FACTORS INFLUENCING AVAILABILITY, ACCESSIBILITY AND UTILIZATION OF POST EXPOSURE PROPHYLAXIS OF HIV BY HEALTH CARE WORKERS IN AINABKOI NORTH DIVISION, ELDORET EAST DISTRICT

BY

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I declare that this thesis is my original work and has not been presented for an award of a degree in this or any other university.

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This research report has been submitted to Kampala International University with my approval as University supervisor.

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MR.JOSPHAT MANIGA.

DEDICATION

This research work is dedicated to my beloved wife and son whose patience, love and support as enabled me to complete this course.

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I acknowledge the invaluable support of all the lecturers and fellow students throughout the course of my study. Special thanks go to my supervisor Mr. Maniga who patiently guided me throughout my research work, my close friends Kosgey, Kaazare and Bett who were there when I needed them. I am grateful to my family for their patience, encouragement, love and support during my study.

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TABLE OF CONTENTS

List of Tables

List of Figures

ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal Care
ART	Antiretroviral Therapy
ARV	Antiretroviral
CPT	Cotrimoxazole Preventive Treatment
CT	Counseling and Testing
CSS	Care and Support Services
DOTS	Directly observed Treatment, short course
FBOs	Faith Based Organization
GOK	Government of Kenya
HIV	Human Immunodeficiency Virus
INH	Isoniazid
IPT	Intermittent Prophylactic Treatment
ORS	Oral Rehydration Salts
PCP	Pneumocystis Carinii Pneumonia
PEP	Post – Exposure Prophylaxis
PEPFAR	Presidential Emergency Plan for AIDS Relief
	Initiative Indicators
PHS	Public Health Service
PLHA	People living with HIV/AIDS
PMTCT	Prevention of Mother to child transmission

RPR	Reactive Plasma Regain
STI	Sexually Transmitted Infection
TB	Tuberculosis
USAID	United States agency for International Development
VDRL	Venereal Disease Research Laboratory Test
VCT	Voluntary Counseling and testing
WHO	World Health Organization
YFS	Youth Friendly Services

Abstract

HIV/ AIDs is a global problem with estimated 33 million persons infected worldwide in 2007 and with 2.7 million new infections (UNAIDS/Global AIDs epidemic report 2008). 60% of this lives in Sub Saharan Africa. Exposure occur through needle sticks or cuts from other sharp instruments contaminated with an infected patient's blood or through contact of the eye, nose, mouth, or skin with a patient's blood. PEP of HIV if initiated within 72 hours of exposure have been shown to significantly reduce the risk of getting HIV.

The risk for occupational exposure to HIV has been well characterized in the developed world, but limited information is available about this transmission risk in resource-constrained settings facing the largest burden of Kenya infection. In addition, the availability and utilization of post-exposure prophylaxis (PEP) programs in these settings are unclear. Therefore, the study sought to examine the availability, accessibility and utilization of occupational exposure to HIV and the utilization of PEP among health care workers (HCW) in hospitals.

The objectives of the study was to; determine the prevalence and types of occupational exposure in health care centres, determine accessibility and availability of occupational PEP services and assess utilization of HIV PEP services by HCWs in public and private health facilities in Eldoret East district.

The study looked into the availability, accessibility and utilization of PEP of HIV by HCWs in both government and faith base health facilities in Eldoret East district. The study adopted exploratory research design, cross sectional and quantitative data for was collected. Structured questionnaire and in-depth interviews were used to collect the data. Data was sort, summarized and analyzed statistically. The study findings revealed that there is significant number exposure 19% annually as compared to the world 0.3% which is a subject to development and resources. The level of awareness of PEP in the health centres is low due to lack of PEP drugs in the Eldoret East district. The study recommends that there is need for the health centres facilities to conduct extensive awareness compaign to inform the health care workers of the PEP drugs availability and how it can utilized to prevent HIV infection after exposure. The findings will contribute to suggest policy changes that may lead to improvement in compliance by HCWs to universal precautions and/or use of PEP of HIV.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

HIV/AIDS is a global problem with an estimated 33. Million (30-36 million) persons infected worldwide in 2007 and 2.7 million new infections (UNAIDS/global AIDS epidemic report 2008). Of these, approximately 60 percent live in sub –Saharan Africa. In response to improved treatment options and commitment from donors and international health experts, a variety of initiatives are underway to expand the scope and quality of services for HIV/AIDS. The services needed for prevention of HIV/AIDS and optimal maintenance of infected persons are multidimensional and include preventive measures, care and support for infected persons, and social and economic support. Health care personnel are at risk of occupational exposure to blood borne pathogens, including hepatitis B virus (HBV), Hepatitis C virus (HCV), and human immunodeficiency virus (HIV). Exposure occur through needle sticks or cuts from other sharp instruments contaminated with an infected patient's blood or through contact of the eye, nose, mouth, or skin with a patient's blood. Post Exposure prophylaxis (PEP) is recommended for health care workers if they have had a significant occupational exposure to blood or another high risk body fluid like amniotic, pleural or cerebrospinal fluids which are likely to be infected with HIV/AIDS. PEP is a medical response given to prevent transmission of pathogens after exposure. Post exposure prophylaxis (PEP) of HIV is an emergency medical response that can be used to protect individuals exposed to the human immunodeficiency virus (HIV.

According to the Government of Kenya (GOK), much more needs to be done to ensure that the uninfected remain virus free, while the majority of the infected gain access to affordable antiretroviral therapy (ART). In addition, efforts aimed at reducing transmission through other routes, such as mother to child transmission (PMTCT), the promotion of voluntary counseling and testing (VCT) and strengthening of STI control programs also need to be enhanced. A number of challenges however still prevail, like the need for increased resource mobilization to improve cost effectiveness of

interventions, the ever increasing numbers in need of ART and the competitions for resources of HIV.

PEP was originally designed for medical workers who were accidentally exposed to HIV during the course of their work – for example needle stick injuries. However, its value in other situations involving possible exposure to HIV (such as sexual assault) is now recognized and is being used. Although PEP has not been conclusively proven to prevent the transmission of HIV infection, research studies suggest that if medication initiated quickly after the possible exposure (ideally within 2-24 hours and not later than 48 to72 hours) it is beneficial. The efficacy of PEP is probably higher if treatment is started within the first few hours of exposure and is probably progressively reduced if started later.

All health care workers in hospital and elsewhere should be informed and educated about the possible risk from occupation exposure and should be aware of importance of seeking urgent advice following any needle stick injury or other occupational exposure. However from the study above, it is evident that the use of PEP for HIV is still wanting despite the many reported cases of occupational injuries and or sensitizations to HCWs on HIV. The low uptake of PEP could imply that some factors determine the use of the service by the workers. Therefore this study established the availability, accessibility and utilization of prophylaxis by HIV health care workers in the district setting in the hospitals, health centres and the dispensaries, both in the government and private sector.

1.2 Statement of the Problem

HIV/ AIDs is a global problem with estimated 33 million persons infected worldwide in 2007 and with 2.7 million new infections (UNAIDS/Global AIDs epidemic report 2008). 60% of this lives in Sub Saharan Africa. The services needed for prevention of HIV/AIDS and optimal maintenance of infected persons are multidimensional. . Health care personnel are at risk of occupational exposure to blood borne pathogens, including

hepatitis B virus (HBV), Hepatitis C virus (HCV), and human immunodeficiency virus (HIV). Exposure occur through needle sticks or cuts from other sharp instruments contaminated with an infected patient's blood or through contact of the eye, nose, mouth, or skin with a patient's blood. PEP of HIV if initiated within 72 hours of exposure have been shown to significantly reduce the risk of getting HIV (Gerbering *et al* 1987)

Occupational exposure to blood or other body fluids in healthcare settings constitutes a small but significant risk of transmission of HIV and other blood-borne pathogens (Sagoe-Moses, 2001). In addition, such exposures can cause tremendous anxiety, fear and stress among healthcare workers (HCW) that can have a negative impact not only on the HCW, but also their families and colleagues Pruss-Ustun *et al* (2005). The World Health Organization estimates that 3 million percutaneous exposures occur annually among 35 million HCW globally, with over 90% occurring in resource-contrained countries (Cardo *et al* 1997). As a consequence of these exposures, an estimated 66,000 hepatitis B, 16,000 hepatitis C, and up to 1000 HIV infections occur each year.

The risk of HIV transmission from patients to health care workers and vice versa has been of concern since the early days of the HIV epidemic. The risk, particularly through accidental needle stick injuries, continues to be a major concern for all working in health care facilities. Though exposure may result from a failure to follow recommended procedures, there remains occasions when exposure occurs despite careful attention to the correct procedure. The risk is believed to be higher for exposure involving blood or high HIV viral load. The risk after percuteneous exposure has been estimated on basis of surveillance and prospective studies to be 0.3% (New York department of health 2004) in developed countries and the figure is likely to be much higher in resource poor settings where HIV burden is also high like in Sub Saharan Africa. This is why the study sought to establish the accessibility, accessibility and utilization of post exposure prophylaxis by HIV health care workers.

1.3 Study Objectives

The broad objective of this study was to assess the availability, accessibility and the utilization of PEP by HIV health workers.

The specific objectives were;-

1. To determine the prevalence and types of occupational exposure in our health care centres
2. To determine accessibility and availability of occupational PEP services.
3. To assess utilization of HIV PEP services by HCWs in public and private health facilities in Eldoret East district.

1.4 Research Questions

To address the study objectives, the following research questions were used;

1. What is the prevalence and types of occupational exposure in health care centres?
2. What is the accessibility and availability of PEP to occupational workers?
3. What is the utilization of HIV PEP services by HCWs in public and private health facilities in Eldoret East district?

1.5 Justification of the study

Numerous studies document that the magnitude of under reporting of occupational exposures is very high. There is even less incentive to report exposures in countries where there is no PEP, no workers compensation, little job security and possibly greater discrimination against infected health care workers.

The health care system must not only care for the patients, but also ensure that its human capacity remains strong and motivated. Health Care Professionals need a secure and supportive work environment if they are to be effective partners in combating the HIV epidemic. The study therefore seeks to assess the availability, accessibility and acceptability of the PEP of HIV to HCWs and to, recommend policies changes to guide on development of environmental and/ or individual factors needed to motivate health

staff to take all appropriate precautions to protect and promote good health practices in their work places.

1.6 Conceptual Framework

The study main variables were conceptualized and presented in figure 1.1.

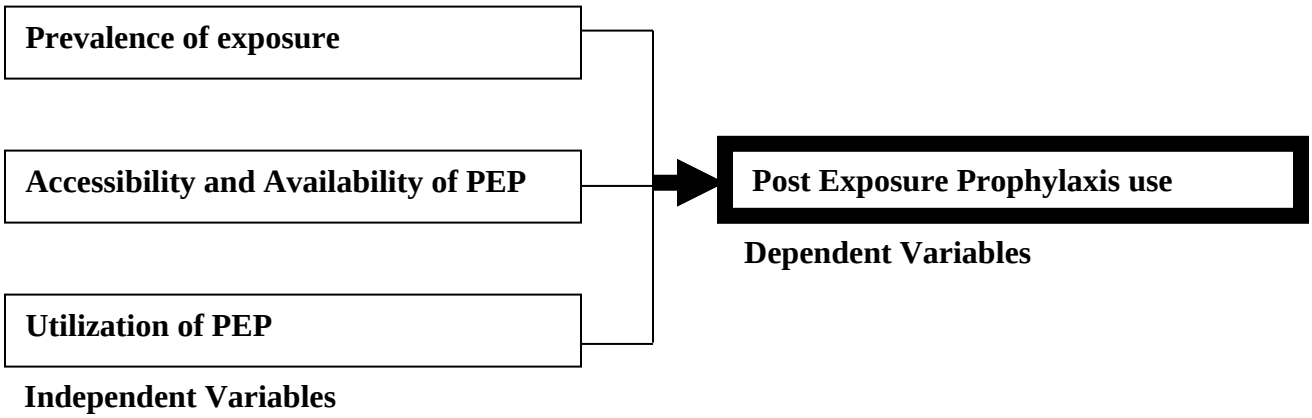

Figure 1.1: Conceptual Framework

The study assumed that the prevalence of exposure, accessibility, availability and utilization of post exposure prophylaxis by the health care workers is affected by its availability in the health cares centers.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

2.1.1 Definitions

The term *post-exposure prophylaxis* is generally understood to mean the medical response given to prevent the transmission of blood-borne pathogens following a potential exposure to HIV. In the context of HIV, post-exposure prophylaxis refers to the set of services that are provided to manage the specific aspects of exposure to HIV and to help prevent HIV infection in a person exposed to the risk of getting infected by HIV. These services might comprise first aid, counselling including the assessment of risk of exposure to the infection, HIV testing, and depending on the outcome of the exposure assessment, the prescription of a 28-day course of antiretroviral drugs, with appropriate support and follow-up (Almeda *et al*. (2004). Individuals can also face potential *non-occupational exposure* to HIV outside the work setting. In these guidelines, this term predominantly refers to potential exposure through sexual assault. Other forms of potential non-occupational exposure include those arising from needle-sharing among injecting drug users and potential exposure through consensual sex. The *exposed person* is the person who has been potentially at risk of acquiring HIV infection through exposure to blood or body fluids in his or her occupation or in another non-occupational situation (Christophides *et al*. (2006).

2.2 Review of Past Studies

Extrapolating the accepted low occupational HIV infection rates seen in resource rich countries, to resource poor setting may be both misleading and an underlying cause of HCW morbidity and mortality. A review of literature on occupational exposures was undertaken followed by a workshop of clinical Health workers (HCW) from, Los Vietnam, Cambodia, Thailand, and Indonesia. Lessons learned; estimation of risk from occupational exposure to human immunodeficiency virus (HIV) are based on studies in Western countries where prevalence of HIV is low, availability of personal protective

equipment is good and compliance with standard (Universal) precautions is high compared to resource, poor settings where none of these factors are present. Source patients in resource poor settings are more likely to have undiagnosed HIV and less likely to be on treatments which lower viral loads and reduce infectivity. It is unknown if the viral strain affects rate of occupational transmission. Numerous studies document under reporting of occupational exposures. There is even less incentive to report exposures in countries where there is no PEP, no workers compensation, little job security and possibly greater discrimination against infected health care workers. Resource poor countries have a poor culture of reporting occupational exposures; national standardization surveillance tools are not being used. Without data, it is impossible to estimate the impact of occupational exposures on national health systems (Tandberg *et al* 1991).

