

**Knowledge, Attitude and Practice of Post Exposure Prophylaxis against HIV  
Infection following unprotected Sexual Exposure among Female Sex  
Workers at Majengo, Nairobi.**

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**A Thesis Submitted in Partial Fulfillment for the degree of Master of  
Science in Public Health in the Jomo Kenyatta University of Agriculture  
and Technology.**

**2014**

**DECLARATION**

This thesis is my original work and has not been presented to any other university for the award of a degree.

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## **DEDICATION**

I dedicate this thesis to Benson Kithuku and Mary Kioko for unfailing encouragement and love. To my loving husband Boniface; who surrounded and encouraged me as a friend, for walking this journey with me, for picking me up when I was down and for burning the mid night oil with me. To my sons Harmony Wambua and Osteen Muuw'o for their moral support during the entire study period.

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## **ABBREVIATIONS AND ACRONYMS**

ARV	Antiretroviral
AZT	Zidovudine
DHHS	Department of Health and Human Services
FSW	Female Sex Workers
HAART	Highly Active Antiretroviral Therapy
HIV	Human Infectious Virus
MSM	Men who have Sex with Men
nPEP	Non-occupational Post Exposure Prophylaxis
OR	Odds Ratio
aOR	Adjusted Odds Ratio
PMPA	Precision Machined Products Association
PEP	Post Exposure Prophylaxis
PEP	Post Exposure Prophylaxis after sexual exposure
STI	Sexually Transmitted Infections
UAI	Unprotected anal intercourse
UD	Undefined
UK	United Kingdom
US	United States

## ABSTRACT

Female sex workers (FSW) represent a vulnerable group at high risk of HIV infection, and sex work is an important driver of HIV transmission in the general population. Therefore, interventions that prevent HIV infection in FSW will not only protect vulnerable women, but could also reduce HIV transmission at a population level. The study aimed at determining the knowledge, attitude and practice of post exposure prophylaxis (PEP) following unprotected sexual exposure among female sex workers. The study was carried out at Majengo slums, a sex workers clinic in Nairobi. A total of 344 female sex workers attending Majengo STI clinic were interviewed. The mean age of the respondents was  $33.2 \pm 6.3$  years. The proportion of women with adequate knowledge on post exposure prophylaxis (PEP) was 76.5% (95% CI [72.0% – 81.0%]). Adjusting for other factors, adequate knowledge on PEP was significantly associated with ever using PEP (aOR=8.45; 95% CI [4.72-15.13]  $p < 0.001$ ).

The proportion of women with appropriate attitude towards PEP was 62.5% (95% CI [57.4% – 67.6%]). Knowledge of PEP was negatively significantly associated with anal sex was significantly (aOR=0.19; 95% CI: 0.07 – 51;  $p = 0.001$ ). A respondent engaging in anal sex was 5.3 times less likely to have adequate knowledge on PEP compared to one not engaging. Side effects (82.9%) were mentioned as the main reason for not completing the treatment. Engaging in unprotected sex when given some incentives was significantly associated with use of PEP (aOR=8.21; 95% CI: 3.83 – 17.62;  $p < 0.001$ ). A respondent engaging in unprotected sex when given some incentives was 8.21 times more likely to use PEP. The proportion of women who ever used PEP was 65.7% (95% CI: 62.6% – 72.5%). Adjusting for other factors, use of PEP was significantly associated with adequate knowledge on PEP (aOR=9.19; 95% CI, 4.66 – 18.10;  $p < 0.001$ ).

Most of the respondents had adequate knowledge and positive attitude towards use of PEP and most had used it at time of study.

## CHAPTER ONE

### 1.0 INTRODUCTION

#### 1.1 Background information

The most effective methods for preventing human immunodeficiency virus (HIV) infection are those that reduce exposure to HIV (CDC, 1998). However, there are some circumstances whereby individuals are exposed to HIV either occupationally or non-occupationally (Guadalupe *et al.*, 2003), necessitating the need for post exposure prophylaxis. Post-exposure prophylaxis (PEP) is defined as the provision of a short course of antiretroviral drugs soon after a possible or confirmed HIV exposure to HIV negative persons (Granich, 2009). The aim is to allow a person's immune system to provide protection against the virus and prevent it from infecting the body. This has to be done within 72 hours of exposure to HIV (Granich, 2009). Although it is difficult to study in humans, anecdotal evidence coupled with data from animal models suggests that this intervention represents a useful HIV prevention tool. While HIV PEP has been used extensively in the context of risky exposures in health care settings, its use in risky sexual exposure remains understudied (Guadalupe *et al.*, 2003).

Sex workers, either male or female, are at high risk of acquiring HIV, generally through sex. Transmission may be prevented by the appropriate use of the male or female condom. However, sometimes condoms may not be used for a number of reasons, such as rape, personal choice or condom breakage (Cardo D., Cielielski CA. 1997). In such situations the probability of HIV transmission may be reduced by the administration of Post Exposure Prophylaxis. This involves taking 2-3 antiretroviral (ARV) drugs for a period of one month, in conjunction with appropriate counselling, monitoring and post-PEP follow up (Cardo D., Cielielski CA. 1997).

The sooner PEP is started, the more effective it is in preventing HIV infection (Tsai *et al.*, 1998). Sex workers should be encouraged to seek PEP as soon as possible after the exposure, since even a few hours may make a significant difference. In general, the efficacy drops after 24 hours, and PEP should not be offered if it is more than 72 hours after the exposure occurrence. Post exposure prophylaxis should be provided for four weeks. Animal studies suggest that a shorter course may not be effective, and so sex workers should be encouraged to complete the full course of treatment. (CDC, 2009).

Post-exposure prophylaxis has been available to health workers since the beginning of 1990s in most areas of North America and Europe, as an important aspect of safety in the workplace. In 2005, the United Kingdom Department of Health and Human Services, drafted clinical guidelines, to extend the recommendations on using PEP to non-occupational circumstances (Bashh, 2006). Post exposure prophylaxis treatment is now available at accident and emergency areas in hospital, or HIV clinics, and via some medical doctors experienced in preventing HIV, in different countries and anybody who has been exposed to HIV is able to access the services. Post exposure prophylaxis has been studied in animal and human trials. The evidence from each individual study is not enough to confirm PEP efficiency. However, the cumulative evidence is enough to suggest that PEP might be effective in reducing the risk of HIV infection. This conclusion is widely recognized and as a result, a number of countries have produced guidelines for the use of PEP in both occupational and non-occupational circumstances (Ottens, 2000).

Post-exposure prophylaxis is not enough to significantly reduce the worldwide spread of HIV. It is a short-term preventive measure that is used as an ‘emergency’ precaution. It should be considered as the very last option in HIV prevention and should only be used when all other methods of HIV prevention have failed. However, with increasing widespread availability and awareness, PEP can offer more people control over their own health (Abbas *et al.*, 2007).

Majengo STI clinic for sex workers serves a cohort which has been in operation since 1985. It is managed by the University of Nairobi in collaboration with University of Manitoba. It offers services to female sex workers with the aim of prevention of HIV/Sexually transmitted diseases (STI). At the time of study, the clinic had a population of 2756 clients. Out of this number, 1950 were HIV negative; according to the previous 3 months results. As part of primary prevention intervention the clients are advised to use protection while having sexual exposure and the facility provides condoms to the clients. Occasionally, the clients have accidental unsafe sexual exposure due to drunkenness, rape or condom burst or for other reasons. In such circumstances they were given PEP as a preventive measure. The facility has been providing PEP to sex workers over the past 2 years, yet some clients report to have been engaged in unprotected sexual exposure or had a condom burst and they didn’t use PEP or douching to prevent HIV

infection. This shows that there is a gap of knowledge, attitude and practice of PEP use among this group.

## **1.2 Problem Statement**

Female sex workers usually engage in unsafe sex or many have occasional condom burst with partners whose HIV status is unknown. The clinic has been providing PEP to FSW as a core component of a comprehensive HIV/STI care and prevention package in a large FSW community outreach program in Nairobi. About 700 HIV negative clients attend Majengo Clinic on monthly basis. Forty percent of clients reported to have engaged in unsafe sex or had a condom burst with only 25% report to have used PEP. The HIV prevalence at the facility had increased from 5% to 7% from 2008-2010 and STI prevalence was 37% as at 2010 (Kimani *et al.*, 2012). This could be related to risky sexual exposure with no use of PEP. In order to prevent HIV infections, there is need to assess the gaps in knowledge, attitude and practice of PEP use among this high risk group.

## **1.3 Justification of the study**

Female sex workers are a high risk group to HIV infection than the general population. Interventions that prevent HIV infection in this group will not only protect this group but will also reduce HIV transmission to the general population by extension. Hence, it is important to determine their knowledge of PEP, attitude towards PEP and the actual use of PEP among this high risk population. The results from this study will guide the policy makers on the development of health education tools to be used to educate female sex workers in order to improve their knowledge on PEP and guide on the use of PEP to avoid misuse which may result in drug resistance.

## **1.4 Research questions**

- 1.4.1. What is the level of knowledge of PEP among the female sex workers attending Majengo STI Clinic?
- 1.4.2. What is the attitude of female sex workers attending Majengo STI Clinic in regard to PEP?

1.4.3. What is the practice of the female sex workers attending Majengo STI Clinic in regard to PEP?

## **1.5 Objectives**

### **1.5.1 General objective**

To determine the knowledge, attitude and practice of PEP among female sex workers enrolled at Majengo STI Clinic, Nairobi County in 2011.

### **1.5.2. Specific objectives**

1.5.2.1 To determine the knowledge of PEP among the female sex-workers attending Majengo STI Clinic, in Nairobi county.

1.5.2.2 To determine the attitude towards PEP among the female sex-workers attending Majengo STI Clinic, in Nairobi county.

1.5.2.3 To establish the practice of PEP use among the female sex workers attending Majengo Clinic, in Nairobi county.

## CHAPTER TWO

### 2.0 LITERATURE REVIEW

#### 2.1 Introduction

Female sex workers (FSW) represent a vulnerable group that is at high risk of HIV infection. Sex work is an important driver of HIV transmission in the broader community, even during a mature epidemic (Chen *et al.*, 2007). Therefore, interventions that prevent HIV infection in FSW will not only protect vulnerable women but will also reduce HIV transmission at the population level (Jha *et al.*, 2001). The provision of effective antiretroviral therapy (ART) to an HIV infected individual not only improves their own health but also dramatically reduce the chance of subsequent HIV transmission to their sexual partner(s) (Donnel *et al.*, 2010). In addition, the provision of oral and/or vaginal pre-exposure prophylaxis (PrEP) to an HIV-uninfected individual also reduces the risk of HIV acquisition (Karim *et al.*, 2011).

The results from recent clinical trials suggest that the efficacy of PrEP and antiretroviral-based microbicides is highest in the context of long-term HIV-serodiscordant couples, but remains less clear in the setting of high-risk individuals (Cohen *et al.*, 2012). The Female-PrEP clinical trial which was designed to assess whether a daily dose of the antiretroviral Truvada is safe and effective at preventing HIV infection among women at high risk of HIV exposure, the study was halted early due to futility (Karim *et al.*, 2011) as were the oral and vaginal tenofovir arms of the VOICE study (Van der Straten *et al.*, 2012). Therefore, there may be a “prevention gap” for FSWs and other high-risk women, which has implications for the eventual effectiveness of HIV control efforts.

Despite high rates of condom use, FSWs have higher exposures that can lead to HIV infection. Post exposure prophylaxis represents a potential prevention tool to avert infection in these circumstances. Post exposure prophylaxis was first used in health care settings after exposure to HIV via needle stick injuries or contact with other infectious body fluids, and a case-control study demonstrated that azidothymidine alone after a needle stick injury resulted in an 81% reduction in transmission risk (Cardo *et al.*, 2011). There is also evidence that PEP can prevent mucosal transmission in nonhuman primates (Tsai *et al.*, 1998). Therefore, PEP is commonly



recommended after known or possible HIV exposure, particularly after sexual assault or needle stick, although breakthrough HIV infections can occur (Fisher *et al.*, 2006). The potential for HIV exposure during sex work arises in several contexts, including coerced sex, inability to negotiate for safe sex, and condom burst. It is currently recommended in many countries that PEP be given after high-risk sexual exposures (Benn *et al.*, 2011), but there are no specific guidelines for PEP use among FSW populations. A barrier to the development of such guidelines include the many questions that remain unanswered surrounding access to, compliance with, and efficacy of PEP in the FSWs context.

