the extent to which hand washing influenced infection prevention and control practices in KL5H. Data analyzed revealed that only 26.5% of the respondents had been trained on hand washing within 6 months from the time the study was carried out. Concerning emphasis of importance of hand washing practice in departmental meetings 52.9 % of the respondents agreed that this was being done in their departments. It was also established that only 55% of the respondents were able to wash hands before and after every procedure done to patients as recommended. This observation agrees to that made by previous researchers that majority of the healthcare providers do not wash hands as recommended in the clinical area. 57.8% of the departments had a running water source and 71.4% of the respondents reported that the running water sources in their departments were in working order while 65% of the respondents reported that the running water sources in their departments were easily accessible from the working areas. 56.4% of the respondents stated that the sinks in the departments where they worked were located near the entrance or exit of the working areas or rooms whereas 67.1 of the respondents stated that their departments had adequate supply of soap and detergents for hand washing. Past studies had observed that adequate facilities needed to be put in place for proper hand washing to take place in any particular clinical setup. 87.1% of the respondents were of the opinion that hand washing was beneficial to the healthcare provider and only 71.5% of the respondents stated that hand washing was of benefit to the patients. Finally, 62.1% of the respondents stated that they considered hand washing to be a challenge in the departments in which they worked. Lack of running water in departments, heavy work load, erratic supply of soap and detergents, inaccessibility of sinks, lack of training and negative staff attitudes were cited as the main hindrances to effective hand washing in departments by staff.

The second objective of the study was to assess how waste segregation influenced infection prevention and control practices in KL5H, Kisii County. The data analyzed revealed that only 30.7% of the respondents had received training on waste segregation in a 6-Month period.

Majority of the respondents (70.7%) agreed that waste segregation was being emphasized in their departmental meeting. Color-coded dust bins were adequate according to 64.2% of the respondents and easily accessible from the working areas. However, only 54.2% of the respondents reported that the dust bins in their departments were well labeled. The supply of color-coded liner bags in the departments was adequate as reported by 65% of the respondents. 80% of the respondents stated that waste segregation was for the benefit of the healthcare provider while only 71.4% of the respondents stated that waste segregation was for the benefit of the patient. A minority of respondents (5%) stated that waste segregation is the job of casual works whereas a majority of respondents (97.8%) stated that waste segregation was the responsibility of everybody. 70.7% of the respondents considered waste segregation to be a challenge in the departments where they worked. These respondents stated that the dust bins in their departments were either inadequate, absent or not clearly labeled. There were a few respondents who felt that the dust bins were adequate and well labeled and therefore waste segregation was never a challenge. Other respondents pointed out negative attitude of the staff as the main cause of poor waste segregation practices in their departments. Most staff did not consider waste segregation to be their responsibility and therefore did not mind carelessly mixing waste in the dust bins. There are other respondents thought that the main challenge was in the collection of the waste from the departments for disposal. They reported that the wastes were overstaying in the departments thus causing a lot of smell from the rotting waste.

The third objective was to determine the extent to which injection safety influenced infection prevention and control practices in KL5H, Kisii County. From the data analyzed, only 18.6% of the respondents had received training on injection safety in a period of 6 months and 64.3% of the respondents stated that injection safety was frequently emphasized in their departmental meetings. 54.2% of the respondents had adequate supply of safety boxes in their departments while 64.3% of the respondents reported that that the safety boxes in their departments were situated in locations that were easily accessible from the working areas. Majority of the respondents reported that their departments had adequate supply of needles and syringes, implying that there were minimal chances of sharing of these devices during injection administration in the departments. 82.1% of the respondents indicated that injection safety practice is beneficial to the healthcare provider while 76.4% of the respondents indicated that injection safety was for the good of the patient. The data also showed that only 36.5% of the respondents believed that waste handlers in their departments were provided

with adequate protective gear for safe handling of the waste. Finally, 50% of the respondents reported that they considered injection safety to be a challenge in the departments where they worked. Unnecessary injections, heavy work load, inadequate supply of safety boxes, forgetfulness on the part of the staff and inadequate provision of protective gear for waste handlers were cited as major hindrances to injection safety practices in the departments.

