

**ANTIRETROVIRAL THERAPY (ART) AND SEXUAL BEHAVIOUR AMONG
PEOPLE LIVING WITH HIV: A CASE STUDY OF LUSAKA**

By

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**A dissertation Submitted in partial fulfillment of the requirements of the
degree of Master of Arts in Population Studies**

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Declaration

I JOHN S. MANDA do hereby declare that this dissertation represents my own work. This work has not previously been published or submitted for a degree at this or any other University, and it does not incorporate any published work or material from another dissertation.

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Approval

This dissertation of John S. Manda has been approved as partial fulfillment of the requirements for the award of the degree of Master of Arts in Population Studies by the University of Zambia.

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Abstract

Background: With thousands of the HIV infected Zambian population on ART, there are worries that people on ART may be engaging in high risk sexual behaviours thereby nullifying the impact of current HIV prevention efforts.

Objectives: This study therefore investigated sexual behaviours among people on ART in Lusaka District. It was specifically aimed to assess the knowledge and attitudes regarding the HIV infectivity of people on ART, assess levels of condom use, investigate the number of sexual partners and types of partners people on ART have sex with. It further evaluated the associations between duration of being on ART, HIV status disclosure, exposure to positive living messages, attitudes on the HIV infectivity of people on ART and social, economic and demographic factors on having multiple sexual partnerships and consistent condom use.

Methods: Three hundred and twenty men and women aged 15-49 participated in this study and they were interviewed based on a mixed methods, quantitative and qualitative, cross-sectional study methodology.

Results: key findings of this study were that multiple sexual partners among people on ART were high (21percent), non-condom use at last sex was high (19 percent) and consistent condom use was very low (14 percent). Results further showed that longer duration on ART ($p=0.03$), and being exposed to positive living messages ($p=0.04$), were associated with having only one sexual partner ($p=0.03$). Exposure to positive living messages ($p=0.05$) was also associated with safer sex; consistent condom use. Male respondents (OR: 11, $p=0.001$), those with secondary education and higher (OR: 2.3, $p=0.04$), shorter duration on ART, and no exposure to positive living messages (OR: 2, $p=0.04$) were significantly and positively associated with having multiple sexual partners. Having secondary education and higher (OR: 2.6, $p=0.001$), and exposure to positive living messages were significantly and positively associated with consistent condom use.

Conclusions: The findings of this study signal a picture of high-risk sexual behaviours among people on ART. This study thus recommends that focused interventions needs to be designed to primarily target people living with HIV to inspire behaviors that will result in the reduction of new HIV infections. Specifically, programs should promote condom use among married partners, couples HIV testing, HIV status disclosure and intensification of health communication targeting people on ART.

To my father Dominick N. Manda and my late Mother Grace Sakala Manda

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Abbreviations and Acronyms

AIDS	:	Acquired Immune Deficiency Syndrome
ART	:	Antiretroviral Therapy
ARV	:	Antiretroviral
CCU	:	Consistent Condom Use
CSO	:	Central Statistics Office
CSW	:	Commercial Sex Workers
FSWs	:	Female Sex Workers
HAART	:	Highly Active Antiretroviral Therapy
HIV	:	Human Immune Virus
KAPB	:	Knowledge, Attitudes, Practices and Behaviour
NAC	:	National AIDS Council
NGOs	:	Non-Governmental Organizations
NAC	:	National HIV/AIDS/TB Council
PLH	:	People or Person Living with HIV
PLHA	:	People or Person Living with HIV and AIDS
PMTCT	:	Prevention of Mother to Child Transmission
SPSS	:	Statistical Package for Social Sciences
STDs	:	Sexually Transmitted Diseases
STIs	:	Sexually Transmitted Infections
TB	:	Tuberculosis
UAI	:	Unprotected Anal Intercourse
UNAIDS	:	United Nations Joint Program on AIDS
VCT	:	Voluntary Counseling and Testing
ZDHS	:	Zambia Demographic and Health Survey
ZSBS	:	Zambia Sexual Behaviour Survey

I. Introduction and Background

Sub-Saharan Africa has continued to account for the highest HIV prevalence, new infections and number of people who died from HIV related illnesses worldwide (UNAIDS 2012). Zambia is one of the Sub-Saharan African countries worst hit by the HIV/AIDS pandemic (UNAIDS 2012). In Zambia, 14.3% of the adult population were living with HIV, 1.6% become newly infected and about 0.4% died of HIV related illnesses annually in 2010 (CSO et al. 2009 and NAC 2010).

However, access to ART has reduced mortality resulting from HIV-related illnesses and has led to improvements in the quality of life of people on antiretroviral therapy (ART) (UNAIDS 2012). In Zambia about 72% of the 480,000 people living with HIV and AIDS (PLWHA) in need of ART were receiving ART by the year 2010 (WHO et al 2011). As a result of ART, mortality resulting from HIV-related illnesses has been declining over the years (NAC 2012).

It is well established that ART is effective at reducing HIV related morbidity and mortality (UNAIDS 2012). However, Studies conducted between 2001 and 2005 showed that availability of ART, the misconceptions that ART reduces or negates infectivity and poor HIV status disclosure; were associated with high prevalence of risky sex among people living with HIV and AIDS (PLWHA) (Glass 2004, Scheel 2001, and Blower 2005). As a result of these and similar reports, there were fears that people on ART may be practicing risky sexual behaviours thereby compromising prevention efforts and leading to the transmission of HIV strains that are resistant to available ART.

As a country, Zambia has responded to its HIV situation with a number of interventions through policy and formulation of guidelines, and the implementation of localized and targeted interventions and some of these are specifically targeting PLWHA. Prevention efforts targeting people on ART are commonly known as Prevention with Positives (PwP) (NAC 2009). Key documents addressing PwP included the National strategy for the prevention of HIV and STIs and the National HIV/AIDS Strategic Framework (NASF 2006-2010).

In the implementation of the many interventions, including the NASF, Zambia has faced many challenges and many lessons have also been learned. However, very little is known about the sexual behaviours of people on ART. It was therefore the prevailing situation of having scanty if any information and research on the sexual behaviour of people on ART that inspired this research.

1.1 Statement of the Problem

The government of the republic of Zambia, through the Nation HIV/AIDS/TB council's National HIV and AIDS Strategic Framework (NASF 2006-2010) had highlighted a number of strategies to achieve a Zambia free from the threat of HIV and AIDS through the implementation of a number of interventions aimed at reducing new HIV infections (NAC 2009). In the NASF 2006-2010, the core intervention strategy, specifically targeting people living with HIV and AIDS (PLWHA) was the integration of prevention interventions with other HIV and health care services, with special attention to Prevention with Positives (NAC 2009).

Deliberate efforts to specifically target people living with HIV with prevention efforts suggests that there is an acknowledgement of the central position people living with HIV have in any prevention

efforts. However, little is known about the sexual behavior of people on ART to facilitate the designing and implementation of effective interventions among people living with HIV. The Zambia HIV prevention response, as outlined in the NASF, clearly outlines the implementation of PwP. However, the implementation report hardly reports on the status of interventions among the positives and there is hardly any mention of the sexual behaviours of people on ART.

It is important for Zambia to learn more about the nature of the HIV epidemic, particularly the sexual behaviours of people living with HIV. This is specifically so because of the negative and disturbing reports in other settings which suggest that access to ART was associated with high risk sexual behaviours among people on ART. Specifically, a study conducted by Scheer et al (2001) revealed that people on ART were practicing high-risk sexual behaviours such as non-condom use. Similarly, a study conducted by Moatti and others (2003) showed high levels of self-reported unsafe sex as well as high levels of pregnancies and STIs among people on ART. This study, among others, suggests that people on ART are practicing sexual behaviours that are less likely to translate into low incidences and prevalence of HIV at a national level.

In Zambia, HIV prevalence is shown to have almost stagnated at high levels since 2002 (CSO et al 2009). Several studies including the Zambia Sexual Behaviour Surveys have studied the sexual behaviors of the general population. However, very little research was conducted to assess the sexual behaviours of people on ART in Zambia. With the current levels of HIV prevalence in Zambia, it was therefore important to find out, through this study, whether and to what extent people on ART are engaging in high-risk sexual behaviours which may be influencing the high HIV prevalence in the general population.

1.2 Research Objectives

1.2.1 General objective

The main objective of this study was to find out if people on ART engaged in risky sexual behaviour and the factors which were associated with risky sexual behaviour in Lusaka district.

1.2.2 Specific objectives

Specifically this study aimed to:

1. To assess the knowledge and attitudes regarding ART and HIV infectivity
2. To examine the levels of condom use among people living with HIV
3. To investigate if people on ART engaged in sex with multiple partners and the type of partners they had sexual relations with
4. To establish the relationship between duration of being on ART and sexual behaviour
5. To determine the relationship between social, economic and demographic factors on sexual behavior among people on ART
6. To establish the relationship between HIV status disclosure and sexual behaviour

1.3 Hypotheses

This study hypothesized that:

1. People on ART who believe that being on ART reduces their potency to transmit the HIV virus (HIV infectivity) are more likely to engage in risky sexual behavior

2. People on ART who disclose their HIV status to their sexual partners do not engage in multiple sexual partnerships and they practice safer sex (*consistent condom use*)
3. People on ART who have been on ART for a longer duration practice more risky sex (*low condom use/multiple sexual partners*)

1.4 Study Rationale

This study was conducted because of its relevance to the fight against the HIV and AIDS pandemic. By achieving the study objectives, it was envisioned that the findings of this study will inform HIV policy, HIV programming, and the undertaking of further research.

In relation to Li's (1998, p.5) emphasis on evidenced-based decision-making, this study sought to provide insights of the sexual behaviours of people on ART and what factors are associated with risky sexual behaviors. This information was seen to be important in the following ways:

HIV policy: This study provides insights to policy makers, primarily to facilitate the revision of current HIV and AIDS related policies and programs and to facilitate the formulation of new guidelines for comprehensive HIV prevention involving PLWHA.

HIV programming: this study may help to identify relevant factors related to the sexual behaviours of people on ART and facilitate the designing of effective communication tools, messages and communication interventions. This study may also provide insights regarding the implications of strengthening prevention efforts among people living with HIV on the general population.

Further research: this study may inform the undertaking of more comprehensive studies in the investigation of ART and sexual behaviours. It will provide insights into what variables to prioritize and the appropriate methodologies to use in the investigations.

Generally, this study was viewed to be significant in that it was aimed to contribute to the stock of knowledge that is relevant to the fight against the spread of the HIV virus as well as influence policy and programming of HIV initiatives for government departments, NGOs and the general community in matters related to the fight against the HIV and AIDS pandemic.

II. Literature Review

According to the World Health Organization, (WHO 2005), The Zambian government's ART program formerly started in the year 2002. This was in addition to ART provision by private institutions which were sparsely dotted around Lusaka and a few urban areas (WHO 2005). The introduction and subsequent roll-out of ART has resulted in massive reductions in AIDS related mortality and improvements in the health of PLWHA (Noble 200, UNAIDS 2012).

Although it is clear that ART significantly reduces viral load as well as morbidity and mortality associated with HIV and AIDS, there has been widespread discussion about the sexual Behaviours of people of ART (Scheel et al 2002).

Glass (2004) stressed that if people diagnosed with HIV believed that a low viral load reduce infectivity and that ART reduces infectivity (as recently reported by what is popularly known as the Swiss Declaration), they may be more likely to engage in unsafe sex. Because of this, there was concern that the fear of HIV/AIDS as a life-threatening disease may dissipate leading to complacency around safer sexual practices.

In 2009, the International AIDS Society (IAS) under the popular, Swiss declaration, officially recognized and declared that ART is an effective prevention method of HIV transmission and tuberculosis (TB) incidence (IAS 2009). This plus many other reports have revived worries among public health programs working in the area of HIV that people on ART may stop practicing safer sexual behaviours believing that they are no longer infectious.

A few studies have shown that being on ART was significantly associated with self-reported unsafe sex and a high incidence of STIs (Scheel et al 2002, Ven et al. 2005, Travis 2004).

In 2005, Ven and others conducted a research on whether undetectable viral load is associated with sexual risk taking in serodiscordant gay couples in Sydney -Australia (Ven et al. 2005). This was a cross-section study nested within two cohort studies from February 2002 to August 2003. The respondents of this study were 119 men in an HIV serodiscordant regular relationship of at least 6 months duration (45 HIV-negative men, 74 HIV-positive men). The main outcome measure was the occurrence of unprotected anal intercourse (UAI) within the relationship in the previous 6 months.

This study used face to face structured interviews and a blood test for HIV antibodies .The results showed that UAI was significantly more likely where viral load was undetectable (39.4% versus 20.8%; $P = 0.04$), that is, undetectable viral load was found to be a significant predictor of UAI in serodiscordant relationships. These findings were also in agreement with Travis' (2004) findings in a longitudinal study conducted among 534 single gay men aged 18 to 24 years in San Francisco. His findings further showed an increase in self-reported unsafe sex in the sample introduced to HAART in the period 1994 to 1999.

In another separate study, Scheer et al (2002) found an increase in high-risk sexual behaviour and sexually transmitted diseases (STD) during the time period when highly active antiretroviral therapy (HAART) became widely available. The study examined whether taking HAART increased the risk of acquiring an STD which is an accepted epidemiological marker of unsafe sex in people with HIV.

The study conducted by Scheer and others was based on a computerized match of people in the San Francisco STD and AIDS registries. This study analyzed data of people with HIV who were diagnosed before the year 1999 and alive in November of the year 1995, or later, and these were classified as having had an STI after HIV diagnosis or not having had an STD after HIV diagnosis. A Cox proportional hazards model was used to see whether use of antiretroviral therapy was associated with acquiring an STD after HIV, after adjustment for sex, age, race, HIV-1 risk category, and CD4 count at the time of HIV diagnosis.

This study revealed that people with HIV who were on HAART showed an independent increase in the risk of developing an STD (hazard ratio 4.10; 95% CI 2.84–5.94). Americans of African origin, younger age, and higher CD4 count at the time of HIV diagnosis were also associated with acquiring an STD after HIV diagnosis. The number of people living with HIV/AIDS who acquired an STD increased over time from 60 (0.66%) in 1995 to 113 (1.32%) in 1998 ($p < 0.001$).

Therefore, this study concluded that people on HAART were more likely to develop an STD, an epidemiological marker of unsafe sex (Scheer et al 2002).