## **2.2 Attitude towards use of PEP**

There is widespread concern that the availability of PEP after sexual exposure (PEP), that it encourages risk taking among female sex workers (Waldo *et al.*, 2000). However, this is difficult to prove. Some studies show there is no change, whereas others show there is a decrease in risk-taking behaviour in the short term (Henrike *et al.*, 2005). However, long-term behaviour modification does not appear to be sustained. There are fears that the use of PEP may lead to more risky sexual behaviour because people may feel protected against HIV infection. This increase in risky sexual behaviour, which is called behavioural disinhibition or risk compensation, would to some extent reduce the effect of PEP (Martin *et al.*, 2004). Respondents in the non occupational PEP feasibility study in San Francisco, 72% reported a decrease in risk behaviour over a period of 12 months (Nambia *et al.*, 2007). However, 17% of respondents requested a second course of non occupational PEP during the year after the first course, indicating that although respondents did not increase risk behaviours, a substantial proportion of the respondents did not eliminate risk behaviours (Waldo *et al.*, 2002).

People on PEP need to be extensively counselled, to be more aware of their risk behaviour and especially of unprotected sex, and may therefore be more likely to use condoms. The awareness of PEP was reported to have no effect on the condom use in discordant couples participating in a cross-sectional survey (Kalichman *et al.*, 1999). Men who had had Sex with men in a Brazilian cohort and two San Francisco clinics, self reported significant decrease in risk behaviour in clinics that provided PEP (Van der Straten *et al.*, 2000). In either way it is

important to stress to patients that PEP should only be used in emergency situations, not as a reliable method of preventing HIV infection.

### **2.3 Knowledge of PEP**

Having knowledge of PEP plays a major role in HIV prevention. A study done on Knowledge and attitudes regarding PEP among sex workers in the US showed that 72% of them had heard about PEP, 10% knew someone who had taken PEP, and 1.5% had taken PEP themselves (Bartholow *et al.*, 2000). Another study among general practitioners in northern Sydney, showed that 68.5% of those surveyed were aware of the availability of HIV PEP for high risk occupational exposures and only 35.1% of all doctors were aware of the availability of HIV PEP for sexual exposures. Of all the respondents surveyed, 24.6% were aware of the 72 hour time restrictions of PEP with 28.1% offering explanations of how to access HIV PEP. Only 42.3% of the doctors were aware of time restrictions of PEP with 46.5% offering explanations of access (Brown-Peterside *et al.*, 2005). Low levels of awareness and knowledge of HIV PEP may translate to missed opportunities for access to PEP, and potential HIV infection. Limited knowledge may reflect the recent introduction of PEP into Australia and/or unfamiliarity with HIV infection and patients (Willard *et al.*, 2004).

Chen *et al.*, (2007), in a study on Knowledge of HIV post-exposure prophylaxis in HIV-positive and HIV-negative men in an urban clinic population in UK showed that awareness of PEP was 52% in the HIV-positive group compared to 19% of the people attending the general unit clinic. A higher proportion of the HIV-positive group were Men who have Sex with Men (72% vs 19% of the HIV-negative men). Only half of MSM were aware of PEP in both groups; 56% and 53% of the HIV positive and General Unit groups, respectively. Few studies on knowledge of PEP among FSW have been done and since sex work is an important driver of HIV transmission in the broader community, even during a mature epidemic, there is a need to determine the knowledge level on PEP among this risk group.

## 2.4 Use of PEP

A study (de Silva *et al.*, 2004) on the risk behaviour and willingness to use PEP among Men who have Sex with Men showed that: 57% of HIV-positive MSM reported recent unprotected anal intercourse (UAI), with one in six reporting UAI with more than five partners, and one in five believing that this would probably have included an HIV-negative partner; PEP use was not discussed in any of these situations. Among 19% of HIV-positive men reported having discussions about PEP, none of whom reported UAI. Although 76% of the group reported that they would consider using PEP, this figure was much lower amongst those at higher risk. Of the 17% of men in the clinic who reported recent UAI, only 20% said they would consider using PEP, even though some thought them at probable risk of exposure to HIV. The study concluded that there was ‘a striking lack of knowledge about PEP, and that many people at risk may miss the opportunity to use PEP, and that PEP should be discussed with both HIV-positive and HIV-negative persons, in both HIV clinics and entire clinic settings.

Post Exposure prophylaxis timing is crucial for it to be effective in prevention of HIV. In a study of men who had sex with men (MSM) in Brazil, individuals were given PEP supplies to commence immediately after sexual exposure (Richens *et al.*, 2005). Sero-conversions occurred in significantly fewer of those individuals who utilized PEP than those who did not. In a second Brazilian study, individuals who presented within 72 hours following sexual assault were offered PEP. HIV sero-conversion occurred in none of the individuals who received PEP, but occurred in 2.7% of individuals who presented themselves after the 72-hour window (Michelle R.E. *et al.*, 2007).

Completion of the PEP medications is the key to HIV prevention. However, many people (over 50%) do not complete a full month after both occupational and non-occupational exposure (Rowland J and Meroge K. 2005). The regimens may vary, but in general should always include two NRTIs (either AZT/3TC or TDV/3TC). For very high risk exposures (e.g: receptive anal sex from a known HIV+ partner) the addition of a boosted PI (lopinavir-ritonavir) should be considered. If the infected partner is known or suspected to harbour a drug-resistant virus, then use of that drug and/or class should be avoided if possible (CDC, 2009).

Side effects and stigma have been mentioned as the main hindrance to incomplete treatment of PEP. A study done among health workers at Mulago Hospital in Uganda (Alenyo *et al.*, 2006), 82.9% of the staff members had been exposed to potentially infectious fluids, mostly after percutaneous injury. Only 21% sought some sort of advice for PEP and did not follow it up. The most common reason given was side effects and fear of being stigmatized. Most believed their fellow staff would not buy the idea that it was from being exposed in the line of duty. It also became evident that many of the respondents did not wish to know their HIV status. There are few studies that have been done on use of PEP among FSW workers hence more is needed to be studied on that issue.

## **CHAPTER THREE**

### **3.0 MATERIALS AND METHODS**

#### **3.1 Study setting**

The study was carried out at a sex worker clinic located at Majengo slums in Nairobi, neighbouring Gikomba market and Pumwani Maternity Hospital in the Eastern part of Nairobi city. This clinic is managed by the Universities of Nairobi/Manitoba for the recruitment of female sex worker for purpose of screening, treatment and research of STDs and HIV.

#### **3.2 Study design**

The study was cross-sectional design. It was carried out in the month of October and November 2011.

#### **3.3 Study Population**

The study targeted female sex workers who were enrolled at the Majengo clinic and were HIV negative. This was because post exposure prophylaxis is only recommended for persons who are HIV negative (Granich, 2009). The facility serves both HIV positive and negative female sex workers. The clinic had enrolled 2756 clients at the time of study. Human immune deficiency syndrome (HIV) and sexually transmitted infection (STI) screening was done routinely after every 3 months. At the time of data collection, 1950 of the total population of FSW were HIV negative.

##### **3.3.1 Inclusion criteria**

1. Any female sex worker enrolled at the Majengo clinic and was willing to participate in the study voluntarily.
2. Any female sex worker enrolled in the Majengo clinic and was HIV negative at the time of recruitment in the study.
3. The participant had to be over 18 years of age.

##### **3.3.2 Exclusion criteria**

1. Any female sex worker who was already HIV positive at the time of study.

2. Any female sex worker not willing to participate in the study. Any female sex worker who was less than 18 years of age.

### 3.4 Sample size determination

A previous study on KAP of PEP among sex workers in Madagascar showed that Knowledge was 72% (Bartholow *et al.*, 2000). Since this group had similar characteristics being measured it was used to calculate the Sample size according to Fisher *et al.*, (2006).

$$n = Z^2 * pq / d^2$$

Where,

n= desired sample size

Z = the value of the normal deviate corresponding to the 95% confidence interval (1.96)

p=the proportion in the target population estimated to have characteristics being measured (72%)

d= the error margin =0.05

Therefore:  $n = (1.96)^2(0.72)(0.28) / (0.05)^2$

$$=310$$

The sample size was adjusted for refusals of (10%)

$$n = 310 / (1 - 0.1)$$

$$=344$$

### 3.5 Sampling

A systematic random sampling procedure was used in the selection of the study sample. The study period was fixed to 4 weeks, a period in which 50 clients were seen on a daily basis giving a total of  $50 * 5 * 4 = 1000$  clients. A sampling interval was estimated as:

$$\text{Interval} = 1000 / 344$$

$$=3$$

So every 3<sup>rd</sup> client was selected. The first case was selected by simple a random sampling, 2 was picked. The second case was obtained by adding the sampling interval to the randomly selected number. This process continued until the required sample size was obtained.

### **3.6 Determination of Knowledge and Attitude on PEP**

#### **1. Determination of knowledge on post exposure prophylaxis**

*Knowledge score on PEP was assessed using the knowledge variables as follows;*

- *How long should you take to seek Doctor's help following a condom burst or rape? (1)*
- *If you had condom burst what are you supposed to do? (1)*
- *What is Post Exposure Prophylaxis? (1)*

Each of the response was assigned a similar score and ranking done based on the total scores of respondents. The total score was generated the percentage score was categorized as; <25% - Poor( no correct answer), 25 to <50% - Moderately low(1 correct answer out of the 3 questions), 50 to <75% - Moderately high(2 correct answers out of the 3 questions), 75 to 100% - Excellent (3 correct answers out of the 3 questions). A respondent scoring 75% or more was considered to have adequate knowledge on PEP.

#### **2. Determination of Attitude towards on post exposure prophylaxis**

The attitude questions were not structured using likert scale for response; instead the responses were structured using binary response i.e. 'Yes' or 'No'. When the respondent gave a correct response to particular questions, s/he scored 1 point as show in this section. A composite score was generated and categorized as described in this section

Attitude towards PEP was assessed using the attitude variables as follows;

- *PEP encourages non use of condom (No=1)*
- *PEP should be easily available to all sex workers (Yes=1)*
- *PEP should not be used at all (No=1)*

Since PEP services are available at the Majengo clinic, would you use it or would you recommend a friend to use it if necessary (Yes=1)

Respondent's perception on factors that may affect the use of PEP?

- *Lack of knowledge about PEP is a factor (Yes=1)*
- *Traditional beliefs are associated with HIV infection (No=1)*
- *Fear of side effects from the drugs (No=1)*
- *Fear of not following the instructions on how to use the drug (No=1)*
- *Lack of time to go to the facility (No=1)*

- *Lack of bus fare to access the facility (No=1)*
- *Fear that other sex workers/clients will know am using the drugs (No=1)*

A total score was generated and computed as a percentage score. The percentage score was categorized as; <25% - Poor, 25 to <50% - Moderately low, 50 to <75% - Moderately high, 75 to 100% - Excellent. A respondent scoring 75% or more was considered to have appropriate attitude towards PEP.

### **3.7 Data collection tool**

Data was collected by use of a structured questionnaire to collect quantitative data. The instrument sought for demographic information of study participants, knowledge on PEP, attitude towards PEP and practice in regard to PEP. Pre-testing of the questionnaires (Appendix 3) was done on 20 FSW in Kariobagi sex workers clinic prior to data collection to ascertain homogeneity and clarity of the questions. After pre-testing the necessary modifications were made to the questionnaires which were administered following prior consent of subjects. The questionnaire was also translated into Kiswahili (Appendix 4) The research was carried out with a help of a trained research assistant. Those who qualified and consented to participate in the study were interviewed in a private room. During interview, the researcher explained details about the study, including potential risks and benefits of participation.

### **3.8 data management and analysis**

#### **3.8.1 data storage**

The quantitative data was coded and double entered into a computer database using MS-Access application. Data cleaning and validation was performed to achieve a clean set of data that was then exported to a Statistical Package for Social Sciences (SPSS) file for analysis. Both clean sets of data (MS-Access and SPSS files) were backed-up in a CD and flash discs. They were stored in hard drive disks in the computer ready for analysis. A back-up of the data was done regularly and passwords used to avoid any loss or tampering. Hard cover books were used to store the data and any vital information collected and observed during the study period. All the filled questionnaires were organized in folders and properly kept in lockable drawers for confidentiality.



### **3.8.2 Data analysis**

Data analysis was conducted using IBM SPSS (Version 21.0) statistical software. Exploratory data analysis was carried to uncover the structure of data and identify outliers or unusual entered values.

