ASSESSMENT OF PATIENTS ANTIRETROVIRAL THERAPY KNOWLEDGE AT INDUSTRIAL AREA REMAND PRISON AND LOCO HEALTH CENTRES, NAIROBI.

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DISSERTATION SUBMITTED TO THE SCHOOL OF PUBLIC HEALTH IN PART FULFILMENT FOR THE AWARD OF THE DEGREE OF MASTER OF PUBLIC HEALTH OF THE UNIVERSITY OF NAIROBI

DECLARATION

I hereby declare that this dissertation is my own work and effort and that it has not been submitted anywhere for any award. Where other sources of information have been used, they have been acknowledged.

Signature: ……………………………………….

APPROVAL

This dissertation has been presented as part of the fulfillment for the award of Master of Public Health Degree of the University of Nairobi with the Approval of the following supervisors:-

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DEDICATION

I would like to dedicate my dissertation to my sons Ndung'u and Kiarie, my dear husband Kevin, for they have been patient with me as I took time to concentrate on my studies. My dear Dad and Mum who have been there to motivate and inspire me with every step I have taken in life. I also dedicate it to my brothers and sister for our cohesiveness and support for each other.

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To my Dad and Mum for their continuous encouragement during the course of this dissertation for they gave me the drive to overcome any obstacles that I encountered.

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LIST OF ABBREVIATIONS

AIDS	Acute Immune Deficiency Syndrome
ART	Antiretroviral Therapy
ARV	Anti-retroviral
CCC	Comprehensive Care Clinic
CPGH	Coast Provincial General Hospital
Df	Degrees of freedom
DHMT	District Health Management Team
DHRIO	District Health Records Information Officer
GoK	Government of Kenya
HAART	Highly Active Antiretroviral Therapy
HIV	Human Immunodeficiency Virus
KAIS	Kenya AIDS Indicator Survey
MEMS	Medication Event Monitoring System
NASCOP	National AIDS and STI Coordinating Programme
OI	Opportunistic Infection
PASCO	Provincial AIDS and STI Coordinator
PEPFAR	President's Emergency Plan for AIDS Relief
PLHA	Person Living with HIV/AIDS
PASW	Predictive Analytical Software
STI	Sexually Transmitted Infection
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNGASS	United Nations General Assembly Special Session
WHO	World Health Organization

OPERATIONAL TERMS

Acute Immuno-Deficiency Syndrome (AIDS)   Disease of the human immune system caused by the human immunodeficiency virus

Antiretrovirals (ARVs)   Drugs that suppress or stop multiplication of retroviruses like HIV

Antiretroviral Therapy (ART)   Treatment for human immunodeficiency virus (HIV) infection that uses a combination of several Anti-Retrovirals

Adherence   The extent to which the patient continues the agreed-upon mode of treatment under limited supervision when faced with conflicting demands

Adherence Counseling   Advice given to the patient by the health worker on how to maintain the prescribed regimen as required

Comprehensive Care Clinic (CCC)   Clinic set aside at the health facility to attend to all the medical needs of HIV/AIDS patients

CD4 cell   T cell with CD4 receptor that recognizes antigens on the surface of a virus

CD4 cell count	The absolute number of CD4 cells in one cubic millimeter (mm3) of blood.
Highly Active Antiretroviral Therapy (HAART)	A combination of ARVS to achieve maximal suppression of HIV
Human Immunodeficiency Virus (HIV)	A retrovirus that targets human CD4 immune cells suppressing the immune system
Medication Event Monitoring System (MEMS)	A method of measuring drug adherence that uses a computer chip embedded in a pill bottle lid to record the date and time each dose is taken
Participants	This refers to the patients receiving antiretroviral therapy who took part in the study
Patients	Refers to the individuals with HIV/AIDS receiving ARVs from a health facility
Treatment Knowledge	Understanding by patients on what antiretroviral drugs are, why they are needed and what ARVs can and cannot do.

ABSTRACT

Background: According to available statistics of 2000, an estimated 2.2 million people in Kenya were reported to be living with HIV/AIDS while in 2007, 1.4 million people in Kenya were estimated to be living with HIV/AIDS (WHO, 2007). Total number of people on ART in Kenya in 2011 was estimated at 470,000 (NASCOP, 2011). Before people are initiated on ART, basic knowledge on HIV/AIDS is needed, understanding of opportunistic infections, ART and the side effects of treatment

Objective: To determine patients knowledge on various aspects of antiretroviral therapy.

Design: This was a descriptive cross-sectional study. A questionnaire was administered to 342 patients receiving antiretroviral therapy at Industrial Area Remand Prison and Loco health centers.

Results: The ratio of males to females of all participants was 1.4:1. Statistical significance was found between participants level of education and their knowledge on, definition of AIDS (p=0.006), definition of side effects (p=0.005), definition of ARVs (p=0.000), daily dosing time of ARVs (p=0.000), consequences of missing ARV doses (p=0.001) and duration of use of ARVs (p=0.004). Among the patients using alcohol there were more males (76%) than females, while condom use was noted among higher proportion of patients (75.1%).

There were gaps noted in knowledge of participants with low levels of education on various aspects of HIV/AIDS. Industrial Area Remand prison and Loco health centre need to review and revise their communication strategy geared towards enhancing all patients treatment knowledge irrespective of their level of education.

CHAPTER 1: INTRODUCTION
1.1 BACKGROUND

The first global case of Acquired Immune deficiency Syndrome (AIDS) was reported in 1981 in the United States of America with Human Immunodeficiency Virus (HIV) identified as the aetiological agent (UNAIDS, 2003). In Kenya, the first case of HIV/AIDS was reported in 1984 by the Kenyan Ministry of Health (UNDP, 2004). Towards the end of 1986, there was an average of four new AIDS cases being reported to the World Health Organization each month in Kenya with 286 cases being reported by the end of that year (AIDS Newsletter-1987).

The national HIV prevalence in Kenya was estimated at over 14% in the late 1990s. Available statistics reveal that in 2000, an estimated 36.1 million people Worldwide, 25.3 million people in Africa and 2.2 million people in Kenya were reported to be living with HIV/AIDS and by the year 2007, 33.2 million people Worldwide, 22.8 million people in Africa, 1.4 million people in Kenya were estimated to be living with HIV/AIDS (WHO, 2007). There was a noted 36% decrease in the number of people living with HIV/AIDS in Kenya between the year 2000 and 2007. The Kenya Demographic Health Survey (KDHS 2008/09) estimated average HIV prevalence among general population at 6.3%, which reflected a progressive decrease in HIV prevalence across the years from the late 1990s.

Globally women constitute half (48 to 53 %) of the adults living with HIV. The burden of HIV on women varies considerably by region and is highest in sub-Saharan Africa where 1.4 times more adult women than men were living with HIV (UNAIDS, 2010). In Kenya, 1.9 times more adult women than men were living with HIV according to the KDHS 2008/9.

The estimated HIV prevalence among the general population increased with age with the highest among the age bracket of 40 to 44 years at 10.3% and the lowest amongst the age bracket of 15 to 19 years. The region with the highest HIV prevalence was Nyanza province at 14%, with the second highest being Nairobi and Western province at 7%. The region with the lowest prevalence was North Eastern province at 1% (KDHS 2008/09).

The noted reduction in HIV prevalence in general population, globally, in Africa and Kenya, was attributable to the interventions enlisted by the WHO in combating HIV/AIDS. Amongst some of the interventions was antiretroviral therapy (ART) (WHO, 2009). Anti-retroviral Therapy was found to be the most cost-effective intervention against HIV/AIDS. Putting more people on ART would reduce HIV prevalence, reduce the incidence of orphaned children, and contribute to better economic performance (USAID, 2009). Anti-retrovirals were not affordable to majority of HIV/AIDS patients in the country a decade ago but changes occurred once generic ARVs were allowed into the country (Industrial Property Act of July 2001). The significantly reduced cost of ARVs made the drugs became available and accessible to HIV patients through public health facilities (NASCOP, 2005).

Available statistics indicate that in 2009, 555,000 patients in Kenya needed ARVs and only 336,980 were on ARVs, which is 61% coverage of people eligible for treatment. In the year 2010 the total number of patients who needed ARVs were 710,000 and only 432,621 were on ARVs with coverage of people eligible for treatment still at 61%. (UNGASS, 2010). Total number of patients on ART in Kenya, 2011, was estimated at 470,000, which was 63% of the total patients in need of ART (NASCOP, 2011).

Due to the gap between patients receiving ARVs and the actual number that are in need of them, the government supported ART program has experienced rapid growth over time with the number of sites providing ART rising from 15 in 2003 to 1,522 in 2011 (NASCOP, 2011). The challenges to improve access to HIV care and ART provision has created this need for more ART service delivery points in health centres and dispensaries (NASCOP, 2009).

Scaling up of HIV care and ART provision services has not been without challenges. Challenges identified with increase in HIV clinics include maintaining of clinical standards, affordable monitoring, emergence of resistance and problem on how to address ill equipped, under resourced health systems and underpaid health workers (Attawel, 2003). This is experienced where decentralization of care has been done to lower cadres and lower levels of health facilities affecting quality of care given (NASCOP, 2009)

Before patients are initiated on ART, basic knowledge on HIV/AIDS is needed, understanding of opportunistic infections, antiretroviral therapy (ART) and effect of lifestyle practices on treatment. Patients need to comprehend, cope and comply with prescribed actions such as treatment adherence and safe sexual practices. Following initiation on ARVs, the patients need basic information about antiretroviral treatment to a more comprehensive approach that empowers them not only to understand the fundamentals involved in participating in treatment but also includes the social skills and capacity to effectively access other pertinent health services and maintain good health (Hirut Gerbrekristos et al, 2005).

In order to achieve ART goal, patients need to follow treatment plan, take medication at prescribed times and frequencies, follow instructions regarding food and other

medications. A patient's knowledge of his medication regimen and a patient's understanding of the relationship between non-adherence and build-up of resistance to medication predict better adherence (CPGH, 2004).

Patients knowledge on ART leads to improved health outcomes and better adherence to drug regimens. Communication around antiretroviral therapy is required for an effective and comprehensive response to HIV/AIDS that includes and makes linkages between prevention, treatment, care and support. Treatment knowledge emphasizes that a patient must know the ARVs he/she is taking, their side effects and how they can be managed, what foods to take and not to take with them, how to prevent oneself from infection and re-infection, prevention of infecting others and prevention of progression from HIV to AIDS (Healthlink Worldwide, 2006).

1.2 STATEMENT OF THE PROBLEM

Due to the gap between patients, eligible for ART and actual number on ART there is an increase in number of health facilities offering antiretroviral therapy in the country to improve access and availability of antiretrovirals. In order to improve patient quality of life, reduce viral load to undetectable levels and boost the immunity, patients using ARVs are expected to adhere to treatment in excess of 95%. Level of adherence to treatment is measured using a medication event monitoring system (MEMS).

Patients in Nairobi are not achieving optimal adherence of 95% to antiretrovirals (Oyore, 2009). This means that patients are missing to take their ARVs at the correct time or/and skipping their ARVs doses. HIV clinics have also documented low retention rate of patients on ART, which indicates patients are defaulting on treatment. A study conducted in Kenya by NASCOP in 2008 indicated that there were sites that had lost more than twenty percent of their patients to follow-up. The sites that failed to achieve the target of less than twenty percent loss to follow-up were health centres managed by the Government (NASCOP, 2010).

When a person is not taking ARV doses as directed drug resistance is likely to take place leading to treatment failure (Lisa, 2010). When drug resistance sets in an alternative ART regimen is prescribed for the patient and through the Ministry of Health only one other regimen (second line regimen) is available as an option for the patients due to cost implications (NASCOP, 2010).

Factors that have been determined that influence adherence to antiretroviral therapy include patients knowledge on the treatment they are receiving (Oyore, 2009).

1.3 JUSTIFICATION OF THE STUDY

To ensure a patient adheres to treatment they undergo three intense counseling sessions prior to starting ART, with the counselor being guided by a standard counseling form provided by NASCOP. This aims at empowering the patient to understand the treatment they are to be initiated on as this treatment is taken for the rest of their lives. Patient education is provided to ensure long-term adherence to treatment, which is associated with treatment success (NASCOP, 2005).

The study aims at assessing patients knowledge on various aspects of antiretroviral therapy and patients lifestyle practices. Healthcare workers at the CCC continue to enroll more patients to use ARVs on a monthly basis but there is no continuous assessment of the quality of care of the health services provided by the facility themselves and NASCOP. The findings of this study will be feedback to the ART program at the health facility level and Provincial level on effectiveness of interventions on education and communication to patients receiving ART at the study sites.

The improvement in adherence indicated that direct cost of ARV therapy together with knowledge of HAART and belief in benefits of therapy have positive impact on compliance to therapy by patients (Wakibi, 2010). To overcome potential barriers to poor adherence, all involved actors in the HIV/AIDS program should aim at strengthening counseling, education and information interventions for HIV-infected patients (Yao et al, 2009). Interventions patients require after starting ART include ongoing education about the importance of medication adherence, consequences of non-adherence and improved communication with healthcare workers (Ow Fong, 2000).

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1.4 RESEARCH QUESTIONS

- What are the socio-demographic characteristics of the patients receiving ART?

- Are patients knowledgeable on meaning of HIV, AIDS, ARVs, side effects, CD4 cell count and opportunistic infections?

- What are some of lifestyle practices patients engage in that are contra-indicated when receiving ART?

- Do patients have access to various sources of information at the health facility to enhance their knowledge on ART?

- Is there any association between patients knowledge on ART and socio-demographic characteristics?

1.5 OBJECTIVES

General objective

To determine knowledge on antiretroviral therapy in patients receiving antiretrovirals at Industrial Area Remand Prison and Loco health centres.

Specific objectives

1. To describe socio-demographic characteristics of patients receiving ART in the two health centres.

2. To determine the patients knowledge with respect to meaning of HIV/AIDS, ARVs, side effects, CD4 cell count and opportunistic infections.

3. To determine patients knowledge on treatment and care provided at the HIV clinics.

4. To determine association between patients knowledge on various aspects of ART and socio-demographic characteristics.

5. To determine whether patients are provided with adherence, nutrition and lifestyle counseling at the health facilities.

6. To identify reading materials on various aspects of ART available for patients at the two study sites.

7. To determine patients lifestyle practices in relation to treatment provided at the HIV clinics.

CHAPTER 2: LITERATURE REVIEW

In order to educate the patients receiving ART, it is deemed necessary to provide health talks, audio-visual aids, pamphlets/brochures, adherence counseling, nutritional counseling, general counseling and support groups at the health facility level (NASCOP, 2005). Misunderstandings by patients receiving ART about incompatibility of certain behaviors with use of ARVs, such as drinking alcohol, smoking cigarettes and engaging in unprotected sex disheartened patients and led to decreased levels of efficacy of ARVs (Maria et al, 2009).

Association of all involved actors in HIV/AIDS program is encouraged to strengthen counseling, education and information interventions for HIV infected patients in order to overcome the potential barriers of poor adherence to ARVs. A cross-sectional survey among people living with HIV/AIDS in Togo revealed that only 56% of those interviewed knew the name of ARV regimen prescribed (Yao et al, 2009). A cross-sectional study conducted on HIV patients in an outpatient clinic of Pennsylvania Hospital revealed that patients who had completed high school education or equivalent were 2.5 times more likely to remember the names of their HIV medications and 1.75 times more likely to remember their last CD4 cell count (Subhasish, 2007).

In a non-interventional cross-sectional study conducted in Nairobi, Kenya among HIV infected patients on treatment, 48% of the patients had accurate knowledge on meaning of ARVs and what their effect on the body. There was significant relationship between knowledge on ARVs and adherence to treatment with those having information that is more accurate knowledge likely to adhere (Oyore, 2009)

Reasons given by patients for not wanting to be initiated on ARVs were conflicting information from religious leaders and community, concerns regarding continuity of care and treatment and illiteracy making patients unable to understand information given by health care workers as revealed in a cross-sectional study conducted, in Kibera Slums in Nairobi (Unge et al, 2007).

Patient centered barriers to ART adherence include inadequate knowledge about ART, HIV, AIDS, CD4 cell andand viral load results, stigma, traveling costs, waiting times at clinics, side effects of ART, use of traditional medicines and abuse of alcohol as revealed in a quantitative descriptive study conducted in Botswana (Kip, 2007).