There is need for national surveillance systems to provide data on the impact of occupational exposures to HCW. Systemic support and infrastructure as well as education and resources are needed to implement surveillance. Data collected should be used to establish evidence based monitoring and evaluation of HCW safety programs.
HIV has significantly altered the face of healthcare and the lives of virtually everyone in our communities. The risk of transmission, particularly through needle stick injuries, continues to be a major concern for all working in health services.

Since AIDS was first recognized, new information about modes of HIV transmission, ways to reduce risks and guidelines for managing exposure have been developed. Great strides have been made in treating the disease itself and in managing its complications. Development of protease inhibitors (PI) and their use in combination therapies have renewed hope that, even if a cure is not found, the infection can be controlled.

2.2.1 Epidemiology of HIV

The mechanisms of HIV transmission are well documented and include the following:-

1. Inoculation (usually through needle sharing, needle stick injuries, or by splashing blood onto mucous membrane)

2. Sexual contact in which body fluid are exchanged
3. Parental transmission between mother and child (New York state department 2004).
4. Blood transfusion

The common body fluids and material which may pose a risk of HIV transmission if significant occupational exposure occurs include:- blood, amniotic fluid, cerebrospinal fluid, breast milk, pericardial fluid, peritoneal fluid, pleural fluid, saliva in association with dentistry (likely to be contaminated with blood) synovial fluid, unfixed human tissue and organs, any other body fluid if visibly blood stained, exudates or other tissue fluid from burns or skin lesions, vaginal secretions, and semen (New York state department 2004).

Although there are guidelines to prevent HIV infection in health care workers setting, it has been published that exposure particularly through needle pricks is still too common. The risk is believed to be higher for exposure involving blood or high HIV viral load. The risk after percuteneous exposure is low and has been estimated on basis of surveillance and prospective studies to be 0.3% (New York State department of health 2004) An estimated 500,000 percutaneous blood exposure occur in United States of America hospital's HCWs each year, of these about 5,000 involved HIV infected blood (Hendrew 1995).

In 2001, HIV postexposure prophylaxis (PEP) was initiated in western Kenya; occupational PEP was initiated first followed by nonoccupational PEP (nPEP). Antiretroviral regimens were based upon national PEP guidelines, affordability and availability, and prevailing HIV prevalence. Between November 2001 and December 2006, 446 patients sought PEP; 91 of them being occupationally exposed: 51 males and 40 females; 72 accepted HIV testing; 48 of 52 source patients were HIV infected; median exposure-PEP time was 3 hours (range: 0.3-96 hours). Of 72 HIV-negative patients receiving PEP, 3 discontinued, 69 completed, and 23 performed post-PEP HIV RNA polymerase chain reaction (all negative). Eleven follow-up HIV enzyme-linked immunosorbent assay tests have all turned negative (Siika *et al* (2009).

The frequency of blood exposure varies by Job Category, the type of procedures performed and the safety precautions used (New York state department of Health 2004). The health care workers most often involved have been nurses (CDC update MMWR 1987) laboratory technicians (Kline *et al* 1985) and non surgeon physicians (Bell, 1997)

However, if all possible cases are included, significant numbers of Health aides, emergency technician, paramedics, housekeepers, laundry personnel, and maintenance workers also have been identified (MOH;NASCOP 2006).
There are five primary activities associated with the majority of needle stick injuries. They are:- Disposing of needles, including collection and disposal of materials used during patient care procedure, administering injections, drawing blood, recapping needles, and handling trash and dirty linens termed as downstream injuries which affect especially the housekeeping departments (Chiarello 1992).

A study of health workers in Kenya revealed that many are ill equipped to cope with occupational exposure to HIV and the demand of caring for HIV patients both at work and at home. A research Conducted by the Kenya Ministry of Health, National AIDS and STI Control Program, involved interviews with 1,897 medical personnel in 245 health facilities located in 28 districts in Kenya (Dana Farber 1997). 93% of health workers in Kenya are very concerned about getting infected with HIV on the job. Nearly one in five reported a recent event where they could have been exposed to HIV at work, and amongst these, half had experienced multiple exposures. To add to their concern, more than half of health workers indicated that their facilities did not have written guidelines about what to do in case of occupational exposure to HIV.

Needle stick injuries are caused by unsafe needle devise rather than careless use by health care workers (Jagger, 1988) safer needle devices have been shown to significantly reduce

the incidence of accidental needle stick injuries and exposure to potentially fatal blood borne illness (CDC, 1997)

2.3 Occupational Hazards

There is international recognition that health care workforce attrition caused by occupational hazards is unnecessarily high and demands priority attention (WHR, 2006). For instance, nearly 90% of nurses surveyed by the American Nursing Association indicated that health and safety concerns influenced the likelihood that they would continue to practice (2001). In Africa and Asia, the growing threat of illness or death related to occupationally acquired disease is increasingly a reason health care workers leave their jobs (WHR, 2006).

Health care workers face many types of occupational hazards including exposure to infectious diseases, back and repetitive strain injuries, latex allergies, violence from patients and families, and stress. Biological hazards are among the major risks to the health of health care workers. Infectious pathogens exist throughout all health care settings and include exposure to air-borne and blood-borne diseases. Due to the high risk of exposure to a vast range of infectious diseases in health care workplaces, organizers chose to focus workshop discussions on the occupational transmission of blood-borne and air-borne diseases.

Without adequate resources for health and safety, health care workers are very vulnerable to exposure and potential infection from biological agents. For instance, each year at least three million health workers worldwide are exposed to blood-borne pathogens due to needle stick injuries (Prüss-Üstün, Rapiti, & Hutin, 2007). Two million of these health care workers are exposed to hepatitis B, 900 000 to hepatitis C, and 170 000 to HIV (WHR, 2006). These injuries result in over 40% of all hepatitis B and C infections and 2.5 % of HIV infections among health care workers (Prüss-Üstün, Rapiti, & Hutin, 2007). The convergence of the significant crisis in health human resources with growing occupational health threats and the tenuous safety of health care workers in under-

resourced areas led to the generation of this study to seek to find out the availability, accessibility and utilization of prophylaxis by HIV health care workers.

2.3.1 Principles of HCWs safety

The Health, Nutritional and Population discussion paper of May 2004 summarizes the principles of HCW safety into four as follows:-

A. Reduce susceptibility to infection by vaccination programs and health education programs.
B. Prevent occupational exposures by reducing potential for exposure, engineering controls, standard precautions, safe sharps handling, staff supervision, staff education, waste management and storage. Occupational health and safety issues and data collection.
C. Manage occupational exposures by encouraging reporting, simple accessible protocols, first aid, risk assessment, post exposure prophylaxis, testing, support and follow up.
D. Maintain health of infected HCW by protocols which support infected HCW. Assurance of confidentiality. Work practices, infection control standards, and compensation for occupationally acquired disease.

Kenya has a number of statutes for responding to HIV and AIDS related issues in the workplace though the current acts do not specifically refer to HIV and AIDS. However, it is recognized that an enabling legal and regulatory environment is imperative to create the desired impact in the fight against HIV and AIDS pandemic.

Medical history and examination cannot reliably identify all patients infected with HIV or other blood borne pathogens. The approach previously recommended by CDC (Mc Cray E 1986), and referred to as universal blood and body fluid precautions or 'universal precautions' should be used in the care of ALL patients, especially including those in emergency care settings in which the risk of blood exposures is increased and the infections status of the patient is usually unknown (Ippolito *et al* 1998).

All health care workers should routinely use appropriate barrier precautions to prevent skin and mucous membrane exposure when contact with blood or other body fluids of any patient is anticipated. Gloves should be worn before touching blood and body fluids, mucous membranes, or non-intact skin of all patients, for handling items or surfaces soiled with blood or body fluids, and for performing venipuncture and other vascular access procedures. Gloves should be changed after contact with each patient. Masks and protective eye wear or face shields should be worn during procedures that are likely to generate droplets of blood or other body fluids to prevent exposure of mucous membranes of the mouth, noise, and eyes. Gowns or aprons should be worn during procedures that are likely to generate splashes of blood or other body fluids.

2.3.2 Management of HIV Exposure among health workers

In the work environment, health care workers may be occupationally exposed to HIV infection. Health care workers include all paid and unpaid persons working in health care settings who have the potential for exposure to infectious material, for example blood, tissue, and specific body tissues and medical supplies, equipment, or environ-mental surfaces contaminated with these substanes. Health care workers include doctors, nurses, pharmacists, nursing assistants, emergency medical service personnel, therapists, students and trainees, technicians and persons not directly involved in patient care but potentially exposed to blood and body fluids (e. g laboratory scientists and technologists, clerical, housekeeping, maintenance and volunteer personnel). The same principle of postexposure management could be applied to other workers who have potential for occupational exposure to blood and body fluids in other settings (U.S. Public Health Services, 2001).

2.4 Risk Assessment and Management

There are three types of exposure in health care settings associated with significant risk. These are:

- Percutaneous injury (from needles, instruments, bone fragments, significant bites which break the skin, and so on);
- Exposure of broken skin (abrasions, cuts, eczema and so on)
- Exposure of mucous membranes including the eye.

2.5 Protection of health care workers in developing countries

Protecting health care workers in developing countries, however where even the basics of medical care are difficult to provide and where the protection of health care workers does not appear on any list of health care priorities is a formidable challenge. It is all too easy to ignore a problem about which there are few data. Clearly, health care workers in developing countries are at serious risk of infection from blood-borne pathogens.

Although the prevalence of blood-borne pathogens in many developing countries is high, documentation of infections caused by occupational exposure in these countries is scarce. Seventy percent of the world's HIV-infected population lives in sub-Saharan Africa, but only 4 percent of worldwide cases of occupational HIV infection are reported from this region (Ippolito, 1999) By contrast, 4 percent of the world's HIV-infected population lives in North America and western Europe, yet 90 percent of documented occupational HIV infections are reported from these areas (Ippolito, 1999). It is unlikely that surveillance and reporting of occupational exposure to infected blood will be undertaken in places where postexposure prophylaxis, treatment, and workers' compensation are lacking.

In developing countries, the risk of occupational transmission of blood-borne pathogens is increased by the excessive handling of contaminated needles that results from some common, unsafe practices (Kane *et al* 1999). These include the administration of unnecessary injections on demand, the reuse of non-sterile needles when supplies are low, and the unregulated disposal of hazardous waste. Such practices pose risks of disease transmission to health care workers, patients, and communities at large. In many developing countries, the high demand for injections derives from the belief that they are more effective than other forms of treatment. In Ghana, 80 to 90 percent of the patients

who visited a health center received one or more injections per visit (van Staa, 1997). Similar findings have been reported in Uganda and Indonesia. A correlation has been documented between the frequency of injections and the prevalence of HBV, HCV, and HIV in the population (Kane *et al* 1999).

2.6 The Costs of Protecting Healthcare Workers

Protecting health care workers in developing countries from exposure to blood-borne pathogens will involve some cost. In industrialized countries, the cost of protective devices and equipment that reduce blood exposure may be offset by lower expenditures associated with postexposure testing and prophylaxis, medical treatment of infected workers, institutional insurance premiums, and workers' compensation payments.30,31 In most developing countries, however, similar economic incentives do not exist; there is little reason for postexposure follow-up in countries that cannot afford prophylaxis, treatment, and compensation benefits (World Bank Group, 2000).

Nevertheless, there are costs associated with failing to protect health care workers in developing countries. The loss of a wage-earning health care worker can be devastating to the financial security of the worker's family. The loss of health care workers can also have a disproportionate effect on the fragile health care infrastructure of developing countries, where trained health professionals are scarce in relation to the overall populations they serve. Statistics from the World Health Organization (WHO) indicate that there are fewer than 10 physicians per 100,000 population in 15 sub-Saharan countries, as compared with nearly 250 physicians per 100,000 population in the United States (World Bank Group, 2000). Similar discrepancies exist between the numbers of nurses in these countries and the number of nurses in the United States. Any reduction in the work force further strains understaffed and overextended health care systems. Possibly the largest unrecognized cost of failing to protect health care workers is the loss of the national investment in the training of workers whose careers are cut short by occupationally acquired infections (National AIDS 2000).

2.7 Post Exposure Treatment of HIV

Although preventing blood exposures is the primary means of preventing occupationally acquired HIV infection, appropriate post exposure management is an important element of workplace safety. In January 1990, CDC issued a statement for the management of HIV exposures that included considerations for zidovudine (ZDV) for post exposure prophylaxis. Since that time, studies of health care workers exposed percutaneously to HIV identified risk factors for HIV transmission and documented that use of ZDV was associated with a decrease in the risk for HIV seroconversion. This data along with information ZDV efficacy in preventing perinatal transmission and evidence that PEP prevented or ameliorated retroviral infection in some studies in animals prompted a public Health Service working group to issue in 1996, provisional recommendations for PEP for HCWs after occupational HIV exposure (Bell DM 1997). Since that time, several new antiretroviral drugs have been approved by the Food and Drug Administration (FDA) and more information is available about the use and safety of antiretroviral agents in exposed HCWs. In addition, several questions have been raised regarding use of PEP in situations not fully addressed in the 1996 guidelines (e.g. unknown source or unknown HIV status of source, pregnancy, regimes of PEP for known or suspected resistant strains of HIV and when not to offer PEP). This is new information prompted a PHS interagency working group to issue updated recommendations.

Recommendations for PEP have been modified to include a basic 4 week regimen of two drugs (Zidovudine and Lamivudine) for most HIV exposures and an expanded regimen that includes the addition of a protest inhibitor for HIV exposures that pose an increased risk for transmission or where resistance to one or more of the antiretroviral agents recommended for PEP is known or suspected. An algorithm is provided to guide clinicians and exposed health care workers in deciding the use of PEP for HIV exposure (see copy annex). The CDC recommends taking medications to try to prevent infection after an exposure to HIV containing blood or body fluids based on information suggesting that Zidovudine (ZDV) post exposure prophylaxis may reduce HIV infection after exposure to HIV containing blood (Patel N *et al* 1997).

Information regarding the effectiveness of drugs in preventing infection is limited, however a recent study of health care workers exposed to HIV showed that taking ZDV was associated with a significantly lower risk of HIV infection. On the other hand, use of ZDV following exposure has failed to prevent HIV infection in a number of health care workers. Studies of HIV infected patients receiving combination therapy of ZDV and lamivudine (3TC) showed increased antiretroviral activity than with ZDV alone. Also the addition of a protease inhibitor, indinavir (IDV) provided even greater antiretroviral activity (Dana Farber institute of cancer 1997).

When an occupational exposure occurs, the following information should be recorded in the HCW's confidential medical record.