The fourth objective was to establish the extent to which provision of policies and guidelines influence infection prevention and control practices in KL5H. Data analyzed showed that 46.5% of the respondents considered the Hospital infection prevention and control committee to be active. Concerning availability of policies on infection prevention and control in the departments, 60.7% of the respondents stated that waste segregation policy was available in their departments, 52.9% indicated that hand washing policy was available in the departments where they worked, 64.3% stated that injection safety policy was available in their departments and only 45.8% of the respondents indicated that the post exposure prophylaxis policy was available in the departments where they worked. Finally, only 60% of the respondents thought that the policies in the departments where they worked were written in a language easy to read and understand.

5.3: Conclusions

The study investigated the Factors Influencing Infection Prevention and Control Practices in KL5H. The study specifically sought to establish the extent to which hand washing influenced infection prevention and control practices in KL5H and concludes hand washing is not being carried out in KL5H as recommended due to inadequate on job training of staff on hand washing, little emphasis of the importance of hand washing to staffs in departmental meetings, lack of adequate hand washing facilities in the departments, lack of disposable towels to use for drying hands after washing them, heavy work load and negative attitude of staff. 62.1% of the staff perceives hand washing to be a challenge in their departments; only 55% were able to wash hands before and after every procedure as recommended. Some departments do not have running water sources at all while others' running water sources are out of order. A third of the workers do not have access to regular supply of soap and detergents for washing hands. In some departments sinks are located a way from the entrances and exits of the working areas and this has contributed to the low rates of hand washing in the hospital by workers. There are a minority of staff who do not consider hand washing to be of any befit to them or to the patients and therefore do not see any need to

practice it. Some staffs consider gloving to be a substitute for washing hands and do not think it necessary to wash hands when one is able to change gloves while attending to patients. Studies conducted by the CDC and several others found that nurses and doctors fail to wash their hands the recommended time 60% of the time between patient contacts and procedures. Health care facilities must have adequate hand-washing basins, with a minimum of one per patient room, procedure room, and exam room. Each six-bed cubicle must have at least one sink. Each sink should be large enough to avoid splashing and prevent contamination by bacteria that are resident in the drain. Sinks must be sealed to the wall or placed far enough from the wall to allow effective cleaning. They should be located near the entrance or exit for easy access by HCWs. The surrounding area must be nonporous to resist growth of fungus. Taps and soap dispensers should be fitted with hands-off controls, that is, controls that can be operated by elbow, knee, or foot. Elbow-operated systems are preferable because they are less prone to breaking down. Where resources allow, electronically generated systems should be considered.

The study sought to assess how waste segregation Influenced Infection Prevention and Control Practices in KL5H. The study concludes that waste segregation is not being practiced as recommended due to lack of frequent training and emphasis of waste segregation to the staffs, inadequate supply of color-coded dust bins and color-coded liner bags, negative staff attitude on waste segregation, lack of labeling of dust bins, heavy work load and lack of adequate protective gear for waste handlers. Waste segregation is a challenge to majority of the workers. Only a small proportion of healthcare providers receive frequent on job training on waste segregation and there are health care providers who do not easily access color-coded dust bins near their areas of work whereas those who access the dust bins are not able to segregate waste well due to lack of clear labeling of the bins. Inspite of the fact that many staffs consider waste segregation to be everybody's duty, some think that waste segregation is a role for casual workers. According to empirical literature, it is possible that segregation can be achieved through training, and designing of clear standards to be followed by all players in waste generation in hospitals. Segregation consists of separating the different waste streams based on the hazardous properties of the waste, the type of treatment, and disposal methods that are applied to each. Efforts should be made to minimize the amount of waste generated by the health facility, e.g., paper, unnecessary injections. The administration should provide means of waste disposal that are accessible and convenient for staff. There should be a system in place to ensure that staffs adhere to appropriate waste disposal. This could be done

with the help of supervisors of respective units in the facility and included with other training to change staff's attitudes and behavior as regards to infection control practices. Clinical waste should be collected in separate containers from non-clinical waste; the containers should be lined with identifiable plastic bags (biohazard marker/ color coded). Different locally available containers can be used in place of costly equipment. Garbage should be collected daily, and transported in specific trolleys. There should be a designated restricted area in the facility for waste storage.