A cross-sectional qualitative study, conducted among Zambian women participating in an exclusive breastfeeding program, to assess barriers to acceptance and adherence to ART indicated some of the barriers to ART as side effects, unfamiliarity with the implications of having a chronic disease, the presence of depression and hopelessness, and lack of accurate information (Murray, 2006). Low adherence to ARVs was noted among patients who had inadequate knowledge about HIV treatment from a cross-sectional study conducted on patients at Helen Joseph Hospital in Johannesburg (Akpomiemie, 2004).

Prevalence of adherence increased with the number of years of formal education. Specifically, more than eight years of schooling and adherence were associated even after adjustment for other socio-demographic and clinical variables as revealed in a cross-sectional study conducted in South Brazil on HIV-infected adults being treated with ARVs. Low literacy is associated with low health knowledge and several adverse health outcomes

including increased incidence of chronic illness and less than optimal use of preventive health services (Berkman et al, 2004).

Antiretroviral therapy health knowledge and HIV related knowledge were associated with adherence to ART. Lower educational status below University level was associated with lower adherence as revealed in a cross-sectional, quantitative study conducted on PLWHA receiving ART in private and public health facilities in Pune and Delhi towns in India (Sarna et al, 2004). Adequate information is needed to improve the knowledge and attitudes of PLWHA towards ARVs (Afolabi et al, 2006).

Patients knowledge of their HIV condition and its treatment is a factor that influences adherence to ART (Subhasish, 2007). Limited literacy presents a wide-reaching barrier to disease prevention that is potentially modifiable with respect to the development of communication strategies to promote HIV medication adherence. Most health education materials describing medication management and adherence have been written at high school or college level and may be difficult to understand by individuals with low literacy skills (Osborn, 2006).

Low health knowledge creates barrier to fully understanding one's health, illness and treatments. Misperceptions of treatment in the case of HIV infection create danger for potentially transmitting treatment-resistant strains of HIV. After controlling for years of education, persons of lower health knowledge were significantly less likely to know their CD4 cell count and less likely to know meaning of the measure. Low health knowledge was also related to misperceptions that ARVs reduce risks for sexually transmitting HIV and that ARVs could relax safer-sex practices (Kalichman et al, 2000).

A study conducted among Coast People Living with HIV/AIDS in Mombasa, Kenya revealed serious gaps in knowledge on ART, associated side effects and basics of HIV/AIDS. The study concluded that education and communication were needed to foster a climate in which clinically eligible PLHA could initiate ART and adhere to medication. As a follow-up to the study education interventions was then designed for ART programs and brochures, guides, posters and videos were made in the local language, Kiswahili. Kiswahili materials developed geared toward low literate and illiterate audiences and these materials described ARV drugs and essential aspects of treatment such as adherence, side effects and the need for on-going prevention (Ritzenthaler, 2005).

Predictor Variables
-Patient factors
-Health facility factors

Health facility factors
- Adherence counseling provided
- Nutrition counseling provided
- Lifestyle counseling provided
- HIV/AIDS/ART pamphlets access
- Health talks on ART at health facility
- Audiovisual aids access
- Support groups

Patient factors
- Level of Education
- Age
- Occupation
- Sex
- Marital status
- Attitude
- Lifestyle practices

Outcome Variables

Patients knowledge on various aspects ART

Adherence to ARVs

Other Factors that influence adherence to ARVs

Figure 4.1 Conceptual Framework

CHAPTER 3: METHODOLOGY

3.1 OVERVIEW OF METHODOLOGY

This chapter describes the methodology used in this study. It also covers the study design, study area, study population, eligibility criteria, sample size determination, variables, data collection, data processing and analysis, minimization of biases and errors and ethical considerations.

3.2 STUDY DESIGN

A cross-sectional, quantitative study was conducted on patients receiving ART at HIV comprehensive care clinics at Industrial Area Remand prison and Loco health centres to determine patients level of knowledge on various aspects of ART. The data collected included both primary and secondary data.

Primary data was collected through interviewing patients who met the inclusion criteria, while secondary data was collected through reference to patients ART appointment cards and patients medical files.

3.3 STUDY AREA

The study was conducted at Industrial Area Remand prison and Loco health centre HIV comprehensive care clinics in Nairobi. The two health facilities, which are public health facilities under the Ministry of Public Health and Sanitation, were selected using convenience sampling. The investigator having worked at a supervisory level at the two health facilities, was interested in determining if the methods used to communicate with the patients were effective. It was very ease for the investigator to supervise data collection exercise because it was the investigators place of work.

All public health facilities offering ART in Makadara district were identified and HIV clinic workload was listed for the five health facilities offering ART. The two health facilities selected for the study, industrial Area Remand prison health centre and Loco dispensary, were high workload and low workload health facilities respectively.

Industrial Area Remand prison health centre, a high workload HIV clinic, has offered ART services to HIV patients since the year 2005 and total number of adult patients on ART seen as per 31st December 2010 was **323**. Industrial area Remand prison CCC main clientele are residents from nearby Mukuru, South B and Viwandani slum, workers from industrial area, prison staff and prisoners in the Remand prison.

Loco health centre on the other hand is a low workload HIV clinic, offering ART services to patients since 2007 and total number of adult patients on ART seen as per 31st December 2010 was **96** (MOH 711A report, 2010). Loco health centre main clientele are residents from Muthurwa andand South B areas and workers from the city centre (PASCO- Nairobi, 2010).

3.4 STUDY POPULATION

The population of interest was the HIV/AIDS patients receiving antiretroviral therapy at Industrial Area Remand prison and Loco health centre HIV clinics in Nairobi province.

3.5 ELIGIBILITY CRITERIA

Inclusion criteria

Participants in the study were;-

- all those on ART; and

- age eighteen years and above. Patients above 18 years of age could give written consent without need of a guardian. The patients gave informed written consent for participation in the study. Data collectors clearly explained the purpose of the study to patients before they affixed their signatures on the consent form.

Exclusion Criteria

Patients excluded from the study are those who did not meet inclusion criteria.

Patients excluded were those:-

- below 18 years of age,

- not on ART,

- who did not give written consent; and

- initiated on ART for duration of less than one month.

Only one patient on ART failed to give written consent, at Industrial Area Remand Prison health centre, for the reason he was busy with his work thus administering the questionnaire would consume time. Patients initiated on ART less than one month were excluded because they were still undergoing intense counseling and familiarizing with their ARVs.

3.6 DETERMINATION OF SIZE OF STUDY PARTICIPANTS

All patients registered for ARVs in the various health facilities. The documented total number of adult patients receiving ART at the HIV clinics was 419. The documented average number of patients receiving ART every month at Industrial Area Remand prison and Loco health centres was 170 and 80 respectively (ART Monthly patient Summary 2010). At the respective health facilities, patients who had been on treatment for more than six month and were clinically stable received appointments bimonthly with the exception of prisoners who received monthly appointments since they are not allowed to stock more than one month's medicine supply in prison (ART Appointment Register, 2010).

The total number of patients interviewed over two months was 250 and 92 at Industrial area remand and Loco health centres respectively, represented eighty two percent of the total number expected to participate in the study. The shortfall in the number of patients who participated was due to lack of a tracking mechanism for patients that might have defaulted treatment or died at both health facilities. These patients were still included in the health facilities data of active patients on ART. This was a major challenge that the health facilities experienced without support for community health workers to help track patients defaulting treatment.

3.7 VARIABLES

Predictor Variables

The socio-demographic variables included sex, age, marital status, level of education and occupation that were determined for each study participant.

In determination of health facility factors, information was provided by the study participants. The health facility factors determined were services accessed at the HIV clinics. The health services assessed were access to health education on HIV, AIDS and

ART through audiovisual aids, pamphlets, health talks and counseling on adherence to medicine, nutrition and lifestyle practices,

Outcome Variables

Participants knowledge on various aspects of ART was determined. In addition to this, how the participants knowledge on ART is enriched at health facility level and participants various lifestyle practices were documented.

3.8 DATA COLLECTION

Quantitative method of data collection was applied through administration of a semi-structured questionnaire. The open-ended questions in the questionnaire specifically focused on issues based on facts, which included questions' regarding meaning of HIV, AIDS, ARVs, side effects, opportunistic infections, and CD4 cell counts. Answers given by participants were documented on questionnaire without any alteration and the investigator classified the answers provided as correct or incorrect resulting in quantitative data for analysis with PASW.

The questionnaire administered was divided into two with section one of the questionnaire capturing data on socio-demographic factors of the patient, source of information on ART generally and at the health facility, counseling provided at the health facility and duration of counseling sessions. The other section of the questionnaire captured information on patients knowledge on various aspects of ART and lifestyle practices such as alcohol consumption, safe sex and use of medicines not prescribed at the health facility.

The questionnaire was pre-tested to assess for reliability and validity of the responses. The investigator and study assistants pre-tested the questionnaire among 11 patients at Makadara Health centre who met inclusion criteria and these were excluded in the study population. The study assistants were well trained before commencement on the data collection exercise with one study assistant situated at each study site. The study assistants participated in the pre-testing exercise to familiarize themselves with the questionnaire. Regular cross checking, inspection and scrutinizing of information collected by the study assistants was done by the investigator on daily basis to ensure accuracy, completeness, uniformity, relevance and consistency of collected data.

The health workers were very cooperative at both study sites and a room with privacy was provided at each health facility for the Principal Investigator to conduct the interviews. The investigator participated in the data collection exercise for six weeks out of the eight weeks of data collection exercise. Information needed from patients files was filled after administering the questionnaire and health workers readily availed these files.

3.9   DATA PROCESSING AND ANALYSIS

Data was then coded and entered into the computer using Predictive Analytical Software (PASW) version 17. Data entry to the analytical tool was done weekly by the investigator over the eight weeks of data collection. Data was presented using frequency tables, pie charts and graphs. Descriptive statistics such as frequencies and percentages were used to describe and summarize the data. Analysis of contingency tables was used to test for association between variables and level of significance. The confidence level administered during analysis was 95% (5% level of significance).

3.10 MINIMIZATION OF BIASES AND ERRORS

A semi-structured questionnaire (open-ended and closed questions) was administered to all study participants. The study assistants were documenting answers on questionnaire as given by participants for open-ended questions. The study assistants were trained on how to administer the tool to ensure uniformity in data collection and minimize interviewer bias.

On a daily basis, the investigator did a detailed check of filled questionnaires to pick out any issues and corrections done immediately. Coding of the questions was conducted by the investigator before commencing data entry into Predictive Analytical Software. Data entry was also solely done by the investigator to minimize on errors and misinterpretation.

3.11   STUDY LIMITATIONS

The study cannot be generalized to other HIV clinics because selection of study sites was done via convenience sampling. The findings, conclusion and recommendation are limited to Industrial Area Remand prison and Loco health centres.

The two health facilities are also institution based with Industrial area remand prison health centre within a prison compound and Loco health centre with the Railway company compound, which may have an effect on the way the health facilities are run.

The patients were interviewed after they had been attended to at the HIV clinic which could have had an effect on the responses given in the questionnaire as some were rushing to go back to work.

3.12 ETHICAL CONSIDERATIONS

Before embarking on the study, authority was sought from Kenyatta National Hospital/University of Nairobi Ethics and Research Committee, which protects the rights and welfare of research participants who take part in research activities. Authority to conduct the study was given within a month of making the application (Ref KNH-ERC/A/22).

The study was conducted in Nairobi province and provincial health services at health centres and dispensaries are governed centrally by Provincial Director of Public Health and Sanitation (PDPHS). The PDPHS directed the Investigator to see the District Medical Officer of Health (DMOH) of Makadara, who oversees provision of health services within the district, where the study area was located for approval to conduct study.

Thereafter, the DMOH of Makadara gave signed approval for the study to be conducted at the two study sites. Signed approval was also given by the health facility in-charges at the study sites.

A consent form was signed for each study participant and was attached to the questionnaire to ensure the study assistants did not forget to have this signed before administering questionnaire. During filling of questionnaire, only participants name initials were recorded to keep their identity anonymous. All information collected was handled with utmost confidentiality by ensuring only the investigator and study assistants handled the filled questionnaires, which were filed and stored away safely by the investigator.

CHAPTER 4: RESULTS

The expected number of participants in the study was 419 from both health facilities. The actual number of participants was 342 (82%) with 250 from Industrial area remand and 92 from Loco health centre. Actual number of participants approached was 343 but one individual at Industrial Area Remand health centre declined to participate in the study due to time constraints on his part. The response rate was therefore 99.7%.

4.1 DISTRIBUTION ACCORDING TO SOCIO-DEMOGRAPHIC FACTORS

4.1.1 Distribution by Sex

Industrial area remand health centre had more males (61%) than females (49%) attending the HIV clinic (Figure 4.2). This was attributable to the fact that the prison is for men only and the staff also working there were mainly men. There was statistically significant difference in the proportion of males to females at the HIV clinic (p=0.000).
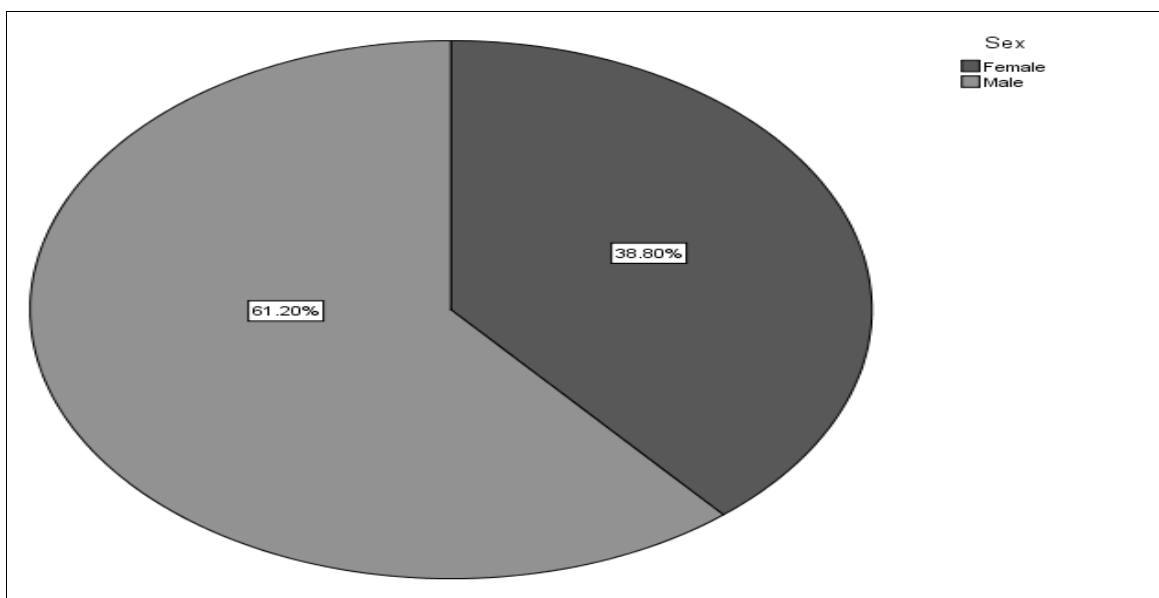
Figure 4.2 Industrial Area Remand Health Centre Distribution by Sex

At the other HIV clinic, Loco Health centre, the proportion of males to females was 44:48 (Figure 4.3). There was no statistically significant difference in the proportion of males to females at Loco health centre HIV clinic (p=0.755).
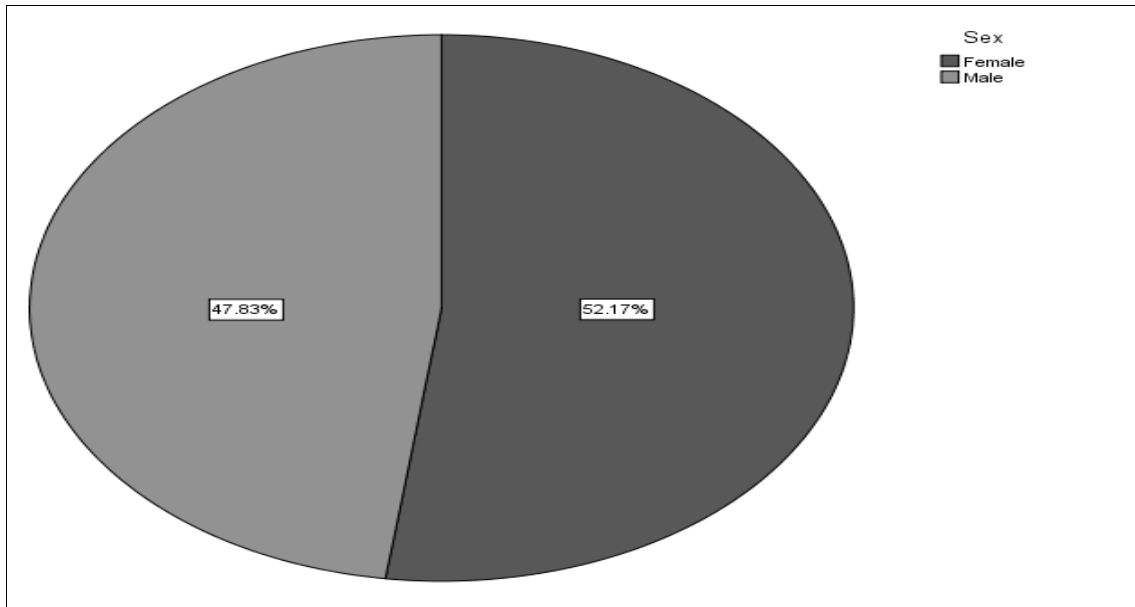
Figure 4.3 Loco Health Centre Distribution by Sex