- Date and time of the exposure. Details of the procedure being performed and the use of protective equipment at the time of the exposure.
- The type, severity, and amount to which the HCW was exposed
- Details about the exposure source
- Medical documentation that provides details about post exposure management

PEP should be initiated as soon as possible ideally within 2 hours and no later than 72 hours post exposure (CDC update MMWR 1987). The prescribing provider should ensure that the patient has access to the full course of antiretroviral (ARV) medication. HAART is always recommended as the regimen of choice for at risk exposure. Any variance from the recommended regimens should be made in consultation with an HIV specialist or an occupational health clinician experienced in providing PEP (Dana Farber institute 1997).

CHAPTER THREE

RESEARCH DESIGN METHODOLOGY

3.1. Study Design

The study adopted exploratory research design. This is a cross sectional study as the data on occupational injury was collected at the same time with data on use of PEP. This shows the distribution or prevalence of occupational injuries and describes the perceptions and actions of the HCWs on the event of injury at the particular time. The study described the basic features of the data. The study was conducted in all hospitals and healthcare centres in Eldoret East district, both in government and non government facilities. This research design provided insights into issues confronting the study. According to Polonsky (2009) exploratory research design is used when the researcher does not have enough information on a topic and wants flexilibility to explore the issue.

3.2 Study Site

The study was done in Eldoret East District which has been split into three districts namely; Eldoret East, Eldoret west and Wareng DistrictIt borders Eldoret west to the west , Koibatek and Keiyo to the east. The district has total area coverage of 1250.7km^2 and administratively divided into two divisions 20 location and 45 sub-locations.

Health Facilities and human resource distributions

Table 3.1: Health Facilities and human resource distributions

Type 0f facility	HOSPITAL		HEALTH CENTRE		DISPENSARIES	
	PUBLIC	PRIVATE	PUBLIC	PRIVATE	PUBLIC	PRIVATE
No. Of facilities	3	1	5	0	19	18

Source: Eldoret East district health facility records (2009)

3.3. Target Population

The study target population was all HCWs, who have regular, clinical contact with patients, such as doctors, dentists, nurses and paramedical professionals such as occupational therapists, physiotherapists, radiographers, ambulance workers and porters, and students in these disciplines; laboratory and other ancillary staff such as engineers and cleaners. Staff from both government and faith based facilities is eligible for the study and in all levels (level 2, 3 and 4) of facilities in Eldoret East district. The study involved those who are at work, those about to go for leave and those retuning from leave since the study duration is one month but those who would have not returned from leave were left out of the study. The criteria involved targeting those about to go for leave, those who at work and those who are returning from leave in that period so as to ensure that most of the health care workers are covered. Patton (2002) argues that the sample size depends on what one wants to know, the purpose of the inquiry, what is at stake, what will be useful, what will have credibility and what can be done with available time and resource. The table showing the staff cadre's distribution was shown below.

Table 3.2: Human Resource Availability

Level of facility	Level 4 (hospitals)		Level 3 (health centers)		level 2 (dispensaries)	
	public	Private	Public	Private	Public	Private
No. of HCWs	296	83	89	0	80	103

Source District Health Facilities Records (2009)

Eligibility Criteria

All the health care workers were eligible to be involved in this study a part from those who were on more than one month leave during the study period, such as those who were on maternity leave, study leave and sick leave. Also those who have been employed or transferred in within the last one month because they may not have had any exposure or knowledge on availability and accessibility of PEP in the hospitals.

3.4. Sample Size

In order to get 95% confidence intervals and sampling error of 5% the sample size was determined using the following formulae

Sample size = Z^2 (P q)/D^2

Where

Z- 1.96 (a statistical constant)

D=5% sampling error

P=0.2

Based on assumption that 0.3% of HCWs is at risk of getting HIV occupationally therefore expected to practice PEP

H= **(**$1.96)^2$(0.3) (0.7) / 0.0025 =322

The sample size therefore is **322** HCW.

3.5. Sampling Technique

The researcher ensured a high degree of correspondence between a sampling frame and the sample population as the accuracy of the sample depends on the sampling frame. To sample out Eldoret East a simple random sampling was done between the former 19 districts of Rift Valley province where PEP is implemented. Eldoret East district was picked with an HIV prevalence of 7.6%. To ascertain that all categories of staff are represented a list of all HCWs is developed and group according to cadres like clinical and non clinical/ancillary. The clinical staff includes doctors, nurses, clinical officers, dentists, pharmacists; laboratory technicians and other paramedical staff like plaster technicians. The non medical staff includes drivers, subordinate staff, cleaners, and other administrative workers. To get the 322 sample size, from a sampling frame of 651 HCWs.

Systematic sampling is used. The sampling interval (K) is every 2^{nd} from the formula.

$$K = \frac{\text{total population (N)}}{\text{Sample size (n)}} = \frac{655}{322} = 2.03$$

Therefore every 2nd person in the list is selected.

Sample size (n) 322

The sample was distributed proportionately across the facilities.

Thus, for public level 4 = no.of HCW in level 4 (public) = 296 *100%= 45% of 322=146

Total no. of HCW 651

The distribution of other levels follows the same trend giving the distribution as shown in the table below 3.3

Table 3.3: Distribution of other levels

Level of facility	Level 4		Level 2 and 3	
	public	private	Public	private
No. to be sampled	146	41	84	51

The first person was selected randomly.

3.6 Data Collection Tools

To collect the data to meet the objectives of the study, a structured questionnaire and key informant interviews was used. The structured questionnaire was used to collect quantitative data. The questionnaire was divided into sections. The sections dealt with specific aspects of the objectives. These include general information, knowledge of PEP, prevalence of injuries, and practice of PEP of HIV by HCWs. Face-to-face interviews with the key informant was done. Notes taking was used to collect the data. The interviews and filling of the questionnaires were expected to take 20 minutes per respondent.

3.6.1 Pilot study

Prior to the study, four research assistants were selected and trained on the data tools and research methodology. The assistants participated in pilot and the actual study. Pre test then is done to test the data collection tools. Pre test was done in Uasin Gishu district hospital. The hospital was not included in the study.

3.6.2 Data collection

Prior to applying the data tools, a visit to the district medical officer of health (DMOH) and the medical superintendent was done to get their approval and authorization to carry out the research in their area of jurisdiction. During the meeting, cooperation of other district health managers was sought. These include officers in charge of public health, nursing, clinical, laboratory, pharmacists and personnel departments.

A list of all HCWs who were on duty on that month study was found with the assistance of hospital personnel officers in respective Eldoret East districts and from hospital administrators for Faith Based facilities. A list of all HCWs was developed. Using the given list, a sample is picked. Then the data collection tools were administered by research assistants to the sampled group. The administration was conducted in their units of work or their facilities by interviewing the HCWs using the structured questionnaire.

For qualitative data, key informant interviews was done. The interview targeted selected officers with more information on PEP. These include the DMOH, medical superintendent, nursing officer in charge, AIDS coordinator, and staff working in comprehensive care centre, VCT counselors and pharmacist. A date and venue was set with the selected HCWs who participated in the interviews. Prior to the application of the data tools consent was sought from HCWs.

3.6.3 Validity of Research Instrument

Validity is the degree to which results obtained from the analysis of the data actually represents the phenomenon under study (Mutai, 2001). Validity therefore, has to do with

how accurately the data obtained in the study represents the variables of the study. If such data is a true reflection of the variables, then inferences based on such data will be accurate and meaningful. According to Patton (2002), validity is quality attributed to proposition or measures to the degree to which they conform to establish knowledge or truth. An attitude scale is considered valid, for example, to the degree to which its results conform to other measures of possession of the attitude. Validity therefore refers to the extent to which an instrument can measure what it ought to measure. It therefore refers to the extent to which an instrument asks the right questions in terms of accuracy. Mugenda and Mugenda (1999) validity is the accuracy and meaningfulness of inferences, which are based on research results.

The instruments were rated in terms of how effectively it samples significant aspects of the purpose of the study. The content validity of the instrument was determined in two ways. First, the researcher discussed the items in the instrument with the supervisors, colleagues and other lecturers in the Departments. Advice given helped the researcher determine the validity of the research instruments. The advice included suggestions, clarifications and other inputs in order. These suggestions were used in making necessary changes.

Secondly, content validity of the instrument was determined through piloting, where the responses of the subjects were checked against the research objectives. This also gave a reason as to why content was used. For a research instrument to be considered valid, the content selected and included in the questionnaire must be relevant to the variable being investigated argues Kerlinger (1978).

3.6.4 Reliability of Research Instrument

Reliability is a measure of the degree to which a research instrument yields results after repeated trials (Neuman, 2000). Reliability is a quality attributed to proposition or measures to the degree to which they produce consistent results. An attitude scale is considered reliable, for example, to the degree to which the same respondents, or very similar respondents, receive the same or very similar score upon repeated testing.

According to Mugenda and Mugenda (1999), the reliability of an instrument is the measure of the degree to which a research instrument yields consistent results or data after repeated trials. In order to test the reliability of the instrument to be used in the study, the test- retest method was used. The questionnaire was administered twice within an interval of two weeks in Uasin Gishu district. This established the extent to which the questionnaire elicits the same responses every time it is administered.

Pearson's product moment's correlation (r) will also be used to determine the coefficient stability of the data collection instrument. Fraenkel and Warren (2000) say that Pearson's Product moment coefficient of correlation is one of the best-known measures of association. The reliability coefficient was calculated and a score of 0.5 and above was considered to be the required threshold to be used in the study, (Patton, 2002).

For all likert type questions, Cronbach's Coefficient Alpha was computed for each item. A reliability coefficient of 0.7 or over was assumed to reflect the internal reliability of the instruments (Fraenkel & Wallen, 2000). This is because likert type questions are best tested for reliability using Cronbach's Coefficient Alpha which combines all the items and advises on which item to discard if it does not capture what it is intended to capture (Neuman, 2000).

3.7 Data Management and Analysis

Data collected was reviewed for completeness and accuracy to correct obvious errors. Data was then coded for parameters which need sorting and classification and develop a written code book. The data was entered into the Statistical Package for Social Sciences (SPSS) for further analysis. Data on prevalence and other quantitative thematic contents was analyzed focusing on describing the answering the questions; how many, who, where, when and how did it happened. Data relating to this was compared to show the spatial distribution of the occupational injuries. The data was then be presented in frequency tables and graphs to facilitate calculation of rates and mean or median. Comparisons are done by side to side comparisons of rates, cross tabulations or frequency

histograms to explain the differences between the public and private sectors. On readiness by HCWs to take PEP, analysis was done focusing on describing accessibility, availability, knowledge (based on training or sensitization) and uptake of PEP by HCWs. Cross tabulations of data was done. Statistical significance of results was also done.

3.8 Ethical Approval

Before the commencement of the study ethical approval was sought from IREC (see annex for a template). Further authority from the district medical officer and the medical superintendents/officers in-charges of facilities sought. A copy of approval and authority letter from district medical officer or district medical superintendent was presented to in charges at the lower facilities. Any health workers was free to withdraw from study at any point this was treated as non-response.

3.8.1Confidentiality

A written confidential agreement was signed between the researcher and the respondents. The agreement was accord the respondents the following: -

a. to keep Information confidential;
b. not to communicate or otherwise make available Information to any third party
c. not to use, or allow to be used, Information except solely in relation to the Research,
d. not to make, or cause to be made, commercial use of Information.

Therein sign researcher _____

Respondent signature_____

3.8.2 Informed Consent

Informed consent of the health care workers was sought before the questionnaire is administered (Copy in annex)

3.8.3 Dissemination of Reports

The results and conclusion of the study was disseminated at the end to all stakeholders. The dissemination Method depended on the audients involved; to district staff, a conference was done and the report of salient points of the study results given by oral presentation. A report was written to the Ministry of health and to the research supervisors.

3.8.4 Anticipated Risks

The study collected data mainly through questionnaires, interviews and document analysis and no tests was carried out. Thus there was no exposure of the research assistants to any risks.

CHAPTER FOUR

FINDINGS

4.1 Background Information of the Respondents

The type of facilities

The study sought to establish the number of respondents according to type of facility in the area of study and from findings most of 141(44.7%) were from public hospitals, 41(13%) were from hospitals, 82(26%) were from public health centres/dispensaries, 51(16.3%) private dispensaries as shown in table 4.1.

Table 4.1: Number of respondents according to facility type

Facility	Frequency	Percent
Public hospitals	141	44.7
Private hospitals	41	13.0
Public health centres/dispensaries	82	26
Private dispensaries	51	16.3
Total	315	100.0

The findings show that the study targeted both public and private hospitals, public health centres/dispensaries and private dispensaries.

The age of respondents

Study sought to find out the age of the respondents and from findings 82(26%) were aged between 26-30 years, 63(20%) were aged between 36-40years, 52(16.5%) between 31-35years, 40(12.7%) below 25 years while 20(6.3%) and 12(3.8%) were aged between 46-50 and above 51 years respectively as shown in table 4.2.

In effort to examine the gender of the respondents it was revealed that more than half 162(51.4%) were female while 150(47.6%) were male as shown in table 4.2. It is

believed marriage comes with age and responsibility in life in the African context and this is why the study examined the marital status of the respondents from which it was revealed that majority 226(71.7%) were married. It was also found worth to establish the occupation of the respondents, most of them184 (58.4%) were nurses as shown in table 4.2.

Table 4.2: Respondents age

Years	Frequency	Percent
25 Yrs a	40	12.7
26-30 Yr	82	26.0
31-35 Y	52	16.5
36-40 Yr	63	20.0
41-45 Yr	20	6.3
46-50 Yr	12	3.8
> 51 Yrs	14	4.4
Non response	32	10.2
Total	315	100.0
Gender		
Female	162	51.4
Male	150	47.6
No response	3	1.0
Total	315	100.0
Marital status		
Married	226	71.7
Separate	6	1.9
Single	68	21.6
Widowed	7	2.2
No response	8	2.5
Total	315	100.0
Occupation		
Doctor	15	4.8
Nurse	184	58.4
Clinical officer	44	14.0

Years	Frequency	Percent
25 Yrs a	40	12.7
26-30 Yr	82	26.0
31-35 Y	52	16.5
36-40 Yr	63	20.0
41-45 Yr	20	6.3
46-50 Yr	12	3.8
> 51 Yrs	14	4.4
Non response	32	10.2
Laboratory staff	27	8.6
Public health officer	14	4.4
Nutritional officers	8	2.5
Subordinate staff	20	6.4
Casual worker/others	3	1.0
Total	315	100.0

The findings as shown in table 4.2 could mean that the respondents were from different age groups and thus implied that the employees in the health care centres are in different age groups. From findings it was connoted to mean that the employees in the visited health care centres the number of male and female employees does not have much difference. It could also be attributed to the fact that there are more female lab assistants in healthcare facilities.