**Univariate Analysis:** Descriptive statistics such as proportions were used to summarize categorical variables while measures of central tendency such as mean, standard deviation, and ranges for continuous variables, were computed.

**Bivariate Analysis:** Pearson's Chi-square or fisher exact test was used to test for the strength of association between categorical variables. All independent variables were associated with each of the dependent variables (Knowledge, attitude and use of PEP) to determine the ones with significant association. Odds Ratio (OR) and the 95% Confidence Interval (CI) were used to estimate the strength of association between independent variables and each of the dependent variables. The threshold for statistical significance was set at  $p \leq 0.05$ .

**Multivariate Analysis:** All independent variables identified to significantly associate with 'Knowledge, attitude and use of PEP' at bivariate analysis were considered together in a Multivariate analysis. Binary logistic regression was used where backward conditional method was specified in order to identify confounders and/or effect modifiers. Adjusted odds Ratio (aOR) with corresponding 95% Confidence Interval (CI) were used to estimate the strength of association between the retained independent factors associated with 'Knowledge, attitude and use of PEP'.

### **3.9 Study limitation**

Clients not willing to give information, this was addressed in the ethical part. Clients not willing to wait, the questionnaires were administered in the morning hours as they waited to be attended to for routine clinical visits. Trained researcher helped in data collection and made sure that the study respondents were interviewed before been seen by the doctor for their appointments. Recall bias may have been introduced in the study, as clients were asked of PEP history, further probing was done to try and get more information as much as possible.

### **3.10 Ethical considerations**

Approval was sought from JKUAT, the Center for Public Health and Kenya Medical Research Institute (KEMRI) Scientific Steering Committees and KEMRI National Ethical Review Committee. Permission to collect data within the University facility was obtained from the clinical director. A written consent was obtained from the respondents (Appendix 1). The respondents were free to decline from participating in the study without any penalty. The selection to participate in the study was based on no other reason apart from study respondents being a Member of Majengo STI clinic. Those who accepted to take part in this study, there was no payment for the study participation. The study respondents received the information about PEP and how it is used. Counselling and privacy was given during interview to alleviate any psychological trauma the respondent may encounter during the interview. Adequate efforts were made to keep the respondents personal information confidential. The information was recorded only by a special number assigned to the study respondents. The number was only known to the researcher and the study respondents. The information was kept under lock and key and Computer documents had passwords only accessible to the research teams. In case of any concerns the respondents were given contacts of officials from Institute of Tropical Medicine and Infectious Diseases (ITROMID, KEMRI), and Jomo Kenyatta University of Agriculture and Technology.

### **3.11 Study Assumptions**

The study had two assumptions that all the respondents were sex worker and all the information given was accurate and correct.

## CHAPTER FOUR

### 4.0 RESULTS

#### 4.1 Demographic characteristics of the study respondents

Thirty one point four percent of the respondents were aged between 30 and 34 years, 2.9% less than 25 years and 4.1% were more than 44 years (Table 4.1). The highest proportion was single (40.1%), followed by divorced (34%) with only one respondent married (0.3%). Religious affiliation for most (45.9%) of the respondents was Protestant followed by Catholics (40.4%) with a small proportion 13.7% being Muslims. The level of education revealed a comparable number of respondents with Primary (37.8%) and Secondary (40.1%) education.

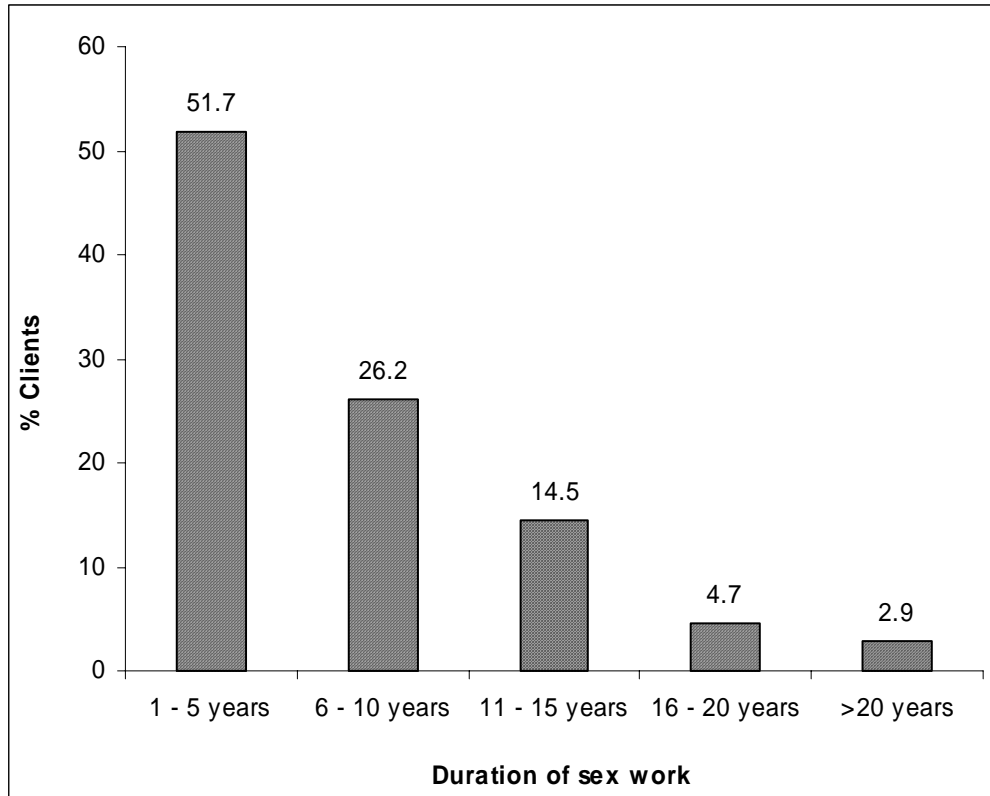
**Table 4. 1: Selected demographic characteristics**

<b>Variables</b>	<b>n=344</b>	<b>Frequency (%)</b>
<b>Age in years</b>		
<25	10	2.9
25 – 29	97	28.2
30 – 34	108	31.4
35 – 39	56	16.3
40 – 44	59	17.2
>44	14	4.1
<b>Marital status</b>		
Single	138	40.1
Divorced	117	34.0
Widowed	89	25.9
<b>Religion</b>		
Protestant	158	45.9
Catholic	139	40.4
Muslim	47	13.7
<b>Level of education</b>		
No formal education	27	7.8
Primary	130	37.8
Secondary	138	40.1
College	49	14.2

#### 4.1.1 Sex Work duration and Condom use

##### 4.1.1.1 Sex Work duration

Majority of the respondents (51.7%) indicated that they had been in sex work for between 1 – 5 years as shown in Figure 4.1. Upon probing them on their involvement in boyfriend relationships, 79.1% of the respondents indicated that they had a boyfriend



**Figure 4.1: Duration of sex work**

#### 4.1.1.2 Condom Use

Overall assessment of condom use revealed that majority (77.0%) of the respondents used condom while having sex. A small proportion (2.3%) of the respondents indicated that they sometimes used condom while having sex with first time respondents, 10.8% used with regular respondents, and the vast majority (94.1%) with boyfriend as shown in Table 4.2

**Table 4.2: Condom use**

<b>Variables</b>	<b>n=344</b>	<b>Frequency (%)</b>
<b>Condom use</b>		
Use	265	77.0
Non use	79	23.0
<b>Frequency of condom use with first time respondents</b>		
Sometimes	8	2.3
Always	336	97.7
<b>Frequency of condom use with regular respondents</b>		
Never/Sometimes	37	10.8
Always	307	89.2
<b>Frequency of condom use with boy friend respondents</b>		
Always	175	64.3
Sometimes	81	29.8
Never	16	5.9

#### 4.1.1.3 Sexual Orientation

Overall assessment of vaginal sexual intercourse revealed that indeed the vast majority (99.1%) of the respondents used vaginal sexual intercourse, 62.5% practised oral sex and 6.4% anal sexual intercourse.

#### 4.1.2 Knowledge on Post Exposure Prophylaxis

Upon probing on some of the steps taken in case of a condom burst, majority (74.7%) of the respondents mentioned the correct option, i.e. '*Go to hospital for help*'. When to seek Doctor's help following a condom burst or rape most of the respondents (56.1%) mentioned the correct option, i.e. '*As soon as possible and not after 72hours after condom burst or rape*'. Upon probing as to whether the respondents understood what Post Exposure Prophylaxis was, majority of the respondents (65.1%) mentioned the correct option i.e. '*It's a drug that is used*

after unprotected sex with a client whose HIV status is Unknown or is HIV positive' as shown in Table 4.3.

Overall knowledge score on Post Exposure Prophylaxis revealed that a relatively high proportion (76.5%) of the respondents had adequate knowledge, constituted by moderately high (43.9%) and Excellent scores (32.6%). Twenty three point five percent of the respondents had inadequate knowledge which constituted of poor (13.1%) and moderate low scores (10.5%) Table 4.3.

**Table 4. 3: Knowledge on Post Exposure Prophylaxis**

Variables	n=344	Frequency (%)
<b>Steps taken in case of a condom burst</b>		
Go to hospital for help	257	<b>74.7</b>
Use some solutions to clean vaginas	75	21.8
Take herbal drugs	8	2.3
Don't know what I can do	4	1.2
<b>When to seek Doctor's help following a condom burst or rape</b>		
Anytime after the unprotected sexual intercourse	126	36.6
As soon as possible and not after 72 hours after condom burst or rape	193	<b>56.1</b>
Don't know	25	7.3
<b>What Post Exposure Prophylaxis is</b>		
It's a drug that is used after unprotected sex with a client whose HIV status is Unknown or is HIV positive	224	<b>65.1</b>
It's a drug to treat HIV infection	82	23.8
It's a drug to prevent pregnancy after unprotected sexual exposure	2	0.6
Don't know	36	10.5
<b>% Overall knowledge score on PEP</b>		
Poor (<25%)	45	13.1
Moderately low (25 – 49%)	36	10.5
Moderately high (50 - 74%)	151	43.9
Excellent (75 - 100%)	112	32.6
<b>Overall knowledge score on PEP</b>		
Adequate (Moderately high+ Excellent)	263	76.5
Inadequate (Poor + Moderately low)	81	23.5

#### **4.1.3 Attitude towards practice of post exposure prophylaxis**

Majority (97.1%) of the respondents stated that PEP should be made available to all sex workers (Table 4.4). Since PEP services are available at Majengo clinic, 90.4% of the respondents indicated that they would use it and would recommend their friends to use PEP. Eighty-one-

point-eight percent of the respondents who were against use of PEP cited side effects as the main reason. On assessing factors that may affect use of PEP as perceived by respondents, lack of knowledge about PEP (90.4%), fear of side effects from the drugs (64.0%), and fear that other sex workers/respondents will know one is taking PEP (57.0%) were the most commonly mentioned (Table 4.4). The study established that a relatively high proportion (62.5%) of the respondents had appropriate attitude and 37.4% had inappropriate attitude towards PEP.