The reviewed studies suggested that ART did influence the sexual behaviours of people living with HIV by encouraging high-risk sexual behaviours. These findings were important to the undertaking of this study as they provided further justification regarding the importance of conducting a study to evaluate the sexual behaviours of people on ART and factors associated with the sexual behaviours of having multiple sexual partnerships and inconsistent condom use in Zambia. However, additional review of other literature, showed different findings to what was found in the studies so far reviewed.

In separate studies, (Moatti et al. 2003; Elford et al. 2005 and Ven et al. 2005), it was found that having only one stable sexual partner and not knowing his or her serostatus, high alcohol consumption, absence of episodes of acute morbidity and not being on ART, were significantly related to a higher likelihood of HIV-related risky sexual behaviours.

In a cross-sectional study conducted by Moatti et al. (2003), it was discovered that sexual abstinence was the preventive strategy of choice for a majority (about 53% of the 711 respondents) of people living with HIV who were aware of their serostatus and consulting for care in eight health centers in Bouake and Abijan in Cote d'Ivoire. The aim of this study was to compare the sexual behaviours of HIV-infected patients in Cote d'Ivoire- whether or not they had access to antiretroviral treatment. In this study, access to ART was not associated with an increase in HIV-related risky sexual behaviours.

In another study, Elford et al (2005) used a cohort- based design to find out whether unsafe sexual behaviour was increasing among HIV positive individuals in Switzerland. Participants were asked about their sexual practices every 6 months for 3 years during regular follow-up of the cohort beginning on 1 April 2000.

Just like in the previous cross-sectional study, there was no evidence to support the hypothesis that individuals taking ART and those with optimal viral suppression were more likely to engage in unsafe sexual behaviour. In fact, his analysis found that those on ART and those with an interruption in ART were less likely to report unsafe sexual behaviour.

Similarly, Crepaz et al (2004), reviewed 25 papers published between 1996 and 2003 and conducted three meta-analyses to determine whether: being treated with HAART, having undetectable viral load; or holding specific beliefs about HAART and viral load were associated with an increased likelihood of engaging in unprotected sex.

He found that overall association between having an undetectable viral load and sexual risk behaviour was non-significant. He also found no significant overall association between taking HAART and unprotected sex. People with HIV taking HAART were found to be just as likely to engage in unprotected intercourse as those not taking HAART.

Nevertheless, the systematic review did find that the likelihood of unprotected sex was significantly higher among people who believed that HAART reduced HIV transmission or who were less concerned about HIV given the availability of HAART. This association, which was only significant for gay men, was seen in US and non-US studies among both HIV-positive as well as HIV-negative and those not aware of their status. However, since the primary studies in the meta-analytic review were all cross-sectional, the authors recognized that they could not establish causality.

Another equally important study investigating the sexual behaviours of people on ART was conducted by Lurie and others in 2008 (Lurie et al 2008). The study was entitled The Sexual Behaviour and Reproductive Health among HIV-Infected Patients in Urban and Rural South Africa. The research used a cross sectional study methodology and assessed sexual behaviour among 3,819 HIV-positive South Africans attending a rural clinic and an urban clinic. The study was conducted from June 2003 until April 2006. Nurses administered a structured questionnaire, identical at the

urban and rural sites, to all consenting people who were on ART at the time of their first visit. All individuals were aware of their HIV status in advance of these visits.

Results of this study show that urban residents were more likely than rural residents to have current regular sexual partners, to have any current sexual partners, to report consistent condom use with regular partners and with casual partners. In multivariate analysis, independent predictors of consistent condom use with regular partners included across gender; urban residence, and higher education levels; for women, disclosure and younger age; and for men only, no history of alcohol consumption. Male and female participants with a casual sexual partner were less likely to use a condom consistently with regular partners. Additionally, urban residence and a CD4 count greater than 200 cells/mm³ as well as (for women only) a higher household income and a history of alcohol consumption were predictors of having a regular sexual partner.

In addition, Bunnell and others conducted a prospective cohort study in Uganda to assess changes in risky sexual behavior and estimated HIV transmission from HIV-infected adults after 6 months of ART (Bunnell et al 2006). Nine hundred and twenty-six (926) HIV-infected adults were enrolled and followed in a home-based ART program that included prevention counseling, voluntary counseling and testing (VCT) for cohabitating partners and condom provision. At follow up, only 882 were interviewed. At baseline and follow-up, participants' HIV plasma viral load and partner-specific sexual behaviors were assessed. Risky sex was defined as inconsistent or no condom use with partners of HIV-negative or unknown serostatus in the previous 3 months. The rates of risky sex were compared using a Poisson regression model and transmission risk per partner was estimated, based on established viral load specific transmission rates.

Enrollment of the study participants was systematically conducted. People with HIV-1 infection with a CD4 cell count \geq 250 cells/ml or symptomatic AIDS living within a 100 km² catchment area were eligible for enrollment and they were thus systematically invited to take part; only willing and consenting adults were finally included in the study.

The Study design and procedures were such that, at enrollment and every 3 months thereafter, study counselors conducted private home-based structured interviews with participants.

This study obtained frequency of condom use for the prior 2 weeks as act-specific use of a condom and for the previous 3 months as 'always', 'sometimes', or 'never'.

Results showed that six months after initiating ART, risky sexual behavior reduced by 70%. Over 85% of risky sexual acts occurred within married couples. In terms of the sexual activity after 6 months on ART, the proportion of participants who had sexual intercourse within the prior 3 months did not change between baseline and follow-up for either women (21 versus 24%, $P = 0.1772$) or men (47 versus 53%, $P = 0.2243$), but both reported changes in sexual feelings and experiences. Consistent condom use increased and unprotected sex with partners of negative or unknown status decreased.

This study concluded that providing ART, prevention counseling, and partner VCT was associated with reduced sexual risk behavior and estimated risk of HIV transmission among HIV infected Ugandan adults during the first 6 months of therapy. An extension of this study observed that people receiving antiretroviral therapy in rural Uganda continue to have lower levels of risky sexual

behaviour and vastly reduced risk of HIV transmission after two years on treatment. These findings were based on a two years follow-up on 454 individuals recruited between May 2003 and 2004.

The findings show that although sexual activity increased for both men and women, occasions of unprotected sexual intercourse showed a trend towards decline over the two years of follow-up. Unprotected sex with partners of negative or unknown HIV status declined dramatically, and only one sexual partner seroconverted during the follow-up. Women had higher rates of unprotected sex than men, chiefly within marriage. The study also established that partner testing was one of the most important prevention interventions, as it was found that relations in which both partners knew HIV status had much higher levels of condom use (Bunnell 2006).

The Horizons program and the international Center for Reproductive Health (ICRH) also conducted a study on the sexual risk behaviours of HIV-positive persons receiving ART for 12 months in Mombasa, Kenya.

Two hundred and thirty-four (234) HIV-infected, treatment naïve patients who initiated ART were enrolled in the study between September 2003 and November 2004. All patients received a first line ART treatment regimen and were followed for 48 weeks. Patients were in regular contact with health workers (nurses, doctors, clinical officers, and counselors) through monthly visits at a health facility where they received routine medical care.

This study used a semi-structured questionnaire with questions on sexual partnerships, behaviours and disclosure among others. Results of this study did not support such concerns that improvement

in health status, after treatment with antiretroviral medications, increases risky sexual behaviors among HIV-infected persons. However, the study found that disclosure of HIV status appears to facilitate people having safer sex.

More recently, Joseph Doyle and colleagues conducted a meta-analysis of effects of antiretroviral therapy use on sexual and injecting risk-taking behavior (Doyle JS et al 2013). This analysis use data from all parts of the world and at any time since the introduction of ART. The researchers identified all previous research which met predetermined criteria and pooled their results. Included in the analysis were studies of HIV-positive adults, whether or not they were on ART, were exposed to sexual risk reducing information, were diagnosed of STIs or unsafe injecting. A Cochrane Collaboration methodology was used to analyze the data. A total of 55 different studies provided data on self-reports on unprotected sex or inconsistent condom use, bring the total participants to well over 30,000.

Findings showed that people on ART were about 28% less likely to report unprotected sex than people who were not taking ART (OR: 0.75, 95% CI 0.63-0.81). furthermore, people on ART were significantly found to be about 43% less likely to report unprotected sex with a person of unknown or negative HIV status (OR:0.57, 95% CI: 0.33-1.01).In this study, the authors concluded that strategies to scale up use of treatment in the context of care are unlikely to adversely affect risk-taking sexual behaviours.

In Zambia, few if any studies have researched on ART and the sexual behaviour of people living with HIV and AIDS. The Zambia demographic health surveys, (CSO et al 1992, 1996, 2001-2002

and 2009) and the Zambia Sexual Behaviour Surveys (CSO et al. 2005 and 2009) do not have sections that focus on ART or the sexual behaviour of people living with HIV and AIDS.

Ensuing from the reviewed studies, it was clear that different approaches were employed to study the sexual behavior of people on ART. Despite using different approaches, the reviewed studies all managed to highlight the importance of people living with HIV, particularly people on ART in the fight against HIV. The studies showed that people on ART hold a key position, and should be so treated if any HIV reduction efforts should produce any meaningful results.

The reviewed studies informed the design of this study and also guided the prioritization of variables to be included in this study. They also provided the analytical framework which informed the undertaking of this study and further informed the type of questions to ask and how to approach the study of sexual behavior among people on ART.

2.1 The Conceptual and Theoretical Framework

This study, of sexual behavior among people on ART and the factors associated with their sexual behavior, was guided by the conceptual framework in figure 1 on page 17. The proposed framework is premised on the Health Belief Model. The model presents a systematic way of understanding behaviours, or situations. It is a set of concepts, definitions, and propositions that explain or predict these events or situations by illustrating the relationships between variables (NCI 2005).

The HBM, as presented in this paper was conceptualized from reviewing various literatures including a review and analysis of theories by the National Cancer Institute (NCI 2005) in a book

entitled Theory at a Glance. Additional reference was made to Hayden’s book written in 2009, entitled Introduction to Health Behaviour and Theory and lastly from the critical analysis and review of the health belief model by Dr Katheryn Maguire of the Wayne State University in the year 2010. The health belief model (HBM) is one of the first theories of health behavior which also remains one of the most widely recognized in the field. The HBM was developed in the 1950s by three U.S. psychologists, Irwin Rosenstock, Godfrey Hochbaum and Stephen Kegels, who wanted to explain why so few people were responding to federal government offerings of free health prevention programs. Maguire (2010) notes that, it is difficult to convince people they are at risk, and if they know they are at risk, getting them to adopt health behaviors; let alone to get them to adapt long – term health behaviours.

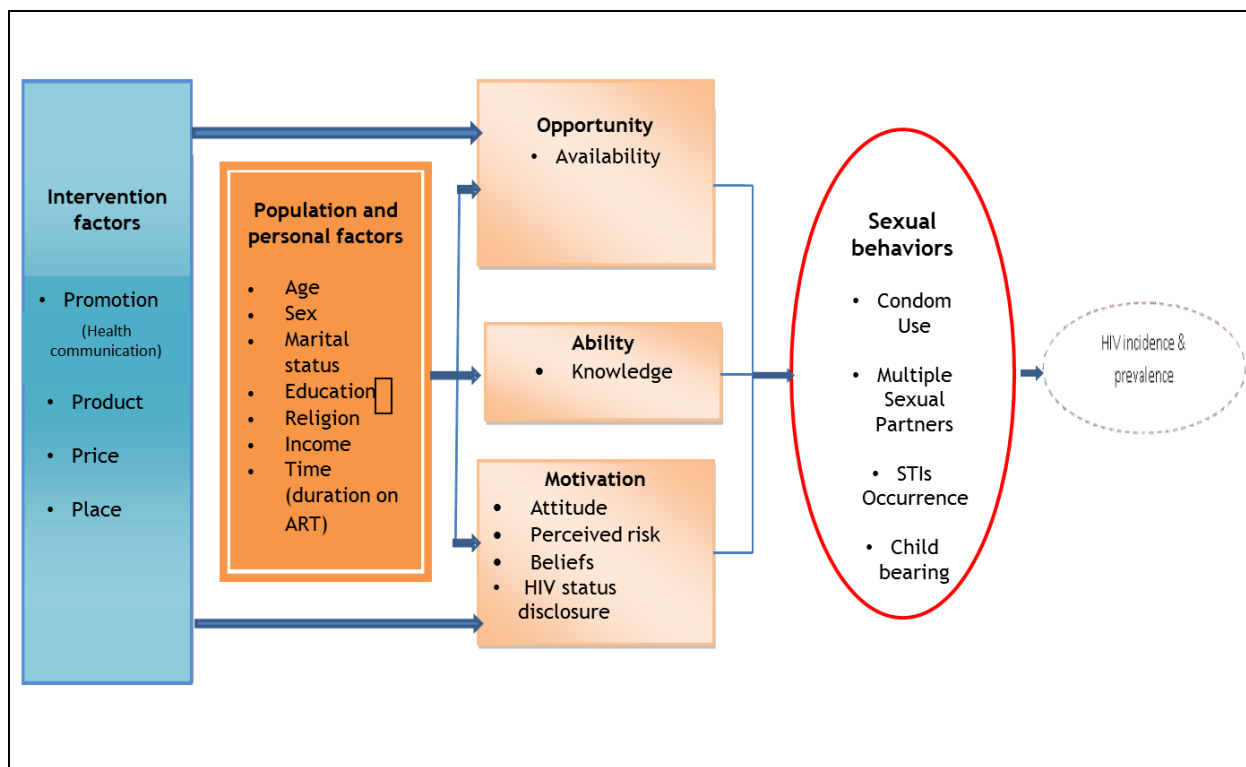


Figure 2.1: Conceptual Framework

The health belief model (HBM) addresses the individual's perceptions of the threat posed by a health problem (susceptibility, severity), the benefits of avoiding the threat, and factors influencing the decision to act (barriers, cues to action, and self-efficacy).

Overtime, many scholars and researchers have expanded upon this theory, and they finally arrived at six main constructs as factors that influence people's decisions about whether to take action to adopt a healthy behaviour. The theory posits that people are ready to adopt a healthy behaviour if they: believe they are susceptible to the condition (*perceived susceptibility*), believe the condition has serious consequences (*perceived severity*), and if they believe taking action would reduce their susceptibility to the condition or its severity (*perceived benefits*). It was further explained that deciding on an action is shaped by the options accessible to the individual and the belief in their effectiveness. Action is thus dependent on having at least one course of action to prevent an illness from occurring while believing it will produce acceptable results (Maguire 2010). The theory further states that adopting a behavior is also dependent on exposure to factors that prompt action (e.g., a television advertisement or a reminder from one's physician to access a health service) (*cue to action*). Cues to action were defined as stimulants that can trigger appropriate behavior. Internal cues to action include physical discomfort and external cues include messages communicating the seriousness of a disease. External cues are most relevant to communication as they often rely on media and interpersonal interaction (Maguire 2010). Behavior change was also theorized to be likely if people believe costs of taking action (*perceived barriers*) are outweighed by the benefits and lastly if the people felt confident in their ability to successfully pursue an action (*self-efficacy*).