The male to female sex ratio of all participants in the study was 1.4:1 (Figure 4.4).
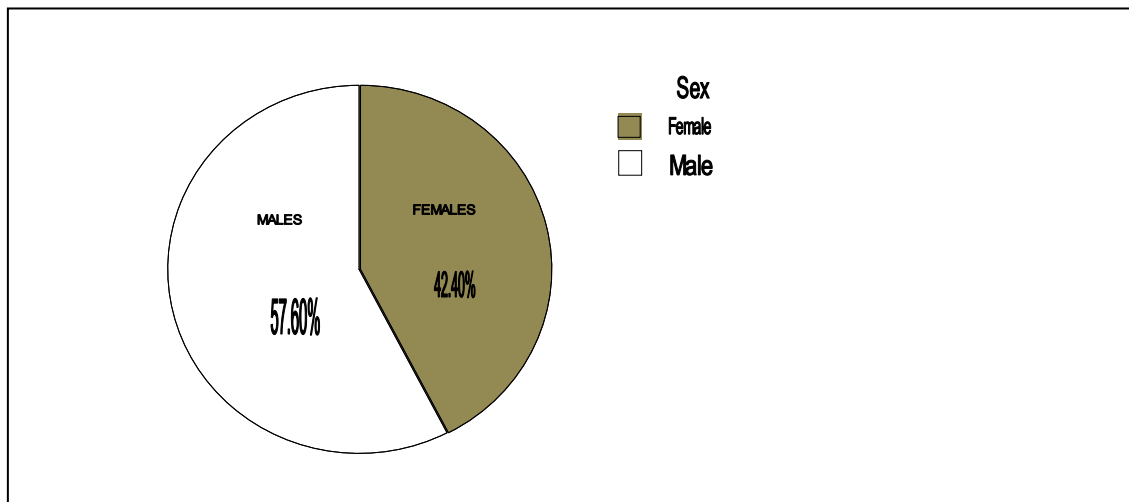
Figure 4.4 Distribution by Sex

The difference between proportion of males to females for entire study was statistically significant (p-value=0.006).

4.1.2 DISTRIBUTION BY AGE

The highest proportion of participants by age was 30 to 39 years at 38.6% (Figure 4.5).
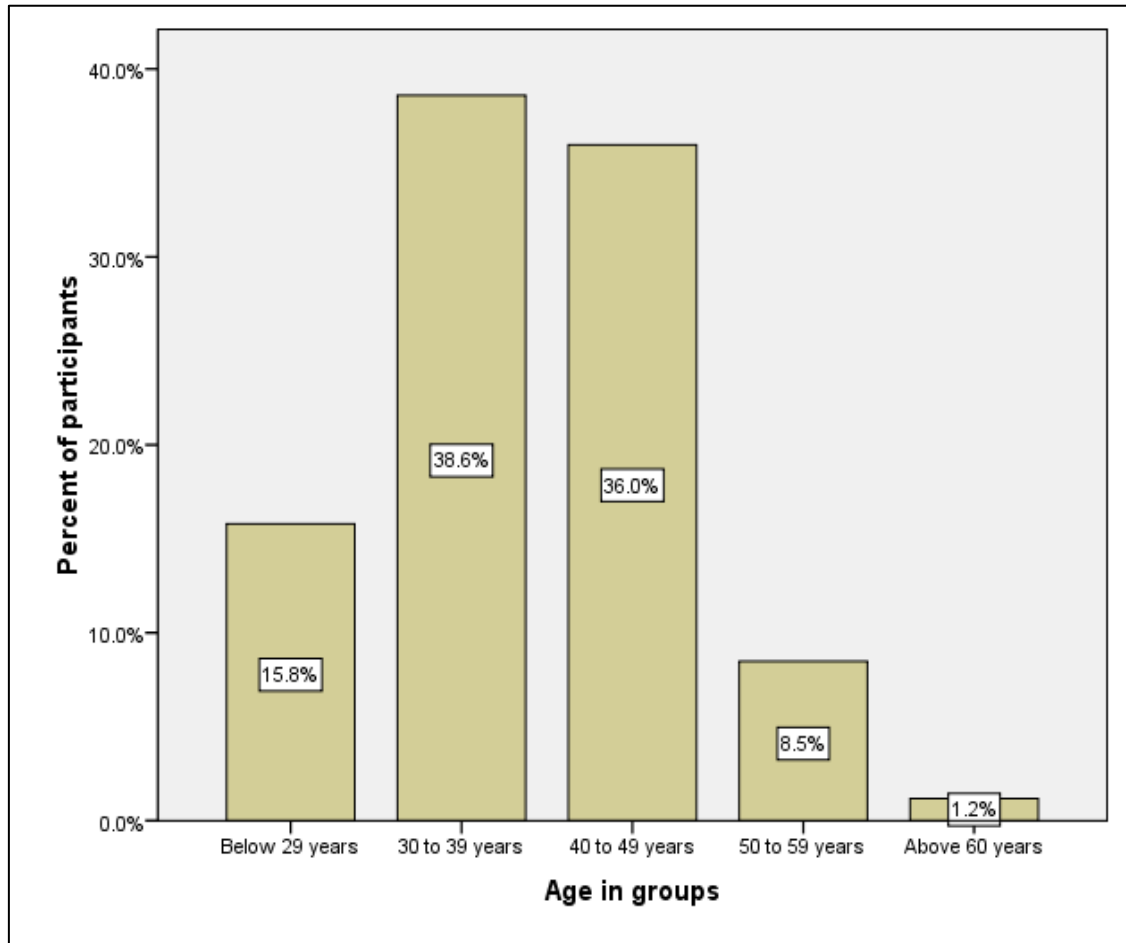
Figure 4.5 Distribution by Age

The mean age of participants interviewed was 39 years. Participants between ages 30 and 49 years were the majority accessing ART services from the HIV clinics.

4.1.3 DISTRIBUTION BY MARITAL STATUS

The highest proportion of participants by marital status was the married or cohabiting with partners at 65.2% (Figure 4.6).
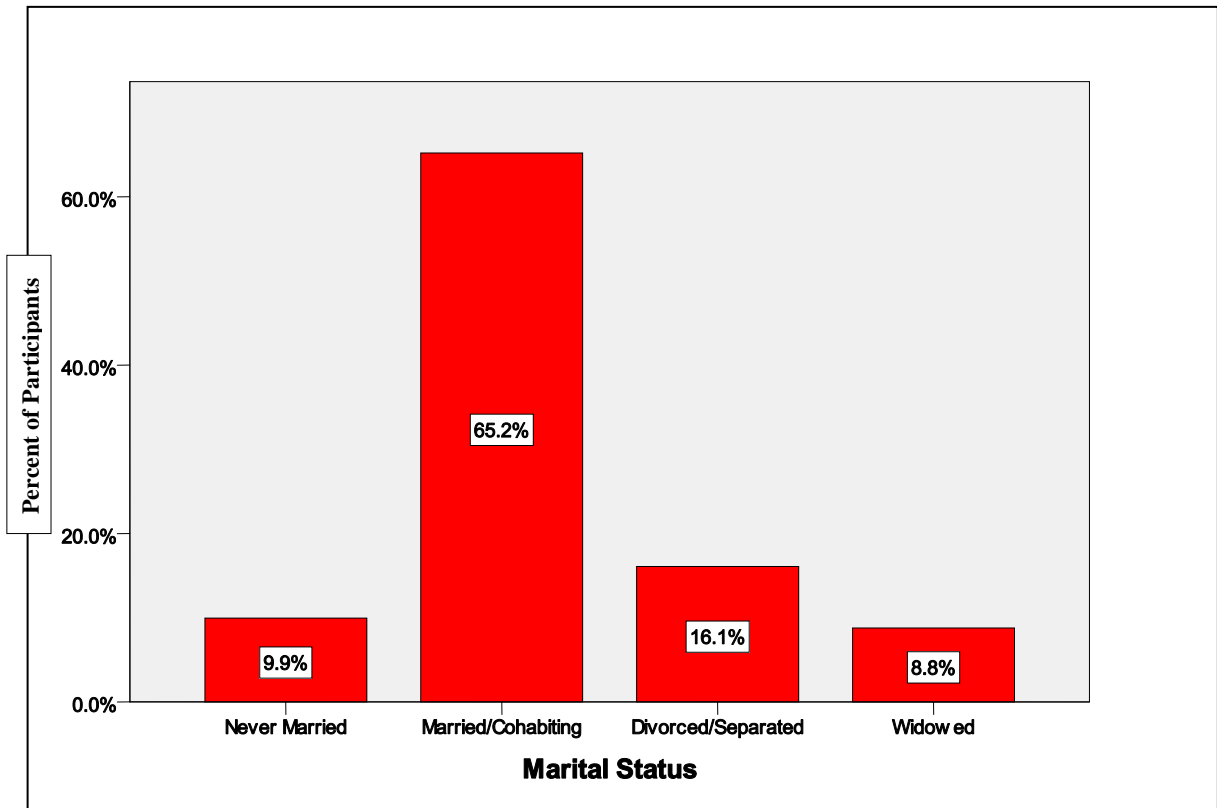
Figure 4.6 Distribution by Marital Status

For participants that were married/cohabiting and attending the same HIV clinic with the partner, either the spouse attending the clinic would pick medicine on behalf of the partner or the partner would attend the clinic on a different day. No couple was interviewed that had attended clinic together.

4.1.4   DISTRIBUTION BY LEVEL OF EDUCATION

Among the participants highest proportion, 45.6%, had completed primary school education (Figure 4.7).
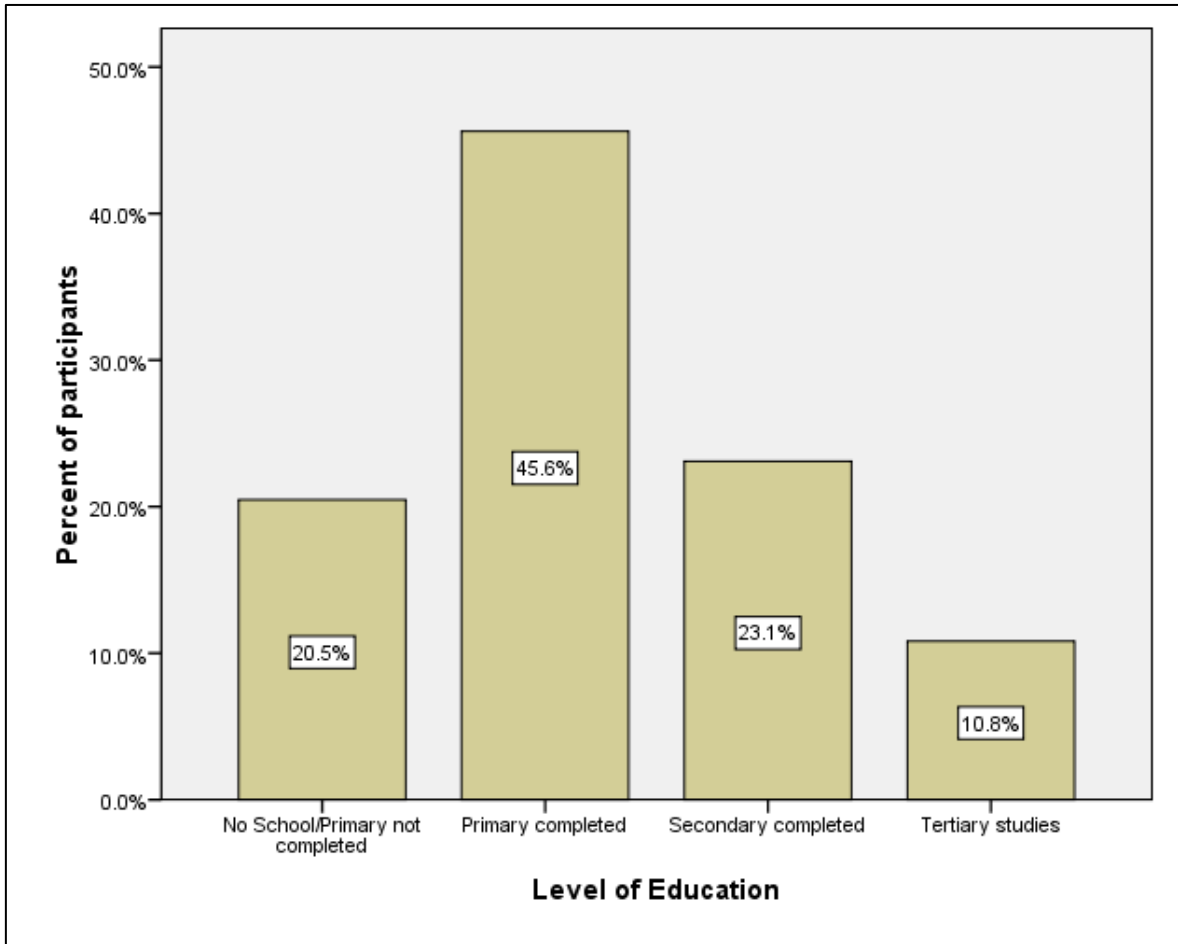
Figure 4.7 Distribution by Level of Education

4.1.5   DISTRIBUTION BY OCCUPATION

Among the participants highest proportion, 40.1%, were running their own businesses (Figure 4.8).
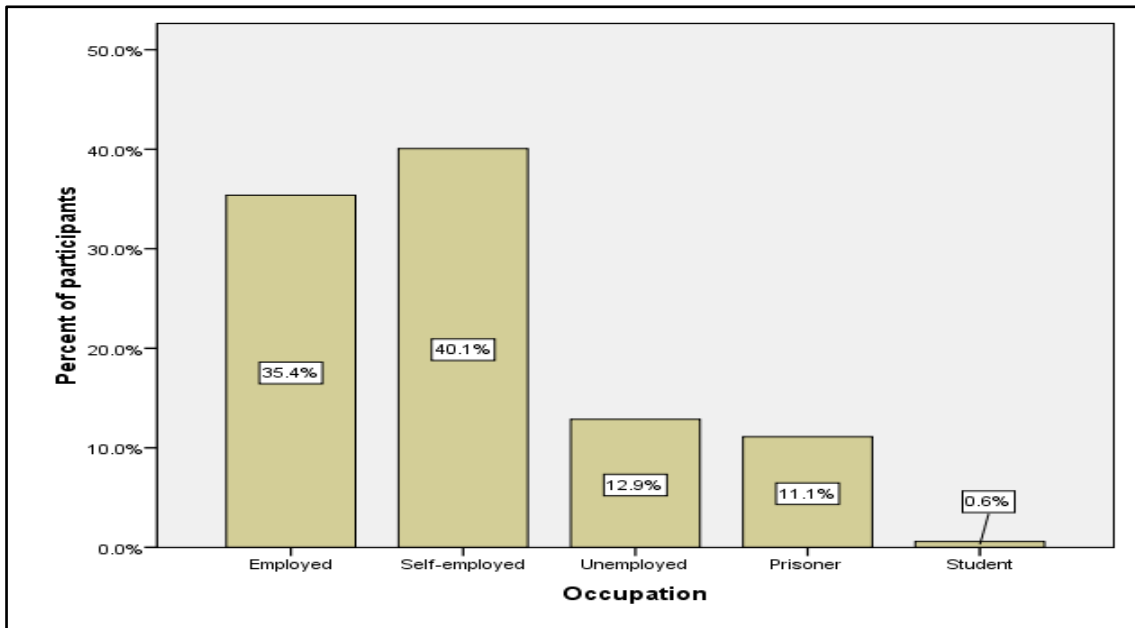
Figure 4.8 Distribution by Occupation

The participants that were self-employed and the unemployed mentioned they had no problem keeping to their scheduled appointments and usually attended the HIV clinic very early in the morning. Participants that were employed had problems keeping to their scheduled appointments and some mentioned they worked near the HIV clinic to enable them rush to the clinic to be attended to during breaks from work.