The study also sought to determine the extent to which injection safety influenced infection prevention and control practices in KL5H, Kisii County. 50% of the staffs consider injection safety to be a challenge in the departments where they worked. The study concludes that only a small fraction of healthcare workers receive frequent trainings on injection safety in the hospital, the waste handlers are not being provided with adequate protective gear, safety boxes are not easily accessible to a good proportion of healthcare workers and that there are some staffs who do not consider injection safety to be beneficial to the patients and staff. A large proportion of staffs have access to adequate supply to disposable needles and syringes for use while administering injections. The study also concludes that injection safety is hampered by lack of adequate space for the sample collection area and lack of training of staffs on phlebotomy that has led to careless self-needle prick by the staffs involved. According to empirical literature unsafe injections can result in transmission of a wide variety of pathogens, including viruses, bacteria, fungi and parasites. They can also cause non-infectious adverse events such as abscesses and toxic reactions. Reuse of syringes or needles is common in many settings. It exposes patients to pathogens either directly (via contaminated equipment) or indirectly (via contaminated medication vials). The risks of unsafe injection practices have been well documented for the three primary blood borne pathogens.

Finally, the study sought to establish the extent to which provision of policies and guidelines influence infection prevention and control practices in KL5H. The study concludes that the Infection Prevention and Control Committee in the hospital is not actively involved in its functions within the hospital. This committee is supposed to spearhead the development and distribution of IPC policies in to the hospital departments. Data analyzed showed that only a number of healthcare workers had never seen hand washing, waste segregation, injection safety and post exposure prophylaxis policies in their departments. In the departments where the policies are available, only 60% of the staffs find them easy to read and understand.

According to empirical literature the presence of Infection prevention and control committee and Infection prevention and control lead persons recognized by the hospital administration is associated with good Infection Prevention and Control practices. Infection prevention and control lead persons must have support from the hospital administration to acquire various supplies and mechanisms that are necessary for good Infection Prevention and Control practices. The management team should integrate Infection Prevention and control in to the regular supervision of health care providers, and the Infection Prevention and control lead person should be part of the supervision team. In addition, Infection Prevention and control activities should be factored in to the annual planning and budgetary process, thereby ensuring consistent availability of Infection Prevention and control supplies and equipment. Health care facilities without active Infection Prevention and control committees perform poorly in Infection Prevention and control practices at both institutional and provider levels. Where the Infection Prevention and control IPC lead person is not part of the hospital management team, IPC activities tend to be relegated to the back and to lose the prominence that is necessary for good practices.

5.4: Recommendations

The study has revealed that adequate training and sensitization of staff, adequate facilities, adequate supplies, adequate staffing and a positive staff attitude are needed to promote hand washing in the hospital. Therefore, the study recommends that the hospital formulates a programme for frequent hand washing training and sensitization to all staff, that the hospital ensures that there proper and easily accessible running water infrastructure near the areas of work in all departments, that the hospital supplies disposable towels to enable the health care workers to dry their hands after washing them at the work areas and that the hospital should ensure that soap and detergents are always available at the clinical working areas. The staffs needs to be trained on attitude change, that gloving does not substitute washing hands at their working areas and that hand washings is of benefit to both the patients and the staff. The staff are overloaded with work hence do not have adequate time to wash hands as recommended. There the study recommends that the government adequately staffs the hospital to counteract this.