As illustrated in table 4.2, it could mean that majority of the employees in the health centres are people with families and their exposure to HIV virus will not only affect them but also their families and thus the need to access the PEP as soon as exposed to divert its effects.

The findings imply that most of the respondents involved in the study were nurses followed by the laboratory staff. This means that the majority of the healthcare workers are nurses. According to the interviewed healthcare workers 8 out of 10 stated that nurses, clinical officers, lab technicians and cleaners are the people at high risk because

they are mostly exposed to needles pricks which have been used and blood specimens. The cleaners can also get pricked during their cleaning process.

Duration of work in the current station

Number of years in the same organization gives someone understanding of his environment and in this case the health care workers can understand the availability of PEP in the hospitals. It was revealed that most of them 128(40.6%) have been in the same organization for 1year as shown in table 4.3.

Table 4.3: Duration of work in the same station

Duration	**Frequency**	**Percent**
0-1 Yrs	128	40.6
2-5 Yrs	87	27.6
5-10 Yrs	45	14.3
>10 Yrs	47	14.9
No response	8	2.5
Total	315	100.0

This could mean that most of the respondents understand the accessibility, availability and possibly the use of the PEP in their health care centres since they have been their long enough and thus could participate in the study effectively.

Number of years since initial qualification

Although the respondents had worked in the same organization for less than a years it was also revealed that 102(32.4%) have more than 10years since their initial qualifications in the field.

Table 4.4: Number of years since initial qualification

Years	Frequency	Percent
0-1 Yrs	50	15.9
2-5 Yrs	81	25.7
5-10 Yrs	69	21.9
>10 Yrs	102	32.4
No response	13	4.1
Total	315	100.0

From the findings it could mean that the health system keep renewing its work force, thus the presence of both new and hold staff in terms of years since qualification.

The respondents work department

Study further sought to find out the department that respondents work in and from the findings it was revealed that, 137(43.5%) work in OPD department.

Table 4.5: The respondents work department

Department	Frequency	Percent
Dispensary	2	.6
Dphns office	8	2.5
environment	2	.6
general	3	1.0
Laboratory	28	8.9
OPD	137	43.5
public health	19	6.0
Theater	6	1.9
Wards	57	18.1
No response	53	16.8
Total	315	100.0

It was concluded from the findings that respondents were drawn from nine departments in the healthcare but most of them were from OPD.

4.3 The prevalence and types of occupational exposure in our healthcare centres

All occupational exposures do not carry equal risk. Some are unquestionably high risk if the source is positive – such as a spontaneously bleeding injury caused by a large bore hollow needle immediately after it has been used to withdraw blood from a vein or an artery. Some exposures pose very little risk – such as exposure to body fluids other than blood, splash exposures to nonmucous membranes, or superficial injuries which do not cause bleeding. Some contacts with blood or body fluids are usually considered not to be exposures – such as when the contact is only to intact skin. This is why in this section the study will seek to establish the prevalence and types of occupational exposure among the healthcare workers.

Common ways of staff exposure to HIV

While under duty in the care centres employees are exposed to various areas that they be easily exposed to HIV and according to findings 240(76.2, felt that it is through suturing procedure, 224(71.1%) say it is through disposing of needles, 212(67.3%) recapping of needles, 211(67%) injection administration, 206(65.4%) pricking of needles, 201(63.8%) through drawing of blood, 180(57.1%) through splashing of blood and 144(45.7%) felt that it was through handling of trash and dirt linens

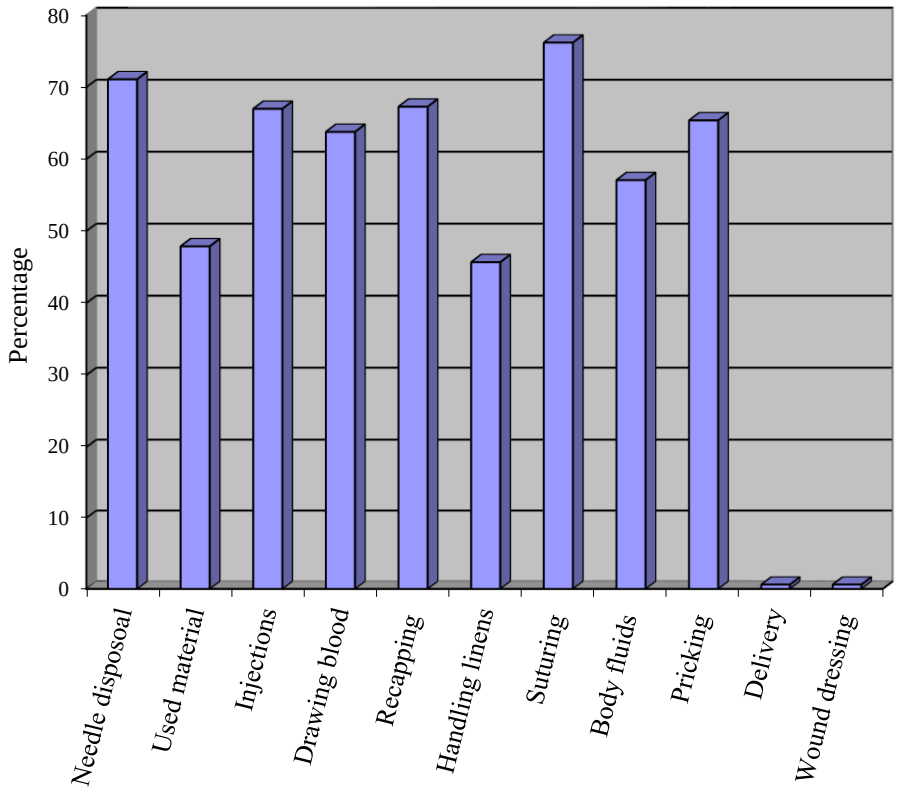

Figure 4.1: Common ways of staff exposure to HIV

As illustrated in Fig 4.1, it can be connoted that the most common sources of infection to the staff is through suturing procedure and through disposing of needles.

Knowledge on component(s) of post exposure prophylaxis of HIV

The study further sought to examine the knowledge on components of post exposure prophylaxis of workers, it was revealed that 246(78.1%) knew that PEP is the use of ARVs after possible exposure to HIV. The others could define PEP differently as 111(35.2%) defined it as; testing all the suspected patients exposed, 86(27.3%) as going for VCT, and 84(26.7%) as going for DTC as shown in Fig 4.2.

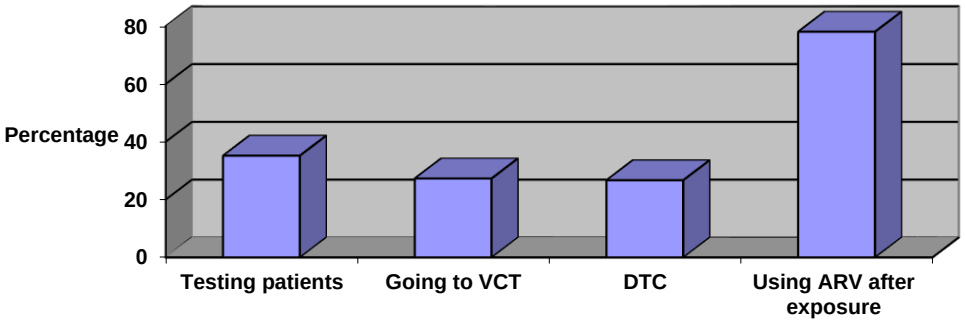

Fig 4.2: Component(s) of post exposure prophylaxis of HIV

Although the findings in Figure 4.6, is interpreted to mean that most of the respondents knew what PEP is as using ARV after possible exposure to HIV, a large percentage did not know the components putting them in the risk in case of infection.

Sensitization of on PEP for last one year

The respondents were also asked if they have been sensitized on PEP for the last one year, 173(54.9%) have not been sensitized while 136(136(43.2%) have been sensitized.

Table 4.6: Sensitization of on PEP for last one year

Sensitization	**Frequency**	**Percent**
Not sensitized	173	54.9
Sensitized	136	43.2
No response	6	1.9
Total	315	100.0

The finding means that half of the respondents have not been sensitized on PEP for the last one year; this could mean that even if exposed to HIV they may not know what to do next.

When respondents heard about PEP

Further, the study sought to find out when last the respondents heard about PEP and from findings 64(20.3%) have never heard of it, 74(23.5%) heard of it 1-2 years ago, 37(11.7%) heard over three years, 32(10.2%) heard less than a year while 108(34.3%) did not respond as shown in table 4.7.

Table 4.7: When respondents heard about PEP last

Period	**Frequency**	**Percent**
< 1 Year	32	10.2
1-2 Years	74	23.5
>3 Yrs	37	11.7
Never heard	64	20.3
No Response	108	34.3
Total	315	100.0

It was thus concluded that the respondents have heard of PEP in different years, this could be because the health facilities do not have any stipulated time table to sensitize their employees on PEP.

Knowledge on drugs used for PEP of HIV

The study also examined the drugs used for post exposure prophylaxis (PEP) and from findings 204(64.8%) of the respondents stated rightly that they use Stavudine/Lamivudine/Niverabine, 86(27.3%) for PEP. Others said that It's use of Zidovudine, 86(27.3%), Rifater 8(2.5%) while others 4(1.3%) as use of antibiotics.

Table 4.8: Drugs used for PEP of HIV

Drugs Used	**Yes**	
Drugs	**Freq**	**%**

Rifater	8	2.5
Antibiotic	4	1.3
HIV-Zidovudine	86	27.3
HIV-Stavudine/Lamivudine/Niverabine	204	64.8

As illustrated in table 4.8, it can be concluded that majority of the respondents know it's the use Stavudine/Lamivudine/Niverabine for their PEP of HIV. However more than 25% of the respondents don't know which drugs are used for PEP

Duration of PEP drugs uptake

In quest to find out the duration at which PEP is taken, the respondents were asked to state how long they think it is taken 242(76.8%) agreed that it is within duration of 28days as shown in table 4.9.

Table 4.9: Duration of PEP drugs uptake

Duration	**Frequency**	**Percent**
2 Months	3	1.0
28 Days	242	76.8
6 Months	6	1.9
Don't know	45	14.3
Lifetime	1	.3
No response	18	5.7
Total	315	100.0

It was thus concluded that most HCWs know that PEP is taken for 28 days to be effective.

Staff on PEP awareness

The study further examined if the staff were aware of any staff members who were under PEP uptake, 105(33.3%) were aware while 200(63.5%) were not aware as illustrated in table 4.10.

Table 4.10: Staff on PEP awareness

Awareness	**Frequency**	**Percent**
Not aware	200	63.5
Aware	105	33.3
No response	10	3.2
Total	315	100.0

It was thus concluded that indeed there are some staff members who had been exposed to HIV and took PEP drugs.

Reasons for using Post Exposure Prophylaxis

After establishing that there were health care workers who were under PEP, the study further sought to find out the reasons that they are under drugs majority 271(86%) agree that the use of PEP is to prevent HIV infection after exposure as shown in table 4.11.

Table 4.11: Reasons for using Post Exposure Prophylaxis

Reasons	**Yes**	
	Freq	**%**
To prevent HIV infection	271	86.0
To reduce viral load	3	1.0
Because of rape	4	1.3
Pricked during work	37	11.7
Total	315	100

As illustrated in table 4.12, it was concluded that most HCWs know that the main use of PEP is to prevent infection of HIV after exposure by the health care workers. A significant number of HCWs were on PEP (11.7%) due to needle prick injuries at work place.

Availability of PEP drugs in the healthcare facilities

For health care workers to be able to utilize the PEP drugs, the drugs should be readily available to them and from study findings 171(54.3%) agreed that the drugs were available, 90(28.6%) say it is not available while 46(14.6%) do not know.

Table 4.12: Availability of PEP drugs in the healthcare facilities

Availability	**Frequency**	**Percent**
Don't Know	46	14.6
Not available	90	28.6
Available	171	54.3
No response	8	2.5
Total	315	100.0

It implies that more than half (54%) of the HCWs can access PEP drugs, the others either does not know or not available in their work stations.

Time taken to the next nearest facility

The study further sought to find out the time that can be taken to reach the nearest facility to access the PEP drug for those who do not have and 53(16.8%) agree that it will take them 2-24hours, 41(13%) say they can access within 2hours as shown in table 4.13.

Table 4.13: Time taken to the next nearest facility

Time taken	**Frequency**	**Percent**

> 72 Hours	7	2.2
25-72 Hours	12	3.8
2-24 Hours	53	16.8
Within 2	41	13.0
No response	202	64.1
Total	315	100.0

The findings illustrated meant that the health care workers can access the PEP drugs in their facilities and if they cannot it will take them 2 to 24hours to access the same in the nearest healthcare centre.

4.4 HIV Risk, Perception and PEP Utilization

Strong ethical arguments support providing PEP for HIV infection. Each day, thousands of people around the world experience accidental exposure to blood, other body fluids or tissues. Health care workers are especially vulnerable. Moreover, in many parts of the world, the potential for workplace accidents that may expose workers to HIV-infected blood and other body fluids is increasing. The availability of PEP for health workers also serves to increase staff motivation to work with people infected with HIV, and may help to reassure and retain staff concerned about the risk of exposure to HIV in the workplace. An increasing number of HIV infected patients come into the health care system for care and treatment. Therefore the number of people who may require invasive procedure is increasing rising the potential risk of injuries and transmission of HIV and this is why this section looks at PEP utilization among the HCWs.

Rate of getting exposed to HIV/Aids Infection Occupationally

In effort to establish the rate of healthcare workers exposure to HIV/Aids it was revealed that 90(28.6%) feel that it's low, 81(25.7%) feel its moderate, 80(25.4%) feel it's very low as illustrated in table 4.14.

Table 4.14: Rate of getting exposed to HIV/Aids Infection Occupationally

Rate	Frequency	Percent
Very low	80	25.4
Low	90	28.6
Moderate	81	25.7
High	32	10.2
Very High	21	6.7
No response	11	3.5
Total	315	100.0

The findings from study in table 4.14 meant that there is no exact level that the exposure of PEP can be rated in the healthcare centres.

Rate of getting exposed to HIV/Aids Infection and Availability of PEP

According to the interviewed healthcare workers, the risk of exposure was very high for those who had PEP drugs readily available in their facilities,28.0% while very low among those who did not know whether PEP drugs were available in their facilities as shown in fig 4.3.