4.2 DISTRIBUTION BY TREATMENT PROFILE
4.2.1 DISTRIBUTION BY DURATION ON ANTIRETROVIRALS

Duration on ART was elicited with respect to number of months from when participants were initiated on ARVs. All patients who had been on ARVs for less than one month were not interviewed since they were still undergoing intense counseling during the first month of starting ARVs which entailed equipping them with the requisite information needed for them to adhere to treatment.

The proportion of participants that had been on treatment for less than 12 months was at highest at 29.53% (Figure 4.9).
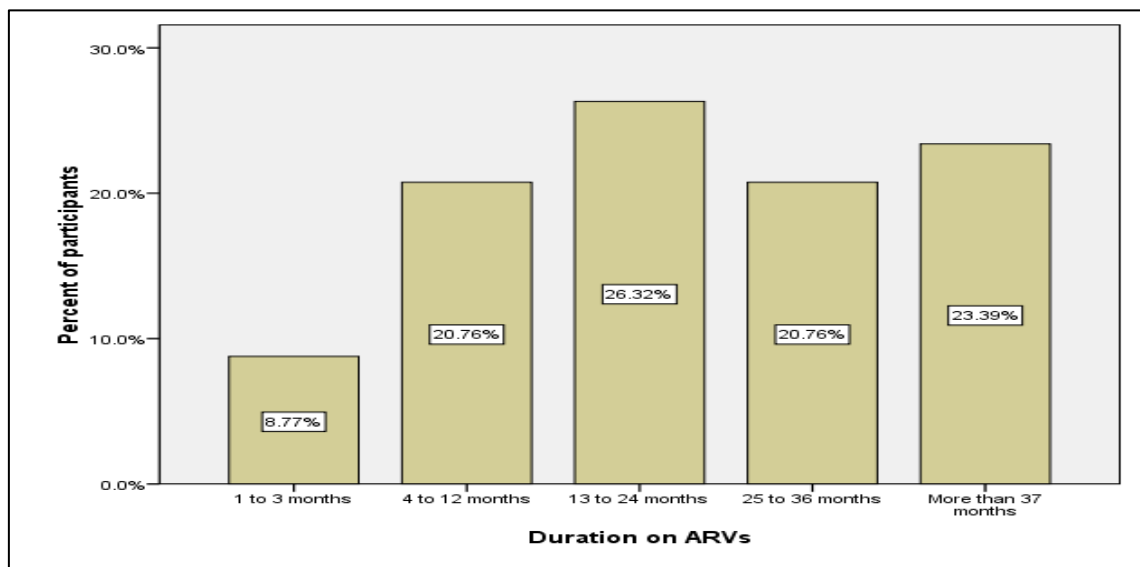
Figure 4.9 Distribution by Duration on ARVs

More than half of the participants receiving ART at the HIV clinics had been on ARVs for more than a year. Participants reported they had been initiated on ART at their respective HIV clinics except for a few transfer-ins who were initiated on ARVs at other HIV clinics then transferred to their current HIV clinic.

There was statistical significance between duration of use of ARVs and knowledge on effect of missing ARVs (95% CL; X^2=9.274; df=1:p=0.002) (Table 4.1). Patients that had

been on treatment with ARVs longer than 2 years were knowledgeable on consequences of missing ARV doses.

Table 4.1 Knowledge on consequences of missing ARV doses by duration for which patients have used ARVs

		Know consequences of missing ARV doses	Don't know consequences of missing ARV doses	χ^2	Degrees of freedom	p-value
Duration for which patient has used ARVs	On ARVs less than 2 years	86 (45%)	105(55%)	9.274	1	0.002
	On ARVs longer than 2 years	93 (61.6%)	58(38.4%)			
	Total	179 (52.3%)	163(47.7%)			

4.2.2   DISTRIBUTION BY SOURCE OF INFORMATION ON ART

The participants general sources of information on ART were derived from the HIV clinic, the media, booklets/pamphlets, family/friends and HIV/AIDS support groups. Among the participants, 45.6% sourced their information from the HIV clinic and one other additional source, 29.8% who had their sole source of information as the HIV clinic and 24.6% had more than two sources of information either the HIV clinic, media, family/friends or the community (Figure 4.10).
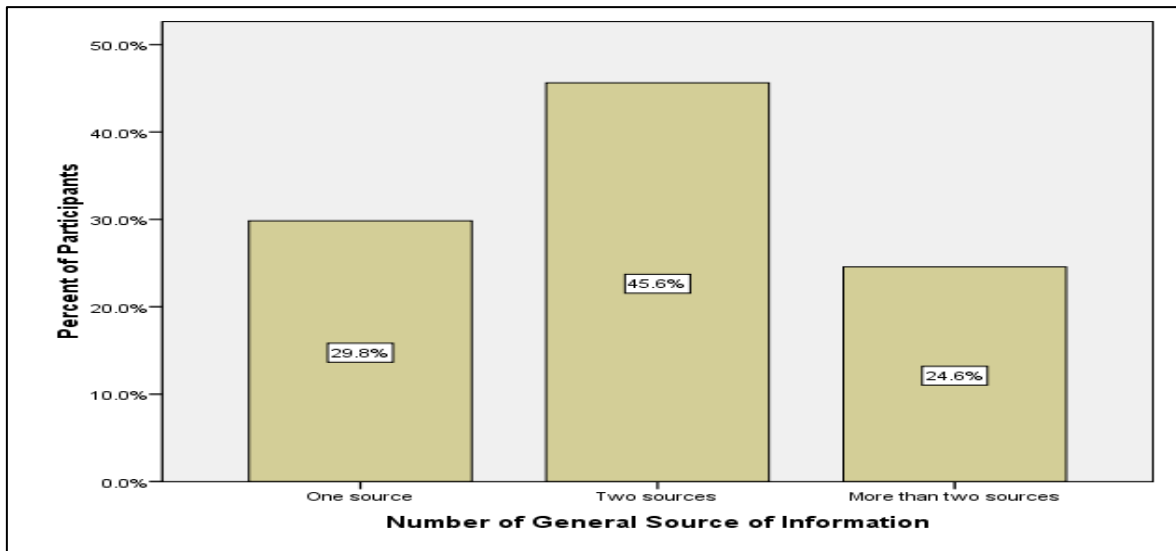
Figure 4.10 Distribution by Number of General sources of information on ART

There was statistical significance between patients marital status and number of general sources of information on ART (χ^2=29.605, df=6, p=0.00) (Table 4.2). Participants who were never married/single mainly relied on a single source of information the HIV clinic. Married, divorced and widowed participants constituted largest proportion that relied on information from the HIV clinic and one other source either media, support groups, family or friends.

There was statistical significance between participants level of education and the number of general sources of information on ART (χ^2=52.555, df=6, p=0.000) (Table 4.2). Participants that had attained tertiary level of education had more than two sources of information on ART. Chi-square test was not applied for socio-demographic factors such as occupation, because more than 20% of expected values were less than five.

Table 4.2 Number of general sources of information on ART by socio-demographic characteristics

		General source of information on ART			χ^2	Degrees of freedom	p-value
		One Source	Two sources	More than two sources			
Socio-demographic characteristics							
Sex	Female	40 (27.6%)	71(49%)	34(23.4%)	1.170	2	0.557
	Male	62(31.5%)	85(43.1%)	50(25.4%)			
Marital Status	Never Married	19(55.9%)	4(11.8%)	11(32.4%)	29.605	6	0.00
	Married/ cohabiting	54(24.2%)	109(48.9%)	60(26.9%)			
	Divorced/ Separated	15(27.3%)	28(50.9%)	12(21.8%)			
	Widowed	14(46.7%)	15(50%)	1(3.3%)			
Level of education	No School	20(28.6%)	44(62.9%)	6(8.6%)	52.555	6	0.000
	Primary completed	60(38.5%)	70(44.9%)	26(16.7%)			
	Secondary completed	16(20.3%)	33(41.8%)	30(38%)			
	Tertiary studies	6(16.2%)	9(24.3%)	22(59.5%)			
Age	29 years and below	17(31.5%)	23(42.6%)	14(25.9%)	4.492	4	0.288
	30 to 49 years	74(29%)	114(44.7%)	67(26.3%)			
	50 years plus	11(33.3%)	19(57.6%)	3(9.1%)			

Among the participants highest proportion of 95.6%, had their sole source of information at the HIV clinic as the health worker or counselor who was attending to them (Figure 4.11).
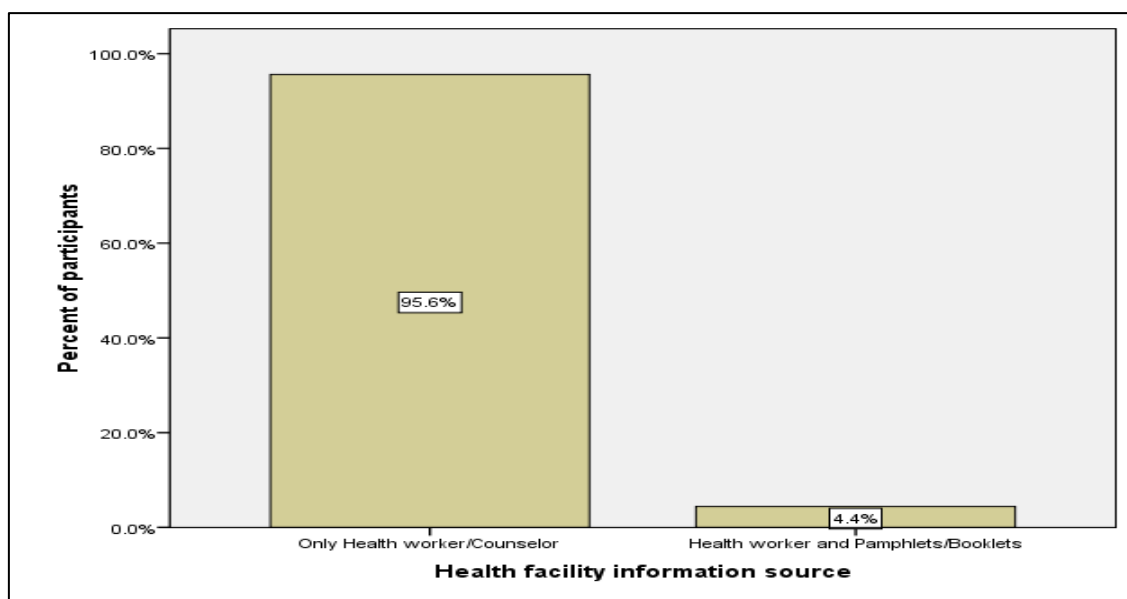
Figure 4.11 Distribution by source of information on ART at the HIV clinic

Participants frequency of visits to the HIV clinic determined, was based on the date of next appointment given by the health worker and was confirmed on the participants appointment cards. The participants attendance at the HIV clinic was either monthly or bimonthly with exception of a few with special circumstances where appointments were scheduled after more than two months (Table 4.3).

Table 4.3 Frequency of counseling at HIV clinic

	Frequency	Percent
Once a month	192	56%
Once every 2 months	127	37%
Once every 3 months	15	4%
Twice a year	7	2%
only once ever	1	1%
Total	**342**	**100%**

As reported by the participants, counseling sessions lasted more than 10 minutes for most of them and some of the topics covered included medication use, nutrition, opportunistic infections, STDs, use of condoms during sexual intercourse and general well-being (Table 4.4).

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Table 4.4 Frequency on duration of a counseling session

	Frequency	Percent
Less than 10 minutes	44	12.9
10 to 30 minutes	221	64.6
More than 30 minutes	77	22.5
Total	342	100%

Participants self-reported on number of times they had forgotten to take their ARVs in the last three months (Table 4.5).

Table 4.5 Frequency on missed doses in last 3 months

	Frequency	Percent
Never	266	78%
Once	29	8%
More than once	47	14%
Total	342	100%

4.3 DISTRIBUTION BY LEVEL OF KNOWLEDGE ON VARIOUS ASPECTS OF ART

Participants were asked to explain in their own words their understanding of HIV, and 56% either could not express themselves clearly with some confusing it with AIDS and 44% of the participants responded that HIV was a virus and some even knew what the acronym HIV stood for. One participant mentioned that they knew they had HIV but did not know what HIV was (Figure 4.12).
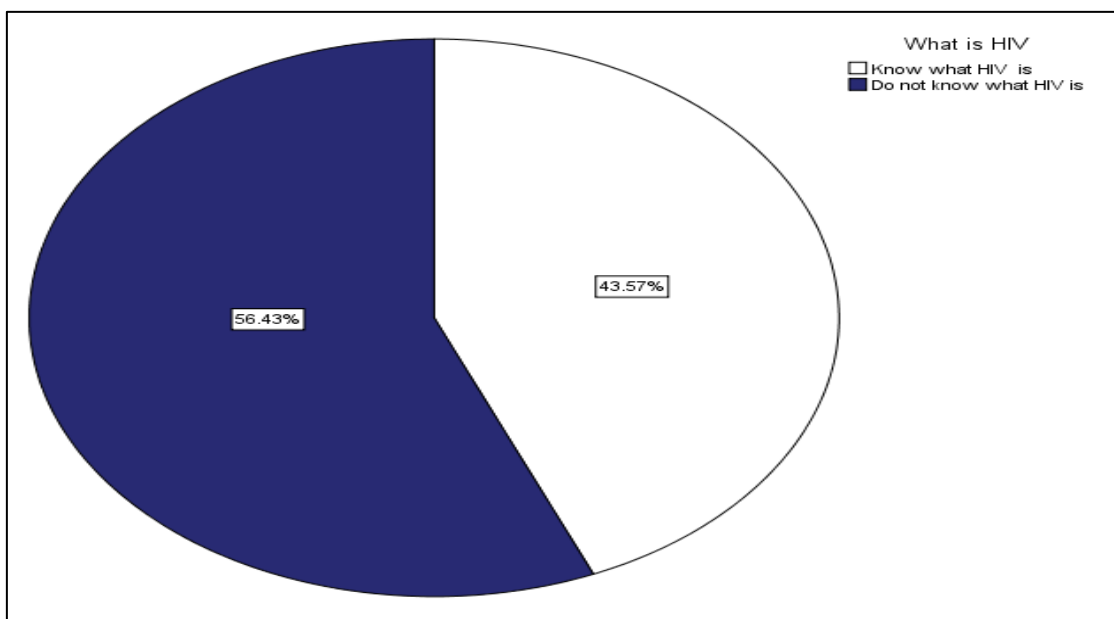

Figure 4.12 Distribution by knowledge on meaning of HIV

The difference between proportion of participants who knew meaning of HIV and those who did not know was statistically significant (p-value=0.02).

The association between knowledge on the meaning of HIV and socio-demographic factors was not statistically significant (Table 4.6).