**Table 4.4: Overall assessment on attitude towards PEP**

Variables	n=344	Frequency (%)
<b>Respondents view on the use of PEP</b>		
It encourages non use of condom	99	28.8
Should be easily available to all sex workers	334	97.1
Should not be used at all	8	2.3
<b>Since PEP services are available at Majengo clinic, participant would use or would recommend friends to use if necessary</b>		
Yes	311	90.4
No	33	9.6
<b>Reasons why participant would not use or would not recommend a friend</b>		
It does not prevents one from HIV infection when exposed to	6	18.2
It has severe side effects	27	81.8
<b>Factors that may affect the use of PEP as perceived by respondents</b>		
Lack of knowledge about PEP	311	90.4
Traditional beliefs associated with HIV infection	72	20.9
Fear of side effects from the drugs	220	64.0
Fear of not following the instructions on how to use the drug	45	13.1
Lack of time to go to the facility	35	10.2
Lack of bus fare to access the facility	28	8.1
Fear that other sex workers/respondents will know one taking PEP	196	57.0
<b>% Overall attitude score towards PEP</b>		
Poor/Good (25 - <75%)	129	37.5
Excellent (75 - 100%)	215	62.5
<b>Overall assessment on attitude towards PEP</b>		
Appropriate	215	62.5
Inappropriate	129	37.5

**NB: Where n is more than 344 and >100% because of multiple responses**

#### **4.1.4 Practice of post exposure prophylaxis**

A relatively high proportion (65.7%) of the respondents reported that they had ever used Post Exposure Prophylaxis with current use standing at 16.8% (Table 4.5)

Among the 38 respondents who reported current practice of post exposure prophylaxis, majority (57.9%) indicated condom burst as the reason. Practice of post exposure prophylaxis before the interview date was reported by 64.0% of the respondents. Similar to current use, majority (69.1%) of the previous users indicated condom burst as the reason. Upon probing on the frequency of Post Exposure Prophylaxis before the interview date, most (62.7%) of the respondents indicated that they had used PEP twice. Sixty-nine-point-one percent reported that upon starting PEP, they never completed the 4 weeks of medications, the main reason being side effects (82.9%) Table 4.5



**Table 4.5: Practice of post exposure prophylaxis**

<b>Variables</b>	<b>n=344</b>	<b>Frequency (%)</b>
<b>Ever used PEP</b>		
Yes	226	65.7
No	118	34.3
<b>Reasons why used PEP before</b>		
Condom broke	152	69.1
Decided not to use a condom	11	5.0
Client did not want to use a condom	18	8.2
Client paid more not to use condom	26	11.8
Rape/coerced sex	13	5.9
N/A	124	
You chose not to use a condom	5	13.2
Client did not want to use a condom	5	13.2
Rape/coerced sex	6	15.8
N/A	306	
<b>Have you been exposed and didn't use PEP</b>		
Yes	220	64.0
No	124	36.0
<b>Frequency of taking PEP before</b>		
Once	35	15.9
Twice	138	<b>62.7</b>
Thrice	36	16.4
More than thrice	11	5.0
N/A	124	
<b>Started PEP and not completed the 4 weeks of medication:</b>		
Yes	152	69.1
No	68	30.9
N/A	124	
<b>Reason for not completing PEP</b>		
Because of side effects	126	82.9
Lost the drugs	6	3.9
Thought was not infected	9	5.9
Forgot to take the pills	2	1.3
Got bored of taking the drugs	9	5.9
N/A	192	

#### **4.2 Relationship between adequate Knowledge on Post exposure Prophylaxis and other characteristics**

Knowledge on Post exposure Prophylaxis was analyzed in relations to (1) selected demographic characteristics, and (2) History of sex work and sexual behaviour among the respondents.

#### 4.2.1 Relationship between adequate Knowledge on Post exposure Prophylaxis and selected demographic characteristics

Three factors namely Age, Marital status, and Level of education were significantly associated with Knowledge on Post exposure Prophylaxis among the study respondents (Table 4.6)

Respondents aged 40 or more years were significantly associated with increased knowledge on PEP (91.8%) compared to age <30 years (72.9%), (OR=4.15; 95% CI: 1.63 – 10.60; p=0.003).

Respondents who were divorced were significantly associated with increased knowledge on PEP (81.2%) compared to being single (70.3%), (OR=1.83; 95% CI: 1.01 – 3.29; p=0.046).

Contrary to the expectation, having secondary education was significantly associated with decreased number of respondents having adequate knowledge on PEP (69.6%) compared to having no formal education (88.9%), (OR=0.32; 95% CI: 0.13 – 0.81; p=0.016). (Table 4.6)

**Table 4.6: Relationship between adequate Knowledge on Post exposure Prophylaxis and selected demographic characteristics**

Variables	Adequate (n=263)		Inadequate (n=81)		OR	95%CI		p-value
	n	%	n	%		Lower	Upper	
<b>Age in years</b>								
<30	78	72.9%	29	27.1%	1.00	Ref		
30 – 34	76	70.4%	32	29.6%	0.88	0.49	1.60	0.681
35 – 39	42	75.0%	14	25.0%	1.12	0.53	2.34	0.772
40 or more	67	91.8%	6	8.2%	4.15	1.63	10.60	<b>0.003</b>
<b>Marital status</b>								
Single	97	70.3%	41	29.7%	1.00	Ref		
Divorced	95	81.2%	22	18.8%	1.83	1.01	3.29	<b>0.046</b>
Widowed	71	79.8%	18	20.2%	1.67	0.89	3.14	0.114
<b>Religion</b>								
Catholic	100	71.9%	39	28.1%	1.00	Ref		
Protestant	125	79.1%	33	20.9%	1.48	0.87	2.52	0.151
Muslim	38	80.9%	9	19.1%	1.65	0.73	3.72	0.231
<b>Level of education</b>								
No formal education	24	88.9%	3	11.1%	1.12	0.26	4.87	0.884
Primary	100	76.9%	30	23.1%	0.47	0.18	1.20	0.113
Secondary	96	69.6%	42	30.4%	0.32	0.13	0.81	<b>0.016</b>
College	43	87.8%	6	12.2%	1.00	Ref		

#### **4.2.2 Relationship between Adequate Knowledge on Post exposure and duration of sex work, Condom use, sexual orientation, attitude towards PEP, and use of PEP**

Four factors were identified to be significantly associated with Knowledge on PEP among the study respondents as shown in Table 4.7, namely, years of sex work, engaging in oral sex, engaging in anal sexual intercourse, and ever used PEP. Being in sex work for more than 15 years was significantly associated with increased number of respondents having adequate knowledge on Post exposure Prophylaxis (96.2%) compared to being in sex work for 1 - 5 years (70.8%), (OR=10.32; 95% CI: 1.36 – 78.14; p=0.024). This indicates that being in prostitution for a longer period makes the respondents to be more knowledgeable and more likely to use PEP.

Engaging in oral sex was significantly associated with increased number of respondents having adequate knowledge on PEP (80.5%) as compared to not engaging in oral sex (69.8%), (OR=1.78; 95% CI: 1.08 – 2.96; p=0.024). Engaging in anal sex was significantly associated with decreased number of respondent having adequate knowledge on Post exposure Prophylaxis (54.5%) compared to not engaging (78.0%), (OR=0.34; 95% CI: 0.14 – 0.82; p=0.012). Ever using PEP was significantly associated with increased number of respondent having adequate knowledge on PEP (88.9%) compared to those who had never used PEP before (52.5%), (OR=7.26; 95% CI: 4.19 – 12.60; p<0.001) (Table 4.7).

**Table 4.7: Relationship between adequate Knowledge on Post exposure Prophylaxis and duration of sex work, Condom use, Sexual orientation, attitude towards PEP and use of PEP**

Variables	Adequate (n=263)		Inadequate (n=81)		OR	95%CI		p-Value
	n	%	n	%		Lower	Upper	
<b>Duration of sex work(yrs)</b>								
1 - 5 years	126	70.8%	52	29.2%	1.00	Ref		
6 - 10 years	72	80.0%	18	20.0%	1.65	0.90	3.04	0.107
11 - 15 years	40	80.0%	10	20.0%	1.65	0.77	3.55	0.199
>15 years	25	96.2%	1	3.8%	10.32	1.36	78.14	<b>0.024</b>
<b>Condom use</b>								
Use	206	77.7%	59	22.3%	1.35	0.76	2.38	0.305
Non use	57	72.2%	22	27.8%	1.00	Ref		
<b>Engaging in oral sex</b>								
Use	173	80.5%	42	19.5%	1.78	1.08	2.96	<b>0.024</b>
Non use	90	69.8%	39	30.2%	1.00	Ref		
<b>Engaging in anal sex</b>								
Use	12	54.5%	10	45.5%	0.34	0.14	0.82	<b>0.012</b>
Non use	251	78.0%	71	22.0%	1.00	Ref		
<b>Engages in unprotected sex when given some incentives</b>								
Yes	93	80.9%	22	19.1%	1.47	0.85	2.55	0.171
No	170	74.2%	59	25.8%	1.00	Ref		
<b>Overall attitude towards PEP</b>								
Appropriate	158	73.5%	57	26.5%	0.63	0.37	1.08	0.094
Inappropriate	105	81.4%	24	18.6%	1.00	Ref		
<b>Ever used PEP</b>								
Yes	201	88.9%	25	11.1%	7.26	4.19	12.60	<b>&lt;0.001</b>
No	62	52.5%	56	47.5%	1.00	Ref		

#### 4.2.3 Factors associated with adequate knowledge on post exposure prophylaxis

The following factors that were associated significantly with adequate knowledge on PEP during bivariate analysis were considered together in a multivariate analysis, they include; (1) Age in years, (2) Marital status, (3) Level of education, (4) Years of sex work, (5) Engaging in oral sex, (6) Engaging in anal sex, and (7) Ever using PEP. Upon fitting the factors using binary logistic regression and specifying three methods each at a time i.e. ‘*Forward conditional*’, ‘*Backward conditional and Stepwise*’ methods with inclusion at  $p < 0.15$  and removal at  $p < 0.05$ , two factor were retained in the final model as shown in Table 4.8

Adjusting for other factors, engaging in anal sex was significantly less associated with having adequate knowledge on PEP as compared to not engaging (aOR=0.19; 95% CI: 0.07 – 51; p=0.001). A respondent engaging in anal sex was 5.3 times less likely to have adequate knowledge on PEP compared to one not engaging. Ever using PEP was significantly associated with having adequate knowledge on PEP as compared to never using PEP (aOR=8.45; 95% CI: 4.72 – 15.13; p<0.001). A respondent identified to have ever used PEP was 8.45 times more likely to have adequate knowledge on PEP as compared to one that has never used PEP.

**Table 4.8: Factors associated with adequate knowledge on post exposure prophylaxis**

Variables	AOR	95%CI		p-Value
		Lower	Upper	
<b>Engaging in anal sex</b>				
Yes	0.19	0.07	0.51	<b>0.001</b>
No	1.00	Ref		
<b>Ever used PEP</b>				
Yes	8.45	4.72	15.13	<b>&lt;0.001</b>
No	1.00	Ref		

### **4.3 Relationship between Attitude towards Post exposure Prophylaxis and other characteristics**

Attitude towards Post exposure Prophylaxis was analyzed in relations to (1) selected demographic characteristics, (2) Duration of sex work, condom use and sexual orientation among the respondents.

#### **4.3.1 Relationship between Attitude towards Post exposure Prophylaxis and selected demographic characteristics**

The following three factors were significantly associated with appropriate attitude towards PEP among the study respondents, namely; Age, Marital status, and Level of education as shown in Table 4.9.

Being below 30 years of age was significantly associated with increased number of respondent having appropriate attitude towards PEP (78.5%) compared to age 40 or more years (53.4%), (OR=3.18; 95% CI: 1.66 – 6.11; p<0.001). A respondent aged below 30 years of age was 3.18

times more likely to have appropriate attitude towards PEP as compared to those aged above 40 years of age.

Being single was significantly associated with increased number of respondent having appropriate attitude towards Post exposure Prophylaxis (74.6%) compared to being widowed (48.3%), (OR=3.15; 95% CI: 1.79 – 5.54; p<0.001). A respondent being single was 3.15 times more likely to have appropriate attitude towards PEP.

Having no formal education was significantly associated with decreased number of respondent having appropriate attitude towards Post exposure Prophylaxis (55.6%) compared to having a college education (48.3%) (OR=0.36; 95% CI: 0.13 – 1.00; p=0.049). Similarly, having a primary education was significantly associated with decreased number of respondent having appropriate attitude towards Post exposure Prophylaxis (56.2%) compared to having a college education (48.3%) (OR=0.37; 95% CI: 0.17 – 0.79; p=0.010) (Table 4.9)

**Table 4.9: Relationship between Attitude towards Post exposure Prophylaxis and selected demographic characteristics**

Variables	Appropriate Attitude (n=215)		Inappropriate (n=129)		OR	95%CI		p-Value
	n	%	No	%		Lower	Upper	
<b>Age in years</b>								
<30	84	78.5%	23	21.5%	3.18	1.66	6.11	<0.001
30 – 34	60	55.6%	48	44.4%	1.09	0.60	1.98	0.778
35 – 39	32	57.1%	24	42.9%	1.16	0.58	2.34	0.674
40 or more	39	53.4%	34	46.6%	1.00	Ref		
<b>Marital status</b>								
Single	103	74.6%	35	25.4%	3.15	1.79	5.54	<0.001
Divorced	69	59.0%	48	41.0%	1.54	0.88	2.68	0.129
Widowed	43	48.3%	46	51.7%	1.00	Ref		
<b>Religion</b>								
Protestant	87	55.1%	71	44.9%	0.57	0.29	1.14	0.115
Catholic	96	69.1%	43	30.9%	1.05	0.51	2.13	0.900
Muslim	32	68.1%	15	31.9%	1.00	Ref		
<b>Level of education</b>								
No formal education	15	55.6%	12	44.4%	0.36	0.13	1.00	0.049
Primary	73	56.2%	57	43.8%	0.37	0.17	0.79	0.010
Secondary	89	64.5%	49	35.5%	0.53	0.25	1.12	0.096
College	38	77.6%	11	22.4%	1.00	Ref		

### **4.3.2 Relationship between Attitude towards Post exposure Prophylaxis and duration of sex work, Condom use, sexual orientation, adequate knowledge, and use of PEP**

Four factors namely, Years of sex work, engaging in anal sex, engaging in unprotected sex when given some incentives, and ever using PEP were significantly associated with appropriate attitude towards Post exposure Prophylaxis among the study respondents as shown in Table 4.10.