In addition to the 6 constructs, Hayden (2009) brought out other factors that influence behavior change, intervention adoption, and the ability to maintain the new behaviours. The additional constructs included demographics (i.e., age, sex, marital status, and religion), psychosocial variables, and structural variables. These factors have been identified to influence individual's perceptions related to the 6 key constructs and which in turn influences people's decision making process.

In this study, the health belief model has been translated and synthesized into the framework in figure 1. The HBM is a robust model and has many constructs. However, only a few constructs of the HBM were prioritized for investigation in this study. Ensuing from the posits of the HBM, this study theorizes that for people on ART to be ready to take healthy actions, such as avoiding multiple sexual partnerships and consistently using condoms during sexual intercourse, they have to believe that they are at risk of contracting other strains of the HIV virus; believe that they are still able to transmit the HIV virus to HIV negative partners, and they also have to have positive perceptions about the benefits of avoiding risky sexual behaviours. Perceived susceptibility can be measured by the attitude and beliefs of people on ART regarding their potency to transmit the HIV virus and the belief that they are still at risk of re-infection with other strains of the HIV virus. In this study, it is theorized that people on ART are more likely to pursue risk reducing sexual behaviours if they believe they are susceptible to re-infections with other strains of the HIV virus and the contraction of other STIs. This study identified HIV status disclosure as one of the factors that may enhance perceived susceptibility to HIV and to the transmission of the HIV virus to a negative partner. It was theorized that if there is disclosure, there is more consciousness by the positive partner to make

efforts to avoid transmitting the virus to an HIV negative partner and to contract new strains of the HIV virus.

In addition, people on ART are more likely to improve their sexual behaviours if they believe that taking action by staying with only one sexual partners and consistently using condoms and also by avoiding having children after knowing their HIV status, would reduce their and other people's susceptibility to HIV infection. People on ART have two actions to avoid other strains of the HIV virus and to transmit the HIV virus to sexual partners who are HIV negative. They can use condoms correctly and consistently with all sexual partners and they may reduce their exposure to HIV by having only one sexual partner with whom they consistently use condoms during sexual intercourse. It was also theorized that people on ART were likely to improve their sexual behaviours if they were exposed to factors that prompt action commonly referred to as cues to action. The cues to action fall in the category of intervention factors and particularly health promotion/communication. It was theorized that as people on ART are exposed to positive living messages of consistent condom use and limiting of sexual partners to one at a time, then they would be more likely to report improved sexual behaviours.

Finally, this study also acknowledges the significance of demographics and social factors such as age, sex, marital status, religion, income and education, in influencing the behaviours of people on ART. It was theorized that the age, marital status, duration of being on ART, education, income category and religion influences personal risk assessment and eventually affect the pursuance of risk reducing actions.

In conclusion, this framework postulates that the sexual behaviors of people on ART are affected by a number of factors. The framework posits that sexual behaviours of people on ART are influenced by a combination of factors grouped as opportunity, ability, motivation, demographics/population variables and intervention factors. Opportunity factors were defined as factors that increase one's chances to perform the desired actions such as availability of condoms. Ability factors include factors such as knowledge and self-efficacy and these are factors that improve one's proficiency or skills to perform the desired behaviours. Motivation factors were defined as factors that increase one's desire to perform the desired behaviours and in this case risky reducing sexual behaviours. Therefore, it was theorized that if any sexual behavior improvements are to take place, people on ART have to have strong and behavior enhancing beliefs about their susceptibility to exposure to HIV and or other HIV strains. They also have to have the motivation to change their behaviours, and that the structural and environment realities around them have to be ideal for improved behaviours. The framework also postulates that the demographics of the person also play a significant role in behavior change decision making processes. The effect of demographics will be measured in this study.

2.2 List of Variables and Definitions

This study prioritized the two set of variables namely dependent and independent or antecedent variables. Dependent variables included variables that were hypothesized as being influenced or whose occurrence, and or changes were determined by a list of other variables called independent variables. Independent and antecedent variables were defined as those variables that were hypothesized as influencing changes in the identified dependent variables. The list of variables and their definition is shown in table 2.2.1.

Table 2.2.1: List of Variables and Definitions

Variable/ Construct	Definition
Dependent Variables	
1. Multiple sexual partnerships	This measured the occurrence of multiple sexual partnerships among respondents in the 6 and 12 months before the survey
2. Type of sexual partner	This measured the occurrence of regular and non-regular sexual partnerships among respondents.
3. Consistent Condom use	This measured whether respondents used condoms all the time for every sexual encounter
4. Condom Use at last sex	This a measure of whether a condom was used during the last time respondents had sexual intercourse
5. Fertility/childbearing:	This is a proxy measure of the prevalence of sex without a condom and refers to a measure of whether and how many children a person on ART had from the time they were diagnosed with the HIV virus and after commencing ART
6. STIs Occurrence and Episodes:	This was a proxy measure of the prevalence of sex without a condom and refers to whether one had an STI within the reference time of 12 months.
Independent/antecedent variables	
1. Beliefs/attitude of reduced infectivity	This measured perceptions/beliefs that being on ART reduces one's potency to transmit the HIV virus. The perceptions were either positive or negative. Negative perceptions meant that people on ART believed that ART reduced one's potency to transmit the HIV virus
2. HIV status disclosure	This refers to a measure of whether a person on ART revealed his/her status to the people whom he /she had sexual intercourse
3. Duration of being on ART	This refers to how long a person has been on ART in months.
4. Exposure to positive living messages:	This refers to what messages and how often people on ART receive positive living messages on specific topics.

III. Research Methodology

3.1 Study Setting

This study was conducted in Lusaka district. Lusaka was prioritized as a setting for this study because it was identified as one of the areas of high HIV prevalence (20%) in Zambia by the year 2007 (CSO et al. 2009). Specifically, this study was conducted in institutions offering ART; at ART centres, with clients on ART treatment. Respondents of this study were randomly selected from Kabwata, Kalingalinga, Bauleni and Kamwala clinics specifically at ART centers based on these clinics. ART centers provided easy access to respondents.

3.2 Study Design

This study was premised on a non-experimental and cross-sectional study design.

A mixed methods approach was employed and therefore both quantitative and qualitative methods were used to assess sexual behaviours among people on ART.

Qualitative data was also collected to supplement available literature to help understand the context of sexual behavior among people on living with HIV and on ART. The findings from the qualitative study were also used to inform the design of the quantitative survey questionnaire to facilitate the quantitative measurement of the identified variables of interest in this study.

3.3 Target population

This study interviewed men aged 15-59 and women aged 15 to 49 who were living with HIV and who were on ART. The PLWHA were identified to be very critical to the fight against HIV as they are right at the centre of the pandemic.

The study interviewed people who were on ART for a duration of 6 months and over, who were not hospitalized or bed-ridden to facilitate the investigation of sexual behaviours.

3.4 Sample Size, selection and procedure

The sample size for this study was 320 men and women, including respondents for the qualitative and quantitative components of the study. To select respondents who participated in the quantitative component, a quota sampling procedure was employed. This is a method where people with the required characteristics (the PLWHA and on ART, by duration, sex, etc) were selected using this method, a respondents are not necessarily randomly selected from the population a subset of all qualifying elements but random selection of respondents is conducted using a calculated interval and the selection continues until the required and desirable sample (a quota) is achieved. This method, as compared to stratified or simple random sampling, is inexpensive and less time consuming because it does not require the availability of a sampling frame to conduct.

In this study, respondents were also stratified by sex, and duration of being on ART treatment. As already mentioned, the sample was drawn from four (4) different ART centers namely Kabwata, Bauleni, Kalingalinga, and Kamwala Health centres. This was done so that the required sample size could be achieved within a short period of time and also to enhance diversity of participants.

3.5 Selection

Respondents were randomly selected and interviewed from ART centers by the researcher with the permission and support of ART coordinators or other authorized personnel at the ART center. Selection of respondents was conducted with the aid and support of ART center coordinators who helped screen and identify potential respondents based on age, sex, duration on ART and whether they were willing to participate in a discussion with the researchers. Following the introduction process by the ART center coordinators, the study was explained to the potential respondent following the study information sheet and then written informed consent was finally obtained prior to the start of the interview. The interviews were conducted as the eligible respondents were waiting to be attended to or after they had been attended to for the service they went to access at the ART center. At first contact with potential respondents, *ART Center Coordinators or other relevant authority* announced to the group seeking ART about the research and particularly the selection process of respondents. Potential respondents were assured that they were allowed to ask any questions that they might want to ask before participating in the research if they were randomly selected. ART supervisors asked the selected participants to feel free and indicated that the information which was being collected might be useful to help improve future ART related programming. Finally, The ART coordinators then introduced the researchers and handed over the selection process to the researchers.

A “*raffle method*” was used to select individual participants. Potential respondents who expressed willingness to participate were asked to randomly pick numbered paper sheets, in a box. At any selection time, the researcher, placed 50 to 100 numbered and folded paper sheets in a box, passed round and asked potential respondents to select one paper as they stood on queues or as they sat

on the grass as they waited to be attended to. The number of paper sheets depended on the maximum number of potential respondents who were available at the time of selection at the ART center. After all the potential respondents had picked a paper, the researcher systematically selected the numbers and called in the potential participant whose number was randomly selected. This was done by following an interval of 5 numbers from the range of number on the paper sheets that were distributed to potential respondents. The starting number was selected randomly.

After the selection, the researcher explained the study to the respondents based on the information sheet and allowed them to ask questions. Once the participant was satisfied with the explanation and the information given, informed consent to participate was obtained and the respondents were only interviewed if they consented to the interview.

Participation in this study was purely voluntary. In a case where the selected potential respondent refused to participate, another potential respondent was selected using the same procedure.

The selection and indeed the entire research undertaking ensured that there was no disruption of normal activities at the ART center as a result of this research. Once the first group of 50 to 100 potential respondents was exhausted and there was still time to conduct further interviews, a new set of numbered paper sheets was distributed to select more respondents. However, the study ensured that the researcher could only select 20 respondents per day to avoid fatigue and collecting poor quality data.

Respondents who participated in the qualitative interviews were selected purposively. Prioritization for inclusion in the qualitative interviews was aimed to meet the required numbers of sex and duration on ART.

3.6 Data Collection

Quantitative data: This research employed face-to-face interviews based on a semi-structured questionnaire. Face to face interviews were preferred as a more suitable data collection method to facilitate uniformity and accuracy of the collected data and also because not all respondents were able to read and write for them to self-administer the questionnaire. The questionnaire was administered once to all consenting PLWHA.

The survey questionnaire had 10 sections including sections on respondents' identification information, background characteristics, access to ART and Knowledge and ART related attitude, sexual behaviour and ART, child bearing and ART, STIs Prevalence, HIV status disclosure, Exposure to Behaviour Change and Positive Living interventions and a section on general sexual behaviors.

The survey questionnaire was piloted with 3 respondents at two data collection centers namely Kalingalinga and Bauleni before the actual data collection started. The two data collectors who were involved in the data collection also conducted the pilot activity. The pilot included all the steps involved in the selection and interview processes and this facilitated the revision of the questionnaire by rephrasing questions that were difficult to be understood by respondents. The pilot also facilitated the estimation of how long one interview would take as this was important for planning the duration

of the data collection. Interviews lasted for 20 minutes on average and the data collection for the quantitative survey lasted for 10 days. On average each of the two data collectors collected 10 to 15 questionnaires per day from 08:00hrs to 16:00hrs. The variability in the number of interviews per day was determined by availability of qualifying and consenting respondents.

To conduct the actual interviews, ART center coordinators allocated small rooms to the research assistants where they conducted the interviews. In a few cases, when those rooms were not available to be used for interviews, researchers improvised by conducting interviews in a quiet and isolated place within the health center. Alternative interview locations were chosen to ensure that they were away from hearing range of other people. In situations where other people showed interest and drew closer to where the interview was taking place, the researchers politely explained the study process and emphasized that the interview was confidential and therefore no other person was allowed to listen in or see the filled in questionnaires other than approved members of the data collection team. After explaining, the research assistants politely asked the other person to excuse them until it was their turn if they were eligible, randomly selected and if they volunteered to participate in the study. This process helped win the confidence of respondents to open up and provide information. The data collection experiences were not very different from site to site as standard selection procedures were employed and all ART center coordinators were supportive except in situations when they were not able to provide a room to conduct the interviews. In such situations, respondents were the ones who were asked to help identify a location where they would be free to be interviewed.

Qualitative data: in-depth (one to one) interviews were employed to collect the data. To collect qualitative data, an interview guide was developed and it was designed to collect similar information as was collected in the quantitative interviews. This was so designed to facilitate triangulation of findings and primarily to help design the quantitative component around the variables that emerged from the qualitative component. As such, the qualitative interview guide had similar sections as the quantitative survey questionnaire only that the questions were framed to be open-ended, to allow indepth explanations and elaboration of interview responses beyond the structured interviews in the quantitative questionnaire. However considering that qualitative interviews took a longer duration to complete, all efforts were made to ensure that they were conducted at a time when a secured room was available where to conduct the interview and all indepth interviews were thus conducted from secured rooms. The interviews lasted for about an hour to complete.

Two trained interviewers who were hired and stationed at ART centers conducted the interviews with consenting respondents. To ensure uniformity of the data, both interviewers were oriented to the study and the study tools for one full day. They were allowed to ask any questions regarding the implementation of the study and study procedures. At the end of the orientation, the interviewers role played the implementation of the study as practice in readiness for the main study. As already mentioned the pilot and pretesting of study tools also served as a training forum for the interviewers and an opportunity to sharpen their interviewing skills.