Table 4.6 Knowledge on what HIV was by Socio-demographic characteristics

		KNOW MEANING OF HIV	DON'T KNOW MEANING OF HIV	X^2	df	p-value
Socio-demographic characteristic						
Sex	**Female**	66 (46%)	79 (54%)	0.389	1	0.533
	Male	83 (42%)	114 (58%)			
Age	**29 years and below**	18 (33%)	36 (67%)			
	30to 49 years	119 (47%)	136 (53%)	3.993	2	0.136
	50 years and above	12 (36%)	21 (64%)			
Marital status	**Never married**	14 (41%)	20 (59%)			
	Married	99 (44%)	124 (56%)	0.802	3	0.849
	Divorced/Separated	25 (46%)	30 (54%)			
	Widowed	11 (37%)	19 (63%)			
Level of education	**No school**	22 (31%)	48 (69%)			
	Primary completed	70 (45%)	86 (55%)			
	Secondary completed	39 (49%)	40 (51%)	5.77	3	0.123
	Tertiary studies	18 (49%)	19 (51%)			

Participants were asked what AIDS was with 60% giving correct responses while some even describing what the acronym stood for. The remaining 40% did not know what AIDS was and mentioned it was the same as HIV (Figure 4.13).
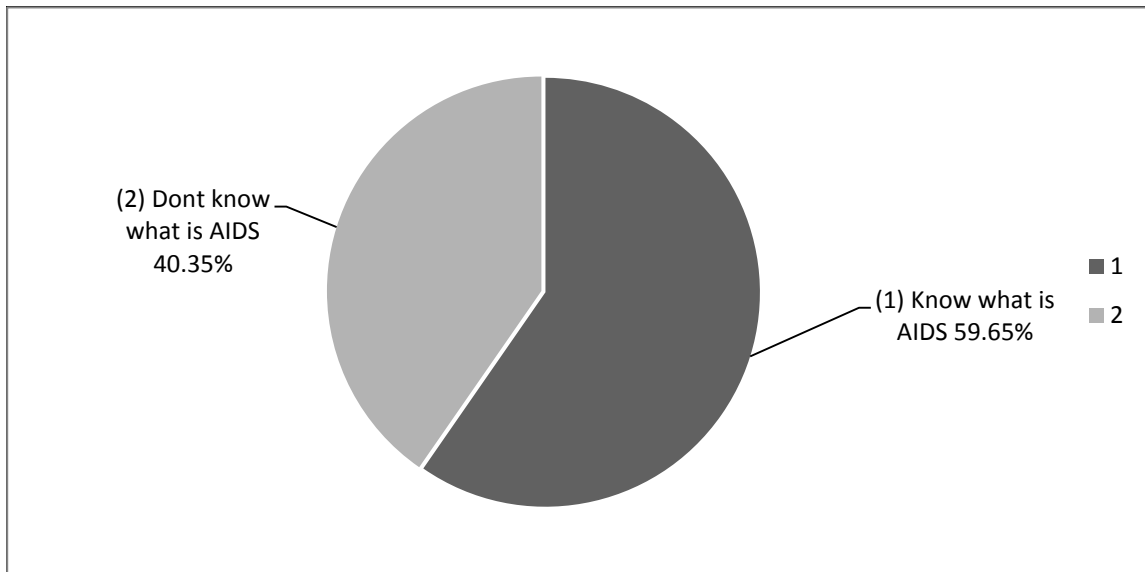
Figure 4.13 Distribution by knowledge on meaning of AIDS

The difference between proportion of patients that knew meaning of AIDS and those that did not know was statistically significant (p-value=0.000).

The relationship between level of education and participants knowledge on meaning of AIDS was statistically significant (X^2=12.561; df=3; p= 0.006) (Table 4.7). It shows more patients, with higher than secondary education, knew meaning of AIDS.

The relationship between sex and participants knowledge on meaning of AIDS, was statistically significant (χ^2=11.937; df=1; p=0.001) (Table 4.7). More males than females were knowledgeable on meaning of AIDS.

Table 4.7 Knowledge on what AIDS was by socio-demographic characteristics

		Know meaning of AIDS	Don't know meaning of AIDS	X^2	Degrees of freedom	p-value
Socio-demographic characteristic						
Sex	**Female**	71 (49%)	74 (51%)	11.937	1	0.001
	Male	133(68%)	64 (32%)			
Age	**29 years and below**	26 (48%)	28 (52%)	5.164	2	0.076
	30to 49 years	161 (63%)	94 (37%)			
	50 years and above	17 (52%)	16 (48%)			
Marital status	**Never married**	15 (44%)	19 (56%)	3.874	3	0.275
	Married	138 (62%)	85 (38%)			
	Divorced/Separated	33 (60%)	22 (40%)			
	Widowed	18 (60%)	12 (40%)			
Level of education	**No school**	34 (49%)	36 (51%)	12.561	3	0.006
	Primary completed	88 (56%)	68 (44%)			
	Secondary completed	52 (66%)	27 (34%)			
	Tertiary studies	30 (81%)	7 (19%)			

With respect to side effects caused by ARVs, 60% of the patients understood what these side effects were with some expressing they had experienced side effects to ARVs and most commonly mentioned was headaches, rashes and nightmares (Figure 4.14). The remaining 40% of the patients had not heard of side effects related to use of ARVs .

Figure 4.14 Knowledge on meaning of side effects to ARVs

The difference between proportion of patients that knew meaning of side effects and those that did not know was statistically significant (p=0.000).

The relationship between level of education and knowledge on side effects was statistically significance (X^2=; 20.098 df=3; p= 0.005) (Table 4.8). Patients with no schooling had the highest proportion of patients that did not know meaning of side effects to ARVs.

Table 4.8 Knowledge on what side effects are by socio-demographic characteristics

		KNOW MEANING OF SIDE EFFECTS	DON'T KNOW MEANING OF SIDE EFFECTS	X^2	df	p
Socio-demographic characteristic						
Sex	**Female**	94 (65%)	51 (35%)	2.218	1	0.136
	Male	112 (57%)	85 (43%)			
Age	**29 years and below**	36 (67%)	18 (33%)	1.41	2	0.565
	30to 49 years	151(59%)	104 (41%)			
	50 years and above	19 (58%)	14 (42%)			
Marital status	**Never married**	17 (50%)	17 (50%)	2.122	3	0.548
	Married	135 (61%)	88(39%)			
	Divorced/Separated	36 (65%)	19 (35%)			
	Widowed	18 (60%)	12 (40%)			
Level of education	**No school**	26 (37%)	44 (63%)	20.098	3	0.000
	Primary completed	106 (68%)	50 (32%)			
	Secondary completed	50 (63%)	29 (37%)			
	Tertiary studies	24 (65%)	13 (35%)			

Participants who knew meaning of ARVs were 76% and they knew that ARVs do not cure HIV (Figure 4.15). The remaining 24% of the participants had not heard of the term antiretrovirals or ARVs and some thought it referred to HIV or AIDS yet they were using antiretrovirals.
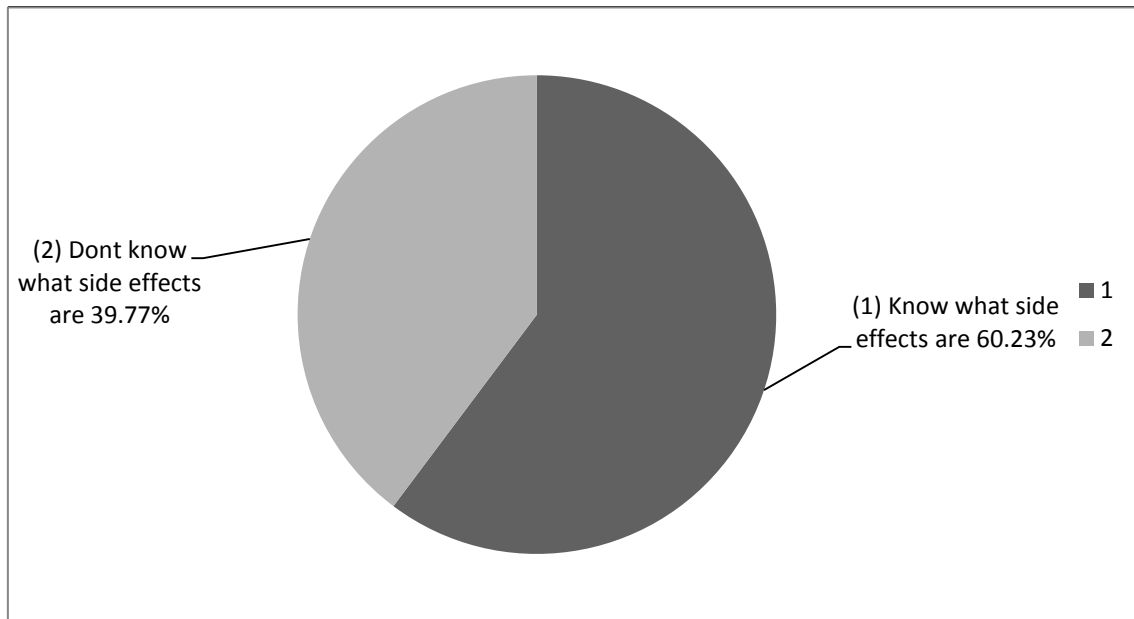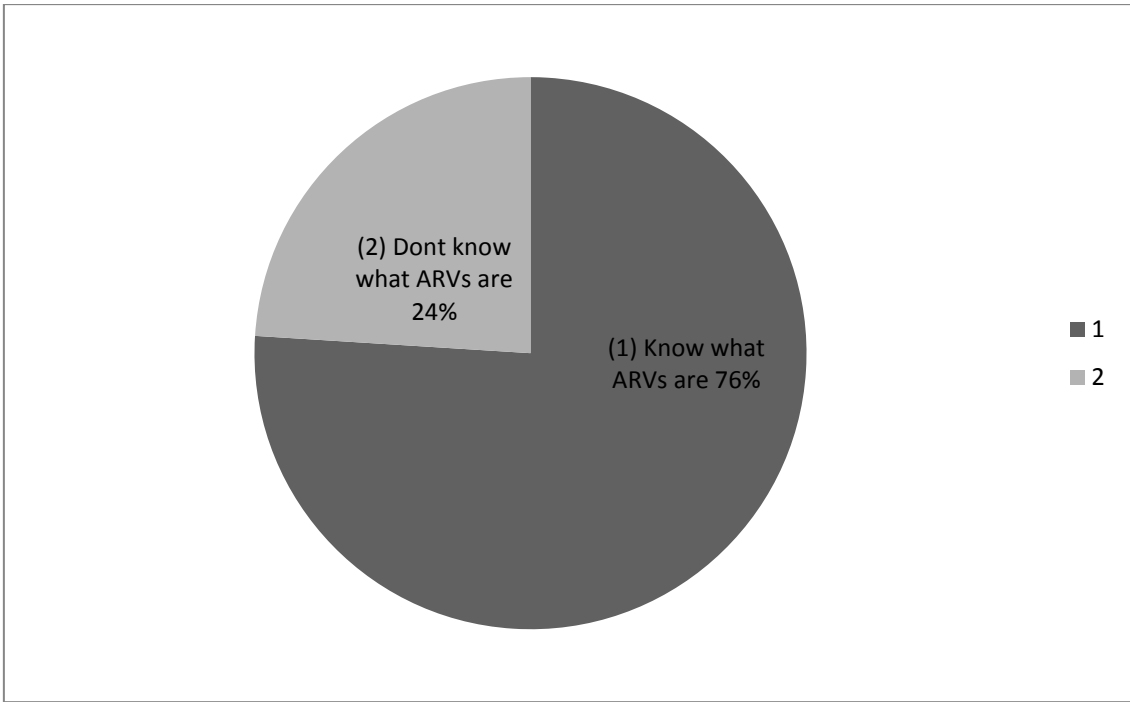
Figure 4.15 Knowledge on meaning of ARVs

The difference between proportion of patients that knew meaning of ARVs and those that did not know was statistically significance (p-value=0.000).

The relationship between level of education and participants understanding on meaning of ARVs was statistically significance (X^2= 20.74; df= 3; p=0.005) (Table 4.9).

Table 4.9 Knowledge on meaning of ARVS by Socio-demographic characteristics

		KNOW MEANING OF ARVs	DON'T KNOW MEANING OF ARVs	X^2	df	p-value
Socio-demographic factor						
Sex	**Female**	114 (79%)	31 (21%)	0.932	1	0.334
	Male	146 (74%)	51 (26%)			
Age	**29 years and below**	47 (87%)	7 (13%)	14.566	2	0.001
	30to 49 years	196 (77%)	59 (23%)			
	50 years and above	17 (52%)	16 (48%)			
Marital status	**Never married**	17 (50%)	17 (50%)	15.926	3	0.001
	Married	174 (78%)	49 (22%)			
	Divorced/Separated	47 (85%)	8 (15%)			
	Widowed	22 (73%)	8 (27%)			
Level of education	**No school**	44 (63%)	26 (51%)	20.74	3	0.000
	Primary completed	112 (72%)	44 (28%)			
	Secondary completed	69 (87%)	10 (13%)			
	Tertiary studies	35 (95%)	2 (5%)			

Participants appointment cards and clinic files were used to confirm the ARV regimen each participant was taking. The HAART regimens recommended by NASCOP in the National ART guidelines are a combination of three ARVs. All the participants confirmed they were using ARVs or some medication daily but not all knew the ARVs or medication they were using by name. Among the participants, 71.3% did not know any of the ARVs they were using by name, 13.5% knew 1 ARV by name, 11.4% knew all 3 ARVs by name and 3.8% knew 2 ARVs by name (Figure 4.16).
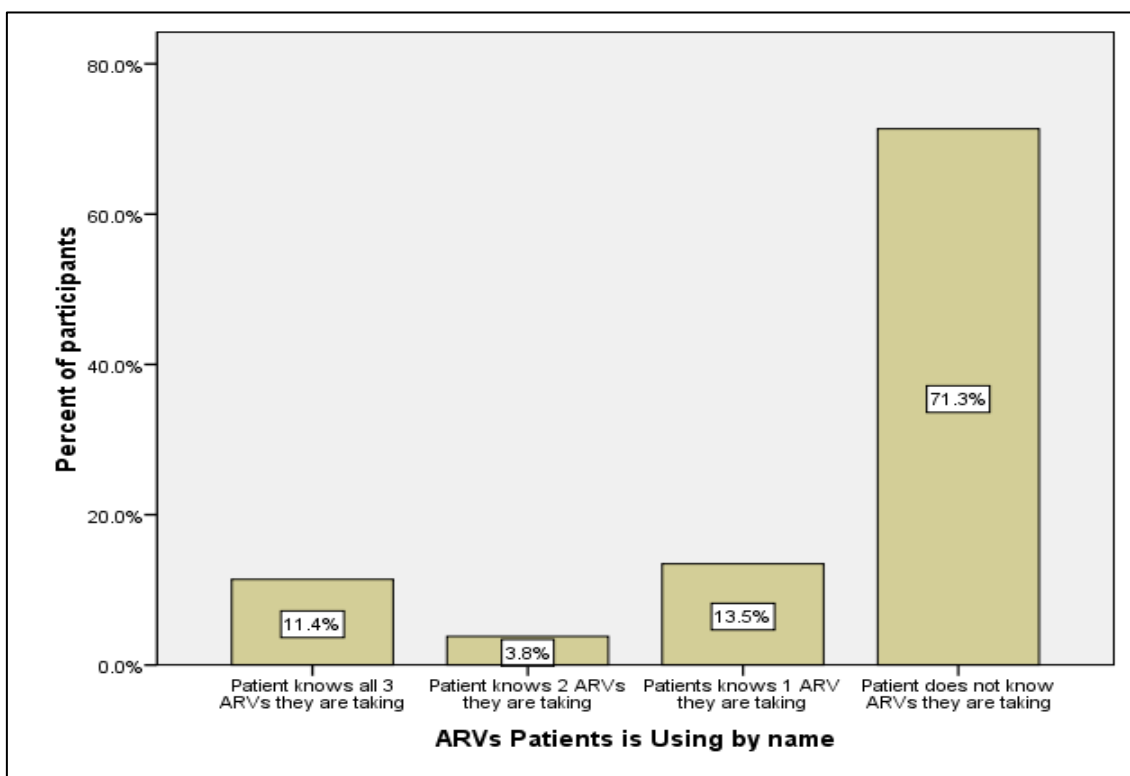
Figure 4.16 Knowledge on name of ARVs participant is using

The participants that who their ARVs by name stated that they had been attending treatment knowledge sessions facilitated by support groups they were attending not necessarily at the health facility. The participants who did not know their ARVs by name mentioned that the names of ARVs were difficult to remember but they said that they could identify the medicines they were using from the packaging (Packaging of ARVs

varies depending on manufacturer and the same medicine can be in different packaging so physical identification of packs is not a reliable way to remember medicine one is using).