The study has also shown that most work areas within the hospital do not have easy access to labeled color-coded dust bins and liner bags and recommends that measures be put in place to improve accessibility in all work areas. The waste handlers are not adequately protected and

the study recommends that the hospital procures the right protective gadgets to assure waste handlers of their safety as they handle the waste within the hospital. Frequent sensitization and training of staff is needed to enable them have positive attitude and practice proper waste segregation. There the study recommends that the hospital integrates these trainings in to the normal hospital programmes to ensure that all workers access it frequently.

Concerning injection safety, the study revealed that the supply of safety boxes is erratic in the departments. The staffs are not able to access them in their working areas. Therefore the study recommends that the hospital conducts an audit to determine the deserving areas that lack and make adequate arrangements to ensure these and other areas have a constant supply of safety boxes to facilitate safe disposal of sharps. The study also revealed that there are cases where injections are prescribed unnecessarily to patients who have a misconception that injections are more effective than oral medications. Therefore, the study recommends that the government and the hospital spearhead a campaign to encourage patients and medical staff to accept oral medications as being as effective as injections. The hospital has only managed to train very few staff on injection safety and the study recommends that a training and sensitization programme be developed to ensure that all medical staffs receive frequent updates on injection safety.

Finally, the study revealed that the Infection prevention and control committee in the hospital is not active and thus many workers do not have access to policies on infection prevention and control. Therefore, the study recommends that the committee be revitalized by the hospital management to be able to undertake its mandate. Policies on hand washing waste segregation, injection safety and post exposure prophylaxis should be developed in easy to understand language and availed to all departments.

5.5: Suggested areas for further research

Further research needs to be carried out to determine the factors influencing infection prevention and control practices among non clinical staff in the hospital and non clinical departments within the hospital.

Further research needs to be done to determine the factors influencing the negative attitude of staff towards infection prevention and control in KL5H.

Further research needs to be done to compare infection prevention and control practices across the different cadres of medical staffs.

5.6: Contribution to the body of knowledge

Table 5.1: Contribution to the body of knowledge

Objective	Contribution to knowledge
1. To establish the extent to which hand washing influences infection prevention and control practices in KL5H, Kisii County	Inadequate training and sensitization of staff on hand washing Inadequate infrastructure Inadequate supply of soap and detergents Lack of supply of disposable towels Heavy work load's effects
2. To assess how waste segregation influences infection prevention and control practices in KL5H, Kisii County	Inadequate infrastructure in work areas Negative staff attitude Inadequate training and sensitization of staffs
3. To determine the extent to which injection safety influence infection prevention and control practices in KL5H, Kisii County	Unnecessary injections Lack of adequate protective gear for waste handlers Inadequate safety boxes Inaccessibility of safety boxes to working areas

	Inadequate space for sample collection in the laboratory
4. To establish the extent to which provision of policies and guidelines influence infection prevention and control practices in KL5H.	Inactive infection prevention and control committee Poor access to policies and guidelines by medical staff

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APPENDIX 1: QUESTIONNAIRE FOR RESPONDENTS

INSTRUCTIONS TO THE RESPONDENT

This questionnaire has five sections, Sections A, B, C, D and E. Participation in this study is voluntary. You will not be given a place to sign as a confirmation of your consent. However, it will be assumed that if you fill the questionnaire, then you have given consent to participate. You will not be given money so as to participate. The study is academic but the findings of the study will be given back to the hospital management as feedback so as to enable it plan on how to make improvements. It is therefore necessary that you provide truthful information to facilitate accurate generalization and feedback. Confidentiality of your information will be maintained. Please do not write your name on any part of the questionnaire. However, take note that the researcher will write your name in a separate form so that it will be easy for the questionnaire to be collected back after you have filled it. Use a pen to complete the questionnaire. Thank you in advance

Section A: Demographic Data

A1: State your sex (circle the correct answer)

a. Male

b. Female

c. Other (specify)