3.7 Data Processing and Analysis

3.7.1 Quantitative Data processing and Analysis

After the data was collected, the data was entered into a data entry screen/database which was developed using a software called Epi data 3.1. This was designed to facilitate the conversion of data into numerical format to facilitate statistical analysis of the data to fulfill the objectives of the study. The survey data were entered by two research assistants who entered the same dataset one after another. This was aimed to achieve double data entry which enabled the researcher to verify correctness and identify data entry errors in the data. The next stage was to confirm the identified errors by verifying entries using the physical questionnaire and based on the verification, corrections were made. After the verification, entered data were exported into SPSS 16.0 to facilitate data analysis. In SPSS, further verification for the data were conducted by running frequencies and cross tabulations across relevant variables and further cleaning was conducted and a clean dataset was developed from the two processes. When the data was deemed to be clean, the researcher started the analysis by running frequencies, descriptive statistics, cross tabulations, chi-square tests, bivariate and multivariate analyses. Outputs of these processes were contextualized and facilitated the development of this report.

3.7.2 Qualitative Data processing

Digital recorders were used to record the data and, after the interview, the audio data were transcribed by the same research assistants who collected the data for transcription. All interviews were transcribed verbatim, in the language of the respondents. Transcribed text was translated

into English by the research assistants as the selected research assistants were competent in both English and Nyanja which were the two languages used during the data collection. All translated text was complete and not summaries of the transcribed original language. All translations kept the intent of the original statement, while writing in correct English. The translator(s) ensured that the translations were consistent across all text. Afterwards, transcripts were typed using Microsoft word. The transcription and typing of interview transcripts lasted 3 days translating into one transcript per day and the data was transcribed by the two hired and trained research assistants. To facilitate validity of interview transcripts, research assistants also submitted audio copies of the interview process together with the transcript. The word processed transcripts were reviewed and read by the researcher to identify emerging themes. Common or recurrent themes and codes were used to develop a coding dictionary. The coding dictionary is a list of themes which emerged from the interview data and which were used to classify further data to help categorise similar text data under same themes. After developing the coding dictionary, the interview transcripts were loaded into qualitative analysis software called Atlas ti. 5.0 to facilitate coding, sorting and compilation of text data falling under the identified themes of interest. The coded texts and outputs were analysed for content and themes and these were interpreted into findings which formed the qualitative section and sub-sections of this report.

3.8 Limitations of the Study

The main limitation of this study was the use of the cross-sectional research design that does not permit trend and causal analysis. The feasibility of a more comprehensive study such as a case-control longitudinal design was hampered by the limited time, and funds which were available for

this study. Secondly, the assessment of sexual behaviour was based on self-reports which may be affected by socially desirable responding leading to biases.

3.9 Ethical Considerations

This study was designed to address the following ethical principles: respect for persons, beneficence and justice. Efforts were made to protect individual autonomy, minimize harm and maximize benefits by using procedures which were consistent with sound research designs that took the said factors into consideration. This study did not pose any physical risks associated with a physical procedure or intervention, such as obtaining tissue or blood samples. Primarily, this study ensured informed consent and confidentiality of responses (consent form attached as appendix 1).

This study was reviewed and approved by the University of Zambia Research Ethics Committee. Further approval was obtained from the Ministry of Health's research committee through the Ministry of Health Permanent Secretary and the Director of Public Health and Research.

IV. Main Findings

Introduction:

This chapter discusses the main findings of this study. It is made up of 6 sections which include background characteristics, Sexual partnerships, condom use, prevalence of STIs, and Child bearing. It also discusses, factors associated with sexual behaviours of condom use and multiple sexual partnerships such as duration on ART, HIV status disclosure, exposure to health communication interventions and finally ending with a discussion of findings, conclusion and recommendations.

4.1 Background Characteristics of the respondents

This section describes some of the background characteristics of respondents which included education level, marital status, income level, religion, gender and age.

Three hundred and twenty (320) respondents participated in this study. Three hundred and fourteen (314) participated in the quantitative interviews and six (6) participated in qualitative interviews. Characteristics of the respondents are presented in Table 4.1.

As shown in Table 4.1, 52% (162) of the respondents were males and 48% (152) were females. Most (59.7%) of the respondents were married, about 20% were single, and 11% were either divorced or on separation while about 10% had lost their partners.

Table 4.1: Background characteristics of Respondents

Characteristics		Number of Respondents	Percent
Sex			
	Male	162	52%
	Female	152	48%
Age group			
	15-29	100	31.8%
	30-39	78	24.8%
	40-49	136	43.3%
Marital Status			
	Single	63	20.1%
	Out of marriage	33	10.5%
	Partner died	30	9.6%
	Married	187	59.7%
Highest Level of Education			
	None	22	7.1%
	Primary	95	30.8%
	Secondary	139	45.1%
	Tertiary Vocational	21	6.8%
	College/University	31	10.1%
Religion			
	Protestant Christian	209	71.6%
	Catholic	81	27.7%
	Muslim	2	0.7%
Monthly Income (ZMK)			
	≤500,000	154	50.2%
	500,001-1,500,000	114	37.1%
	1,500,001-2,500,000	20	6.5%
	≥2,500,01	19	6.2%
		314	

By age, respondents were predominantly falling in the age-group 40-49 (43.3%). About a quarter were in the age-group 30-39 and 32% were in the age-group 15-29.

In terms of education attainment, the largest proportion (45%) of respondents had attained secondary education, slightly less than a third (31%) had only attained primary level education and about 10% had either college or university education.

The study respondents were predominantly low income. Slightly over half of the respondents earned K500, 000 or less per month and less than 10% earned more than K2, 500,000. In addition, most of the respondents earned K500, 000 per month.

By religion, most (71.6%) of the respondents were protestant Christian, 27.7% were Catholic and a scanty 0.7% were Muslim.

4.2 Sexual Behaviours

In this study sexual behavior was defined in the context of risky or non-risky sexual intercourse. Risky sexual behavior was defined as any sexual intercourse where condoms were not consistently used and relationships which involved a person on ART who engaged in sexual relations with multiple sexual partnerships within the twelve months before the survey especially without using condoms every time during sexual intercourse. On the other hand, safe sexual behaviours were defined as any sexual relations where condoms were primarily, consistently used with one sexual partner, and with all partners for those who engaged in sexual intercourse with multiple partners. Voluntary abstinence was also classified as a form of safe sexual behaviour. Other proxy indicators of sexual behavior used in this study included STI occurrence and child bearing among respondents.

This section describes self-reported sexual behaviours among the study population. Focus will be on the type of sexual partnerships they had sex with, whether they had sexual intercourse with multiple partners, and whether they consistently used condoms with all sexual partners. In this study, condom use was primarily measured using condom use during the last sexual intercourse and secondarily consistent condom use with all sexual partners.

This section also presents finding of factors that were hypothesized to influence sexual behaviours such as HIV status disclosure, duration on ART, beliefs about ART and HIV infectivity and exposure to health communication. It will also present findings of the association of these factors with sexual behavior.

4.2.1 Last time Respondents Had Last Sexual Intercourse

Figure 4.2 shows that 98% of the respondents were sexually active at the time of the survey- they had sexual intercourse in the 12 months before the survey. These findings revealed low levels of abstinence among respondents.

Furthermore, findings revealed that a majority (68.4%) of the respondents had their sexual intercourse in the last 30 days before the interview while only a few (4.6%) had sex beyond the six months period before the survey.

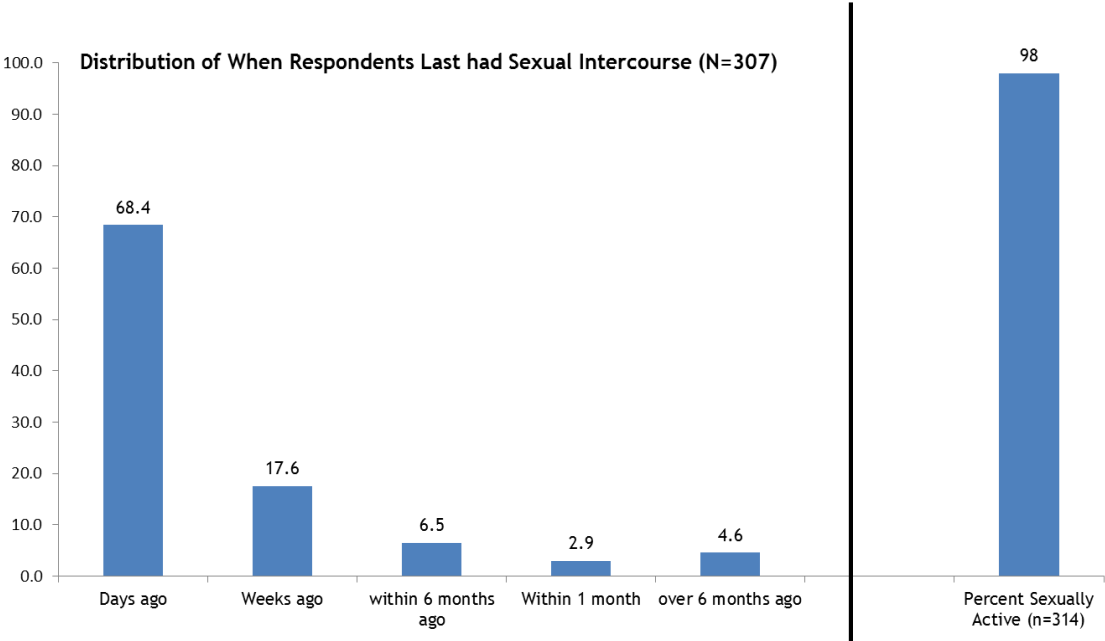


Figure 4.2: Last time Respondents Had Last Sexual Intercourse

4.2.2 Number of Sexual Partners

The number of sexual partners people have within any given period of time has a bearing on their exposure to HIV and other STIs. Several studies have concluded that, having more than one sexual partner at a time increases the likelihood of contracting and transmitting STIs including HIV (NAC 2009).

This study investigated the number of sexual partners respondents had within the 12 months before the survey to facilitate the assessment of risky sexual behaviours. Figure 4.3, show results of number of sexual partners among respondents.

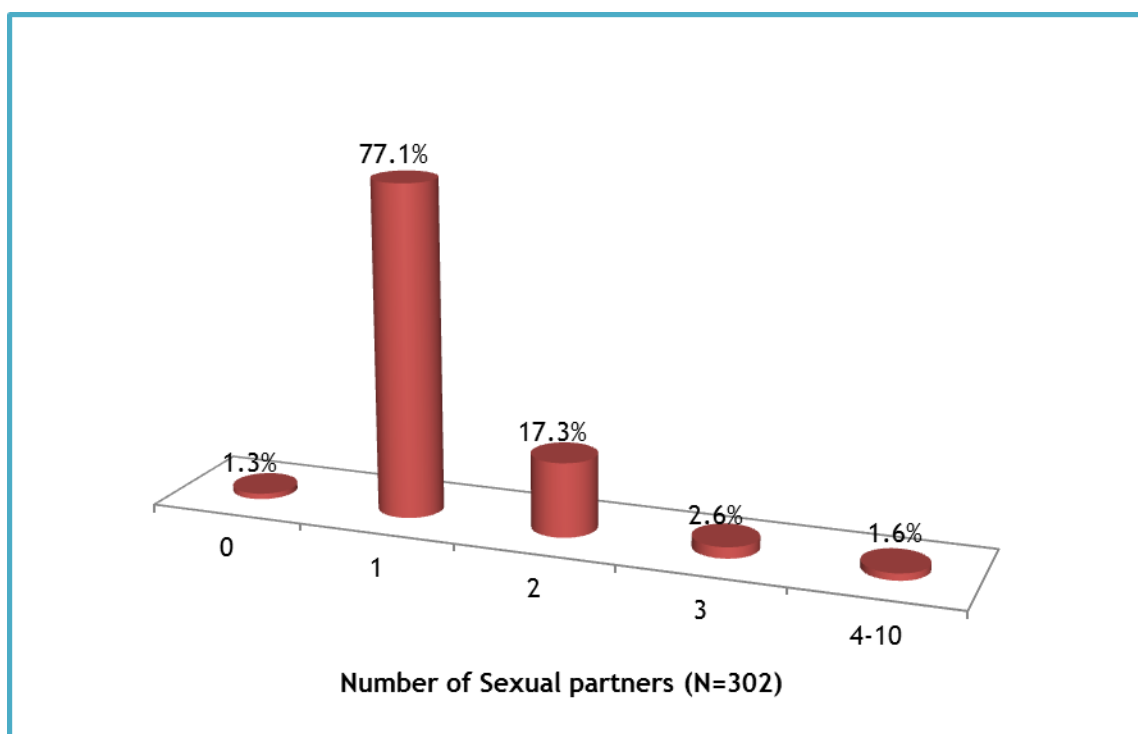


Figure 4.3: Number of sexual partners in the last 12 months preceding the survey

According to results in Figure 4.3, about 21% of the respondents engaged in sexual relations with more than one sexual partner within the 12 twelve months before this survey. However, the study could not verify whether these sexual partnerships occurred at the same time (concurrently) or occurred, one at a time (serially). One percent of the respondents did not have any sexual partners in the 12 months before the survey while, the majority (77.1%) of the respondents reported to have engaged in sexual intercourse with only one sexual partner within the 12 months before the survey.

Table 4.2 showed the percentage distribution of number of sexual partners among respondents by selected background characteristics. The findings show that more (34%) males had two or more sexual partners than females (7.3%). The study further showed that the age group 35-49 had the highest (27.5%) percentage of respondents who had two or more sexual partners while the 15-27 age group had the least proportion of respondents with multiple sexual partners.

Surprisingly, single respondents on ART had the least number of sexual partners. A vast majority (78.7%) of the single respondents indicated that they only had one sexual partner. Respondents whose partners had died reported the highest (26.7%) proportion of respondents with two or more sexual partners in the twelve months before the survey. Similarly, almost a quarter (23.0%) of the married respondents reported to have had two or more sexual partners within the reference period.

By highest education attainment, respondents who reported the highest rates of multiple sexual partnerships, with two or more sexual partners (29.0%), were those who had college or university education. The least (14.3%) rate of multiple sexual partnerships was reported among those who had vocational tertiary education and followed by those who had non or primary level education. The findings therefore denote a trend of increasing number of sexual partners with

increase in education level. This implies that those who had higher education levels were more likely to engage in sexual relations with two or more sexual partners.