The participants self-reported on their frequency of dosing in a day and the exact times they swallowed prescribed ARVs. Among the participants, 90.4% were taking their ARV doses correctly and 9.7% were taking their ARVs doses incorrectly (Figure 4.17). The participants taking ARVs incorrectly were taking at incorrect interval between doses in a day or at incorrect frequency. One participant on a regimen with Efavirenz was taking the medicine twice daily instead of the prescribed dosing, once daily at night.
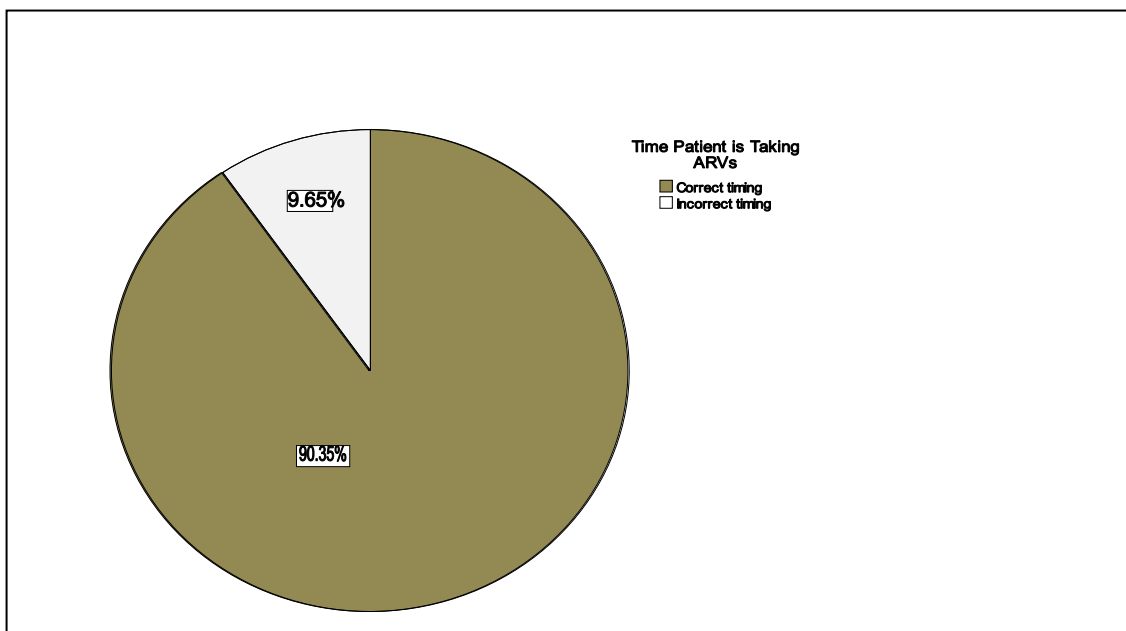
Figure 4.17 ARVs Daily Dosing Time

The relationship between level of education and patients daily dosing time for ARVs was statistically significance (χ^2=24.149; df=3; p=0.000) (Table 4.10). Patients with higher level of education had greater proportion taking their ARVs at the correct time.

Chi-square test was not used for socio-demographic factors, occupation and marital status, because more than 20% of expected values for each were less than five.

Table 4.10 Daily dosing time by socio-demographic characteristics

		Correct dosing time	Incorrect dosing time	X^2	Degrees of freedom	p-value
Socio-demographic factor						
Sex	**Female**	134(92%)	11 (8%)	1,229	1	0.268
	Male	175 (89%)	22 (11%)			
Age	**29 years and below**	52 (96%)	2 (4%)	3.423	2	0.181
	30to 49 years	229 (90%)	26 (10%)			
	50 years and above	28 (85%)	5 (15%)			
Level of education	**No school**	53 (76%)	17 (24%)	24.149	3	0.000
	Primary completed	143 (92%)	13 (8%)			
	Secondary completed	77 (97%)	2 (3%)			
	Tertiary studies	36 (97%)	1 (3%)			

Participants were assessed on their knowledge on consequences of missing doses of ARVs and 47.7%, did not know the consequences of missing doses of ARVs despite most taking their ARVs at the correct time (Figure 4.18).
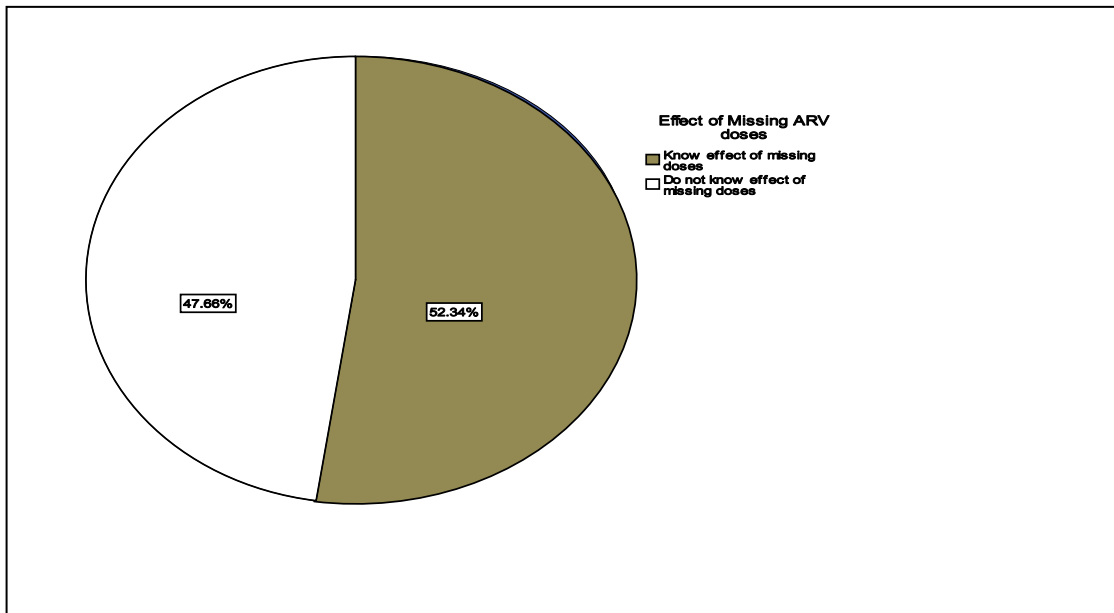
Figure 4.18 Knowledge on consequences of missed ARV doses

The difference between proportion of patients that knew consequences of missing ARV doses and those that did not know was not statistically significance (p-value=0.417).

The relationship between level of education and patients knowledge on consequences of missing doses of their ARVs was statistically significant (χ^2=15.88: df=3; p=0.001) (Table 4.11). Participants with higher level of education had a larger proportion that was knowledgeable on consequences of missing doses of ARVs.

Table 4.11 Knowledge on consequences of missing doses of ARVs by socio-demographic characteristics

		KNOW CONSEQUENCES OF MISSING DOSES	DON'T KNOW CONSEQUENCES OF MISSING DOSES	X^2	Degrees of freedom	p-value
Socio-demographic characteristic						
Sex	**Female**	81(56%)	64(44%)	1.252	1	0.263
	Male	98(50%)	99(50%)			
Age	**29 years and below**	30(56%)	24(44%)	0.855	2	0.652
	30to 49 years	134(53%)	121(47%)			
	50 years and above	15(45%)	18(55%)			
Marital status	**Never married**	22(65%)	12(35%)	2.607	3	0.456
	Married	114(51%)	109(49%)			
	Divorced/Separated	29(53%)	26(47%)			
	Widowed	14(47%)	16(53%)			
Level of education	**No school**	24(34%)	46(66%)	15.888	3	0.001
	Primary completed	85(55%)	71(45%)			
	Secondary completed	43(54%)	36(46%)			
	Tertiary studies	27(73%)	10(27%)			

Participants knowledge on how long they would use ARVs was assessed and 83% knew

they would use ARVs for life with remaining 17% not knowing the duration for which

they would use their ARVs (Figure 4.19). The difference between those who knew how long they would use ARVs and those that did not know was statistically significant (p=0.00).
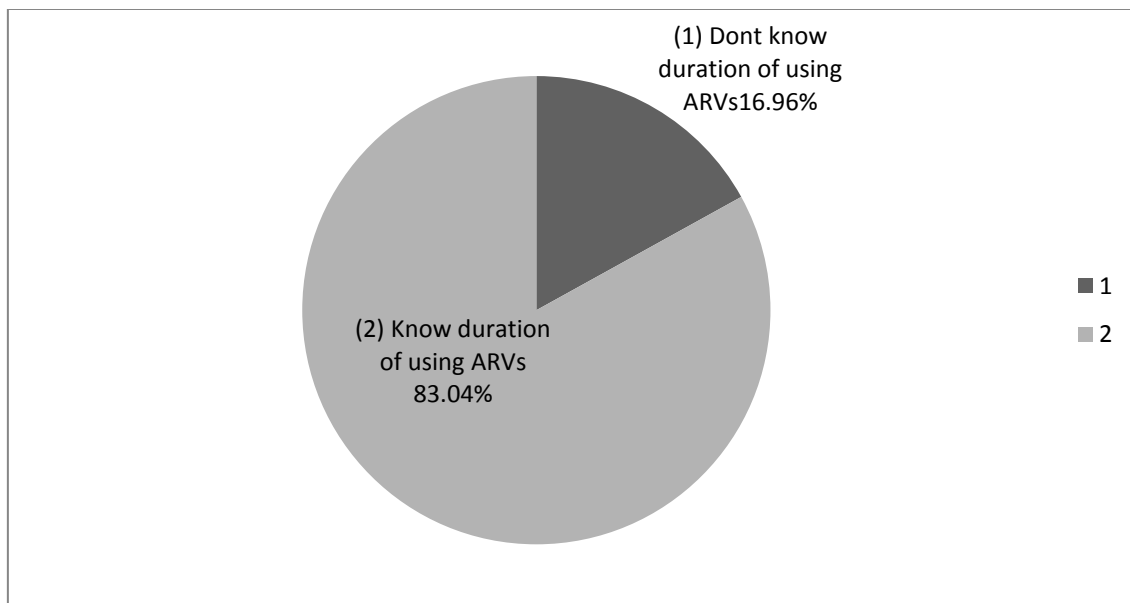
Figure 4.19 Knowledge on duration of use of ARVs

The participants that knew how long they would use their ARVs said they would use them for the rest of their life. The participants that did not know how long they would use ARVs were waiting for the health worker to tell them when they would stop using their ARVs. The relationship between patients level of education and patients knowledge on how long they were going to use ARVs was statistical significance (X^2= 13.182; df=3; p= 0.004) (Table 4.12). Participants with no schooling had the lowest level of knowledge on how long they would use ARVs.

Table 4.12 Knowledge on duration of use of ARVs by socio-demographic characteristics

		KNOW DURATION OF USING ARVs	DON'T KNOW DURATION OF USING ARVs	X^2	df	p-value
Socio-demographic characteristic						
Sex	**Female**	125(86.2%)	20(13.8%)	1.792	1	0.181
	Male	159(80.7%)	38(19.3%)			
Age	**29 years and below**	47(87%)	7(13%)	1.857	2	0.395
	30to 49 years	212(83.1%)	43(16.9%)			
	50 years and above	25(75.8%)	8(24.2%)			
Marital status	**Never married**	27(79.42%)	7(20.6%)	1.064	3	0.786
	Married	184(82.5%)	39(17.5%)			
	Divorced/Separated	48(87.3%)	7(12.7%)			
	Widowed	25(83.3%)	5(16.7%)			
Level of education	**No school**	50(71.4%)	20(28.6%)	13.182	3	0.004
	Primary completed	138(88.5%)	18(11.5%)			
	Secondary completed	62(78.5%)	17(21.5%)			
	Tertiary studies	34(91.9%)	3(8.1%)			

The participants that understood meaning of opportunistic infections were 59.4% and they knew the reason for using cotrimoxazole/dapsone daily (Figure 4.20). Opportunistic infections listed by participants were TB, diarrhoea, herpes zoster and pneumonia. Some

participants were not able to distinguish between opportunistic infections and sexually transmitted diseases. These participants listed syphilis and gonorrhea as opportunistic infections.
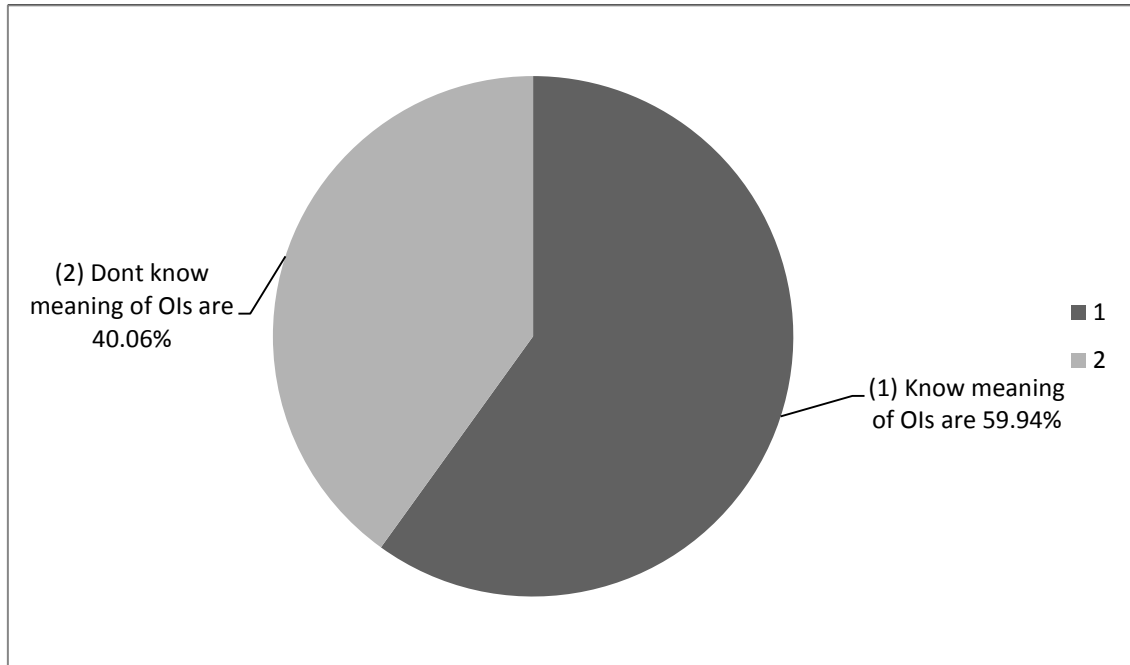
Figure 4.20 Knowledge on meaning of opportunistic infections

The difference between proportion of patients that knew meaning of OIs and those that did not know was statistically significant (p-value= 0.000). More patients were knowledgeable on meaning of OIs.

The relationship between marital status and participants knowledge of meaning of OIs was statistically significant (χ^2=9.910; df=3;p=0.019) (Table 4.13). Participants that were never married/single were the largest proportion that had knowledge on meaning of OIs.

Table 4.13 Knowledge on meaning of OIs by socio-demographic characteristics

		Know meaning of OIs	Don't Know meaning of OIs	X^2	df	p-value
Socio-demographic characteristic						
Sex	Female	84(58%)	61 (42%)	0.424	1	0.515
	Male	121 (61%)	76 (39%)			
Age	29 years and below	31 (57%)	23 (43%)	1.401	2	0.496
	30to 49 years	157 (62%)	98 (38%)			
	50 years and above	17 (51%)	16 (49%)			
Marital status	Never married	24 (71%)	10 (29%)	9.910	3	0.019
	Married	142 (64%)	81 (36%)			
	Divorced/Separated	25 (46%)	30 (54%)			
	Widowed	14 (47%)	16(53%)			
Level of education	No school	36 (51%)	34 (49%)	4.518	3	0.211
	Primary completed	92 (59%)	64 (41%)			
	Secondary completed	51 (65%)	28 (35%)			
	Tertiary studies	26 (70%)	11 (30%)			

All participants interviewed, in addition to using ARVs, were also on cotrimoxazole for use on a daily basis and those hypersensitive to cotrimoxazole were on dapsone. Participants were asked if they knew the reason they had to take an antibiotic on daily basis and 56.4% mentioned it was to prevent Opportunistic infections (Figure 4.21).
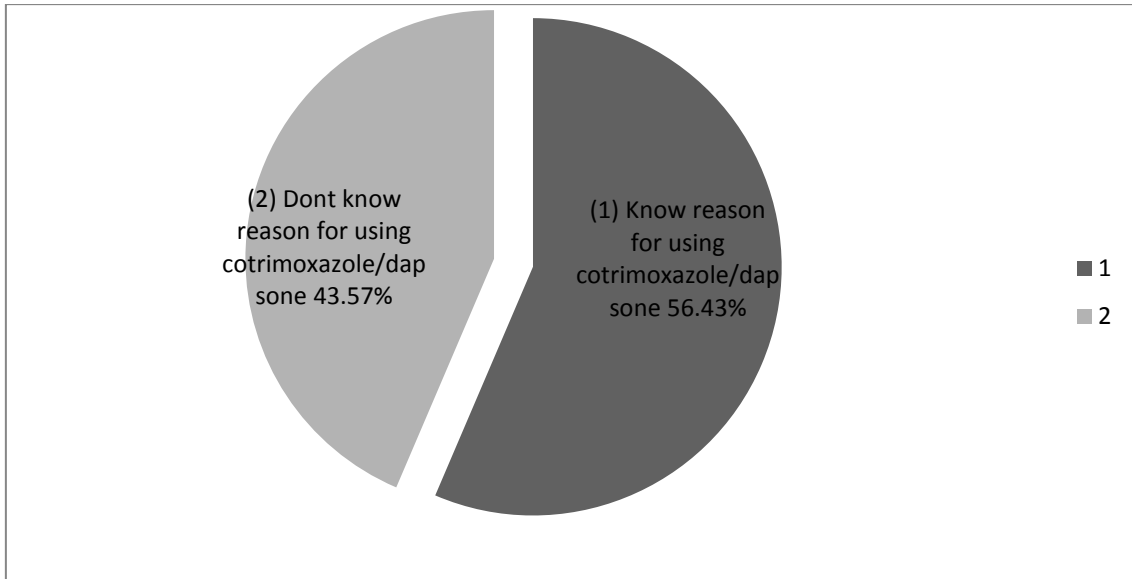
Figure 4.21 Knowledge on reason for using cotrimoxazole/dapsone

Fifty six percent of patients were knowledgeable on reason for using cotrimoxazole/dapsone on daily basis. The difference between proportion of patients that knew reason for using cotrimoxazole/dapsone on daily basis and those that did not know was statistically significant (p-value=0.02).