A2: Indicate your designation by ticking in the appropriate box (circle the correct answer)

a. Nurse

b. Medical Officer

c. Clinical Officer

d. Nurse intern

e. Medical Officer intern

f. Clinical Officer intern

g. Physiotherapist

h. Laboratory technologist

i. Other (specify)

A3: For how long have you been working in a clinical set up since you qualified from college? (***Place a tick against the appropriate answer***)

---

a. Less than 1 year

b. 1-3 years

c. 3-5 years

d. More than 5 years

e. Other (specify)

Section B: Hand washing and infection prevention and control practices

B1: Kindly read each of the following statements carefully about hand washing in your department. Consider carefully whether you agree or disagree with each statement. If your agree with the statement then consider whether you strongly agree or you just agree with the statement and place a tick in the correct box corresponding to your opinion about the statement. On the other hand if you disagree with the statement, then decide whether you just

disagree or you strongly disagree with the statement and place a tick in the corresponding box. The column neither agree nor disagree applies only in cases where your opinion about the statement is neutral

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
a) You have received training on hand washing in the last six months					
b) Hand washing is emphasized frequently in our departmental meetings.					
c) You are able to wash hands before and after every procedure done to all patients you attend to.					
d) Your department has a running water source.					
e) The running water source is in working order.					
f) The running water source is easily accessible from the working area					
g) The department has adequate supply of soap or detergent for washing hands.					
h) Hand washing is for your own good.					
i) Hand washing is for the patient's own good.					

B2: Do you consider hand washing to be a challenge in your department, in your opinion? (Answer this question by placing a tick in the appropriate box corresponding to your opinion).

Yes ☐ No ☐

B3: Explain your answer for question B2 above

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B4: In your opinion, what needs to be done to improve hand washing in your department?

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SECTION C: Waste segregation and infection prevention and control practices

C1: Kindly read each of the following statements carefully about waste segregation in your department. Consider carefully whether you agree or disagree with each statement. If your agree with the statement then consider whether you strongly agree or you just agree with the statement and place a tick in the correct box corresponding to your opinion about the statement. On the other hand if you disagree with the statement, then decide whether you just disagree or you strongly disagree with the statement and place a tick in the corresponding box. The column neither agree nor disagree applies only in cases where your opinion about the statement is neutral.

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
a) You have received training on waste segregation in the last six months					
b) Waste segregation is emphasized frequently in your departmental meetings.					
c) Your department has adequate					

supply of color coded dustbins

d) Your department has adequate supply of color coded liner bags

e) The dust bins are easily accessible from the working area

f) The dust bins are clearly labeled

g) Waste segregation is for the good of the healthcare provider

h) Waste segregation is for the good of the patient

i) Only casual workers should participate in waste segregation in your department

j) Everybody should participate in waste segregation within your department

C2**:** Do you consider waste segregation a challenge in your department, in your opinion? (Place a tick in a box corresponding to your opinion)

Yes ☐ No ☐

C3: explain your answer for question C2 above

……
……

C4: in your opinion, what do you think needs to be done to improve waste segregation in your department?

……
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Section D: Injection safety and infection prevention and control

D1: Kindly read each of the following statements carefully about injection safety in your department. Consider carefully whether you agree or disagree with each statement. If your agree with the statement then consider whether you strongly agree or you just agree with the

statement and place a tick in the correct box corresponding to your opinion about the statement. On the other hand if you disagree with the statement, then decide whether you just disagree or you strongly disagree with the statement and place a tick in the corresponding box. The column neither agree nor disagree applies only in cases where your opinion about the statement is neutral

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
a) You have received training on injection safety in the last six months					
b) Injection safety is emphasized frequently in your departmental meetings.					
c) Your department has adequate supply of safety boxes					
d) Safety boxes are easily accessed during procedures in your department					
e) Your department has adequate supply of disposable syringes and syringes					
f) Injection safety is for your own good.					
g) Injection safety is for the patient's own good.					
h) Waste handlers in your department have adequate protective gear					

D2: Do you consider injection safety to be a challenge in your department? (Answer this question by placing a tick in the box corresponding to your opinion)

Yes ☐ No ☐

D3: Explain your answer for question D2 above

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D4: in your opinion, what do you think needs to be done to improve injection safety in your department?