Table 4.2: Number of Sexual Partners by Selected Background Characteristics of Respondents

Category	Number of Sexual Partners			Odds ratios /p-value for having 2+ partners
	None	One	Two or More	
	Percent/Number	Percent/Number	Percent/Number	
Sex				
Male	2.5% (4/162)	63.6% (103/162)	34.0%(55/162)	11.1 (p=0.00)
Female	2.0% (3/150)	90.7% (136/150)	7.3%(11/150)	
Total	2.2% (7/312)	76.6% (239/312)	21.2% (66/312)	
Age group				
15-27	1.9% (1/52)	82.7% (43/52)	15.4% (8/52)	1.13(p=0.84)
28-34	4.0% (5/124)	77.4% (96/124)	18.5% (23/124)	0.78(p=0.54)
35-49	0.7%(1/136)	73.5% (100/136)	27.5% (35/136)	
Total	2.2%(7/312)	76.6% (239/312)	21.2% (66/312)	
Marital Status				
Single	8.2% (5/61)	78.7% (48/61)	13.1% (8/61)	
Out of marriage	3.0% (1/33)	75.8% (25/33)	21.2% (7/33)	
Partner Died	3.3 % (1/30)	70.0% (21/30)	26.7% (8/30)	
Married	N/A	77.0% (144/187)	23.0% (43/187)	
Total	2.3% (7/311)	76.5% (238/311)	21.2% (66/311)	
In Marriage			23.0% (43/187)	2.0(p=0.58)
Not in marriage			19.7% (23/117)	
Education				
None	0 (0/22)	81.8% (18/22)	18.2% (4/22)	
Primary	4.2% (4/95)	81.1% (77/95)	14.7% (14/95)	
Secondary	0.7% (1/137)	73.7% (101/137)	25.5% (35/137)	
Tertiary Vocational	9.5% (2/21)	76.2% (16/21)	14.3% (3/21)	
College/University	0 (0/31)	71.0% (22/31)	29.0% (9/31)	
Total	2.3% (7/306)	76.5% (234/306)	21.2% (65/306)	
None to primary			15.9%(18/117)	
Secondary & higher			25.9%(47/189)	2.3 (p=0.047)
Income				
≤500,000	3.2% (5/154)	79.9% (123/154)	16.9% (26/154)	
≥500,001	1.3% (2/153)	73.2% (112/153)	25.5% (39/153)	1.3(p=0.55)

By income, respondents with higher income reported higher rates of multiple sexual partnerships (17% Vs. 26%) than those with lower levels of income. In-depth interviews also showed that having money or the lack of it is an important factor that influences having multiple sexual partners. In this regard, a woman from Kamwala clinic said: *“You will find that if a man has money, women will just take themselves to him and he will give them money in exchange for sex. When it comes to money, women don’t resist. Money is hard to come by, hence if we find a man with money and they ask us out , we sleep with them just like that.”*

This study went further to assess if the independent variables of age, sex, marital status, education and income level significantly influence sexual behaviours. Binary logistic regression was applied to the data to measure statistical significance of the intervening and dependent variables and also to assess degree of effect size on dependent variables of background characteristics and intervening variables. To facilitate the use of binary logistic regression models to assess the statistical significance of the observed differences, all dependent variables were dichotomized in the analysis-they were computed into dummy variables.

As shown in Table 4.2, sex was significantly ($p=0.00$) associated with having multiple sexual partners. An odds ratio of 11.1 further entails that males were about 11 times more likely to have multiple sexual partners than females. Similarly, those who had secondary or higher education were found to have a higher likelihood of having multiple sexual partners than those with primary or no education. With an odds ratio of 2.3 and a p-value of 0.047, those with higher

education were about 2 times more likely to engage in multiple sexual partnerships. Results showed non-significant findings between having more than one sexual partner and age, education, marital status, and income at the 95% confidence level.

4.2.3 Type of Partner during Last Sexual Intercourse

The type of sexual partners respondents had sexual intercourse with was of particular interest in this study. This is because the type of sexual partner one has affects exposure to STIs transmission and contraction (NAC 2009 and Moody et al 2010). As a result this study investigated the types of sexual partners among respondents to assess risky sexual behavior.

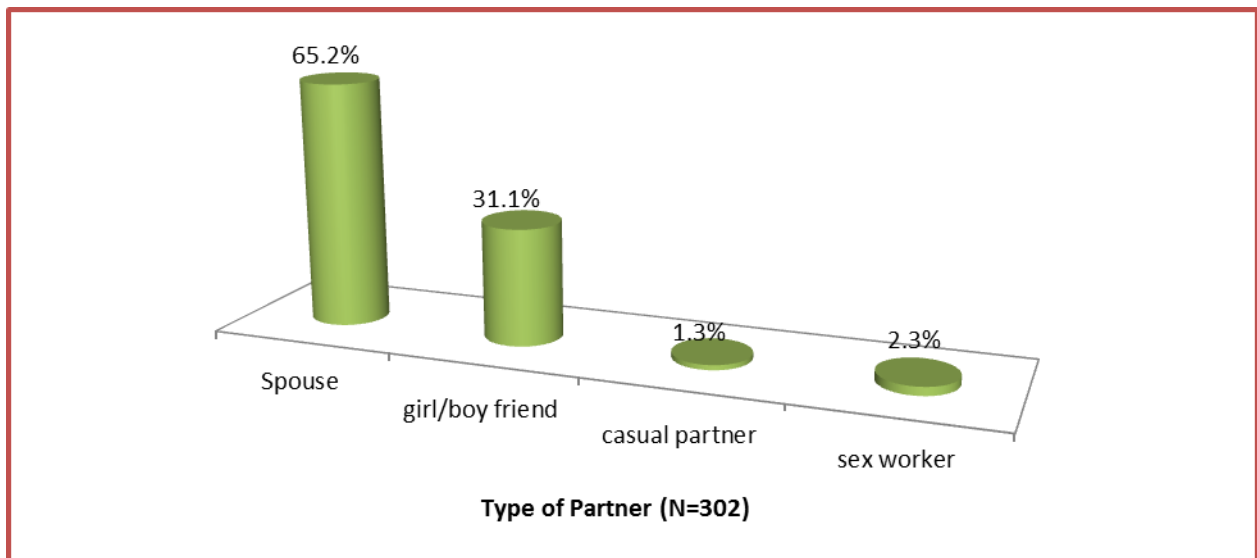


Figure 4.4: Type of Partner during Last Sexual Intercourse

According to Figure 4.4, it was revealed that sexual intercourse with partners who may be deemed as high risk groups, namely casual partners and paying partners (i.e. sex workers) stood at 1.3% and 2.3% respectively. The majority (65%) of the respondents last had sex with a stable

partner; a spouse and about 31% of the respondents reported to have had the last sexual intercourse with boy/girlfriends. Girlfriend and boyfriend relationships were also treated as high risk sexual partnerships in this study because of the inherent instability of such relationships.

Table 4.3, showed self-reported changes in sexual behaviors and condom use with high risk populations; casual and commercial sex workers (CSWs) before and after study participants knew their HIV status.

According to Table 4.3, very few respondents reported that they increased their sexual encounters with high risk populations; 1.2% for CSWs and 2.2% casual partners. However, it is important to also mention that most (61.1% and 64.3%) of the respondents in this study reported to have never had sexual intercourse with CSWs and casual partners before or after being diagnosed with HIV respectively.

Table 4.3: Sexual Intercourse with CSWs and Casual Partners before and after Diagnosis

	CSWs (n(%))	Casual Partner (n(%))	Condom Use (n(%))
Remained the same	1(0.6%)	2 (0.6%)	40 (12.7%)
Increased	2 (1.2%)	7 (2.2%)	198(63.1%)
Decreased	56 (34.6%)	101(32.2%)	20(6.4%)
Can't tell	4 (2.5%)	2 (0.6%)	33(10.5%)
Never had sex with CSWs	99 (61.1%)	202 (64.3%)	-
Total	162	314	291

4.3 Factors Associated with Having Multiple Sexual Partners

As already shown, multiple sexual partnerships were high among respondents. This study also sought to obtain insights on the factors that may be associated with engaging in multiple sexual

partnerships. These included duration on ART, attitudes on the HIV infectivity of people on ART and exposure to positive living messages.

The following were findings on attitude on HIV infectivity of people on ART.

4.3.1 Attitude on Antiretroviral Therapy and HIV Infectivity

Most of the countries in the world, including Zambia had managed to put their infected populations on ART and were almost reaching universal access to ART (UNAIDS 2009).

In light of this, it was important to ensure that accurate information regarding the use of ART and one's potency to transmit HIV (HIV infectivity) is available to people on ART because any misconceptions may result in risky sexual behaviours such as non-use of condoms which might result in increases in the incidence of HIV (Scheel et al 2002).

This section therefore focuses on the attitude of respondents regarding their perceptions on the relationship between being on ART and one's potency to transmit the HIV virus. Attitude was assessed using a list of statements to which respondents were asked to rank from strongly disagreeing to strongly agreeing as shown in Table 4.4. The ranking was reflective of and therefore used as a measure of respondents' attitude of being on ART and having the potency to transmit the HIV virus.

Table 4.4 showed that there were generally positive attitudes and perceptions on the HIV infectivity of people on ART. The scores on the highlighted scaled items ranged from strong disagreement to just disagreeing on negative statements. As shown by the percentage scores, the vast majority of respondents generally disagreed with negative statements such as; "*people on*

ART are less likely to transmit the HIV virus”, “I see no need of using condoms now that I am on ART”, “A person on ART cannot transmit HIV” among others as those who disagreed ranged from 76% to about 98%. The findings generally suggest that respondents in this study did not associate being on ART to a reduction in their potency to transmit the HIV virus if they had sexual intercourse without using a condom.

Table 4.4: Attitude on ART and HIV infectivity

	Strongly disagreed	Somewhat Disagreed	Somewhat agreed	Strongly Agree
People on ART are less likely to transmit the HIV virus.(n=308)	48.1%	27.9%	19.2%	3.9%
HIV positive person who is not on ART is more likely to transmit the HIV virus (n=308)	54.2%	21.1%	18.8%	5.8%
I see no need of using condoms now that I am on ART (n=308)	61.7%	33.8%	3.9%	0.6%
I see no need of using condoms with my regular sexual partner (n=309)	58.9%	33.3%	7.1%	0.6%
A person on ART cannot transmit HIV (n=309)	78.3%	19.7%	1.9%	0
I see no need of using condoms with my casual sexual partners (n=311)	80.1%	18.0%	1.6%	0.3%
You cannot contract HIV if you have sex with a person who is on ART (n=311)	83.9%	14.8%	1.0%	0.3%
You cannot contract HIV if you have sex with a person who is on ART (n=311)	78.8%	18.0%	3.2%	0
If both partners are HIV+ there is less need to use condoms (n=302)	63.6%	22.8%	12.6%	1.0%

Correspondingly, qualitative findings also suggest that people on ART do not believe that if they are on ART, then they cannot transmit the HIV virus if they had sexual intercourse without a condom.

“Yes, [you can transmit] because they say that it [the virus] does not die, people say that it does not die hence it can be passed on,” said a man from Kalingalinga clinic.

It was also important to note that there were still some people on ART who were not very sure about their potency to transmit HIV once on ART. This group presented a cadre of people whose sexual behaviours may easily be swayed to practice risky sex as they lacked proper knowledge to inspire the practice of safe sexual behaviours. A woman from Kabwata clinic shared her experience while interacting with members of her support group and shared; *“Okay I just see that most people in support groups ask the same question-they think that if they start drinking the ARVs they can’t infect their friends.”*

Similarly, a woman from Bauleni clinic shared what she heard through her interaction with her friends who were on ART and shared; *“So most of them think that if you are drinking the ARVs maybe you can’t infect someone else or the risk of infection is reduced and that maybe I can’t get sick again while others think that you can’t infect someone else. “*

A diverse range of views and beliefs were also revealed in the study. A woman from Kabwata believed that since she was on ART, she was less likely to transmit the virus to her regular sexual partner with whom she had been having unprotected sexual intercourse for over two years. She affirmed that, it would take a long time for her to transmit the HIV virus if at all and she said; *“The way I think about this, I can’t give [transmit the virus] right there and then, it will take a beat of time because me and my boyfriend, we are now going into 2 years we have been having unprotected sex but he has never been*

sick so am thinking that they do help, a person can't easily get infected- if it means getting sick, it won't be any time soon."

Table 4.5 presents findings of the association between attitude on HIV infectivity of people on ART and having multiple sexual partnerships.

Table 4.5: Attitude on HIV infectivity and Having Multiple Sexual Partnerships

Behaviour	Had Multiple Partners	
	%/n	Odds ratio/p-value
Attitude on Infectivity		
Positive attitude (<i>do not believe ART reduce HIV infectivity</i>)	22.3(48)	1.71(p=0.41)
Negative attitude (<i>believe ART reduce HIV infectivity</i>)	18.6(18)	

In terms of sexual behavior as measured by number of sexual partners, Table 4.5 shows an odds ratio of 1.7 for those who did not believe that ART (had positive perceptions) reduced HIV infectivity of people on ART. This suggested that those with positive attitudes were about twice as likely to have multiple sexual partners compared to those who had negative beliefs/attitudes. These findings are ironical in that one would expect that those with positive attitudes would practice safer sexual behaviors by having fewer partners.

4.3.2 Duration of being on ART

Duration on ART may affect levels of condom use and the number of partners people on ART had sexual intercourse with. This study therefore investigated whether people who were longer on ART had different sexual behaviours as compared to those who had been on ART for shorter periods of time. In this study duration was in terms of those who were on ART for 6-11 months,

12-23 months and lastly those who were on ART for more than 23 months. Findings are shown in figure 4.5.