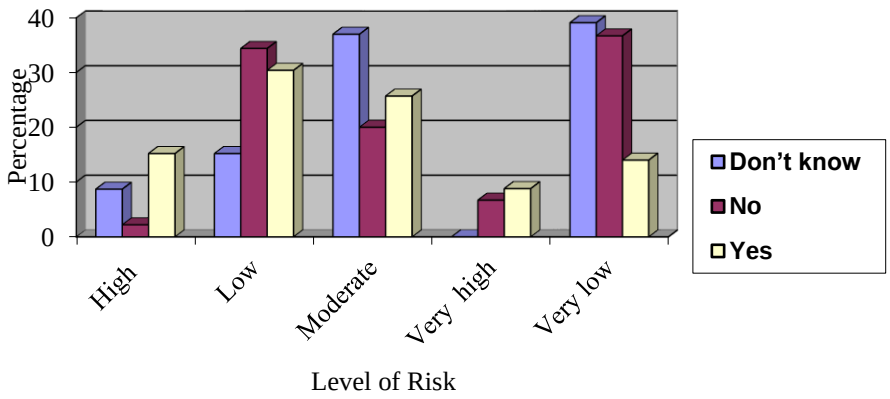

Figure 4.3: PEP availability against rate of HIV/Aids infection risk

This appears as an advantage to those who are at high risk of exposure to the disease and possible infection because they can readily access the drugs.

Comparison of risk of HIV infection and occupation

Four doctors representing 26.7%, 20(10.9%) nurses, 3(6.8%) clinical officers and 1(33.3%) casual worker have a high risk of HIV infection while 4(26.7%) doctors, 43(23.4%) nurses, 17(38.6%) clinical officers, 2(7.4%)nutritional assistants and 1(33.3%) casual worker had a low risk of infection with HIV. Two doctors, (13.3%), 51(27.7%) nurses, 12(27.3%) clinical officers, 3(11.1%) nutritional assistants and 2(10%) reported a moderate risk of infection.

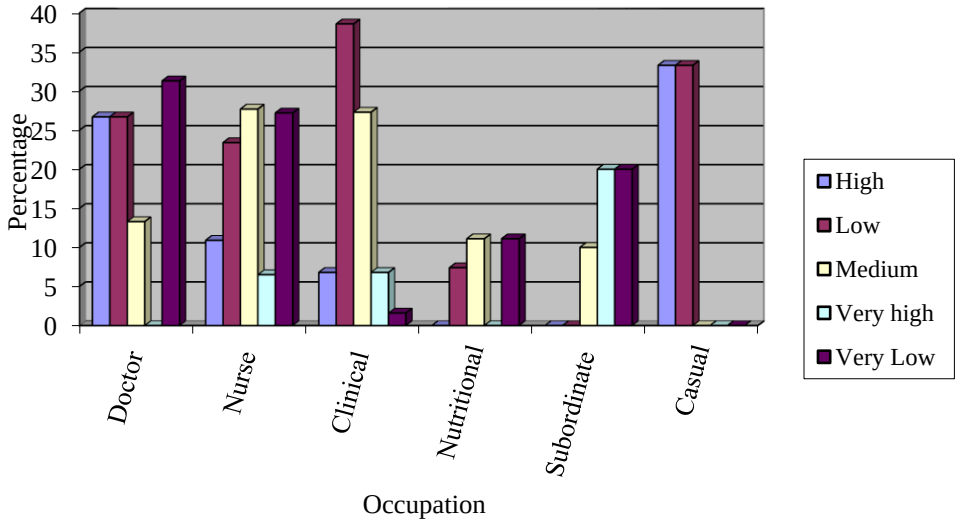

Fig 4.4 Prevalence of HIV infection in relation to occupation

From the results in fig 4.4 above, subordinate staff, clinical officers and nurses respectively are at a very high risk of infection while doctors have the lowest risk of infection. This is due to the kind of work the health care workers are exposed to.

Comparison of HIV infection with gender

Majority of the female respondents 51(31.5%) expressed a low risk of infection while 39(24.1%) said that the risk of infection with HIV was low. Majority of male respondents 44(29.3%) reported a very low risk of infection while 42(28%) reported a moderate risk of infection with HIV.

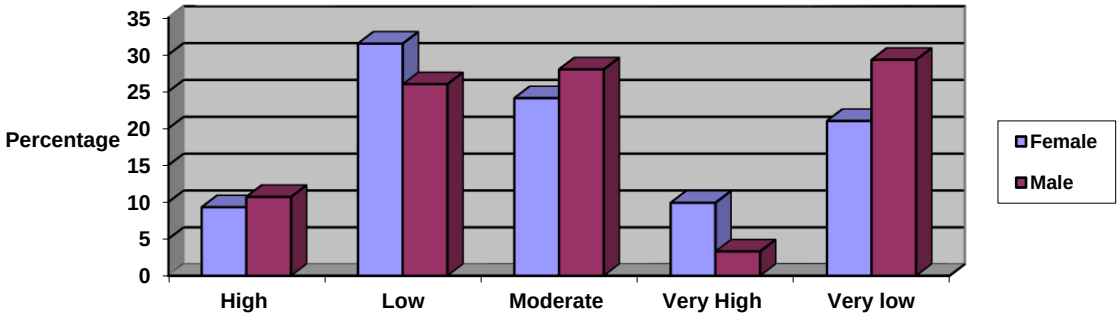

Fig 4.5 Prevalence of HIV risk in relation to gender

Female health workers have a higher risk of being exposed to HIV infection than the male health workers. This could be due to occupational differences where some occupations are popular with some gender.

Prevalence of HIV in relation to work department

All who worked in the dispensary reported a low risk of infection while 4(25%) and 8(50%) who worked at the Dphns reported high and low risk respectively. Majority of those who worked in the laboratory 86(50%) reported a low risk of infection while 4(14.3%) reported a high risk of infection. Majority of those who worked in the OPD 86(62.8%) reported low risk of infection with HIV as well as those who worked at the theatre, 2(33.3%). Majority of those who worked in the public health, 6(42.1%) reported a low risk of infection while all those who worked in the general 3(100%) reported a moderate risk of infection.

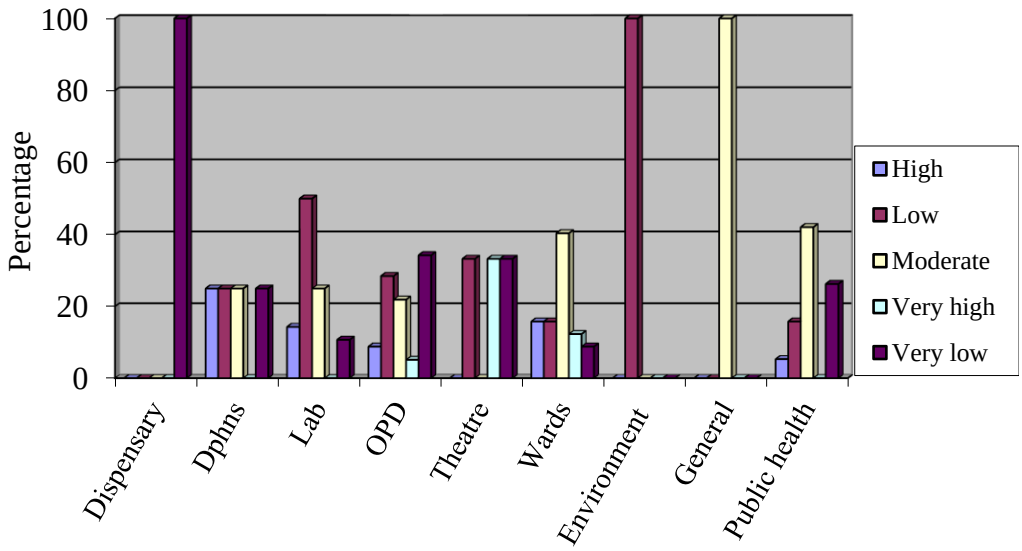

Fig 4.6 Risk of infection of HIV in relation to work department

Health workers working in Dphns, laboratory and wards are at a higher risk of infection of HIV while those working in dispensaries and environment have a low risk of infection with HIV due to the nature of their work.

Reasons for the rate of exposure

The study further sought to establish why the rate of exposure is as stated by the respondents in table 4.15, it was revealed that 246(78.1%) feel that the rate of exposure is as it is because of staff awareness, mode of transmission and prevention methods.

Table 4.15: Reasons for the rate of exposure

Reasons	Frequency	Percent
Staff are now aware of the virus and mode of transmission and prevention methods	246	78.1
It will stress my attitude of work	2	.6
Its already known	2	.6
Lack of knowledge	30	9.6
If the reason is because they come in contact with infected people and materials	35	11.1

It was concluded that the rate of exposure is either high or low because the staff are now aware or not aware of the virus transmission and prevention methods.

Level of PEP Uptake in Facilities

Study further sought to find out the level of PEP uptake after exposure to HIV, 134(42.5%) said it was very low as shown in table 4.16.

Table 4.16: Level of PEP Uptake in Facilities

Level of PEP uptake	Frequency	Percent
Very low	134	42.5
Low	54	17.1
Moderate	43	13.7
Good	43	13.7
Very Good	20	6.3
No response	21	6.7
Total	315	100.0

It implies that although some healthcare workers have been exposed, most of them do not take PEP after exposure. When asked the current state of PEP uptake is as it is the healthcare workers attributed it to staff not being exposed, because of stigma, because of availability of knowledge, fear of HIV infection, availability of PEP drugs, ignorance from some employees, because of some side effects of PEP drugs and lack of enough PEP drugs in the healthcare facilities. Study further interviewed 10 HCWs from which 7 out of 10 agree that PEP is very effective when used properly. They further stated that action that should be taken after exposure is to wash with soap and water, start on PEP immediately, know the status of the source patient and seek counseling immediately after exposure.

Relationship between PEP availability and PEP uptake

Majority of those who did not know whether the facilities had PEP drugs said that the level of uptake of the drugs was low, 30(65.5%). Seven (7.8%) of those who did not have PEP drugs in their facilities said the uptake was good while 72(88.8%) said that the uptake was low. Majority of those who had PEP drugs in their facilities, 84(49.1%) said that the uptake of drugs are low while 54(31.6%) said that the uptake was good as shown in fig 4.7.

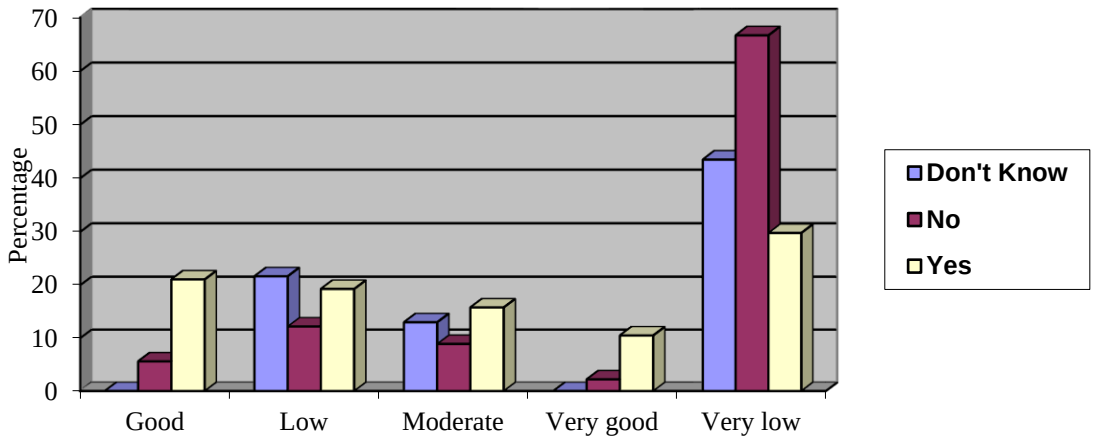

Fig 4.7: Relationship between PEP availability and PEP uptake

Although the uptake of PEP for those facilities with the drugs, who did not have the drug and those who did not know whether the drugs were available, uptake is higher in those

facilities with the drugs. This implies that the availability of the drugs influence the health care workers to take it in case of injury.

Exposure to HIV while working

Study further sought to find out exposure to HIV by healthcare workers for the last one year while working 62(19.7%) have been exposed while 246(78.1%) have not been exposed.

Table 4.17: Exposure to HIV while working in the last one year

Exposure	Frequency	Percent
Not exposed	246	78.1
Exposed	62	19.7
No response	7	2.2
Total	315	100.0

As shown in table 4.17, it is concluded that 19% employees in the healthcare centres get exposed annually.

Exposure to HIV through needle prick occupationally

Majority of those who have been exposed to HIV through needle prick in the past one year were nurses, 38 (61.3%) while 12(19.4%) were clinical officers. Seven (11.3%) were laboratory staff while 3(4.8%) were Public health officers.

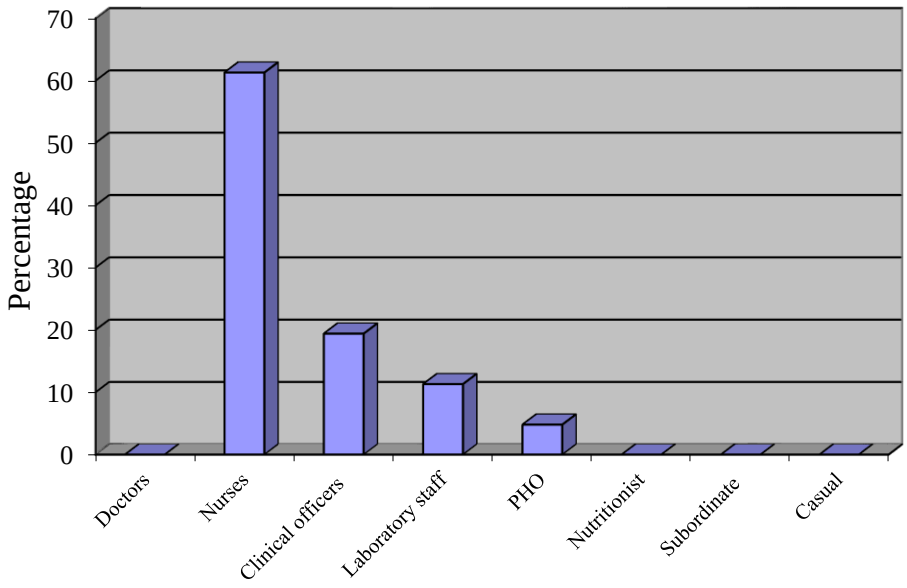

Fig 4.8: Exposure to HIV through needle prick occupationally

Nurses and clinical officers are more at risk of infection due to injuries unlike those in other types of occupation.