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Section E: Provision of policy and guidelines and infection prevention and control practices

E1: Kindly read each of the following statements carefully about provision of policies and guideline on infection control and prevention in your department. Consider carefully whether you agree or disagree with each statement. If your agree with the statement then consider whether you strongly agree or you just agree with the statement and place a tick in the correct box corresponding to your opinion about the statement. On the other hand if you disagree with the statement, then decide whether you just disagree or you strongly disagree with the statement and place a tick in the corresponding box. The column neither agree nor disagree applies only in cases where your opinion about the statement is neutral

		Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
a)	The hospital has an active infection control committee					
b)	Waste segregation policy is available in your department					
c)	Hand washing policy is available in your department					
d)	Injection safety policy is available in your department					

e) Post exposure prophylaxis policy is available in your department

f) The policies available are easy to read and understand

APPENDIX 2: INTERVIEW SCHEDULE

SERIAL NUMBER_____

Section A: Demographic Data

A1: State your sex_____

A2: Indicate your designation by ticking in the appropriate box

---

a. Nurse

b. Medical Officer

c. Clinical Officer

d. Nurse intern

e. Medical Officer intern

f. Clinical Officer intern

g. Physiotherapist

h. Laboratory technologist

i. Other (specify)

A3: For how long have you been working in a clinical set up since you qualified from college? (***Place a tick against the appropriate box***)

a. Less than 1 year
b. 1-3 years
c. 3-5 years
d. More than 5 years
e. Other (specify)

Section B: Hand washing and infection prevention and control practices

B1:

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
a) You have received training on hand washing in the last six months					
b) Hand washing is emphasized frequently in our departmental meetings.					
c) You are able to wash hands before and after every procedure done to all patients you attend to.					
d) Your department has a running water source.					
e) The running water source is in working order.					
f) The running water source is easily accessible from the					

working area

g) The department has adequate supply of soap or detergent for washing hands.

h) Hand washing is for your own good.

i) Hand washing is for the patient's own good.

B2: Do you consider hand washing to be a challenge in your department, in your opinion? (Answer this question by placing a tick in the appropriate box corresponding to your opinion).

Yes ☐ No ☐

B3: Explain your answer for question B2 above

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B4: In your opinion, what needs to be done to improve hand washing in your department?

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Section C: Waste segregation and infection prevention and control practices

C1:

		Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
a)	You have received training on waste segregation in the last six months					
b)	Waste segregation is emphasized frequently in your departmental meetings.					
c)	Your department has adequate supply of color coded dustbins					
d)	Your department has adequate supply of color coded liner bags					
e)	The dust bins are easily accessible from the working area					
f)	The dust bins are clearly labeled					
g)	Waste segregation is for your own good					
h)	Waste segregation is for the good of the patient					
i)	Only casual workers should participate in waste segregation in your department					
j)	Everybody should participate in waste segregation within your department					

C2**:** Do you consider waste segregation a challenge in your department, in your opinion? (Place a tick in a box corresponding to your opinion)

Yes ☐ No ☐

C3: explain your answer for question C2 above

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C4: in your opinion, what do you think needs to be done to improve waste segregation in your department?

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Section D: Injection safety and infection prevention and control practices

D1:

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
a) You have received training on injection safety in the last six months					
b) Injection safety is emphasized frequently in your departmental meetings.					
c) Your department has adequate supply of safety boxes					
d) Safety boxes are easily accessed during procedures in your department					
e) Your department has adequate supply of disposable syringes and syringes					
f) Injection safety is for your own good.					
g) Injection safety is for the patient's own good.					

h) Waste handlers in your department have adequate protective gear

D2: Do you consider injection safety to a challenge in your department? (Answer this question by placing a tick in the box corresponding to your opinion)

Yes ☐ No ☐

D3: Explain your answer for question D2 above

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D4: in your opinion, what do you think needs to be done to improve injection safety in your department?