Being in sex work for 1 – 5 years was significantly associated with increased number of respondents having appropriate attitude towards PEP (75.3%) as compared to being in sex work for more than 15 years (34.6%) (OR=5.75; 95% CI: 2.39 – 13.82;  $p<0.001$ ). Engaging in anal sex was significantly associated with decreased number of respondent having appropriate attitude towards PEP (31.8%) as compared to not engaging (64.6%) (OR=0.26; 95% CI: 0.10 – 0.65;  $p=0.002$ ).

Engaging in unprotected sex when given some incentives was significantly associated with decreased number of respondent having appropriate attitude towards PEP (47.0%) as compared to not engaging (70.3%), (OR=0.37; 95% CI: 0.24 – 0.59;  $p<0.001$ ). Ever using PEP was significantly associated with decreased number of respondent having appropriate attitude towards PEP (54.4%) as compared to never using PEP (78.0%) (OR=0.34; 95% CI: 0.20 – 0.56;  $p<0.001$ ) (Table 4.10).

**Table 4.10: Relationship between Attitude towards Post exposure Prophylaxis and duration of sex work, Condom use sexual orientation, adequate knowledge on PEP, and use of PEP**

Variables	Appropriate Attitude (n=215)		Inappropriate attitude(n=129)		OR	95%CI		p-Value
	n	%	n	%		Lower	Upper	
<b>Duration of sex work(in years)</b>								
1 - 5 years	134	75.3%	44	24.7%	5.75	2.39	13.82	<0.001
6 - 10 years	50	55.6%	40	44.4%	2.36	0.95	5.86	0.064
11 - 15 years	22	44.0%	28	56.0%	1.48	0.56	3.96	0.431
>15 years	9	34.6%	17	65.4%	1.00	Ref		
<b>Condom use</b>								
Use	163	61.5%	102	38.5%	0.83	0.49	1.41	0.487
Non use	52	65.8%	27	34.2%	1.00	Ref		
<b>Engaging in oral sex</b>								
Use	129	60.0%	86	40.0%	0.75	0.48	1.18	0.216
Non use	86	66.7%	43	33.3%	1.00	Ref		
<b>Engaging in anal sex</b>								
Use	7	31.8%	15	68.2%	0.26	0.10	0.65	<b>0.002</b>
Non use	208	64.6%	114	35.4%	1.00	Ref		
<b>Engages in unprotected sex when given some incentives</b>								
Yes	54	47.0%	61	53.0%	0.37	0.24	0.59	<0.001
No	161	70.3%	68	29.7%	1.00	Ref		
<b>Overall knowledge score on PEP</b>								
Adequate	158	60.1%	105	39.9%	0.63	0.37	1.08	0.094
Inadequate	57	70.4%	24	29.6%	1.00	Ref		
<b>Ever used PEP</b>								
Yes	123	54.4%	103	45.6%	0.34	0.20	0.56	<0.001
No	92	78.0%	26	22.0%	1.00	Ref		

### 4.3.3 Factors associated with appropriate attitude towards post exposure prophylaxis|

All factors that were associated significantly with appropriate attitude towards PEP during bivariate analysis were considered together in a multivariate analysis. They include; Age in years, Marital status, Level of education, Duration of sex work, Engaging in anal sex, Engages in unprotected sex when given some incentives, Ever using PEP. Upon fitting the factors using binary logistic regression and specifying three methods each at a time i.e. ‘*Forward conditional*’, *Backward conditional* and *Stepwise*’ methods with inclusion at  $p < 0.15$  and removal at  $p < 0.05$ , four factor were retained in the final model as shown in Table 4.11.



Adjusting for other factors, being in sex work for 1 – 5 years was significantly associated with appropriate attitude towards PEP as compared to being in sex work for more than 15 years (aOR=5.44; 95% CI: 2.18 – 13.61; p<0.001). A respondent that had been in sex work for 1-5 years was 5.44 times more likely to have appropriate attitude towards PEP compared to one being in sex work for more than 15 year.

Engaging in anal sex was significantly less associated with appropriate attitude towards PEP as compared to not engaging in anal sex (aOR=0.29; 95% CI: 0.11 – 0.78; p=0.013). A respondent engaging in anal was 3.4 times less likely to have appropriate attitude towards PEP compared to one not engaging in anal sex. Engaging in unprotected sex when given some incentives was significantly less associated with appropriate attitude towards PEP as compared to not engaging (aOR=0.57; 95% CI: 0.33 – 0.98; p=0.041). A respondent engaging in unprotected sex when given some incentives was 1.8 times less likely to have appropriate attitude towards PEP compared to one not engaging in protected sex.

Ever using PEP was significantly less associated with appropriate attitude towards PEP as compared to those never used (aOR=0.55; 95% CI: 0.31 – 0.98; p=0.042). A respondent that had ever used PEP was 1.8 times less likely to have appropriate attitude towards PEP compared to one that has never used. (Table 4.11).

**Table 4.11: Factors associated with appropriate attitude towards post exposure prophylaxis**

Variables	aOR	95%CI		p-Value
		Lower	Upper	
<b>Duration of sex work (in years)</b>				
1 - 5 years	5.44	2.18	13.61	<0.001
6 - 10 years	2.36	0.92	6.03	0.073
11 - 15 years	1.94	0.69	5.43	0.210
>15 years	1.00	Ref		
<b>Engaging in anal sex</b>				
Yes	0.29	0.11	0.78	<b>0.013</b>
No	1.00	Ref		
<b>Engages in unprotected sex when given some incentives</b>				
Yes	0.57	0.33	0.98	<b>0.041</b>
No	1.00	Ref		
<b>Ever used PEP</b>				
Yes	0.55	0.31	0.98	<b>0.042</b>
No	1.00	Ref		

#### 4.4 Relationship between Practice of post exposure prophylaxis and other characteristics.

Practice of post exposure prophylaxis was analyzed in relations to (1) selected demographic characteristics, (2) History of sex work and sexual behaviour among the respondents.

##### 4.4.1 Relationship between Practice of post exposure prophylaxis and selected demographic characteristics.

Two factors namely, Age, and Marital status were significantly associated with practice of post exposure prophylaxis among the study respondents. Respondents who were aged 40 or more years were more likely to have ever used PEP (82.2%) as compared to those aged <30 years (62.6%), (OR=2.76; 95% CI: 1.35 – 5.64; p=0.006). Respondents who were widowed were more likely to have ever used PEP (75.3%) as compared to those who were single (61.6%), (OR=1.90; 95% CI: 1.05 – 3.43; p=0.034) as shown in Table 4.12.

**Table 4:12: Relationship between Practice of post exposure prophylaxis and selected demographic characteristics**

Variables	Ever used (n=126)		Never used (n=118)		OR	95%CI		p-Value
	N	%	No	%		Lower	Upper	
<b>Age in years</b>								
<30	67	62.6%	40	37.4%	1.00	Ref		
30 – 34	71	65.7%	37	34.3%	1.15	0.66	2.00	0.633
35 – 39	28	50.0%	28	50.0%	0.60	0.31	1.15	0.122
40 or more	60	82.2%	13	17.8%	2.76	1.35	5.64	<b>0.006</b>
<b>Marital status</b>								
Single	85	61.6%	53	38.4%	1.00	Ref		
Divorced	74	63.2%	43	36.8%	1.77	0.96	3.26	0.067
Widowed	67	75.3%	22	24.7%	1.90	1.05	3.43	<b>0.034</b>
<b>Religion</b>								
Catholic	91	65.5%	48	34.5%	1.00	Ref		
Protestant	102	64.6%	56	35.4%	0.96	0.60	1.55	0.870
Muslim	33	70.2%	14	29.8%	1.24	0.61	2.54	0.551
<b>Level of education</b>								
No formal education	18	66.7%	9	33.3%	0.65	0.23	1.82	0.411
Primary	82	63.1%	48	36.9%	0.55	0.26	1.16	0.119
Secondary	89	64.5%	49	35.5%	0.59	0.28	1.23	0.160
College	37	75.5%	12	24.5%	1.00	Ref		

#### **4.4.2 Relationship between Practice of post exposure prophylaxis and duration of prostitution, condom use, sexual orientation, and use of PEP.**

Four factors namely; duration of sex work, engaging in oral sex, engaging in unprotected sex when given some incentives, and overall knowledge score on PEP were significantly associated with ever using PEP among the study respondents as shown in Table 4.13.

Being in sex work over 6 – 10 years was significantly associated with increased number of respondent that had ever used PEP (68.9%) compared to being in sex work for 1 – 5 years (54.5%), (OR=1.85; 95% CI: 1.08 – 3.16; p=0.024). Being in sex work for 11 – 15 years was significantly associated with increased number of respondent that had ever used PEP (84.0%) compared to being in sex work for 1 - 5 years (54.5%), (OR=4.38; 95% CI: 1.95 – 9.87; p<0.001). Being in sex work for 11 – 15 years was significantly associated with increased number of respondent that had ever PEP (96.2%) compared to being in sex work for 1 - 5 years (54.5%), (OR=20.88; 95% CI: 2.77 – 157.44; p=0.003). Engaging in oral sex was significantly associated with increased number of respondent that had ever used PEP (74.0%) compared to not engaging (51.9%), (OR=2.63; 95% CI: 1.66 – 4.16; p<0.001

Engaging in unprotected sex when given some incentives was significantly associated with increased number of respondent that had ever used Post exposure Prophylaxis (88.7%) compared to not engaging (54.1%), (OR=6.64; 95% CI: 3.53 – 12.51; p<0.001). This may be attributed to the risks they had exposed themselves previously.

Adequate knowledge on PEP was significantly associated with increased number of respondent that had ever used PEP (76.4%) compared to inadequate knowledge (30.9%), (OR=7.26; 95% CI: 4.19 – 12.60; p<0.001). Contrary to expectation, appropriate attitude towards PEP was significantly associated with decreased number of respondents who had ever used Post exposure Prophylaxis (57.2%) compared to inappropriate attitude (79.8%), (OR=0.34; 95% CI: 0.20 – 0.56; p<0.001), as show in Table 4.13 below.

**Table 4:13: Relationship between Practice of post exposure prophylaxis and duration of prostitution, condom use, sexual orientation, and use of PEP.**

Variables	Ever used (n=126)		Never used (n=118)		OR	95%CI		p-value
	n	%	No	%		Lower	Upper	
<b>Duration of sex work(in years)</b>								
<5	97	54.5%	81	45.5%	1.00	Ref		
6 - 10	62	68.9%	28	31.1%	1.85	1.08	3.16	<b>0.024</b>
11 - 15	42	84.0%	8	16.0%	4.38	1.95	9.87	<b>&lt;0.001</b>
>15	25	96.2%	1	3.8%	20.88	2.77	157.44	<b>0.003</b>
<b>Condom use</b>								
Use	177	66.8%	88	33.2%	1.23	0.73	2.07	0.433
Non use	49	62.0%	30	38.0%	1.00	Ref		
<b>Engaging in oral sex</b>								
Use	159	74.0%	56	26.0%	2.63	1.66	4.16	<b>&lt;0.001</b>
Non use	67	51.9%	62	48.1%	1.00	Ref		
<b>Engaging in anal sex</b>								
Use	17	77.3%	5	22.7%	1.84	0.66	5.11	0.237
Non use	209	64.9%	113	35.1%	1.00	Ref		
<b>Engages in unprotected sex when given some incentives</b>								
Yes	102	88.7%	13	11.3%	6.64	3.53	12.51	<b>&lt;0.001</b>
No	124	54.1%	105	45.9%	1.00	Ref		
<b>Overall knowledge score on PEP</b>								
Adequate	201	76.4%	62	23.6%	7.26	4.19	12.60	<b>&lt;0.001</b>
Inadequate	25	30.9%	56	69.1%	1.00	Ref		
<b>Overall attitude towards PEP</b>								
Appropriate	123	57.2%	92	42.8%	0.34	0.20	0.56	<b>&lt;0.001</b>
Inappropriate	103	79.8%	26	20.2%	1.00	Ref		

#### 4.4.3 Factors associated with practice of post exposure prophylaxis

Seven factors that were associated significantly with practice of post exposure prophylaxis during bivariate analysis were considered together in a multivariate analysis. They include; Age in years, Marital status, Duration of sex work, Engaging in oral sex, Engages in unprotected sex when given some incentives, Overall knowledge on PEP, and Overall score on attitude towards PEP. Upon fitting the factors using binary logistic regression and specifying three methods each at a time i.e. *‘Forward conditional’, Backward conditional and Stepwise’* methods with inclusion at  $p < 0.15$  and removal at  $p < 0.05$ , four factors were retained in the final model as shown in Table 4.14.