Relationship between availability of drugs and opinion on risk

Majority of those who did not know whether PEP drugs were available had the opinion that the risk of HIV infection was low, 25(54.3%) while 4(8.7%) said that the risk was high. From those who did not have PEP drugs available in their facilities, majority said that the risk of infection was low, 64(71.1%) while 8(8.9%) said that the risk was high. From the respondents who had PEP drugs in their facilities, majority said that the rate of infection was low, 76(44.4%) while 41(24%) opined that the risk was high.

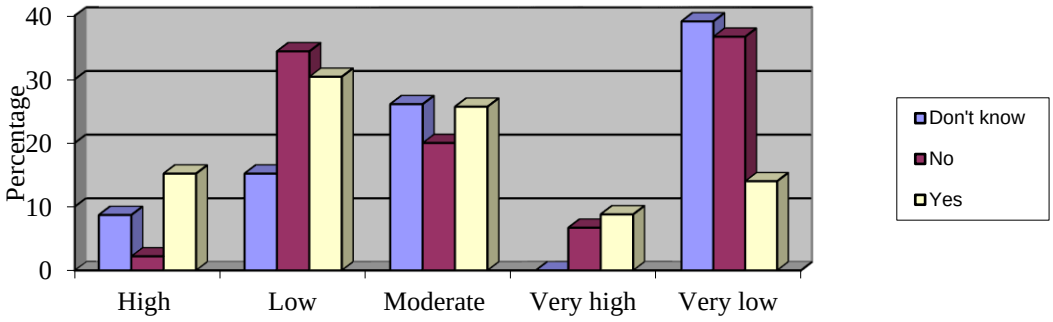

Fig 4.9: Relationship between availability of drugs and opinion on risk

Although the risk of infection is low for all facilities, it is considerably high in those facilities with PEP drugs. This is an advantage to those who might run the risk of infection. However, although the percentage of high risk is lower in those facilities without drugs and where PEP drugs' availability is not known, still those who run the risk of infection in those facilities are at a disadvantage of accessing the drugs.

Times of Exposure to HIV while working in the last one year

Further study examined the number of times that the healthcare workers have been exposed to potential HIV for the last one year and from findings 54(17.1%) have been exposed 1 to 5 times while 6(1.9%) have been exposed 6-10 times as shown in table 4.21.

Table 4.18: Times of Exposure to HIV while working in the last one year

Times of exposure	Frequency	Percent
1-5 times	54	17.1
6-10 times	6	1.9
Nil	110	34.9
No response	158	50.2
Total	315	100.0

It means that those healthcare workers who have been exposed to HIV are in most cases exposed to it 1-5 times in a year. This shows that there is need for the health facilities to develop mechanism of reducing this exposure either applying pre- or post exposure protective mechanism that reduces transmission of HIV.

Sharing Exposure Information

The healthcare workers were asked to indicate if they informed anyone when they were exposed and from findings out of the 62 exposed people as show in table 4.19, 60(19%) told someone.

Table 4.19: Sharing Exposure Information

Inform anyone	Frequency	Percent
Not inform anyone	86	27.3
Informed someone	60	19.0
No response	169	53.7
Total	315	100.0

It is evident from findings that most of the exposed healthcare workers tell someone when they are exposed. This implies that the healthcare workers are concerned on the risks of getting HIV or other communicable diseases.

Person informed when exposed

The study further sought to find out the person the healthcare workers informed when they were exposed to HIV, 38(61.3%) informed their workmate as shown in table 4.20.

Table 4.20: Person informed when exposed

Person	Frequency	Percent
Friend	3	4.8
Officer	16	25.8
Spouse	5	8.1
Work mate	38	61.3
Total	62	100.0

As illustrated in table 4.20, it could mean that when the healthcare workers are exposed the common person informed is their workmates followed by the officer in charge.

Relationship between injury and going for PEP

Thirty of those who had been exposed to HIV in the past one year 1-5 times, representing 55.6% did not seek PEP drugs while 22(44.4%) sought. Five of those who had been exposed to HIV infection 6-10 times in the past one year representing 83.3% did not seek PEP drugs while 1(16.7%) sought PEP drugs

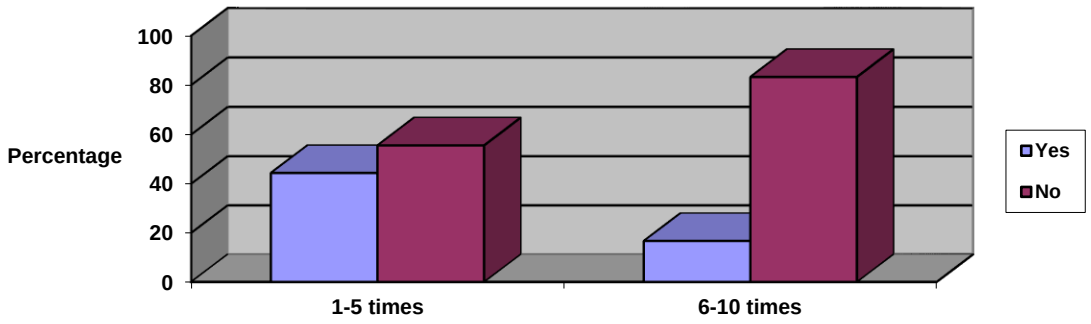

Fig 4.10: Relationship between injury and going for PEP

Although health care workers are exposed to HIV infection in their work place, majority are reluctant to use PEP drugs. This means that they could be infected with HIV despite the PEP drugs being available.

Sensitization on PEP drug use and Use of the drug after injury

Majority of those who had been sensitized on PEP drugs sought intervention to prevent HIV infection when they were exposed, 56(32.4%) while 20(11.6%) sought intervention. From those who had not received sensitization, majority did not seek intervention when to prevent HIV infection when they were exposed to infection, 29(21.3%) while 19(14%) sought intervention.

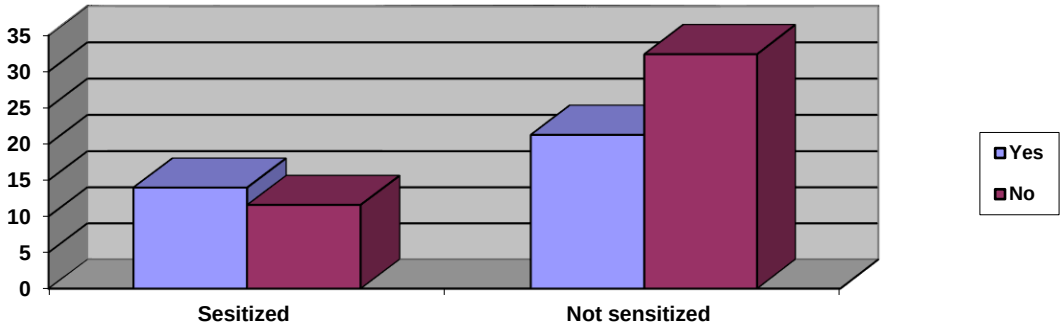

Fig 4.11: Sensitization on PEP drug use and Use of the drug after injury

Sensitization enables healthcare workers to realize the importances of the use of PEP incase of risk of infection and the management should therefore promote sensitization of the workers.

4.5 Utilization of HIV PEP services by HCWs in public and private health facilities

It is inequitable that PEP is available for fewer types of exposures (only the most significant) in resource constrained settings. It could be argued that PEP is unjustifiably available for too many low risk exposures in countries with increased resources. Prevention of exposure in a workplace setting needs to be inculcated into every health care provider right from the time of recruitment. A few primary preventive aspects are washing hands thoroughly before and after patient care, after removing gloves for which commercially available. Due to lack of resources in some healthcare centers there are no PEP drugs and this is why the current study seeks to find out the utilization of PEP among healthcare workers.

Intervention to prevent HIV after exposure

In effort to find out what the healthcare workers do when exposed to HIV, out of the 62 exposed, most of them 40(64.5%) sought for intervention while 20(32.2%) did not seek for intervention as shown in table 4.21.

Table 4.21: Intervention to prevent HIV after exposure

Intervention	Frequency	Percent
Did not seek intervention	20	32.2
Sought intervention	40	64.5
No response	2	3.3
Total	62	100.0

As illustrated in table 4.21 findings, it was concluded that most of the exposed healthcare workers seek intervention. This shows that there need to sensitize them on need to look for intervention after exposure.

Challenges in accessing PEP by the healthcare workers

The challenges facing the accessibility of PEP by the healthcare workers according to study findings is 77(24.4%) lack of enough drugs, 35(11.1%) lack of trained staff, 21(6.7%) stigmatization, 8(2.5%) distance to place of finding drugs and 6(1.9%) lack of cooperation with the staffs by patients.

Table 4.22: Challenges in accessing PEP by the healthcare workers

Challenges	Frequency	Percent
No trained staff	35	11.1
Lack of enough drugs	77	24.4
Drug misuse	4	1.3
Stigmatization	21	6.7
Other patients do not cooperate with the staffs	6	1.9
Lack of confidentiality	2	.6
Distance to the place where you could find the drugs	8	2.5
Lack of taking drugs by the infected staff	3	1.0
Lack of access the drugs	3	1.0
Lack of disclosure after exposure	4	1.3

It was concluded that the challenges facing employees are lack of enough drugs, lack of training, stigmatization, distance to place of accessing the drugs and lack of cooperation. Other challenges according to the 9 out of 10 interviewed HCWs is lack of current information, shortage of PEP drugs, lack of protective kits, shortage of counsellors/ARVs providers, stigma, poor access to PEP services and the level of PEP kit provision.

Comparison of the challenges on the use of PEP and rate of uptake of PEP

Majority of those who said drug uptake was low cited insufficiency of drugs as a source of challenge, 49(62%), 19(24.1%) cited lack of trained staff to administer the drug, 13(16.5%) said that they feared stigmatization, 8(10.1%) said that their was lack of confidentiality in the process, 2(2.5%) said it was due to lack of disclosure after exposure , inaccessibility, drug misuse while 1(1.3%) said that it was due to laxity among staff to take up the drugs after exposure.

Table 4.23: Comparison of challenges on the use of PEP and rate of uptake of PEP

Reason for low level of uptake	Frequency	Percentage
Lack of trained staff	19	24.1
Lack of enough drugs	49	62.0
Misuse of drugs	2	2.5
Stigmatization	13	16.5
Lack of cooperation from the patients	2	2.5
Lack of confidentiality	0	0
Distance	8	10.1
Ignorance from the infected staff on the importance of PEP	1	1.3
Inaccessibility of drugs	2	2.5
Failure to disclose on the event of exposure	2	2.5

Health care workers face challenges in getting sufficient PEP drugs while trained personnel to administer the drugs are not there. This explains the low uptake arte of drugs among healthcare workers after exposure. As a result of this, they face a threat of being infected with HIV from the nature of their work.

Ways of overcoming PEP access challenges

Study further sought ways of overcoming the challenges and according to 92(29.2%) feel that there should be provision of drugs, 52(16.5%) feel that staff should be taught of PEP drugs use while 24(7.6%) that capacity building on staff should be undertaken.

Table 4.24: Ways of overcoming PEP access challenges

Overcoming	Frequency	Percent
Capacity building of the staff on PEP	24	7.6
Providing drugs	92	29.2
Teaching staff on the use of drugs	52	16.5
Provision of counseling	8	2.5
Confidentiality should be maintained by the staffs	4	1.3

It was thus concluded that in order to overcome PEP access challenge there is need to provide the drugs, teaching staff on PEP drugs use, conduct a capacity building, provide counseling and also ensure that confidentiality. According to interviewed HCWs there is need to sensitize staff on PEP use, create HIV workplace welfare team, train special team to counsel staff and test staff, increase access, increase PEP kits supply and there is need increase materials.

Action taken after knowing patient status

Health care workers are in charge of patients and the contact always poses risk of being exposed to HIV, the findings shows that 12(85.7%) of the source patients were counseled while 2(14.3%) were not counseled. The study further sought to find out the number out of the 12 counseled who accepted to be tested, 10(83.3%) accepted to be tested as shown in table 4.26.

Table 4.26: Counseling and testing action

Action	Frequency	Percent
Patient counseled	12	85.7
Not counseled	2	14.3
Total	**14**	**100**
Acceptance to be tested	10	83.3
Not accepted	2	16.7

Action	Frequency	Percent
Patient counseled	12	85.7
Not counseled	2	14.3
Total	**14**	**100**
Acceptance to be tested	10	83.3
Total	**12**	**100**

The findings indicate that those patients who were counseled later on accepted to be tested. This could mean that patient counseling is prerequisite to testing.

Unknown patient status

The respondents were also asked to indicate what they do with patients who decline treatment and their status is unknown and from findings, 29(46.7%) carried out test on patient without informing them while 49(79%) informed the officer in charge.

Table 4.27: Unknown patients' status

What was done in unknown cases	Frequency	Percent
Nothing	1	1.6
Forced the source patient for testing	1	1.6
Did the test without informing the patient	29	46.7
Informed the officer in charge	49	79.0

It was interpreted to mean that the healthcare workers do test on source patients and inform the person in charge.

Healthcare workers status before exposure

It was also found worth to establish the whether the healthcare workers knew their status before exposure to HIV, 90(28.6%) knew their status while 59(18.7%) did not know.

Table 4.28: Healthcare workers status before exposure

Status before exposure	Frequency	Percent
Not known	59	18.7
Known	90	28.6
No response	166	52.7
Total	315	100.0

It was thus concluded that some of the healthcare workers knew their status prior to being exposed to HIV. But also some did not know and thus could not tell later if the were infected through exposure or not. This meant that there is need to sensitize the healthcare workers on the importance of knowing the status and also being open on their status since most of them could not tell if they knew their status or not.

Motivation of healthcare workers to go for PEP treatment when exposed

The healthcare workers were further asked to list what should be done to encourage HCWs participation in PEP treatment, 82(26%) stated that they should be educated on prevention methods, 35(11.1%) feel that they should be educated on PEP, 31(9.8%) agreed that they should be educated to visit VCT/DTC for counseling, 23(7.3%) agree that they should be informed on the risks of HIV while 21(6.7%) felt that they should be informed on the importance of knowing once HIV status.