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SECTION E: Provision of policy and guidelines and infection prevention and control practices

E1:

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
a) The hospital has an active infection control committee					
b) Waste segregation policy is available in your department					
c) Hand washing policy is available in your department					
d) Injection safety policy is available in your department					

e) Post exposure prophylaxis policy is available in your department

f) The policies available in your department on infection prevention and control are easy to read and understand

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APPENDIX 3: TABLE FOR DETERMINING THE NEEDED SIZE

Population	Sample		Population	Sample		Population	Sample
10	10		220	140		1200	291
15	14		230	144		1300	297
20	19		240	148		1400	302
25	24		250	152		1500	306
30	28		260	155		1600	310
35	32		270	159		1700	313
40	36		**280**	**162**		1800	317
45	40		290	165		1900	320
50	44		300	169		2000	322
55	48		320	175		2200	327
60	52		340	181		2400	331
65	56		360	186		2600	335
70	59		380	191		2800	338
75	63		400	196		3000	341
80	66		420	201		3500	346
85	70		440	205		4000	351
90	73		460	210		4500	354
95	76		480	214		5000	357
100	80		500	217		6000	361

110	86		550	226		7000	364
120	92		600	234		8000	367
130	97		650	242		9000	368
140	103		700	248		10 000	370
150	108		750	254		15 000	375
160	113		800	260		20 000	377
sss170	118		850	265		30 000	379
180	123		900	269		40 000	380
190	127		950	274		50 000	381
200	132		1000	278		75 000	382
210	136		1100	285		1 000 000	384
Population	**Sample**	|	**Population**	**Sample**	|	**Population**	**Sample**

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement, 30*, 607-610.

APPENDIX 4: BUDGET

ITEM	UNIT COST	TOTAL UNITS	TOTAL COST
Internet Access	1000 Per Month	5 Months	5000
Research Permit	1000	1	1000
Printing Proposal	10 Per Page	200 Pages	2000
Photocopying Proposal	2 Per Page	135 Pages	270
Binding Proposal	50 Per Copy	4 Copies	200
Transportation Cost	1800 Per Month	6 Months	10,800
Food and drinks	800 Per Day	30 Days	24,000
Printing Final Report	10 Per Page	120 Pages	1200
Photocopying Final Report	2 Per Page	360 Pages	720

Photocopying Questionnaire	2 Per Page	600 Pages	1200
Sub Total	=	=	45,190
Miscellaneous Cost	10% of sub total	=	4,519
Total Cost	**=**	**=**	**50,309**

APPENDIX 5: LETTER OF TRANSMITAL

Everlyne Kemunto Maosa
P.O Box 92-4020
Kisii
Phone: 0726168507
Email: evamaosa@yahoo.com
September 10, 2012.

Dear Respondent,

Re: Research on factors influencing infection prevention and control practices in Kisii Level 5 Hospital

I am a postgraduate student at the University of Nairobi. As part of the requirements for the award of the degree, I am doing a research about the ***Factors Influencing Hospital Infection Prevention and Control Practices in Kisii Level 5 Hospital***.

The study is purely for academic purposes. However the findings of the study will be shared with stakeholders for possible action or actions. The researcher will keep all the information you will provide confidential. So as to help the researcher to attain high levels of confidentiality, you are requested not to write your name on any part of the questionnaire you are filling.

Thank you in advance

Yours Sincerely

Everlyne Kemunto Maosa

APPENDIX 6: QUESTONNAIRE TRACKING FORM

Serial Number	Name	Designation	Department	Date Issued	Date Returned
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Serial Number	Name	Designation	Department	Date Issued	Date Returned
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Serial Number	Name	Designation	Department	Date Issued	Date Returned
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