Adjusting for other factors, age 35 – 39 years was significantly less associated with use of PEP as compared to age less than 30 years (aOR=0.18; 95% CI: 0.07 – 0.46;  $p < 0.001$ ). A

respondent aged 35 – 39 years was 5.6 times less likely to use PEP compared to one aged <30 years. Being in sex work for 11 – 15 years was significantly associated with use of PEP as compared to being in sex work for 1 – 5 years (aOR=5.72; 95% CI: 1.85 – 17.67; p=0.002). A respondent that had been in sex for 11 – 15 years was 5.72 times more likely to use PEP compared to one being in sex work for 1 – 5 year. Similarly, being in sex work for more than 15 years was significantly associated with use of PEP as compared to being in sex work for 1 – 5 years (aOR=31.07; 95% CI: 3.58 – 269.28; p=0.002). A respondent that had been in sex for more than 15 years was 31.07 times more likely to use PEP compared to one being in sex work for 1-5 year.

Engaging in unprotected sex when given some incentives was significantly associated with use of PEP as compared to not engaging (aOR=8.21; 95% CI: 3.83 – 17.62; p<0.001). A respondent engaging in unprotected sex when given some incentives was 8.21 times more likely to use PEP compared to one engaging in protected sex. Adequate knowledge on PEP was significantly associated with use of PEP as compared to inadequate knowledge (aOR=9.19; 95% CI: 4.66 – 18.10; p<0.001). A respondent identified to have adequate knowledge on PEP was 9.19 times more likely to use PEP as compared to one with inadequate knowledge on PEP (Table 4.14).

**Table 4:14: Factors associated with practice of post exposure prophylaxis**

Variables	aOR	95%CI		p-Value
		Lower	Upper	
<b>Age in years</b>				
<30	1.00	Ref		
30 – 34	0.90	0.44	1.84	0.776
35 – 39	0.18	0.07	0.46	<b>&lt;0.001</b>
40 or more	0.50	0.17	1.42	0.193
<b>Duration of sex work(in years)</b>				
1 - 5 years	1.00	Ref		
6 - 10 years	2.51	1.20	5.28	0.015
11 - 15 years	5.72	1.85	17.67	<b>0.002</b>
>15 years	31.07	3.58	269.28	<b>0.002</b>
<b>Engages in unprotected sex when given some incentives</b>				
Yes	8.21	3.83	17.62	<b>&lt;0.001</b>
No	1.00	Ref		
<b>Overall knowledge score on PEP</b>				
Adequate	9.19	4.66	18.10	<b>&lt;0.001</b>
Inadequate	1.00	Ref		

## CHAPTER FIVE

### 5.0 DISCUSSION, CONCLUSION AND RECOMMENDATIONS

#### 5.1 DISCUSSION

##### 5.1.1 Demographic characteristics and sexual behavior

Most of the respondents were aged between 30-34 years (31.4%) with a small percentage aged less than 25 years (2.9%) and more than 44 years (4.1%). This was similar to a study conducted by Fisher *et al.*, 2006 in the UK that found that the respondents who engaged in sex work were aged between 30-34 years of age. The highest proportion of the sex workers were single (40.1%), followed by divorced (33.7%), this is similar to a study conducted by James *et al* (2010) in San Francisco that shows that the respondents engaging in sex work were 48.5% single, 40.05% divorced while 11% were married. Religion affiliation for most of the respondents was Protestants (45.8%) and Catholics (40.4%) with a small proportion being Muslims (13.6%). This contrasts to the study done by Ferguson A. (2003) in Nakuru Kenya that found that 40% of the respondents were Catholics, 20% Protestants while 40% didn't associate themselves with any religion affiliation. Findings of level of education revealed that there were a comparable number of the respondents with Primary (37.8%) and Secondary (40.1%) education, this supports to a study conducted by Preston *et al.* (2011) in Kisumu, Kenya which showed that 55% of the respondents had college education, 38.5% had secondary education while 6.5% had primary education.

Risk behaviour like lack of condom use was also assessed in this study which revealed overall assessment of condom use revealed that majority of the respondents (77.0%) used condom while having sex which was similar to a study done by Audrey *et al.*, (2005) among female sex workers in Madagascar which showed that 90.2% used condom during sexual intercourse. Overall assessment of penetrating vaginal sexual intercourse revealed that indeed the vast majority of the respondents (99.1%) practised penetrating vaginal sexual intercourse, 62.5% practised oral sex and 6.4% practised anal sexual intercourse. This was in support to a study done by Ferguson A. (2003) among female sex workers in urban Kenya that showed that 37%

reported having had anal sex and 33.8% had oral sex but penetrating vaginal sex was highly practised by 98.4%.

### **5.1.2 Knowledge on Post Exposure Prophylaxis (PEP) among the study respondents**

There has been a significant increase in the awareness and uptake of Post exposure prophylaxis following a sexual exposure since high profile health campaigns in the UK and a high volume of discussion around PEP in the gay press (Dodds *et al.*, 2006), predating the publication of UK guidelines for the use of PEP in 2006 (De Silva *et al.*, 2006). In this study, the overall knowledge score on Post Exposure Prophylaxis revealed that a relatively high proportion (76.5%) of the respondents had adequate knowledge.

Duration of sex work was for more than 15 years was significantly associated with increased adequate knowledge on Post exposure Prophylaxis. This suggests that being in prostitution for a longer period makes the respondents to be more knowledgeable and more likely to use PEP. More studies need to be done to support this relationship. Engaging in oral sex was significantly associated with increased number of respondents having adequate knowledge on PEP as compared to not engaging in oral sex.

Knowledge of PEP was significantly associated with anal sex. A respondent engaging in anal sex was 5.3 times less likely to have adequate knowledge on PEP compared to one not engaging. This is similar to a study done by Priddy *et al.*, (2011) among female sex workers in urban Kenya showing that 37% of the respondents who engaged in anal sex had inadequate knowledge on PEP. However these findings are in contrast to a study conducted by Ferguson, 2003 which showed that 20% of a cohort of female sex workers surveyed in Kenya reported having practised anal intercourse had adequate (86.6%) knowledge of PEP.

Ever using PEP was significantly associated with having adequate knowledge on PEP as compared to never using PEP in this study. A respondent identified to have ever used PEP was 8.45 times more likely to have adequate knowledge on PEP as compared to one that has never used PEP. This is similar to another study that was done among at-risk Boston men who have

sex with other men which showed a strong association (AOR=7.31) between use of PEP and the knowledge of PEP, (K. Mayer *et al.*, (2010)). A respondent identified to have ever used PEP was 7.31 times more likely to having adequate knowledge on PEP as compared to one that had never used PEP.

### **5.1.3 Attitude towards PEP among the study respondents**

PEP after a high-risk sexual HIV exposure is an established prevention technology, but data regarding efficacy and acceptability in any context – and particularly the FSW context – are very sparse. This study found that PEP was relatively well accepted by this population, with >62.5% of FSW respondents having an appropriate attitude. Since PEP services are available at Majengo clinic, 90.4% of the respondents indicated that they would use or would recommend friends to use PEP if exposed. This is similar to a study done by Preston *et al.*, (2011), among FSW in Nairobi which showed that 75.9% of the respondents had appropriate attitude. Out of 33 respondents that were against use of PEP, majority (81.8%) cited severe side effects as the main reason for not using PEP. These results are comparable to a study done by Day s. *et al.*, (2006), among FSW in Nigeria which showed that 70.8% of the respondents who were against PEP cited side effects as the main reason. Being in sex work for 1 – 5 years was significantly positively associated with appropriate attitude towards PEP as compared to being in sex work for more than 15 years. This can be attributed to ignorance since being in sex work for long one can start taking things for granted. More studies are needed to be done to explore on this association. Engaging in unprotected sex when given some incentives was significantly negatively associated with appropriate attitude towards PEP as compared to not engaging. This is could be due to lack of adequate knowledge of the risks factors associated with unprotected sex and also poverty could have attributed to this association. More studies are needed to be done to explain this association.

Ever using PEP was significantly less associated with appropriate attitude towards PEP as compared to never using. This could be attributed to the previous experience of the drugs like the side effects as it was mentioned as a factor that affected the attitude towards PEP.



#### **5.1.4 Use of PEP**

The study showed that a relatively high proportion of the respondents (65.7%) had ever used PEP and current use was standing at 16.8%. Condom burst was cited as the major reason for PEP use. The results show that PEP compliance was incomplete among FSW users, with 69.1% of respondents reporting not completing the 4 weeks of treatment. Side effects were mentioned as the main reason for not completing the treatment by 82.9% of the respondents. This was similar to a study done by Abraham N and Jewkes R. (2008), in South Africa which showed that 75.2% of the respondents reported side effects as the main reason for not completing the 4 weeks of PEP treatment and factors like stigma and psychological trauma, particularly in sexual assault victims, also decreased PEP adherence. Prior studies have found comparably low PEP adherence (20-50%) in many settings, including highly informed health care workers and victims of sexual assault 26-28, while other studies have found higher adherence (up to 95%) (Tissot *et al.*, 2011). Female sex workers are a mobile population, and may require additional counselling to counter diminished risk perception over time and to improve PEP adherence.

The timing of PEP initiation following exposure is critical, with the efficacy of PEP presumed to decline over time. Most guidelines recommend it should not be offered after 72 hours, except in paediatrics cases (Siika *et al.*, 2009). Furthermore, it is believed that PEP is most effective if given within the first 24 hours after exposure. In this study, it was found that only 56.1% reported access of PEP before 72 hours. Timing of PEP access is clearly an issue in this setting, particularly since many exposures occur at night or during the weekend. Both clinic and client factors were involved, with reduced clinic access over the weekend being a clear association of the former. These data suggest that PEP availability should be expanded beyond the normal clinic working hours to include weekend access (Siika *et al.*, 2009)..

Use of PEP was significantly associated with duration of sex work. The respondents who had been in sex work for more than 11 years were more likely to use PEP as compared to those with less than 10 years. This could be due to wide experience in the field of prostitution with previous PEP use and also more education achieved during those years on PEP. Also engaging

in unprotected sex when given some incentives was significantly associated with use of PEP as compared to not engaging.

Adequate knowledge on PEP was significantly associated with use of PEP as compared to inadequate knowledge. This was similar to another study that was done among at-risk Boston men who have sex with other men which showed a strong association (AOR=7.31) between use of PEP and the knowledge of PEP, (K. Mayer *et al.*, (2010).

Although all FSW were informed regarding the availability of PEP at the time of clinic enrolment, still the knowledge and use of PEP was not 100%. It would be ideal to have gathered additional qualitative data regarding the circumstances that led FSW to seek or not seek PEP. Future studies should gather more extensive data about why PEP was accessed in certain situations and (perhaps even more importantly) why it was not accessed by some respondents who are in high-risk situations. Barriers to PEP access and knowledge are important areas that require further study. Such data will provide an important entry point for further risk-reduction counselling, in among FSW who are relatively new to sex work. This represents a large-scale study of knowledge and access of PEP in the context of female sex workers. Based on our sample size and overall clinic recruitment approach, it is likely these data are generalizable to FSW in East Africa. The time of PEP access represents an important opportunity to provide enhanced risk-reduction counselling to a subset of FSWs at particularly high risk of HIV acquisition. Post Exposure Prophylaxis represents a useful tool within the HIV prevention package for FSWs, and further research should delineate ways to enhance access and efficacy. There remains an urgent need to develop guidelines for PEP in the setting of FSW in Sub-Saharan Africa.