Table 4.29: Motivation of healthcare workers to go for PEP treatment when exposed

Status before exposure	Frequency	Percent
Visit the VCT/DTC for counseling	31	9.8
They should be educated on the best PEP prevention methods	82	26.0
Test clients as well	5	1.6
Inform of HCWs on the risks of HIV	23	7.3
Educate the HCWs on PEP	35	11.1
Make HCWs aware of the importance of being HIV negative	9	2.9
Inform the workers on the importance of knowing their status	21	6.7
Maintaining confidentiality	14	4.4
No response	109	34.6
Total	315	100.0

It was interpreted to mean that for the healthcare workers to be able to access and use PEP successfully there is need to educate them on importance and use of PEP, they should also be encouraged to visit VCT/DTC for counseling and testing so as to know their status and finally be informed on the importance of knowing their status. According to the 9 out of 10 interviewed healthcare workers to improve behaviour change and PEP uptake there is need to: increased education of healthcare workers, place posters in the healthcare facilities showing importance of PEP, motivate the healthcare workers to know their HIV status and also increase access and use of PEP in the healthcare centres.

Action taken after seeking intervention

Study also sought to find out whether patients were started on PEP medication after seeking intervention, 18(45%) from findings agreed while 21(52.2%) said that they were not put on PEP drugs after seeking for intervention.

Table 4.30(a): Action taken after seeking intervention and Reason for not being put on PEP

Action taken after seeking intervention	**Frequency**	**Percent**
Not put on PEP	21	52.2
Put on PEP drugs	18	45
No response	1	2.8
Total	40	100.0
Reasons for not being put on PEP	**Yes**	
Source patient was negative	7	33.3
My HIV status was positive	5	23.8
ARVs not available in time	11	52.3
Personnel responsible to provide PEP not found	8	38

Interpretation meant that when exposed some healthcare workers are put on PEP after seeking intervention while other do not. The study further sought to find out why others are not put on PEP and as shown in table 4.30(a).

The reason for not putting the healthcare workers under PEP when exposed from findings was because of source patient being negative as supported by 7(33.3%) of the respondents, 11(52.3%) agreed that ARVs were not available in time while 8(38%) agreed that it was because person responsible to provide PEP was not around. This could mean that when exposed sometime they cannot access PEP because source patients are not exposed, lack pf ARVs on time and lack of personnel to provide PEP.

Table 4.30(b): Time taken to start PEP after seeking intervention

Time taken	Yes	
>72 Hour	1	5.5
3-24 Hours	4	22.2
49-72 Hours	4	22.2
Within 2 hours	9	50.1
Total	18	100.0

Study further sought to establish the time taken after seeking intervention for someone to be under PEP, 9(50.1%) said it was within 2hours, 4(22.2%) agreed it was after 3-24hours while 4(22.2%) said it is within 49-72hours. The finding shows that the respondents sought PEP intervention before the required 72hours, however one healthcare worker started PEP after the required time.

Treatment status

To examine whether the respondents finished PEP treatment, 6(33.3%) agree that they finished their treatment, while 9(50%) did not finish as shown in table 4.30(c).

Table 4.30(c): Whether finished PEP treatment and Reasons for not Finishing

Status of PEP	**Frequency**	**Percent**
Not finished	9	50
Finished	6	33.3
No response	3	11.7
Total	**18**	**100.0**
Reasons for not finishing	**Frequency**	**Percent**
Patient tested later turned negative	6	50
Shortage of PEP drugs	4	33.3
Side effects of PEPs drugs	1	8.3
Resorted to Herbal medicines	1	8.3
Total	**12**	**100**

The findings as illustrated in table 4.30(e) shows that 6(50%) of the exposed healthcare workers did not finish the treatment because the patient who had exposed him/her turned negative, 4(33.3%) was because of shortage of PEP, 1(8.3%) did not like the side effects of PEP while 1(8.3%) resorted to herbal medications. It was interpreted to mean that workers do not finish treatment when the patient is negative and when they don't like the side effects of PEP.

PEP awareness in relation to occupation

Of the 136 health care workers sensitized on PEP, 2(1.5%) were doctors, 88(64.7%) were nurses, 26(19.1%) were clinical officers, 7(5.1%) were laboratory staff, 3(2.2%) nutritional assistants, 4(3.0%) were subordinate staff while 2(1.5%) were casual workers

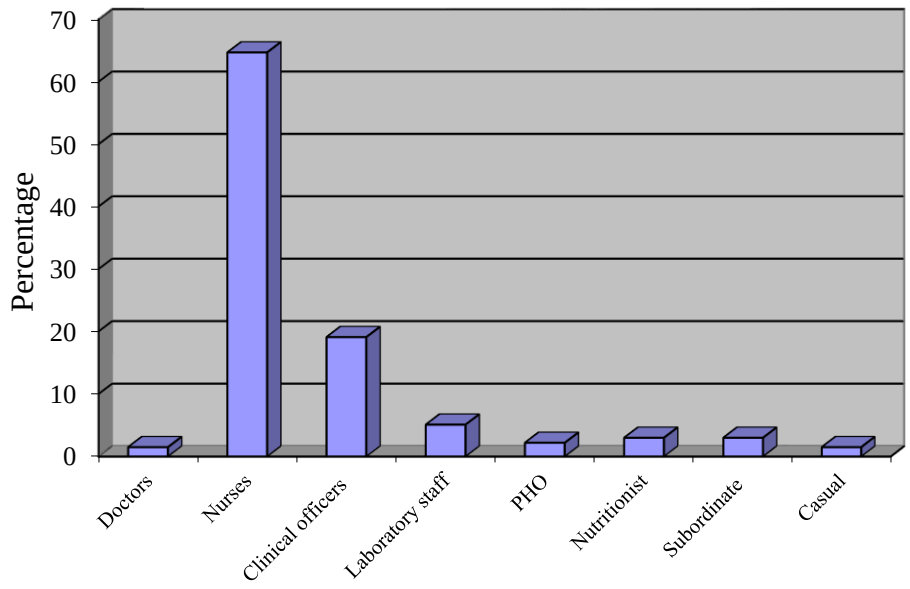

Fig 4.12: PEP awareness in relation to occupation

Majority of the nurses and clinical officers have been sensitized about PEP, however, a large proportion of health care workers lack knowledge on PEP which renders them at a risk in case of an infection during work.

PEP sensitization in relation to number of times exposed to HIV

The study sought to find out the relationship between the time healthcare workers were sensitized on PEP and the number of times that they have been exposed and from findings those who were sensitized between 1-2 years 10(13.5%) were exposed 1-5 times the same number 10(31.3%) who were sensitized 3 years ago were exposed same number

of times. 2(2.7%) sensitized 1-2 years were exposed 6-10 times while 22(29.7%) sensitized in the same time were not exposed.

Table 4.31: PEP sensitization in relation to number of times exposed to HIV

First time heard about PEP	Number of times of infection		
	1-5 times	6-10 times	Nil
Less than a year	10(31.3%)	0	8(25%)
1-2 years	10(8.1%)	2(2.7%)	22(29.7%)
More than 3 years	3(13.5%)	0	14(37.8%)
Never	7(10.9%)	0	31(48.4%)

It was thus concluded that time of sensitization does to influence the number of times that HCW is exposed to HIV.

Number of times exposed in relation to number of years in same station

Of those who have had infection 1-5 times, 13(29.5%) had stayed in the same station for between 0-1 year, 9(20.5%) had stayed for between 2-5 years, 7(15.9%) had stayed for between 5-10 years while 14(31.8%) had stayed for more than 10 years. From those who had a risk of infection 6-10 times, 1(33.3%) had stayed for between 2-5 years while 2(66.7%) had stayed for over ten years

Table 4.32: Number of times exposed in relation to number of years in same station

Number of times exposed to the risk of HIV infection.	Number of times in same station			
	0-1 year	2-5 years	5-10 years	More than 10 years
1-5 times	13(29.5%)	9(20.5%)	7(15.9%)	14(31.8%)
6-10 times	0	1(33.3%)	0	2(66.7%)
Nil	51(46.4%)	3(30%)	6(5.5%)	16(14.5%)

From study findings it was concluded that most of the respondents have been exposed to HIV 1-5 times but number of years does not influence number of times HCW is exposed to HIV since there is no sequential trend number of times someone is exposed. But in >10 years 14(31.8%) of healthcare workers were exposed, in 0-1 year 13(29.5%) were exposed, 2-5 years 9(20.5%) were exposed while in 5-10 years 7(15.9%) were exposed as shown in table 4.32.

How long it can take HCWs to access PEP in nearest facility

Of those who took two hours and less to access PEP in the nearest facility, 13(31.7%) were from public hospitals, 3(7.3%) from private hospitals, 7(17.1%) from public health centers while 10(24.4%) were from private dispensaries. Of those who took more than 72 hours, 2(28.6%) were from public hospitals, 1(14.3%) from public health centers while 4(57.1%) from public dispensaries

Table 4.33: How long it can take HCWs to access PEP in nearest facility

Time taken to access PEP	**Type of facility**					**Total**
	Public hospital	Private hospital	Public health centre	Public dispensary	Private dispensary	
2 hours	13(31.7%)	3(7.3%)	7(17.1%)	8(19.5%)	10(24.4%)	41(100%)
2-24 hours	20(37.7%)	7(13.2%)	12(22.6%)	4(7.5%)	10(18%)	53(100%)
25-72 hours	5(41.7%)	0	2(16.7%)	3(25%)	2(16.7%)	12(100%)
More than 72 hours	2(28.6%)	0	0	1(14.3%)	4(57.1%)	7(100%)

Majority of healthcare workers take between 2 and twenty four hours to access PEP services. This means that PEP services are readily available to the health care workers.

The availability of PEP in different facility types

The study further sought to find out the PEP availability in different facilities and from findings 57(33.3%) of public health care workers said its available, 16(9.4%) of private hospitals, 26(15.2%) public health centeres, 25(14.6%) of public dispensaries and 79(25.1%) of private dispensaries said that PEP is available.

Table 4.34: The availability of PEP in different facility types

Availability of PEP in facilities	**Type of facility**					**Total**
	Public hospital	Private hospital	Public health centre	Public dispensary	Private dispensary	
Don't know	16(34.8%)	4(8.7%)	8(17.4%)	5(10.9%)	13(28.3%)	46(100%)
No	31(34.4%)	8(8.9%)	17(18.9%)	15(16.7%)	19(21.1%)	90(100%)
Yes	57(33.5%)	16(9.4%)	26(15.2%)	25(14.6%)	47(27.5%)	12(100%)

PEP drugs are readily available in public hospitals than in private hospitals. While in dispensaries, PEP drugs are available in private than public.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1 Findings

It was revealed that the healthcare workers were drawn from all ages whereby 26% were aged between 26-30 years, 20% were aged between 36-40years, 16.5% between 31-35years, 12.7% below 25 years while 6.3% and 3.8% were aged between 46-50 years and above 51 respectively. In regards to gender more than half 51.4% were female while 47.6% were male and 71.7% of them were married and also 58.4% were nurses. Working in the same stations can enhance employees understanding of what is happening around and according to the study 40.6% of them have been working for duration of a year in the same station and 32.4% have, over ten years experience in the field. Study examined the respondents work department and it was revealed that 43.5% of them work in OPD department.

The prevalence of occupation exposure types among the healthcare workers and from findings was 76.2% felt its through suturing, 71.1% say it is through disposing of needles, 67.3% agreed that its through recapping of needles, 67% injection administration, 65.4% pricking of needles, 63.8% through drawing of blood, 57.1% through splashing of blood and 45.7% felt that it was through handling of trash and dirt linens.

Risk of infection was highest among subordinate staff 1(33.3%), clinical officers, 3(6.8%) and nurses, 20(10.9%) and was more prevalent among female HCWs 51(31.5%). Those HCWs working at Dphns, 8(50%) and laboratory, 86(50%) were more at risk of infection while exposure through needle prick was highest among nurses, 38(61.3%) and clinical officers, 12(19.4%). After exposure, 35.2% test the suspected patients, 27.3% of them visit VCT while 78.1% use ARVs after exposure and infection. However, only those who are sensitized are the majority among those who use PEP incase of injury, 56(32.4%). Majority of those who have been sensitized are nurses, 88(64.7%) and clinical officers 26(19.1%). The above findings were supported by 8 out of 10 of HCWs

who stated that the people who are at high risk are those that are in direct contact with patients' needles, blood specimens and used surgical tools.

When asked if they have been sensitized about PEP in the last one year 54.9% have not been sensitized while 43.2% have been sensitized, this showed that while some healthcare workers knew about PEP some did not know about its availability or use. In effort to establish whether the respondents know about PEP, they were asked to state the drugs used and from findings most of the 64.8% were aware of the drugs used which was an indication that they understand the PEP and its use, when asked the use of drugs 76.8% of them know the duration at which drugs should be used whereby they said that PEP drugs should be used for 28 days.

From the study, it was also revealed that only 33.3% of the respondents are aware of PEP drugs use but majority 86% know PEP is used to prevent HIV infection after exposure; this further showed the HCWs are knowledgeable of PEP and its use. According to the study 54.3% said drugs were available, 28.6% say it is not available while 14.6% did not know whether it is available or have not been sensitized about it, study further established that in regards to availability of PEP those who said its not available, 16.8% agree that it will take them 2-24hours. However 13% say they can access within 2hours. This showed that those who could not access PEP can also access the drugs within 2-24hrs.

In regards to the rate of exposure, 28.6% feel that it's low, 25.7% feel its moderate while 25.4% feel it's very low and the reasons for exposure was attributed to staff awareness as supported by awareness of 78.1% in the study. The rate of PEP uptake after exposure according to the study 42.5% of them is very low which could be explained by stigma, availability of the drugs, fear of infection, ignorance, the side effects and lack of PEP drugs in the health centers. from findings it was further revealed 14% of them have been exposed 1 to 5 times in a year. This could mean that HIV transmission could be taking place in the healthcare settings. Those who are exposed 19% of them tell someone of their exposure with 12.1% informing their workmate while 19.7% do not inform anyone. The findings clearly indicate that the healthcare workers do not tell anyone when they are

exposed to HIV virus. when exposed to HIV virus there is always need to seek intervention especially to HCWs who are always at a risk, from study findings 32.2% of healthcare workers did seek intervention when exposed while 64.5% sought for intervention.

The challenges facing healthcare workers in accessing PEP is lack of drugs 24.4%, lack of trained staff 11.1% and lack of cooperation 1.9% and according to 29.2%, this challenge can be overcomed through provision of drugs, 52(16.5%) felt that staff should be taught of PEP drugs use while 7.6% agree that capacity building on staff should be undertaken. From interviewed respondents it was revealed that challenges facing healthcare workers are lack of knowledge, accessibility of PEP, availability of PEP drugs and shortage of counselors and ARVs drugs. To examine patient status documentation 8.6% agree that their status have been documented. The action taken after knowing that patients have been exposed 85.7% was counseled while 83.3% of the patients were tested.