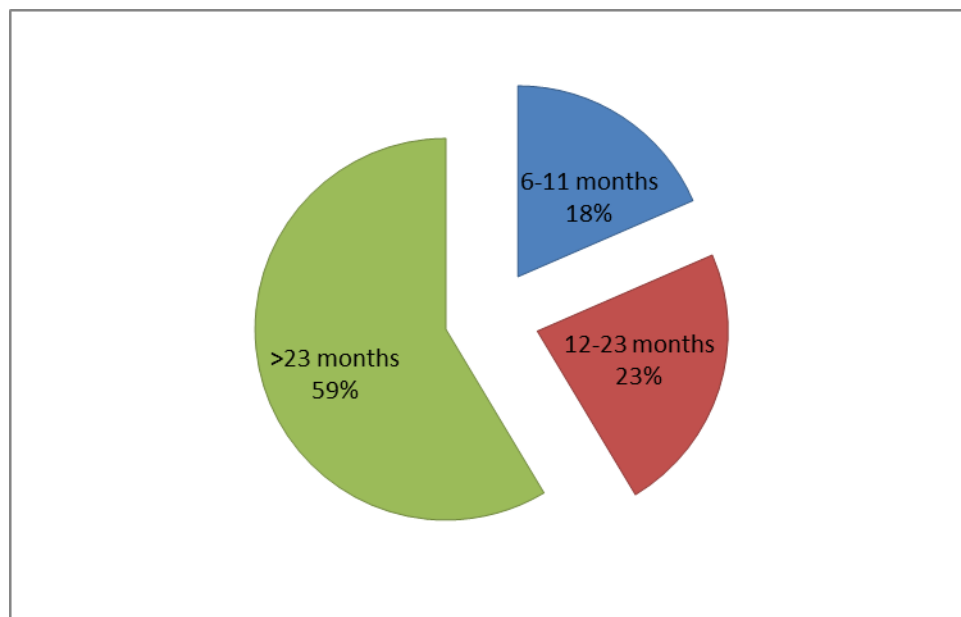


Figure 4.5: Respondents by duration on ART

Results in Figure 4.5 showed that most (59%) of the 314 respondents in this study were on ART for more than 23 months, 23% were on ART for 12-23 months and lastly 18% were on ART for 6-11 months. This study hypothesized that being on ART for a longer duration increases the likelihood of practicing risky sex including having multiple sexual partners.

A few respondents who participated in qualitative interviews had the following to say about duration on ART and having multiple sexual partners.

“on [duration], those who just started on ART, like me in those first days, I was very scared and I was abstaining from sex but as at now I have seen that time is going and am just drinking the medicines so even people’s behaviors slowly change because they are made to believe that they are just okay so they start “tumisango”

[start practicing risky sex; sex with multiple partners],” said a woman from Kamwala clinic

Table 4.6 Duration on ART and having multiple sexual partners

Behaviour/Factor	Had Multiple Partners	
	%/n	Odds ratio/p-value
Duration on ART		
6-23 months	23.1%(30)	-
>23 months	19.8%(36)	0.50(p=0.03)

The findings show that duration on ART is associated with having multiple sexual partners. However, the findings were in contrary to the initial hypothesis that being longer on ART increases the likelihood of engaging in risky sex, particularly, having multiple sexual partners. As shown by the odds ratio (OR: 0.5) which is less than 1 for a reference category of >23 months, a person who was on ART for a duration of 23 months and longer was less likely to have multiple sexual partners. Results also showed that the difference between the two duration categories was statistically different at the 95% level of significance. The findings suggest that longer duration on ART was associated with safer sexual behaviours among respondents.

4.3.3 Exposure to Positive Living Messages

Health communication or health promotion is the sharing of information on various health topics which enable the target population to make sound health choices and to lead healthy lives with reduced risk of exposure to various infection and hence morbidity and mortality (Bachman et al. 2007). Therefore this study investigated PLWH’s exposure to health messages.

Figure 4.6, showed the percentage of respondents who were exposed to health messages in the last six months before the survey.

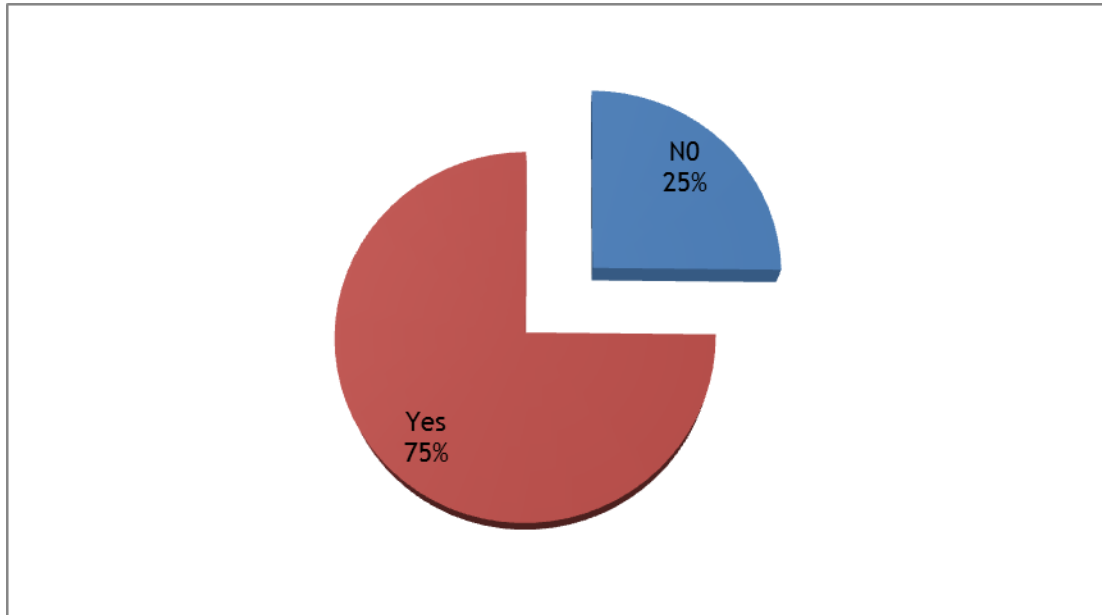


Figure 4.6 Exposure to Positive Living Messages in the 6 months before the Survey

Three quarters (75%) of the 304 respondents reported that they received positive living messages/counseling during the six months before this survey. Table 4.7, shows the types of counseling/messages they received in the same calendar period and during the last visit to an ART center.

Type of Counseling Received

Table 4.7, revealed that ART adherence was the most (34.6%) discussed topic during the counseling sessions with respondents, followed by condom use (25.8%), and nutrition (17.3%). Child bearing issues (1.9%) were among the least discussed topics during counseling sessions with people on ART.

Table 4.7: Type of Counseling and Received by Respondents

Type of Counseling	Received in last 6 months	Received During last visit
Condom use	25.8%	24.0%
Partner reduction	8.1%	7.0%
Abstinence	5.8%	5.6%
Work related counseling	1.5%	0.8%
Nutrition	17.3%	11.1%
PMTCT	7.2%	5.6%
ART adherence	34.6%	40.7%
Male circumcision	3.9%	4.6%
Exercising/keeping fit	3.9%	-
child bearing	1.9%	-
Total Responses	740	359

It is expected that every visit to a health center by a person living with HIV should be accompanied by targeted counseling on positive living messages- prevention, ART adherence, and nutrition among others. Results in Table 4.7 showed that during the last visit to an ART center, most (40.7%) of the respondents received information on ART adherence, followed by consistent condom use (24%), and nutrition (11.1%).

This study went further to assess association between exposure to health messages of any type and having multiple sexual partners. Results are presented in Table 4.8.

Table 4.8: Association between exposure to positive living messages and having multiple sexual partners

Behaviour/Factor	Had Multiple Partners	
	%/n	Odds ratio/p-value
Exposure to Positive Living Messages		
Were Exposed to messages	17.35 (40)	2.3 (p=0.04)
Were not Exposed to messages	31.2% (24)	

Table 4.8, showed an odds ratio of 2.3 which entailed that those who were exposed to positive living messages were twice more likely to have only one sexual partner than those who were not exposed. As shown by the percentages, exposure to positive living messages significantly ($p < 0.04$) reduced the likelihood of having multiple sexual partners among respondents.

Qualitative interviews through in-depth interviews also brought out some factors that may be associated with having multiple partners shown in the quotes.

“just like I earlier said, recklessness; most of them do it recklessly while others want to show people that they are not sick so they just do it carelessly sleeping with anyone so that they can show people that they are not sick and to be viewed that they are not sick yet they are sick” said a woman from Kalingalinga

“And alcohol you will find that a person is drunk then they find someone who they don't know that well and they have sex with them. And then you will find that they go and drink from chawama there, they find another woman then they will pick again, again they go and drink from George compound they find another woman just like that” said a man from Kamwala clinic

4.4 Condom Use

Regardless of whether one engages in sexual intercourse with high risk populations or not, it is important to note that condom use is one of the safest methods of HIV prevention, second from abstinence (Bachman 2007). Therefore, this section focused on condom use among respondents as a method of preventing secondary infections and also to prevent transmission to HIV negative sexual partners. Two indicators of sexual behaviors were prioritized in this study and these included condom use at last sex and consistent condom use.

4.4.1 Condom use During the Last Sexual Intercourse:

Condom use during the last sexual intercourse is an important indicator of the general protective behaviours of the population. This is because a measure of condom use at last sex is less likely to be severely affected by misreporting associated with recall.

Figure 4.7, shows levels of condom use during last sexual intercourse.

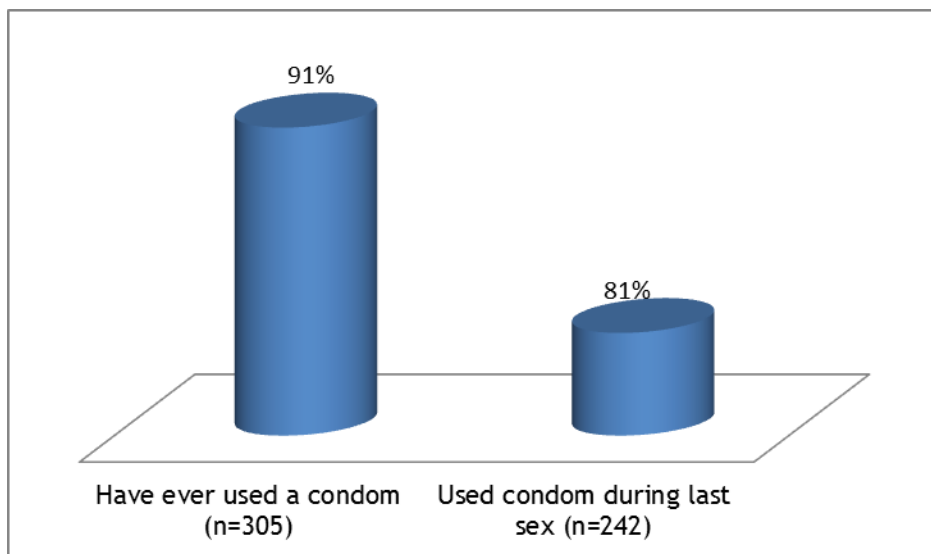


Figure 4.7: Ever Used a Condom and Condom Use during Last Sexual Intercourse

Results in figure 4.7 showed that 91% of the respondents have ever used a condom. This implies that almost a tenth (9%) of the respondents had never used a condom when having sexual intercourse. Figure 4.7 further showed that, among the 242 sexually active respondents, about 81% reported that they used a condom the last time they had sexual intercourse.

4.4.2 Condom Use during Last Sexual Intercourse by Selected Background Characteristics of Respondents

The Zambia Demographic and Health Survey showed that there are differentials in condom use by various social, economic and demographic characteristics in the general Zambian population (CSO et al. 2009). This study thus investigated differentials in condom use by background characteristics among sexually active respondents who reported to have ever used a condom and results are shown in Table 4.9.

Table 4.9 revealed that condom use was not very different between men and women (81.8% Vs. 80.2%) although slightly more males reported condom use during last sexual intercourse than women.

By age, the 15-27 age-group reported the highest percentage of respondents who used a condom during the last sexual intercourse while the age-group 35-49 reported the lowest (79.8%) percentage of respondents who used a condom during the last sexual intercourse.

By marital status, single respondents reported relatively better protective behaviours than all other marital status categories. The major difference was reported among the widowed, who reported the lowest (60.9%) percentage of respondents who reported that they used a condom the last time they had sexual intercourse.

Table 4.9: Condom Use during Last Sexual Intercourse by Selected Background Characteristics of Respondents

Category	Used a Condom at Last Sex	
	Percent (n/N)	
Sex		
Male		81.8% (108/132)
Female		80.2% (89/111)
Age group		
15-27		82.9% (34/41)
28-34		81.6% (80/98)
35-49		79.8% (83/104)
Marital Status		
Single		90.0% (45/50)
Out of marriage		82.6% (19/23)
Partner Died		60.9% (14/23)
Married		81.5% (119/146)
Education		
None		88.9% (16/18)
Primary		79.2% (57/72)
Secondary		82.7% (91/110)
Tertiary Vocational		93.3% (14/15)
College/University		68.2% (15/22)
Income		
≤500,000		80.7% (96/119)
≥500,001		83.9% (99/118)
Total		81.1%(197/243)

The education category also showed marked differentials in condoms use. As depicted in Table 4.9, respondents who had college or university education reported the lowest (68.2%) percentage of respondents who used a condom the last time they had sexual intercourse. While the highest percentage of condom users at last sex was found among those who had vocational tertiary education.

4.4.3 Consistent Condom Use

Various studies (PSI 2009, CSO et al. 2009) have shown that there is a positive bias to consistent condom use with partners that are perceived as high risk such as commercial sex workers (CSWs), long distance truck drivers, among others. Therefore, this study also investigated respondents' reports of consistent condom use, first, with all types of sexual partners and then with specific high risk groups.

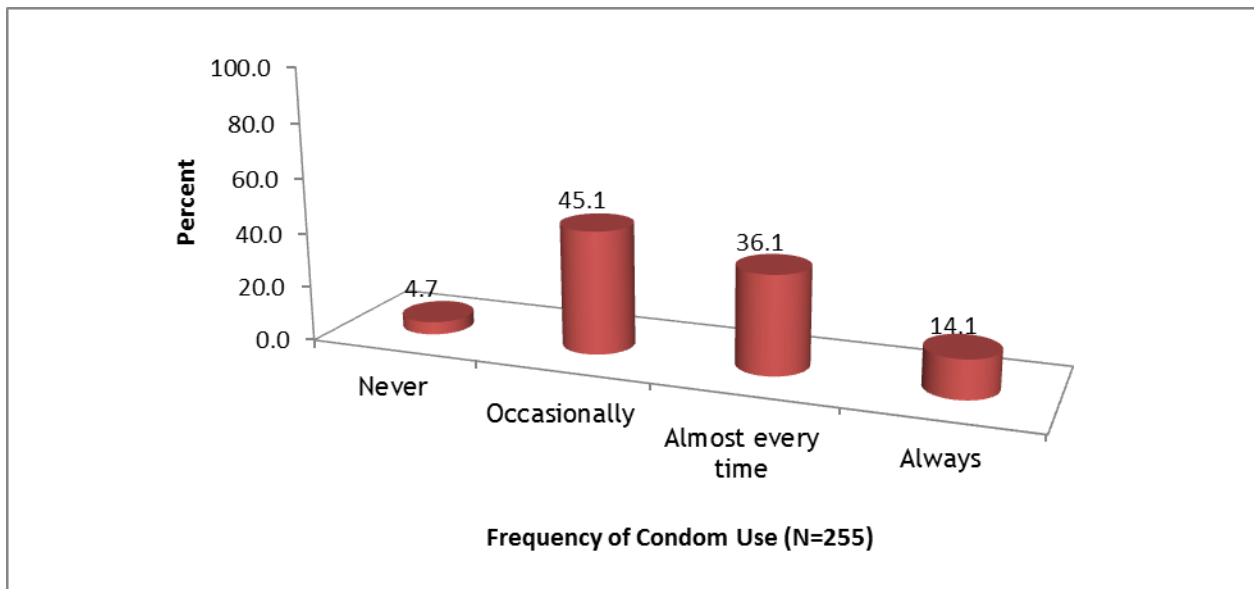


Figure 4.8: Consistent Condom Use with any Type of Partner

To assess general condom use, respondents were asked how often they used condoms with any sexual partner. As shown in Figure 4.8, generally, consistent condom use among respondents was very low. Only about 14% of 255 respondents reported that they consistently used condoms with any type of partner they had sexual intercourse with. About 5% reported that they never used condoms with any type of partner while 45% indicated that they occasionally used condoms with any type of partner.