## **5.2 CONCLUSIONS**

- Most of the study respondents had adequate knowledge of PEP.
- The majority of the respondents had an appropriate/positive attitude in regard to PEP.
- Most of the respondents who engaged in sex work aged between 30-34 years
- Condom burst was cited as the main the reason for using PEP.
- Side effects (82.9%) were mentioned as the main reason for not completing the treatment.
- Majority of the respondents had used PEP before and only a small proportion of the respondents were on PEP at the time of data collection.

## **5.3 RECOMMENDATIONS**

- There is need for more education on PEP and its use among Female sex workers and men who sex with men in order to increase the level of knowledge, to have a positive attitude and proper use of PEP.
- Behaviour change modification should be addressed because the study has revealed that respondents engage in unprotected sexual exposure when given some incentives.
- Though the respondents have adopted safer sex i.e. use of condom there is need for more education on the proper condom use and supply of the recommended lubricants like K-Y jelly to avoid condom burst as it was reported as the main reason for using PEP.
- There is need for more education on coping mechanisms of the PEP side effects as they were mentioned as the main factor that affected the PEP adherence.
- The PEP guideline needs to be reviewed regularly to address on the upcoming issues in regard to PEP among this risk group.

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## **APPENDICES**

### **APPENDIX 1: CONSENT FORM**

**TITLE OF THE STUDY:** Knowledge, attitude and practice of post exposure prophylaxis among female sex workers at Majengo, Nairobi.

**PRINCIPAL INVESTIGATOR: ROSALIA KIOKO**, institute of tropical medicine and infectious diseases Jomo Kenyatta University of agriculture and technology

#### **INTRODUCTION**

How are you? My name is ROSALIA KIOKO. I am a student from the Institute of Tropical Medicine and Infectious Diseases, Jomo Kenyatta University of Agriculture and Technology doing Master of Science in Public Health. Am doing a study on Knowledge, Attitude and practice of post exposure prophylaxis after sexual Exposure among Female sex Workers at Majengo STI Clinic. I would very much appreciate your participation in this study. I would like to ask you some questions about Post exposure Prophylaxis after sexual Exposure. This information will be only for academic purposes. The questionnaire will take between 25 to 30 minutes to complete. If you have any questions about this study and your participation kindly feel free to contact the principal investigator Rosalia Kioko, mobile No.0725 072 018 or Chairman of Ethical Review Committee KEMRI P.O BOX 54840-00200.Nairobi.

#### **Voluntary**

Participation is voluntary. It is your decision to participate or not to participate in this study and your decision will not affect your services in the clinic.

Your selection to participate in the study is based on no other reason apart from you being a Member of Majengo STI clinic.

#### **Benefits and risks of the study**

If you accept to take part in this study, there will be no payment to you for the study participation

You will receive the right information about PEP and how it is used

There are no risks anticipated to cause pain or discomfort to you

#### **Confidentiality**

Efforts will be made to keep your personal information confidential. Your information will be recorded only by a special number assigned to you. The number will only be known to the researcher and yourself. The information will be kept under lock and key only accessible to the



research team. Your names will not be used in any report of this study, or in any reports, publications or presentations. In case the officials from Institute of Tropical Medicine and Infectious Diseases (ITROMID, KEMRI), or Jomo Kenyatta University of Agriculture and Technology will review your records for the study, they will protect your privacy.

You are allowed to ask questions before you answer any of the questions pertaining the study. If you are willing to participant in the study you will write consent by signing this form.

### **Contacts and questions**

The researcher conducting this study is Rosalia Kioko. You may ask any questions you have now, or if you have any questions later, you are encouraged to contact her through mobile telephone number: 0725 072 018 or email address:rossykioko@yahoo.com

If you have any questions or concerns regarding the study and would like to talk to someone other than the researcher (s), you are encouraged to contact the following:

The Director,

Institute of Tropical Medicine and Infectious Diseases (ITROMID)

Jomo Kenyatta University of Agriculture and Technology (JKUAT)

P.O.Box 62000- 00200, Nairobi

Telephone no: 067- 52711

Email: itromid@nairobi.mimcom.net

OR

The Chairman

KEMRI National Ethical Review Committee,

S.L.P. 54840 00200, Nairobi

Mobile no.2722541, 2713349, 0722 205901

Email address: info@kemri.org.

### **Participant's statement:**

The study described above has been explained to me and I have understood clearly. I have had an opportunity to ask questions and they were all answered. I voluntarily consent to participate in this study. .

Name of Participant or respondent.....

Signature..... Or

Thump print (left thumb)

Date.....

Name of the person taking consent.....

Signature ..... Date .....

Name of the investigator .....

Signature .....Date .....

## **APPENDIX 2: FOMU YA IDHINI**

### **IDHINI YA KUSHIRIKI**

**MTAFITI: ROSALIA KIOKO** kutoka Idara ya Utafiti wa Madawa na Magonjwa ya Kuambukiza katika Chuo Kikuu cha Kilimo na Teknolojia cha Jomo Kenyatta.

**Anwani ya utafiti:** Ufahamu, fikra na hali ya kutumia madawa ya dharura ya kuzuia kupata virusi vya ukimwi baada ya kufanya ngono bila kutumia kiga kati ya Wafanyikazi wa ngono wa kike katika Majengo Kliniki, Nairobi.

#### **Utangulizi**

Habari yako? Jina langu ni ROSALIA KIOKO. Mimi ni mwanafunzi kutoka Chuo Kikuu cha Jomo Kenyatta cha Kilimo na Teknolojia (ITROMID). Nafanya utafiti juu ya ufahamu, fikra na hali ya kutumia madawa ya dharura ya kuzuia kupata virusi vya ukimwi baada ya kufanya ngono bila kutumia kiga kati ya Wafanyikazi wa ngono wa kike katika Majengo Kliniki ya magonjwa ya zinaa.

Napenda sana kufahamu ushiriki wako katika utafiti huu. Ningependa kuuliza baadhi ya maswali kuhusu ufahamu, fikra na hali ya kutumia madawa ya dharura ya kuzuia kupata virusi vya ukimwi. Habari hii itakuwa tu kwa madhumuni ya masomo. Dodoso itachukua kati ya dakika ishirini na tano hadi thelathini kukamilika. Kama una maswali yoyote kuhusu utafiti huu na ushiriki wako tafadhali jisikie huru kuwasiliana na mkuu wa uchunguzi wa Rosalia Kioko, Nambari ya simu ya rununu 0725 072 018.

#### **Hiari**

Kushiriki katika utafiti huu ni wa hiari. Ni uamuzi wako kushiriki au kutoshiriki katika utafiti huu na uamuzi wako hautaathiri huduma yako kwa hii kliniki.

Uteuzi wako wa kushiriki katika utafiti huu ni kwa msingi wa kuwa wewe ni mshiriki wa Majengo kliniki ya magonjwa ya zinaa.

#### **Faida na hatari ya utafiti**

Ukikubali kushiriki kwenye utafiti huu, hutapokea malipo yo yote kwa kushiriki kwa utafiti huu

Utapokea taarifa kamili juu ya PEP na jinsi ya kuitumia

Hakuna hatari inayotarajiwa kusababisha uchungu au kutomakinika kwako

### **Kubanwa kwa utafiti**

Juhudi zitafanywa kuhakikisha kwamba maelezo yako ya kibinafsi yamewekwa kisiri. Taarifa zako zitarekodiwa kwa kutumia nambari maalum utakayopewa. Nambari hii itajulikana kwako na maafisa wa uchunguzi pekee. Taarifa zote zitahifadhiwa kwa kufuli na ufunguo. Majina yako hayatatumiwa kwenye ripoti ya utafiti huu, ama kwenye makala yo yote au maonyesho. Ikiwa maafisa kutoka Idara ya Utafiti wa Madawa na Magonjwa ya Kuambukizana au wale kutoka Chuo Kikuu cha Kilimo na Teknolojia cha Jomo Kenyatta watatumia majibu yako, watahifadhi siri yako.

### **Mawasiliano na maswali**

Mtafiti anayetokeleza utafiti huu ni Rosalia Kioko. Unaweza kuuliza maswali yo yote uliyonayo sasa ama ikiwa utakuwa nayo baadaye, unahimizwa kuwasiliana naye kupitia nambari ya simu ya mkono: 0725072018 barua pepe: [rossykioko@yahoo.com](mailto:rossykioko@yahoo.com)

Ikiwa una maswali yo yote kuhusu utafiti huu na ungependa kuongea na mtu mwingine asipokuwa mtafiti, unahimizwa uwasiliane na wafuatao:

Mkurugenzi,

Idara ya Utafiti ya Madawa na Magonjwa ya Kuambukiza  
Chuo Kikuu cha Kilimo na Teknolojia cha Jomo Kenyatta,  
S.L.P 62000 00200, Nairobi

Nambari ya simu: 067-52711

Barua pepe: [itromid@nairobi.mimcom.net](mailto:itromid@nairobi.mimcom.net)

AU

Mwenyekiti

KEMRI National Ethical Review Committee,  
S.L.P. 54840 00200, Nairobi

Nambari ya simu 2722541, 2713349, 0722 205901

Barua pepe: [info@kemri.org](mailto:info@kemri.org)

Mshiriki:

Utafiti ulioelezwa hapa juu umeelezwa kwangu na nikauelewa kwa uwazi. Mimi nilikuwa na fursa ya kuuliza maswali na nikajibiwa. Mimi kwa hiari yangu nakubali kushiriki katika utafiti huu.

Jina la muhojiwa.....

Alama ya kidole gumba (Kushoto)

Tarehe.....

Jina la anayetoa idhini.....

Sahihi..... Tarehe.....

Jina la mtafiti.....

Sahihi..... Tarehe.....

### APPENDIX 3: QUESTIONNAIRE

STUDY NUMBER \_\_\_\_\_ DATE \_\_\_\_\_

Permanent address \_\_\_\_\_

Country \_\_\_\_\_ Province \_\_\_\_\_ District \_\_\_\_\_

Residence \_\_\_\_\_

#### A. Demographic Characteristics

1. Year of birth \_\_\_\_\_ age (Yrs) \_\_\_\_\_
2. Marital status (1) Single ( ) (2) Married ( ) (3) Divorced ( )  
(4) Widowed ( )
3. Religion (1) protestant ( ) (2) Catholic ( ) (3) Muslim ( )  
(4) Other ( )
4. Level of education (1) never gone to school ( )  
(2) Primary school ( ) (3) Secondary school ( ) (4) College ( )  
(5) University ( )
5. Date enrolled in the Clinic \_\_\_\_\_

#### B. Duration of Sex work:

6. Year started Prostitution \_\_\_\_\_ Years of  
prostitution \_\_\_\_\_

#### C. Sexual orientation

7. How many respondents do you have per week? \_\_\_\_\_
8. Of these respondents how many are:-  
(1) First time respondents \_\_\_\_\_  
(2) Regular partner \_\_\_\_\_  
(3) Boyfriend \_\_\_\_\_
9. Do you have a boyfriend? Yes ( 1 ) No( 2 )
10. How often do you use condom with:  
First time client 0=N/A 1=always 2=sometimes 3=never  
Repeat client 0=N/A 1=always 2=sometimes 3=never  
Boyfriend 0=N/A 1=always 2=sometimes 3=never
11. Which one of the methods listed below do you practice with your sexual respondents?