Those patients who decline to be tested according to 16.7%, 46.7% carried test on patients without informing them while 79% informed the officer in charge. The healthcare workers were asked if they knew their status before being exposed 28.6% knew their status while 18.7% did not know and when asked what they do to encourage healthcare workers to take PEP 26% said they should be educated on prevention methods, 11.1% agreed that they should be educated on PEP, 9.8% thought that they should be educated on VCT/DTC for counseling, 7.3% think that they should be informed the risks of HIV while 6.7% agreed that they should be taught on importance of knowing their HIV status.

According to 13% of the respondents the action taken when they sought for intervention 45% were put on PEP while 52.2% were not. The reasons for not being put on PEP according to 33.3% is because of the patients being negative, 38% said because of lack of person in charge, while 52.3% said that because of lack of PEP.

Study further sought to find out if the respondents were knowledgeable of the time required for someone to seek intervention after exposure and it was revealed that 14.6% think its between 2hours, 3.2% believe its 49-72hours, it was thus concluded that the healthcare workers know the time required for someone to seek intervention through PEP. Those who were exposed according to 33.3% finished their treatment, those who did not finish treatment were further asked to give reasons 50% said it was because the source patient turned negative 8.3% did not like the side effects of PEP while 8.3% resorted to herbal medication. To further find out if the healthcare workers sought for follow up 54.8% sought for it and when asked the type of follow-up 45.1% agreed that HIV test was done after three months while 29.1% agreed that test was done after nine months. It was also revealed from the interviews that in order to change the trend of PEP uptake and motivate HCWs there is need to sensitize the staff, increase the availability of PEP, provide trained staff to specifically deal with PEP issues, provide PEP stock in all facilities and increase awareness of PEP through posters in the healthcare centers. It was also revealed that there is need to increase education, increase accessibility and provide occupational compensation to the healthcare workers.

5.2 Conclusion

In conclusion it can be said that most healthcare workers are young with female being slightly more than male and are nurses since in most cases they are the ones taking care of the sick patients. Although workers have been in the same stations for less than a year they have working experience of over ten years and are working in OPD department. The healthcare workers that are at high risk are nurses, clinical officers, lab technicians and cleaners.

The frequent way of exposure to HIV was suturing, needles disposal, recapping of needles, injection administration, blood drawing and handling of dirty linens. After exposure patients are tested and later on visit VCT for testing. More than half of the healthcare workers have been sensitized on PEP use, most of the HCWs understand the PEP drugs used and even the duration which should be used which was concluded that

they are educated on PEP and its use. The respondents were also aware that the PEP drugs are used to prevent HIV infection after exposure but they also agree that the drugs are not readily available while some did not know its availability, how to access or utilize them. But it was also revealed that those who could not access PEP in their health centers it can take them, 2-24hours to access the same in the nearby health centers facilities.

The rate of exposure in the district is low due to the healthcare workers level of awareness and the low rate of PEP uptake because of the stigma, availability of the drugs, fear of infection, ignorance, the side effects and lack of PEP drugs in the health centers. A small percentage of the healthcare workers have been exposed to HIV while working and within a year they are exposed 1 to 5 times in a year. When exposed the HCWs do not tell anyone and those who tell inform their workmates.

It can also be said that although some healthcare workers seek intervention after exposure there is also a number of them who do not seek any intervention. The main challenges facing healthcare workers is like of trained staff and lack of cooperation, this challenges can be overcomed through provision of drugs, staff teaching, staff sensitization on PEP use and staff capacity building should be undertaken. Some of the patients HIV status have been documented and to examine their status the healthcare workers counsel their patients and test them. When patients decline treatment the HCWs either, ignore, test them without consent or even inform the officer in charge. Before exposure some healthcare workers knew their status while others did not know. In effort to establish what can be done to encourage HCWs to take PEP it was showed that they recommend that they should be educated on prevention methods, educated on PEP, encouraged to visit VCT/DTC for counseling, informed of HIV risks and also informed the importance of their HIV status.

The action taken after exposure and seeking intervention was either being put on PEP or not, the reason for not being put on PEP was the source patient being negative, lack of person in charge and lack of PEP. The healthcare workers are well versed on PEP since they knew that PEP should be taken for 28days and should be within 72hours after

exposure. The healthcare workers do not finish their PEP treatment because of source being negative, the side effects and the stigma involved. Finally it can be concluded that the HCWs seek follow up by going for test after 3 or 9 months. From interviews it can be concluded that the main barriers to PEP uptake by the healthcare workers are stigma, availability of the drugs, accessibility, the cultural and traditional believes, lack of knowledge and shortage of counselors in the facilities and in order to overcome the challenges there is need for the healthcare facilities to sensitize its staff, increase the availability and accessibility of PEP, motivate the healthcare workers to know their status and also provide educational materials in the healthcare centers.

5.3 Recommendations

This study finding were limited to availability and utilization of PEP among the healthcare workers in Eldoret East district and thus its findings had some shortcomings and may not be generalized to represent the whole country and thus the following recommendations were made:

5.3.1Prevalence of exposures

There is need for the healthcare facilities to provide protective facilities to reduce the rates of exposure among the HCWs especially during the suturing process. The workers should also be sensitized on the correct and safe methods of disposing used needles, recapping needles after use and avoid pricks from the needles since they are the most causes of exposures. It is also recommended based on study findings that HCWs should be advised to always seek intervention after suspecting exposure even if the patients test negative since they may be infected but may still be in the window period and also the healthcare centers should frequently sensitize its workers frequently to create awareness.

5.3.2 Availability of PEP

There is need for the healthcare facilities to ensure that there are adequate PEP drugs in their facilities and also encourage their workers to freely talk to each other when they are exposed since they can help each by knowing what they should do to access the drugs in time and avoid possibility of being infected. Apart from drugs provision the facilities

should also train its staff, curb the level of stigmatization and encourage the PEP uptake in cases of exposure.

5.3.3 Utilization

The healthcare facilities should also encourage their workers to seek intervention immediately after exposure by educating them on the importance of seeking PEP. They should also provide counseling and testing to the workers by motivating them to see the importance and not the stigmatization and the side effects of the drugs.

5.3.4 Recommendation for further Research

Due to the area of the study and specific objectives the topic under the study is not fully exhausted and thus there is need for other researchers to further explore in the same area and thus the following topics are recommended for future studies.

i. The relationship between prevention methods used and the rate of HIV exposure among healthcare workers

ii. The relationship between the PEP drugs availability and sensation and the level of HIV infection among the healthcare workers

iii. Government role in PEP access and utilization among the public and its effects on HIV infection

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APPENDICES

APPENDIX I: QUESTIONNAIRE FOR HEALTH WORKERS

This is a self-administered questionnaire with guidance of the research assistant. The respondents are HCWs who work in public and faith based health care facilities. Consent is sought before the administration of the questionnaire.

PART 1; general information (modifying factors)

Number of research assistant _____. Date of interview _____

1. Name of health facility _____Level _____ (I, II, III, and IV

2. Type of health facility _____ (public or private)

3. Your age (in competed years**)**_____

4. Your Sex?

Male [ ] Female[ ]

5. Your marital status?

Single [ ] Currently married [ ]

Separated [ ] Divorced [ ]

Widowed [ ]

Others _____

6. What is your occupation?

Doctor [ ]
Nurse [ ]
Clinical officer [ ]
Laboratory staff [ ]
Public health officer [ ]
Others_____

7. How long have you worked in your current station?

0-1 year [ ] 2-5 years [ ]
5-10 [ ] 10 or more [ ]

8 Working experience since initial qualification (tick)

0-1 year [ ] 2-5 years [ ]
5-10 [ ] 10 or more [ ]

9. Which category of facility are you working?(tick)

Hospital [ ]
Health centre [ ]
Dispensary [ ]
Others_____

10. Which department is you station currently? (Tick)

OPD	[ ]	Wards	[ ]
Theatre	[ ]	Laboratory	[ ]

Others _____

11. What are the common ways staff in this health facility can be infected with HIV at the workplace (tick all applicable choices)

Disposing of needles	[ ]
Collection and disposal of materials used patient care procedure	[ ]
Administering injections	[ ]
Drawing blood	[ ]
Recapping needles	[ ]
Handling trash and dirty linens	[ ]
Suturing procedure	[ ]
Body fluids flushing on your face	[ ]
Needle pricks in during operations	[ ]

Others (specify)_____

12. What are the components of post exposure prophylaxis of HIV?

Testing all suspected patients or HIV	[ ]
Going for VCT	[ ]
DTC	[ ]
Using ARV after possible exposure to HIV	[ ]

Others (specify)_____

13. Have you been sensitized on PEP in the last one year?

14. If yes when did you learn about it first?

Less than a year ago	[ ]
1-2 years ago	[ ]
3 or more years ago	[ ]
Never learnt	[ ]

15. Are you aware of any staff member who has used/taken PEP?

Yes [ ] No [ ]

What were the reasons? _____

16. What drugs are used for PEP of HIV**?**

Rifater	[ ]	antibiotic	[ ]
Zidovudine	[ ]	Stavudine/ lamivudine/niverabine	[ ]

Others_____

17. If your answer to question 13 is yes, how long are PEP drugs taken?

Drug are taken for 28 days [ ] Drugs are taken for two months [ ]

Drugs are taken for six months [ ] Drugs are taken for life [ ]
Don't know [ ]

18. A) Are the post exposure drugs readily available in your facility**?**
Yes [ ] No [ ] Don't know [ ]

B) If no in (a) above how long will it take to reach the next nearest facility with the drugs?
Within 2hours [ ] 2-24 hours [ ]
25-72 hours [ ] 72 + hours [ ]

HIV RISK, PERCEPTION AND PEP UTILIZATION

19. If you rate your levels of risk to HIV infection at the work place what would it be?
Very low [ ] Low [ ]
Moderate [ ] High [ ]
Very high [ ]
Why? _____

20. In your opinion, what is the level of PEP uptake in your facility?
Very low [ ] Low [ ]
Moderate [ ] Good [ ]
Very good [ ]
Why? _____

21. Have you been exposed to HIV in the last one year?
No [ ] Yes [ ]

22. If yes, how many times have you been exposed in the last one year?
Nil [ ] 1-5 times [ ]
6-10 times [ ] 10 or more times [ ]

23. Did you inform any one the last one?
Yes [ ] No [ ]

24. Whom did you inform?
None [ ] Work mate [ ]
Officer in charge [ ] Spouse [ ]
Friend [ ] Religious leader [ ]
Others_____

25. If you were exposed did you go for any intervention to prevent HIIV infection?
Yes [ ] No [ ]

26. If the answer to Qn 26 is no, what are the challenges of accessing ARVs for staff at this/your health facility? (List) _____
_____
_____

27. What are your suggestions on how to address these challenges
_____
_____
_____

28. If you decline treatment, was it documented in medical record of the health worker?
Yes [ ] No [ ]

29. What are the barriers to PEP uptake by HCWs? (List them)_____
_____

30. Did you know the source patient HIV status?
Yes [ ] No [ ]
31. If the answer above is no,

a) Was the source patient counselled and tested for HIV?
Yes [ ] No [ ]
b) Did the source patient agree to be tested?
Yes [ ] No [ ]
32. If no, what did you do?
Nothing [ ] Forced the source patient for the test. [ ]
Did the test without informing the patient [ ]
Informed the officer in charge [ ]
Others _____

33. Did you know your HIV status prior to the exposure/s?
Yes [ ] No [ ]
34. What factors do you consider necessary to motivate HCWs to go for

PEP treatment when they are occupationally exposed
(List them)_____
_____
_____
35. If you went for an intervention, were you started on ARVS?
Yes [ ] No [ ]
a) If no, why?
Source patient was negative [ ] My HIV status was positive [ ]
ARVs not available in time [ ]
Personnel responsible to provide ARVs not found [ ]
Others_____
b) If yes, when did you start ARVs?
Within 2 hours [ ]
Between 3-24 hours [ ]
Between 25-48- hours [ ]
Between 49-72- hours [ ]
More than 72 hours [ ]

36. Did you finish the PEP treatment?

Yes [ ] No [ ]

37. If no, why?

Patient tested later turned negative [ ]
Shortage of ARVs [ ]
Side effects of ARVs [ ]
Resorted to herbal medicine [ ]
Others_____

38. If yes, was subsequent follow up done?

Yes [ ] No [ ]

39. Was HIV test done in?

6 weeks [ ] 3months [ ]
9months [ ]

Appendix II: Key informant interview guide

This is a key informant interview tool to guide research assistant. The respondents are selected HCWs who work in public and faith based facilities health care facilities with key information on HIV activities in the districts. Consent is sought and confidentiality assured before the administration of the interview tools

PART 1; general information

Number of research assistant _____. Date of interview _____

1. Name of health facility _____Level _____ (I, II, III, and IV)

2. Type of health facility _____ (public or private)

5. How long have you worked in your current station_____ (years)

8. What is your occupation? _____

Perception questions

9. What in your opinion is the level of risk of HCWs getting HIV occupationally in your work place? (Define who at risk, do the HCWs belief they are susceptible, who, how)

10. Comment about the risk of developing HIV following occupational injury? (Specify and describe the consequence of the risk and development of HIV)

11. What is your opinion about efficacy of PEP of HIV? (Define action to take, how where and when to take, benefits, evidence of effectiveness, level of PEP uptake).

12. What are the barriers/challenges to PEP uptake by HCWs (psychosocial, geographical, systematic issues?)

13. What factors/strategies do you think needs to be put in place to motivate readiness and/or address challanges to use PEP for HIV by HCWs? (Incentives, provide how to-, reminders, education/awareness)

14. What factors to you think are likely to improve behaviour change or give confidence to HCWs to using PEP (positive reinforcement, guidelines in performing action, training?)

APPENDIX III: Informed Consent Form

Title of study: To assess the availability, accessibility and utilization of PEP by HCWs in Eldoret East districts.

I have been informed verbally and in writing about the study. I have clearly understood what is involved. I have obtained clear responses to all my questions and I know whom to contact if I need more information. I understand that confidentially will be preserved. I have also understood that I am free to withdraw from the study at any time without any prejudice or blame. I agree to participate voluntarily in the study under the conditions presented in the information notice. I will be given a copy of this information notice and one of this consent form.

Participant Name_____

Participant Address_____

Signature_____

Date_____

Witness statement (if applicable)

I certify that the information notice and in the consent from have been accurately explained to and apparently fully understood by the participant. The informed consent was freely given

Name of witness_____

Address of witness_____

Signature_____

Date_____