To investigate the type of partner whom respondents were using condoms with, this study asked respondents to state which types of partners they consistently used condoms with. Results were shown in Figure 4.9.

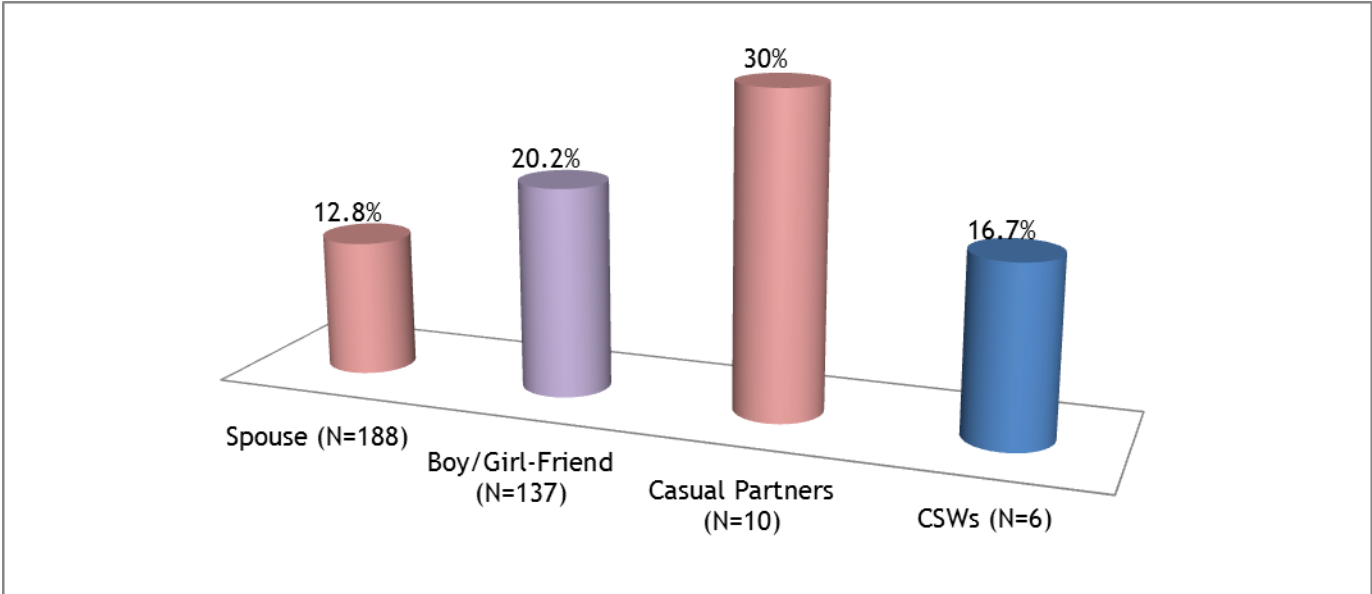


Figure 4.9: Consistent Condom Use by Type of Partner

4.4.4 Consistent Condom Use by Type of Partner

According to the results in figure 4.9, the partner with whom the condom was most inconsistently used was the spouse, with only about 13% reporting consistent condom use with this type of partner. Furthermore, results showed that only about 20%, 30% and 17% reported consistent condom use with partners who may be deemed as risk; boy/girl-friend, casual partners and commercial sex workers respectively.

4.5 Factors Associated with Consistent Condom Use

This section presents findings on possible correlates of condom use, such as HIV status disclosure, duration on ART, attitude on the HIV infectivity of people on ART, exposure to positive living messages, background characteristics. The following were descriptive findings on HIV status disclosure among respondents. This section will then present findings of associations of the hypothesized correlates of sexual behaviour which has already been described in section two.

4.5.1: HIV Status Disclosure

HIV status disclosure is very important as it helps the partners involved to be aware of the risk of and also to find ways of reducing the risk of contracting or transmitting the virus or indeed to prevent secondary infections. This study was particularly interested to assess the relationship between HIV status disclosure and incidences of risky sex, particularly, sexual intercourse without a condom.

Table 4.10 showed that almost a quarter (24.2%) of the respondents reported that they had not disclosed their HIV status to their regular sexual partners. According to Table 4.10, of those who said that they knew the HIV status of their regular sexual partners, about 81% said that their regular sexual partners were also HIV positive, 4.9% said that their partners were HIV negative and about 15% refused to reveal the HIV status of their regular sexual partners.

Table 4.10: HIV status Disclosure

HIV status disclosure	Frequency	Percent
Did not disclose HIV status to regular sexual partner	74	24.2%
HIV status of Regular Sexual Partner		
HIV+	247	80.5%
HIV-	15	4.9%
Didn't want to disclose	45	14.7%
Total	307	100.0%

4.5.2 Condom use by HIV Status of the Partner during Last Sexual Intercourse

This study also investigated disclosure by asking participants if they knew the HIV status of the partner with whom they last had sexual intercourse. This was seen to be of particular interest as it showed levels of discussion around HIV status among sexual partners which facilitates condom use especially if either partner is HIV negative. Results are shown in Table 4.11.

Table 4.11: Condom use by HIV Status of the Partner during Last Sexual Intercourse

HIV status of partner at last sex	Used a condom	Total
HIV+	80.9%	67.8%
HIV- or Status unknown	81.8%	32.2%

Table 4.11: Condom use by HIV Status of the Partner during Last Sexual Intercourse

Table 4.11 revealed that slightly less than a third (32%) of the respondents had sexual intercourse with a partner whose HIV status they did not know or was HIV negative and over two thirds (67%) of the respondents reported that the HIV status of the partner they last had sexual intercourse with was positive. Findings further showed that condom use was slightly more likely when the sexual partner was HIV negative as compared to when the sexual partner was HIV positive (82% and 81% respectively). However, results show that condom use did not significantly differ depending on the HIV status of the partner during last sexual intercourse.

Table 4.12, further revealed that the culture of asking for a new sexual partner’s HIV status was poor. Slightly, over a third (34.5%) of the respondents reported that they never asked the HIV status of a new sexual partner as compared to only 0.6% who did so. However, it is important to note that over half (55%) of the respondents reported that they never engaged in any sexual relations with any non-regular sexual partners.

Table 4.12: Respondents who asked about HIV status of New Sexual Partner

	Frequency	Percent
Never	55	34.4%
Sometimes	16	10.0%
Always	1	0.6%
Never practice such sex	88	55.0%
Total	160	100.0%

4.5.3 Attitude on HIV status Disclosure

As a way of assessing the perceptions of the significance of HIV status disclosure among the respondents, respondents were asked if they would support a legislation to prosecute PLWHA who did not disclose their HIV status but engaged in unprotected sexual intercourse. The aim of this question was to assess levels of protective behaviours among PLWHA to protect their sexual partners from contracting the HIV virus.

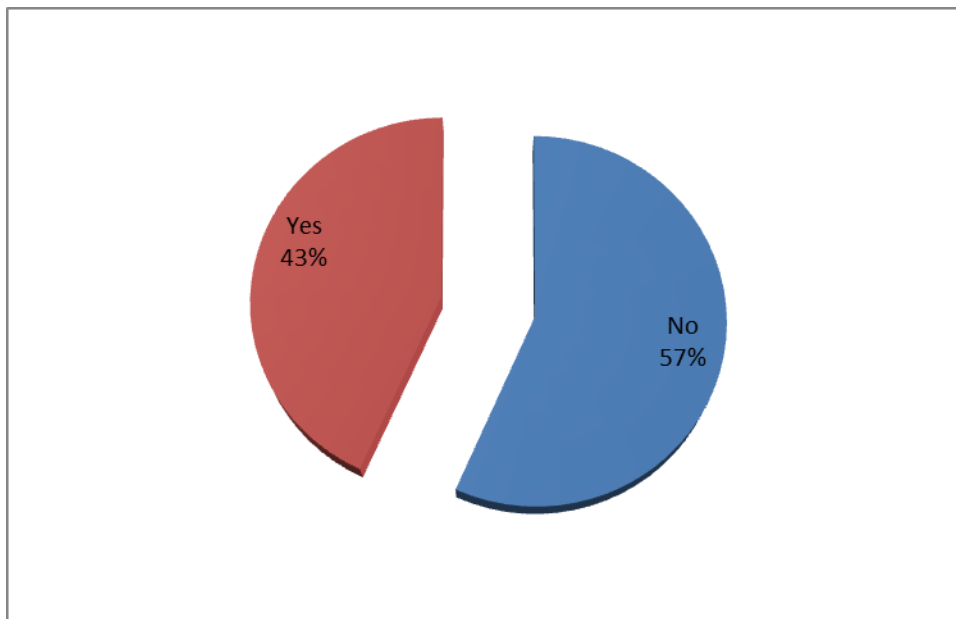


Figure 4.10: Attitude on HIV status Disclosure

Figure 4.10 revealed that over half (57%) of the 305 respondents indicated that they would not support the legislation to prosecute PLWHA who did not disclose their HIV status but who had unprotected sexual intercourse.

4.5.4 Associations between Consistent Condom Use and Selected behaviours and Social, Economic and Demographic Characteristics

Table 4.13 shows findings of condom use and selected social, economic and demographic characteristics and other possible correlates of consistent condom use including HIV status disclosure, duration on ART, and attitude/beliefs regarding being on ART and the potency to transmit the HIV virus, having multiple sexual partnerships, and exposure to positive living messages.

An analysis of the association between consistent condom use and selected factors showed varied findings.

Results showed that sex, age group, marital status, religion, income level, duration on ART, and attitude on infectivity were not significantly associated with consistent condom use at the 95% level of confidence. This entails that there is a 5% probability that differentials in consistent condom use by these variables were due to chance.

In Table 4.13, odds ratios showed the effect of the presence of a variable on the variability of consistent condom use. For example despite that HIV status disclosure was not significantly associated with consistent condom use, an odds ratio of 1.7 for those who disclosed their HIV status as a reference category entails that those who disclosed their HIV status to their sexual partners were 1.7 times more likely to consistently use condoms when having sexual intercourse. Similarly, an odds ratio of 0.75 for duration on ART showed that those on ART for 23 months and over were 0.75 times less likely to consistently use condoms.

Table 4.13: Associations between Consistent Condom Use and Selected behaviours and Social, Economic and Demographic Characteristics

Category	Consistently used Condoms during Sexual Intercourse	
	Percent/Number	Odds ratio/p-value
Sex		
	Male	50.7%(70)
	Female	49.2%(58)
Age group		
	15-27	38.6%(17)
	28-34	46.1%(47)
	35-49	58.2%
Marital Status		
	In marriage	47.8%
	Out of marriage	54.1%
Highest Level of Education		
	None to primary education	38.5%(37)
	Secondary and higher	56.5%(87)*
Income		
	0 to 500,000	47.7%(92)
	>500,000	56.1%(32)
HIV status Disclosure		
	Disclosed to regular partner	51.3%(102)
	Did not Disclose to regular partner	45.6%(26)
Duration on ART*		
	6-23 months	56.3%(58)
	>23 months	45.8%(70)
Attitude on Infectivity		
	Positive	53.2%(91)
	Negative	43.5%(37)
Exposure to Positive Living Messages		
	Were exposed	55.2% (107)
	Were not exposed	35.6% (21)

However, results showed that education, and number of sexual partners was significantly associated with consistent condom use. For education, an odds ratio of 2.56 and a p-value of

0.001 entails that there is 99% confidence that those with secondary education and higher were about 3 times more likely to consistently use condoms than those with primary or no education.

Similarly, respondents who were exposed to positive living messages showed that they were about two times (OR: 2.1) more likely to consistently use condoms than those who were not exposed.

This study also went further to assess sexual behaviours by using proxy measures to further understand sexual behaviours among respondents. These included an assessment of STI occurrence, a proven epidemiological marker of sexual behaviours and childbearing among respondents (Scheer et al 2002). Childbearing as an indicator of sexual behaviour, particularly non-condom use is not a conventional measure but it was used in this study to obtain additional insights and also to help assess what other factors may be associated with non-condom use.

The following section shows findings of reported STIs prevalence and childbearing among respondents.

4.6 Sexually Transmitted Infections

This study also investigated the reported occurrence of sexually transmitted infections (STIs) among respondents. STI prevalence used as an epidemiological marker of unprotected sex-*is a proxy indicator* of the levels of risky sexual intercourse among respondents. A measure of episodes of STIs as a proxy of risky sexual behavior, particularly non-use of condoms, has been validated in several studies including Scheer et al 2002.