(i) First time respondents

N/A	Never	sometimes	always	
Vaginal sex	0	1	2	3
Oral sex	0	1	2	3
Anal sex	0	1	2	3

(ii) Regular partner

N/A	Never	sometimes	always	
Vaginal sex	0	1	2	3
Oral sex	0	1	2	3
Anal sex	0	1	2	3

(iii) Boyfriend/husband

N/A	Never	sometimes	always	
Vaginal sex	0	1	2	3
Oral sex	0	1	2	3
Anal sex	0	1	2	3

12. Do you engage in unprotected sex when given some incentives?

Yes (1) No (2)

**D. KNOWLEDGE OF PEP**

13. If you had a condom burst what are you supposed to do?

- (1) Go to hospital for help
- (2) Use some solutions to clean vaginas
- (3) Take herbal drugs
- (4) Take no action
- (5) I don't know what I can do

14. How long should you take to seek Doctor's help following a condom burst or rape?

(Tick one answer)

- (1) Anytime after the unprotected sexual intercourse
- (2) As soon as possible and not after 72hours after condom burst or rape
- (3) After one week ( )

(4) I don't know \_\_\_\_\_

15. Have you ever heard of Post Exposure Prophylaxis?

Yes ( 1)      No (2)

**If NO skip to Q.17**

16. If YES to the above Q.15 what is Post Exposure Prophylaxis?

(1) It's a drug that is used after unprotected sex with a client whose HIV status is Unknown or is HIV to prevent HIV infection

(2) Its a drug to treat HIV infection

(3) Its a drug to prevent pregnancy after unprotected sexual exposure

**E.USE OF PEP**

17. Have you ever used PEP?

Yes (1)      No (2)

**If NO skip to question 22**

18. If you have ever used PEP, what were the reasons why you used it? Tick one answer

1=Condom broke

2 = Decided not to use a condom

3 = Client did not want to use a condom

4= Client paid more not to use condom

5 = Rape/coerced sex

6 = other reason \_\_\_\_\_

19. How many times have you taken PEP before?

(1) Once (2) Twice (3) Thrice (4) More than thrice

20. Have you ever started PEP and not completed the 4 weeks of medications?

YES (1)      NO (2)

**If NO to the above Q.14 skip to Q.20**

21. If yes to the above question 14, why?

(1) Because of side effects

(2) Lost the drugs

(3) Thought was not infected

(4) Forget to take the pills



(5) Got bored of taking the drugs

(6) Others (specify) \_\_\_\_\_

22. Are you currently on PEP?

Yes (1) No (2)

**If NO to the above Q.22 skip to Q.24**

23. If YES to above Q. 16 explain why? Tick one answer

1= Condom bursted

2 = Chose not to use a condom

3 = Client did not want to use a condom

4 = Rape/coerced sex

5 = other reason \_\_\_\_\_

24. Have you ever had unprotected sexual exposure or condom burst from any of your respondents and you didn't use PEP?

Yes (1) No (2)

**If NO to the above Q.24 skip to Q.26**

25. If yes to the above Q.24 explain why?

(1)I didn't know where to get the services

(2)I didn't know about PEP

(3)I used some solutions to cleanse myself

(4)I went to an herbalist

(5)I thought I was safe

(6) Other reasons \_\_\_\_\_

**F. ATTITUDES TOWARDS PEP**

26. What is your view on the use of PEP?

(Tick yes or no as appropriate)

	Yes	No
(1)It encourages not using condom	( )	( )
(2)Should be easily available to all sex workers	( )	( )
(3) Should not be used at all.	( )	( )
(4) Other reason _____		

27. Since PEP services are available at this Majengo clinic, would you use it or would you recommend your friend to use it if necessary? (Tick one answer)

Yes (1) No (2)

28. If NO to Question above, give reason (s)

(1) It does not prevent one from HIV infection when exposed to

(2) It has severe side effects

(3) It has strict regulations

(4) There are herbal medications which are used.

(5) Other reasons \_\_\_\_\_

29. What Factors may affect the use of PEP?

(1) Lack of knowledge about PEP

(2) Traditional beliefs associated with HIV infection

(3) Fear of side effects from the drugs

(4) Fear of not following the instructions on how to use the drug.

(5) Lack of time to go to the facility

(6) Lack of bus fare to access the facility

(7) Fear that other sex workers/respondents will know am using the drugs

(8) Other reasons \_\_\_\_\_

## APPENDIX 4: MAHOJIANO

NAMBARI YA UTAFITI \_\_\_\_\_ TAREHE \_\_\_\_\_

Sanduku la posta \_\_\_\_\_

Nchi \_\_\_\_\_ Mkoa \_\_\_\_\_ Wilaya \_\_\_\_\_

Unaishi wapi \_\_\_\_\_

### A. DATA YA KIBINAFSI

1. Mwaka wa kuzaliwa \_\_\_\_\_ umri \_\_\_\_\_
2. Hali ya ndoa: (1) sijaolewa ( ) (2) niko katika ndoa ( ) (3) Talaka ( )  
(4) Mjane ( )
3. Dini: (1) Protestanti ( ) (2) Katoliki ( ) (3) Muslim ( )  
(4) Nyingine ( )
4. Kiwango cha elimu  
(1) kamwe sijawai kwenda shule ( )  
(2) shule ya msingi ( )  
(3) Shule ya sekondari ( )  
(4) Chuo kikuu
5. Tarehe yakujiunga katika kliniki \_\_\_\_\_

### B. HISTORIA YA KAZI YA UMALAYA

6. Mwaka ulioanza Ukahaba \_\_\_\_\_ Miaka ya Ukahaba \_\_\_\_\_

### C. TABIA YA NGONO

7. Unapata wateja wagapi kwa wiki? \_\_\_\_\_
8. kati ya wateja hao niwagapi ni:  
(1) Mteja wa mara ya kwanza \_\_\_\_\_  
(2) Mteja wa mara kwa mara \_\_\_\_\_  
(3) Mpenzi \_\_\_\_\_
9. Je, uko na mpenzi? Ndiyo ( 1 ) La ( 2 )
10. Mara ngapi unatumia mpira na  
Mteja wa mara ya kwanza 1 =kamwe 2 = wakati mwingine 3 = kila mara  
Mteja wa mara kwa mara 1 =kamwe 2 = wakati mwingine 3 = kila mara  
Mpenzi 1 = kamwe 2 = wakati mwingine 3 = kila mara

11. Ni mbinu ngani imetajwa hapa njini ambayo unatumia kufanya ngono na watenja wako?

(i) Mtenja wa mara ya kwanza

	kamwe	wakati mwingine	kila mara
Ngono ya kuma	1	2	3
Ngono ya mdomo	1	2	3
Ngono ya mkundu	1	2	3

(ii) Mteja wa mara kwa mara

	kamwe	wakati mwingine	kila mara
Ngono ya kuma	1	2	3
Ngono ya mdomo	1	2	3
Ngono ya mkundu	1	2	3

(iii) Mpenzi

	kamwe	wakati mwingine	kila mara
Ngono ya kuma	1	2	3
Ngono ya mdomo	1	2	3
Ngono ya mkundu	1	2	3

12. Unatumia mpira na:

Mteja wa mara ya kwanza 1 = kamwe 2 = wakati mwingine 3 = kila mara

Mteja wa mara kwa mara 1 = kamwe 2 = wakati mwingine 3 = kila mara

Mpenzi 1 = kamwe 2 = wakati mwingine 3 = kila mara

13. Je, kushiriki katika ngono zembe wakati unapopewa motisha fulani?

Ndio ( 1 ) la ( 2 )

#### **D. UFAHAMU WA PEP**

14. Ungepasukiwa na mpira ungefanya nini?

(1) kuenda hosipitali kupewa usaidizi

(2) Kutumia baadhi ya ufumbuzi kujisafisha kuma

(3) kunywa dawa za kienyenji

(4) Sitachukua hatua yeyote

(5) Sijui vile naweza kufanya

(changua jibu moja)

15. Unapaswa kuchukua muda ngani kupata usaidizi kwa daktari unapopasukiwa na mpira au kunajisiwa? (changua jibu moja)

(1) wakati wowote baada ya kupasukiwa na mpira au kunajisiwa

(2) Haraka iwezekanayo na si kabla ya masaa sabini na mbili kuisha baada ya mpira kupasuka au kunajisiwa.

(3) Baada ya wiki moja ( )

(4) sijuhi \_\_\_\_\_

16. Je, umewahi kusikia 'Post Exposure Prophylaxis' (PEP)?

Ndio (1) La (2)

**(Kama ni LA ruka kwa nambari 21)**

17. kama ndio kwa swali 10 ilio juu, ni nini 'Post Exposure Prophylaxis' (PEP)?

(1) Ni dawa inayotumika baada ya kufanya ngono isiyo na kinga na mteja ambaye hali yake ya virusi vya ukimwi haijulikani ama ako na virusi ili kuzuhia kuabukizwa kwa virusi vya ukimwi.

(2) Ni dawa kutibu virusi vya ukimwi

(3) Ni dawa ya kuzuia mimba baada ya ngono isiyokuwa na kinga.

#### **E.MATUMIZI YA PEP**

18. Je, umewahi kutumia PEP?

Ndio (1) La (2)

**Kama ni LA ruka kwa nambari 23**

19. Kama umewahi kutumia PEP ni nini sababu ya kuitumia? (changua jibu moja)

1= Mpira ulipasuka

2 = Niliamua kutokutumia mpira

3 = Mteja alikataa kutumia mpira

4=Mteja alinilipa pesa zaidi kwa ajili ya kutotumia mpira

5 = Nilibakwa

6= Sababu nyingine \_\_\_\_\_

20. Mara ngapi umetumia PEP?

(1) Mara moja (2) mara mbili (3) Mara tatu (4) Zaidi ya mara tatu

21. Umewahi kuanza PEP na kutokumaliza muda wa wiki nne za matibabu?

Ndio (1) La (2)

**(Kama LA kwa swali 21 juu ruka kwa swali 23**

22. Kama ndiyo kwa swali ya 15 ilio juu, kwa nini?

- (1) Kwa sababu ya madhara
- (2) nilipoteza hizo dawa
- (3) nilifikiri sijaambukizwa
- (4) nilisahau kumeza hizo dawa
- (5) nilichoka kumeza hizo dawa
- (6) sababu nyingine \_\_\_\_\_

23. Unatimia PEP wakati huu? (a) Ndio (1 ) (b) La ( 2 )

**Kama LA kwa swali 23 juu ruka kwa swali 25.**

24. Kama ndio kwa swali 23 ilio juu eleza ni kwa nini? **(changua jibu moja)**

- 1= mpira ulipasuka
- 2 = niliamua kutokutumia mpira
- 3 = Mteja alikataa kutumia mpira
- 4=Mteja alinilipa pesa zaidi kwa ajili ya kutotumia mpira
- 5 = nilibakwa
- 6 = sababu nyingine

25. Umewahi kufanya ngono yenye haina kinga au kupasukiwa na mpira na haukutumia PEP?

Ndio (1) La (2)

**Kama LA kwa swali 25 juu ruka kwa swali 27**

26. Kama ndiyo kwa sawli 25 juu eleza ni kwa nini?

- (1) sikujua ni wapi ningepata huduma
- (2) sikujua kuhusu PEP
- (3) nilitumia ufumbuzi kusafisha kuma yangu
- (4) nilienda ni kwa asili
- (5) Nilifikiri nilikuwa salama
- (6) Sababu nyingine \_\_\_\_\_

## F. MTAZAMO KUELEKEA PEP

27. Nini maoni yako juu ya matumizi ya PEP?

**(Jibu ndio au LA kama inavyofaa)**

Ndio      la

- |  |        |        |
|--|--------|--------|
| (1) inatia moyo watu kutokutumia mpira                       | (    ) | (    ) |
| (2) inapaswa kupatikana kwa hurahisi nawafanyi kazi wa ngono | (    ) | (    ) |
| (3) haipaswi kutumika wakati wowote                          | (    ) | (    ) |
| (4) sababu nyingine _____                                    |        |        |
28. Jinsi huduma za PEP zinapatikana katika kliniki hii ya Majengo, unaweza kuja kupata hio huduma au kupendekeza rafiki yako anapoitaji hio huduma? (Chagua jibu moja) (a) Ndio ( 1 ) La ( 2 )
29. Kama La kwa swali 22 juu eleza sababu
- (1) Haizuhii mtu kuabukizwa virusi vya ukimwi
  - (2) iko na madhara makali sana
  - (3) iko na masharti magumu
  - (4) kuna dawa za kienyenji ambazo zinawaza kutumuka
  - (5) sababu nyingine \_\_\_\_\_
30. Ni mambo gani yanayoweza kuathiri matumizi ya PEP?
- (1) Ukosefu wa ufahamu kuhusu PEP
  - (2) Jadi imani yanayohusiana na virusi vya ukimwi
  - (3) Hofu upande wa madhara ya madawa
  - (4) Hofu yakukosa kufuata maelekezo jinsi ya kutumia hizo dawa
  - (5) ukosefu wa wakati wa kuenda katika kituo cha matibabu.
  - (6) Ukosefu wa nauli ya kuenda katika kituo cha matibabu
  - (7) Hofu ya kwamba makahaba / wateja wengine kujua ninatumia hizi dawa
  - (8) sababu nyingine \_\_\_\_\_