The clinicians at the HIV clinics stated that as a routine CD4 cell counts were performed on patients every 6 months and this was noted in the patients files. Majority of participants (90.06%) interviewed were familiar with the term CD4 cell count (Figure 4.22).

Figure 4.22 Familiarity to term CD4 cell count

Forty four percent of the participants did not know why CD4 cell count is done only that blood was usually drawn from them for CD4 cell count but explanation was never given what the measure meant (Figure 4.23). One participant mentioned that they thought the measure was to assess level of HIV in the blood.

Figure 4.23 Knowledge on reason for CD4 cell count
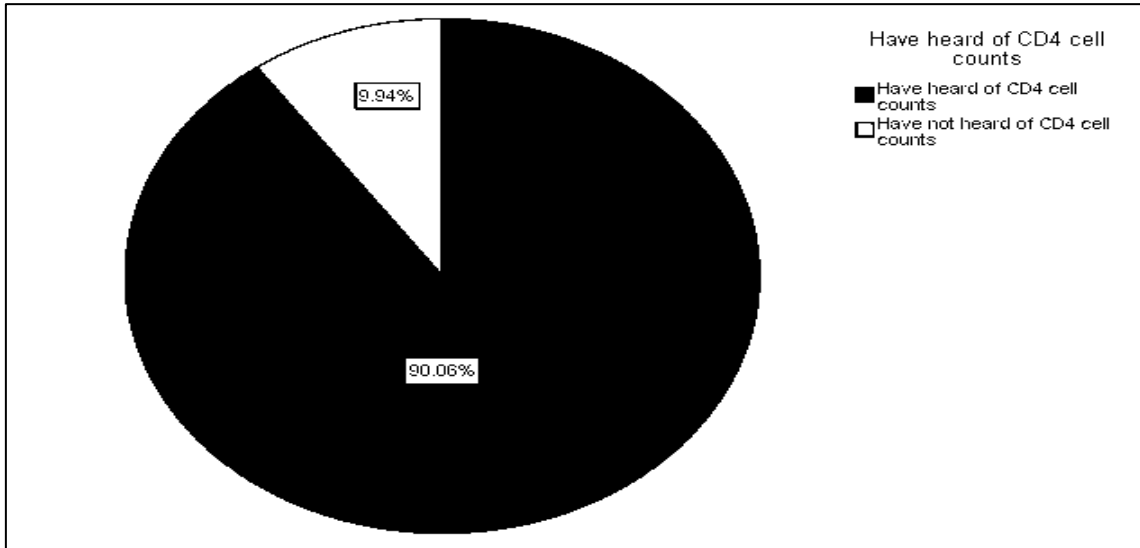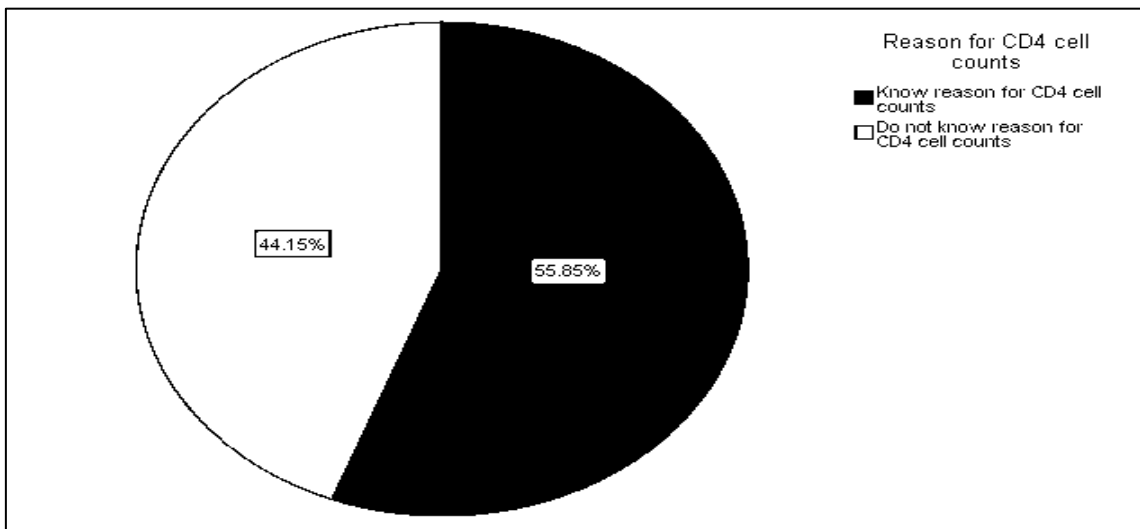
The difference between proportion of participants that knew reason for CD4 cell count and those that did not know was statistically significant (p-value=0.035).

The relationship between marital status and participants knowledge on reason for CD4 cell count was statistically significant (χ^2=13.253; df=3;p=0.004) (Table 4.14). The married and widowed participants had highest proportion who knew reason for CD4 cell count.

Table 4.14 Knowledge on reason for CD4 cell count by socio-demographic characteristics

		KNOW REASON FOR CD4 CELL COUNT	DON'T KNOW REASON FOR CD4 CELL COUNT	X^2	df	p-value
Socio-demographic characteristic						
Sex	**Female**	80(55%)	65(45%)	0.047	1	0.829
	Male	111(56%)	86(44%)			
Age	**29 years and below**	29(54%)	25(46%)	4.414	2	0.110
	30to 49 years	149(58%)	106(42%)			
	50 years and above	13(39%)	20(61%)			
Marital status	**Never married**	10(29%)	24(71%)	13.253	3	0.004
	Married	136(61%)	87(39%)			
	Divorced/Separated	27(49%)	28(51%)			
	Widowed	18(60%)	12(40%)			
Level of education	**No school**	40(57%)	30(43%)	7.508	3	0.057
	Primary completed]	76(49%)	80(51%)			
	Secondary completed	53(67%)	26(33%)			
	Tertiary studies	22(60%)	15(40%)			

4.4 DISTRIBUTION BY LIFESTYLE PRACTICES IN RELATION TO ART

The participants life style practices relating to use of herbal or non-prescribed medicines, consumption of alcohol and use of protection during sexual intercourse were determined.

Participants use of herbal preparations and other medication not prescribed at the HIV clinic was assessed. Among the participants 92% of participants were only taking medication prescribed at the HIV clinic while the rest were using other medicines/herbal preparations not prescribed at the HIV clinic (Figure 4.24). Some of the participants in prison mentioned they had access to marijuana, which they smoked frequently while other participants reported the use of cigarettes and herbal concoctions.
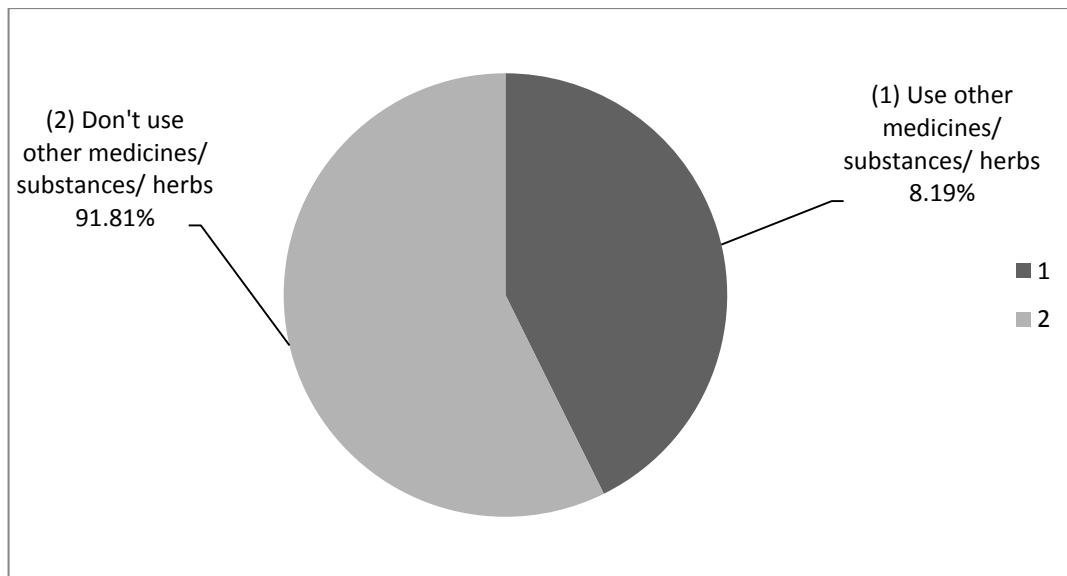
Figure 4.24 Use of herbs/other medicines not prescribed at HIV clinic

The difference between proportion of participants not using other medicines and those using was statistically significant (p=0.000). A higher proportion of the participants were not using other medicines/substances/herbal concoctions in addition to medication given at the HIV clinic.

The relationship between socio-demographic factors to patients use of other medicines/substances or herbal concoctions was not statistically significant (Table 4.15).

Chi-square test was not used for socio-demographic factors, occupation, marital status and age, because more than 20% of expected values for each were less than five.

Table 4.15 Use of other medicines/substances/herbal concoctions by socio-demographic characteristics

		Using	Not Using	X^2	df	p-value
Socio-demographic characteristic						
Sex	**Female**	10(7%)	135(93%)	0.558	1	0.455
	Male	18(9%)	179(91%)			
Level of education	**No school**	5(7%)	65(93%)	5.794	3	0.122
	Primary completed	18(12%)	138(88%)			
	Secondary completed	2(3%)	77(97%)			
	Tertiary studies	3(8%)	34(92%)			

Alcohol use is contra-indicated in patients using ARVs therefore participants self-reported on whether they were consuming alcohol while on treatment. Among the participants highest proportion, 54%, had stopped consuming alcohol (Figure 4.25). Prisoners did not have access to alcohol in the prison so they are isolated in the data presentation.
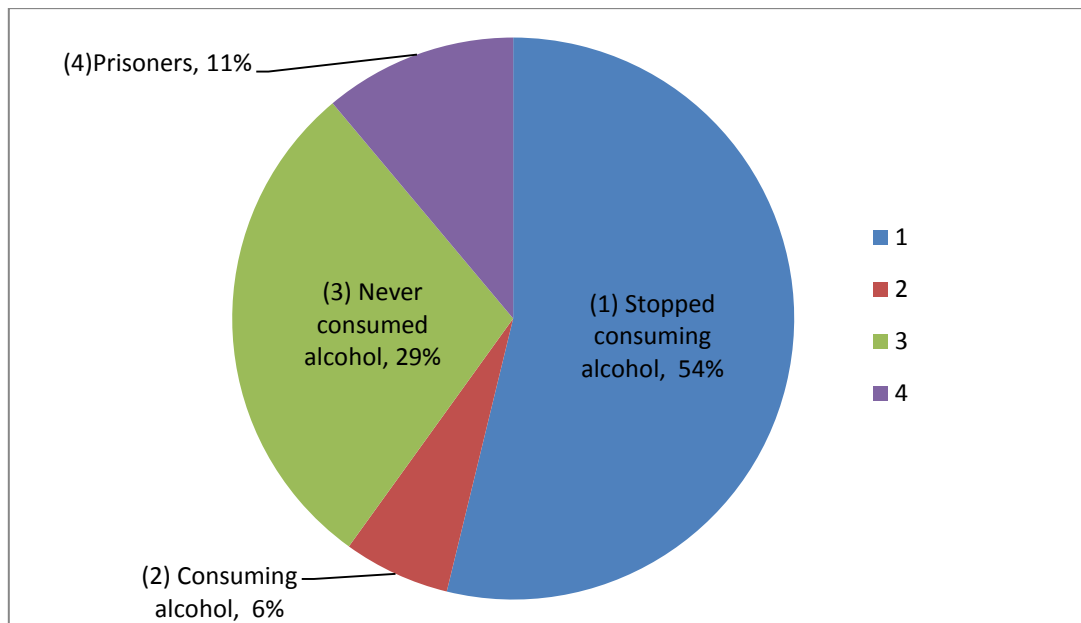
Figure 4.25 Alcohol consumption by participants

The participants that were still consuming alcohol even while on treatment indicated that they had not noted any negative effects caused by the alcohol on their health. The participants who had stopped consuming alcohol did so on knowing their HIV status.

The relationship between sex and patients consumption of alcohol was statistically significant (χ^2=44.775, df=2, p=0.000) (Table 4.16). More males than females were still consuming alcohol. Among the males highest proportion were those that had stopped consuming alcohol.

Chi-square test was not used for socio-demographic factors, occupation, age, marital status and level of education, because more than 20% of expected values for each were less than five.

Table 4.16 Use of alcohol by Socio-demographic characteristics

		Using alcohol	Stopped Using alcohol	Not Using alcohol	X²	df	p-value
Socio-demographic factor							
Sex	**Female**	5(3%)	52(36%)	88(61%)	44.775	2	0.000
	Male	16(8%)	132(67%)	49(25%)			

Participants self-reported on condom use during sexual intercourse. Among the participants highest proportion, 75%, reported they were using condoms consistently (Figure 4.26). One participant indicated they used more than one condom at a time during sexual intercourse to enhance protection.
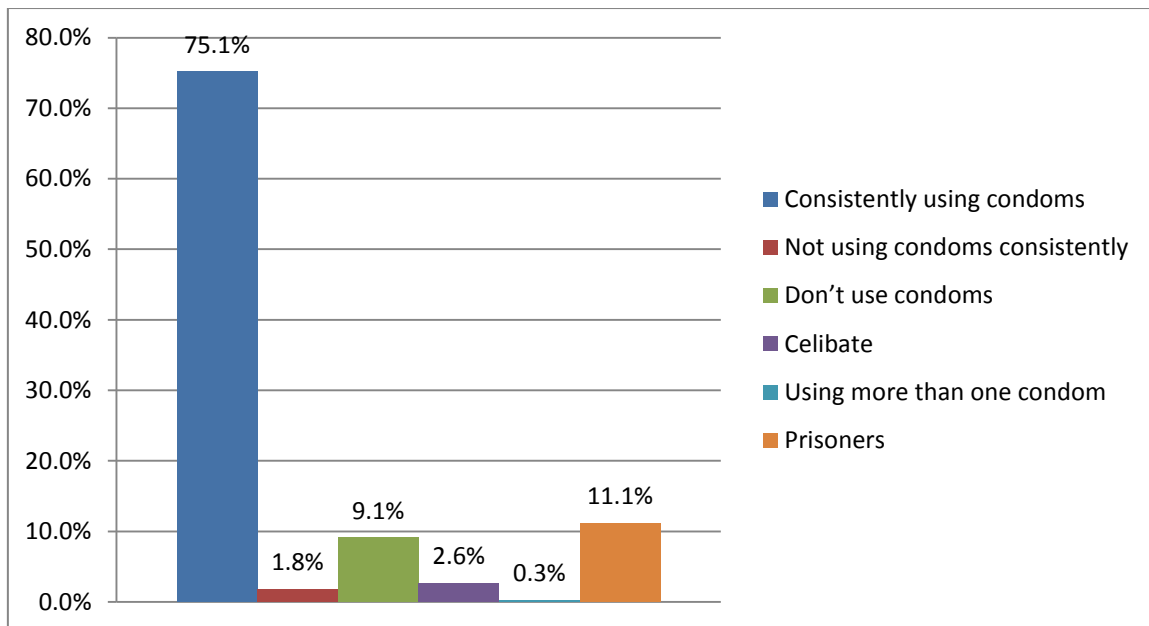
Figure 4.26 Distribution by condom use

Three quarters of the participants were using condoms consistently during sexual intercourse to protect their partners from infection or re-infection. Participants reported condoms were also a family planning option due to availability and easy access. Participants not using condoms consistently had not disclosed to their partners their HIV

status or were trying to get children with their spouse. Only one participant mentioned that they used two condoms at a go with the partner to enhance protection and mentioned that the partner did not know they were HIV positive. There was the group of participants that were abstaining from sex, widows/widowers or personal decision on knowing HIV status. Prisoners are isolated in the data presentation because they are locked up in prison and do not engage in sex.

CHAPTER 5: DISCUSSION AND CONCLUSION

5.1 DISCUSSION

There were more male than female patients mainly contributed by male prisoners and prison wardens attended to at the HIV clinic at Industrial area remand health centre. A study conducted in Nairobi indicated more females (70%) than males were visiting ART clinics (Richard et al, 2009). This is as depicted by the Loco health centre HIV clinic data (Figure 4.2).Women who are HIV positive are usually more numerous than the HIV positive men as patients at health care facilities for PLWHA (Blandine et al, 2006).

The mean age was 39 years for participants with majority (65%) between ages 30 to 49 years. The mean age for females was 36 years and mean age for males was 40 years. The participants below age 29 years were largely those married. This concurred with documentation of HIV clinic data in sub-Saharan Africa that reflected the age group of men and women, starting HAART between the years 2005 to 2006 as 31 to 47 years of age (The ART-LINC Collaboration of the International Databases to Evaluate AIDS, 2008).

A higher proportion of the patients were knowledgeable on the various aspects of ART that were assessed. Meaning of HIV, was a challenge to some of the patients. Patients could not distinguish between HIV and AIDS. As in a study conducted in South Africa patients knew being infected with HIV is the same as having AIDS (Nachega et al, 2002). When initiating ARVs it is important for patients to understand why they declared HIV positive and what this means distinguishing it with when you are told you have AIDS as part of adherence counseling.

Gaps in knowledge were noted on the information patients have on the treatment and care they are receiving at the HIV clinic especially among patients with low level of education. Patients were following instructions given by the health worker from assessment of their lifestyle practices and self-reporting on dosing times and missed doses but some of the patients did not understand the treatment and care they were receiving at the HIV clinic.

Patients with low level of education did not know meaning of AIDS, side effects, ARVs and they did not know they would use ARVs for life. This was also reflected in a study on ART patients on their belief of HIV cure by ART was associated with lower educational levels in a South African study (Nachega et al, 2002). Patients with low literacy skills were more likely to state the physician was their sole source of information on HIV infection as concluded in a study in Southern United States of America (Wolf et al, 2004). Patients with higher level of education were taking their ARVs at the correct time with them having comprehended importance of correct time in dosing. Correct dosing time is a measure of patients adherence to ARVs.

Health care workers need to get a way of communicating with patients of low literacy who have inadequate knowledge on various aspects of ART. Patients of low literacy would have difficulty reading and also comprehending what health worker is teaching if language not simplified.

Side effects to ARVs were a commonly cited reason for missing doses of ARVs as concluded in a study conducted in rural China (Wang et al, 2005). Adequate counseling and education about the appearance and disappearance (over time) of side effects would help to better prepare ARV users for possible side effects and make them more bearable. Patients who did

not know what side effects were, were likely to stop treatment if they had not been alerted on likelihood of side effects occurring. In a study conducted to determine challenges of using ARVs it determined that if side effects are severe patients may stop medication, but due to continuous counseling and education patients continue with their treatment (Anita et al, 2006).

In addition to knowing the side effects primarily, it is important for the patient to know the names of the antiretrovirals they are taking by name. Patient can relate the ARVs they are taking to specific side effects, which helps them cope better with the treatment since they understand what is happening to them when side effects appear. Some HIV-infected patients were unable to recall their current ARV regimen completely, accurately and were unable to recall ARVs taken in past regimens. This was particularly concerning since a complete knowledge of previous ARV medication regimens a patient has received was deemed necessary in deciding which ARVs and regimens a patient may respond to and tolerate in the future as determined in a study conducted in South Eastern USA (Emily et al, 2006).

Patients identified their ARVs using the packaging and the colour and shape of the tablets/capsules. The packaging and tablet/capsule colour and shape of ARVs changes from time to time, depending on who the suppliers are for the medicines. If patients do not know the ARVs they are taking by name they might end up taking wrong ARVs when they travel and have to get a refill. Even in the case of loss of HIV clinic records in theft or fire it is difficult for health care worker to remember what regimen the patient was taking if no backup records are available.

Patients lack of knowledge on consequences of missing doses of ARVs leads to non-adherence to treatment and development of drug resistance. Patients that did not know what

the consequences of missing doses of ARVs were, thought that on failing to take their medication as prescribed all they had to do was to restart taking the medication without any consequences. The patients that knew the consequences mentioned development of AIDS, drug resistance and deterioration of one's health as some of the consequences of missing doses.

A higher proportion of males than females were consuming alcohol despite being cautioned by the health worker as they reported. Patients on HAART consuming alcohol had higher HIV RNA levels and lower CD4 cell counts compared to those who were not drinking alcohol (Mariana et al, 2010). Frequent alcohol intake accelerates HIV disease progression. Engaging in moderate or higher risk alcohol consumption before sex increases the likelihood and rate of unprotected sex among HIV-positive individuals as determined in a daily diary study conducted in South Africa (Susan et al, 2006).

5.2 CONCLUSION

Communication between the health worker and patients is not fully effective due to gaps of information some patients are having on care and treatment they are receiving at the HIV clinic. Communication strategy to patients needs to be reviewed to ensure that all patients understand the care and treatment they are receiving at the HIV clinic. Other than relying on the health worker only to supplement their knowledge on HIV/AIDS and ART, patients should receive reading materials, watch videos and participate actively in support groups. When patients have all the information regarding the care and treatment they will have better adherence to their prescribed ARVs, reduced viral load, high CD4 cell count and improved overall quality of life.

No reading materials for patients were available at the HIV clinic during the duration of the data collection. Patients therefore lacked an additional source of information at the HIV clinic other than the health worker. Patients need an alternative source of information at the HIV clinic other than the health worker. Pamphlets/booklets and support groups are necessary to enforce what patients discuss with the health worker. Pamphlets/booklets provided should be in simplified language with inclusion of pictorial representation of messages because most of the patients have not gone beyond secondary level of education.

Over eighty percent of Patients had adjusted their lifestyle practices in relation to ART as advised at the HIV clinic. Patients reported to have ceased from alcohol consumption, were using condoms consistently and avoiding use of herbal/non-prescribed concoctions. The patients who were still consuming alcohol it was by choice since they acknowledged being discouraged by the health worker.

5.3 RECOMMENDATIONS

The HIV clinics should consider reviewing and revising their communication strategy to patients receiving antiretroviral therapy in consultation with NASCOP. Other than the health worker the patients did not have an additional source of information at the health facility. Access to pamphlets/booklets on various aspects HIV/AIDS/ART at the HIV clinics would be good. These should be written in simple and understandable language since majority of patients had low level of education at the primary school levels.

Audio-visual aids for patients at waiting bay can be used to educate the patients as with the health worker present to tackle any questions that arise. There are various educative videos targeted towards patients. Reading materials/pamphlets should be sourced from NASCOP, by the HIV clinic in-charges, for the patients. Reading materials should cover broadly antiretroviral therapy including what ARVs and side effects are.

All patients should also be encouraged to actively participate in support groups. This should be spearheaded by the HIV clinic in-charge working with the staff as a team. Patients who reported that they were in support groups had better understanding of HIV/AIDs and treatment they were receiving at the HIV clinic.

An assessment would be useful on the knowledge of health workers on antiretroviral therapy to determine if they are passing on the correct information to patients.

At both health facilities (Loco and Industrial Area Remand Prison health centres), it was noted that only one health worker was doing the registration, triage, clinical examination, dispensing and counseling/educating the patient. This was because of shortage in staffing

at the health facilities as stated by the health facility in-charge. Staffing should be addressed by the Provincial Director of Public Health and Sanitation to see if more staff can be sourced for posting to health facilities with HIV clinics. Staff shortage at the HIV clinic can cause burnout on health workers compromising quality of care provided to patients.

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APPENDICES

APPENDIX 1:

PATIENT CONSENT FORM

ASSESSMENT OF ANTIRETROVIRAL THERAPY KNOWLEDGE AMONG PATIENTS AT INDUSTRIAL AREA REMAND PRISON AND LOCO HEALTH CENTRES.

You are being asked to take part in a cross-sectional study where a questionnaire will be administered to assess your level of knowledge on various aspects of antiretroviral therapy. The questions that will be asked relate to the treatment you are receiving at the health facility (ARV regimen, counseling etc) and your personal life (age, level of education, marital status, lifestyle etc). You need to understand what the study is all about to make an informed decision about whether or not to join the study.

This consent form gives detailed information about the study that the investigator/research assistant will discuss with you. Once you understand the study, you will be asked to sign this form if you wish to take part.

If you agree to participate in the study you are assured that all information gathered will be handled confidentially. Only the investigator/research assistant will have access to the filled questionnaires and no name will be recorded on the questionnaire.

Purpose of the Study

This is a descriptive cross-sectional study in which patients receiving ART at Industrial Area Remand Prison and Loco health centers will be interviewed. Objective of the study is to assess the patients overall level of knowledge on various aspects of ART

It is expected that the findings from the study will help understand the ART knowledge of the patients and help in planning at health facility level on how to enhance patients knowledge on ART if gaps are identified on completing the study.

Benefit to Patient

If gaps are identified on the overall level of knowledge the patients have on various aspects of ART, feedback of the study given to the involved health facilities will assist them in restructuring the interventions on education and communication on HIV/AIDS to patients.

Name of Investigator:

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School of Public Health, College of Health Sciences

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Please Tick if you agree

1. I confirm that I have read and understood the information sheet for the above study. ☐

2. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. ☐

3. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, without my medical care or legal rights being affected. ☐

4. I have been assured that confidentiality regarding the information I provide will be maintained by the investigator and that individual answers will not be shared or presented in any way that would identify me as the source. ☐

5. I agree to my health worker being informed of my participation in the study. ☐

6. I agree to take part in the above study. ☐

_____ _____ _____
Name of Patient   Date   Signature

_____ _____ _____
Investigator   Date   Signature

QUESTIONNAIRE

SECTION A:
Initials of Patient's Name:

Date of Birth/Age:

Marital Status:

    a.   Never Married

    b.   Married/Cohabiting

    c.   Divorced/Separated

    d.   Widowed

    e.   Other (Specify)

Occupation:

Date Initiated on ART:

Highest Level of Education achieved:

    a.   No School

    b.   Primary completed

    c.   Secondary Completed

    d.   College/University Completed

Source of Information on HIV/AIDS/ART:

    a.   Pamphlets/Booklets

    b.   Newspaper

    c.   TV/Radio

    d.   Health worker/Counselor

    e.   Family/Friends

    f.   Other (specify)

Information source at health facility:

    a.   Health worker/Counselor

b. Pamphlets/Booklets

c. TV/Radio

d. Other (specify)

Frequency of counseling sessions provided at health facility:

a. Once a month

b. Once every two months

c. Never

d. Other (specify)

Duration of a counseling session at health facility:

a. Less than 10 minutes

b. 10 to 30 minutes

c. > 30 minutes

Topics normally discussed with health worker:

a.

b.

c.

d.

e.

SECTION B

1. **a) Have you heard of the term HIV?**

    i.   Yes
    ii. No **(Proceed to no.2)**

    b) If yes in 1(a) above, what is HIV?

2. **How does one contract HIV?**

    a. Having Unprotected sex with HIV infected person
    b. HIV infected Mother to child in pregnancy
    c. Blood transfusion with HIV infected blood
    d. Getting cuts/pricks from blade/knife/sharp objects/needles contaminated with HIV infected blood
    e. Others (specify)

        i.
        ii.
        iii.

3. **a) Have you heard of the term AIDS?**

    i.   Yes
    ii. No **(Proceed to no.4)**

    b) If yes in 3(a) above, what is AIDS?

4. **a) Have you heard of the term Antiretrovirals or ARVs?**

    iii. Yes
    iv.   No **(Proceed to no.5)**

    b) If yes in 4(a) above, what are Antiretrovirals or ARVs?

5. **a)Do you know what ARVs you are taking**

    i.   Yes
    ii. No**(Proceed to no.6)**

    b) If Yes in 5(a), give the names

Confirm from patient appointment card the regimen they are taking

6. **How many times a day do you take your ARVs (Please give the time)**

   Time

   a. Once a day

   b. Twice a day

   c. Three times a day

   d. I do not know

   e. Other (specify)

7. **In the past three months how many times have you forgotten to take your ARVs**

   a. Never

   b. Once

   c. Twice

   d. Thrice

   e. Other (specify)

8. **a)Are there any consequences if one forgets/misses to take their ARVs**

   i. Yes

   ii. No **(proceed to no.9)**

   b) If Yes in 8(a) above, what are the consequences

9. **How long are you going to take the ARVs**

   a. For Life

   b. Not for life (Give Duration)

   c. Do not know

10. **a)Have you heard of the term 'Side effects'**

    i. Yes

ii.   No**(proceed to no.12)**

b) If Yes in 10(a) above what are side effects?

11. a)Have you ever experienced a side effect to ARVs

    i.   Yes

    ii.   No**[proceed to no.11(c)]**

b) If Yes in 11(a) above, what side effect/s did you experience?

c) When you experience/experienced a side effect what are you supposed to do/did you do?

12. Do you take any other medicine/herbs/traditional preparations not given at the health facility with the ARVs?

    a. Yes

    b. No**(Proceed to no.13)**

b) If Yes in 12(a), what else are you taking with your ARVs?

c) Have you informed your health worker?

    i.   Yes

    ii.   No

13. a)Do you know what opportunistic infections are?

    i.   Yes

    ii.   No**(Proceed to no,14)**

b) If Yes, what are these opportunistic infections

14. a)Do you take cotrimoxazole (Septrin)?

      a. Yes

      b. No

  b) Give reason

15. a)Have you heard of the word CD4 counts?

      a. Yes

      b. No(Proceed to no.16)

  b) If Yes in 15(a), what is CD4 count?

16. a)Do you take alcohol?

     i.   Yes**(Proceed to no.17)**

     ii.   No, I have never**(Proceed to no.17)**

    iii.   No, I stopped taking

  b)If answer is (iii) give reason why?

17. a)Is there food that you cannot take with the ARVs given?

     i. Yes

    ii. No(Proceed to no.18)

  b) If Yes in 17(a) above, give reason

18. a)Do you use protection when having sex?

     i.   Yes

     ii.   No

b) Give reason

c) If Yes in 18(a) above, what protection do you use?

Appendix 3: WORKPLAN

	ACTIVITY	PERSON RESPONSIBLE	TIME FRAME
1.	Approval of Study by ethics committee	KNH- UON Ethics and Research Committee	February 2010
2.	Clearance by Ministry of Public Health and Sanitation	Nairobi Provincial Director of Public Health and Sanitation	February 2010
3.	Clearance by Makadara District Health Management Team	Makadara District Medical Officer of Health	February 2010
4.	Clearance by Industrial Area Remand Prison Administration	Officer In-charge of Industrial Area Remand Prison	February 2010
5.	Commencement of Data collection at Loco health centre	Research Assistant	1st March to 30th April 2011
6.	Commencement of Data collection at Nairobi Remand health centre	Investigator	1st March to 30th April 2011
7.	Data compilation and analysis	Investigator	1st to 31st May 2011
8.	Writing of final thesis document	Investigator	1st to 30th June 2011
9.	Defense of thesis to DCH panel	Investigator	July 2011
10	Dissemination of outcome to DHMT Makadara, Industrial Area Remand and Loco Health centres.	Investigator	July 2011

Appendix 3: BUDGET

ITEM

1. Investigator allowance   5 days a week for 2 months 5x8@1000=40,000

2. Research assistant   5 days a week for 2 months 5x8@500= 20,000

3. Fuel to health facilities   2x40@1500=120,000

4. Stationery; pens   2x4x3@20=480

      Printing   400@10= 4000

      Photocopying   400@4= 3600

      Folders   2x4x3@50=1200

      Binding   4@100=400

Total Cost   **189,680**