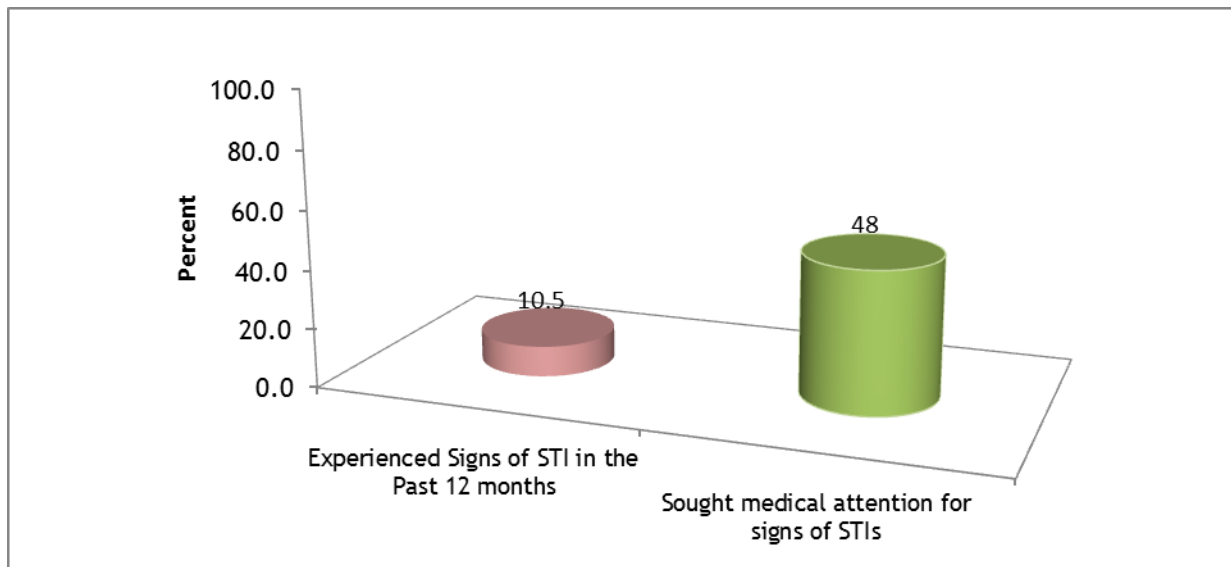


Figure 4.11: Prevalence of STIs and Health seeking behaviours

4.6.1: Prevalence of STIs

Findings in Figure 4.11 showed that 10.5% of the 306 respondents reported that they experienced or showed signs of an STI within the 12 months before the survey. However, less than half (48%) of these, reported that they visited a health center for medical attention. This was a

worrying finding especially given that levels of consistent condom use were reported to be very low, 14%, among respondents in this study.

Figure 4.12, shows findings on episodes of STIs in the twelve months preceding the survey as an indicator of risky sexual behaviours among respondents.

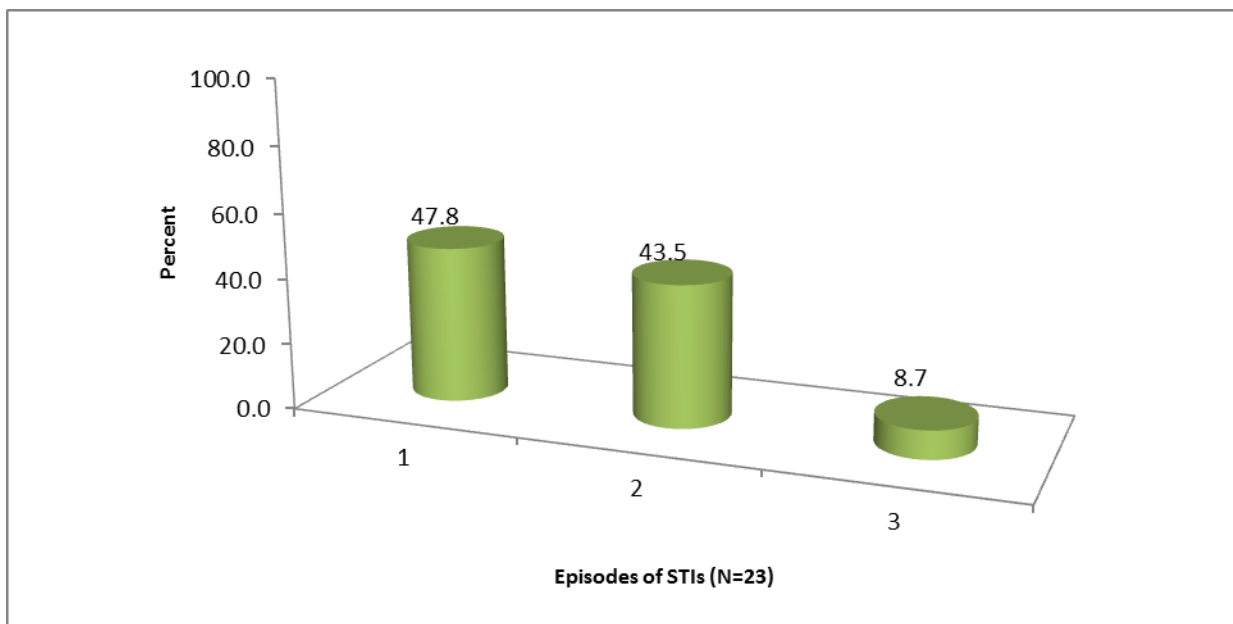


Figure 4.12: Episodes of reported STIs in the 12 months before the Survey

4.6.2 Episodes of reported STI in the last 12 months before the Survey

Figure 4.12 showed episodes of reported STIs among respondents. A scenario of experiencing two and more, episodes of STIs among 43.5% of respondents did not signify a favourable sexual behaviour picture. The general picture displayed by these findings suggested a high STI occurrence and consequently high risk sexual intercourse among respondents.

Table 4.14 presents findings of the association of STI occurrence and selected social, economic and demographic characteristics and duration on ART, HIV status disclosure, and attitude/beliefs on being on ART and the potency to transmit the HIV virus or the HIV infectivity of people on ART.

Table 4.14 showed that more females (15%) had an STI in the last 12 months before the survey than males (about 7%). Results further showed that females were about 3.2 times more likely to report an STI in the 12 month before the survey than males.

By age-group, the age group 15-17 showed significantly higher chances of reporting an STI than other age groups. With an odds ratio of 2.9, those aged 15-17 were about 3 times more likely to report an STI than other age groups.

Although marital status did not show significant differences between those in marriage and those who were not in marriage, results showed that those in marriage were much more likely to report an STI than those who were not married.

Education was another variable that showed a non-significant relationship with having an STI. However, those with primary or no education reported slightly more STI cases than those with secondary education or higher. Similarly, those with higher levels of income reported slightly more cases of STIs than those who earned below K500, 000.

Table 4.14: Association of STI Occurrence and Selected Social, Economic and Demographic Characteristics

Background characteristics/ Behaviours		Had an STI in the Last 12 months before the survey	
		%(n)	OR(p-value)
Sex	Male	6.6% (10)	3.2 (p=0.02)
	Female	14.8% (24)	
Age group	15-27	14.8 % (8)	2.9 (p=0.046)
	28-34	7.3% (9)	
	35-49	12.5% (17)	
Marital Status	In marriage	12.8% (24)	0.9(p=0.945)
	Not in Marriage	7.9% (10)	
Highest Level of Education			
	None to primary education	11.1% (13)	0.96 (p=0.95)
	Secondary and higher	10.5% (20)	
Religion	Protestant Christian	12.4% (26)	0.7(p=0.55)
	Catholic	9.9% (8)	
Income	0 to 500,000	10.4% (16)	0.5 (p=0.19)
	>500,000	11.1% (17)	
Duration on ART	6-23 months	8.5% (11)	1.4(p=0.17)
	>23 months	12.5% (23)	
Attitude on Infectivity of People on ART			
	Negative	13.3% (13)	0.5(p=0.17)
	Positive	9.7% (21)	
Have multiple Sexual Partners			
	Yes	16.4% (12)	0.53 (p=0.172)
	No	9.2% (22)	
Exposure to Positive Living Messages			
	Exposed	9.1% (21)	0.4(p=0.15)
	Not Exposed	16.7% (13)	

By duration on ART, those who were on ART for 23 months and more reported slightly more cases of STIs than those who were on ART for 6-23 months. This showed that risky sex was higher among people who were longer on ART although the findings were not statistically significant at the 95% level of confidence.

Results further showed that those who were exposed to positive living messages were less likely to report an STI within twelve months before the survey. However, the findings did not show a statistically significant relationship between the two categories.

4.7 Child Bearing among Respondents

Child bearing among people living with HIV is very important as it provide insights on the fertility and consequently sexual behaviours and their implications to HIV infection and prevalence rates. This is so because in spite of the availability of effective technologies; in form of the availability of highly effective antiretroviral drugs, the risk of transmitting the HIV virus to the infant and the risk of secondary infections and transmitting the virus to an uninfected partner, in the case of discordant couples, still remains a reality.

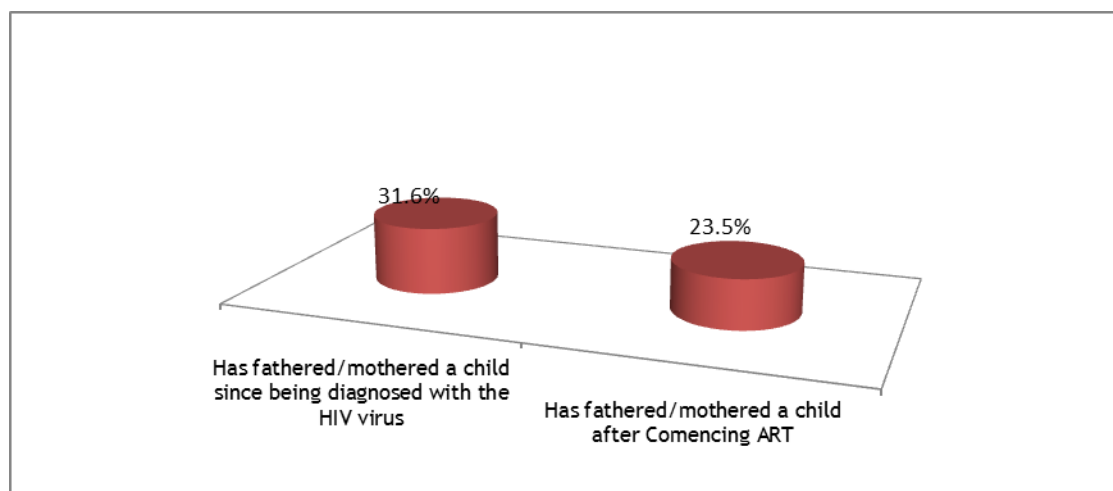


Figure 4.13: Child bearing among Respondents

4.71 Child bearing among Respondents

As shown in Figure 4.13, 32% of the 307 respondents reported that they had a child of their own since being diagnosed with the HIV virus and about 24% reported that they had a child since commencing ART. This indicated unprotected sex although; this study could not verify whether this was done within the confines of strict guidance from the doctors or fertility/ART experts.

Table 4.15: Child Bearing by Selected Behaviours, Social, Economic and Demographic Characteristics

Background characteristics/ Behaviours	Had a child after commencing ART	Odds ratio/p-value
Sex		
Male	23.8%(38)	1.04(p=0.89)
Female	23.1%(34)	
Age group		
15-27	25.5%(13)	2.1(p=0.54)
28-34	27.0%(33)	1.7(p=0.07)
35-49	19.4%(26)	
Marital Status***		
In marriage	30.5%(57)	3.0(p=0.000)
Not in Marriage	11.8%(14)	
Highest Level of Education		
None to primary education	29.3%(34)	0.88(p=0.66)
Secondary and higher	20.5%(38)	
Income		
0 to 1,000,000	25.8%(60)	0.87(p=0.65)
>1,000,000	17.6%(12)	
HIV status Disclosure		
Disclosed to regular partner	26.7%(63)	2.1(p=0.12)
Did not Disclose to regular partner	17.2%(9)	
Duration on ART*		
6-23 months	13.2%(17)	1.4(p=0.008)
>23 months	30.9%(55)	
Attitude on Infectivity		
Positive	20.9%(44)	0.68(p=0.21)
Negative	29.2%(28)	
Exposure to Positive Living Messages		
Were exposed	21.6% (50)	1.6 (p=0.13)
Were not exposed	26.9% (21)	

Table 4.15 shows results of child bearing by selected behaviours and background characteristics.

By sex, male and females did not have significant differences regarding child bearing after

commencing ART. About 24% of males and 23% of females had a child after commencing ART.

By age, those in the age-group 28-34 were the highest (33%) child bearing group than other age categories. Although not significantly different, those in the ages 15-27 were more likely to bear a child after commencing ART than other age categories (OR: 2.7).

By marital status, those who were married were significantly ($p=0.00$) associated with bearing a child after commencing ART. Those who were married were shown to be 3 times (OR: 3) more likely to bear a child once on ART than those who were not in a marital relationship.

On the other hand, education level did not show any significant differences in levels of child bearing. However, results showed that those with secondary and higher education were less likely to bear a child after commencing ART (OR: 0.88).

By income, those with income ranging from 0-K1, 000,000 reported slightly high levels of child bearing than those with higher income although the differences were not significant at the 95% level of confidence.

In addition, results showed that those who were on ART for 23 months and over were significantly associated with bearing a child and they were about 1.4 times more likely to bear a child once on ART than those who were on ART for a duration less than 23 months. Other variables did not show a significant relationship with bearing a child at the 95% confidence level.

Results also showed that respondents who were not exposed to positive living messages were more (OR: 1.6) likely to bear a child in the 12 months before the survey. This is a worrying finding in that this population is less likely to be comprehensively informed about prevention of mother to child transmission as shown by the low exposure to health communication information.

V. Discussion, Conclusion and Recommendations

5.1 Discussion

The purpose of this research was to measure levels of risky sexual behaviours among people on ART. Primarily, the research aimed to find out if people on ART were having sexual intercourse without using condoms and if they were having multiple sexual partners. It also assessed levels of STIs and having a child as proxy measures of risky sexual behaviours among respondents. Furthermore, factors that may influence sexual behaviours of people on ART were also investigated. Specifically the study investigated whether HIV status disclosure, attitude/beliefs on HIV infectivity of people on ART, duration on ART and exposure to positive living messages were associated with having multiple sexual partners and unsafe sex.

Findings on sexual behaviour revealed high levels of risky sexual behaviours among respondents. Although this study did not follow respondents over time to assess changes in sexual behavior as people on ART lived longer on ART, the findings of the study provided insights regarding what may be happening with the sexual behaviors of people on ART.

As proposed by the Health Belief Model, the sexual behaviours of people on ART are influenced by multiple factors. To begin with, this study found high risk sexual behaviours among people on ART. Despite that condom use at last sex was high (81%), consistent condom use was very low (14%), and the levels of multiple sexual partnerships were high (21%). Furthermore, the general sexual behavior outlook among respondents was that abstinence was not a common prevention strategy among, especially unmarried respondents as almost all of them reported having had sexual intercourse within the reference period of 12 months preceding the survey.

The vast majority of people on ART last had sexual intercourse within 7 days preceding the survey. Correspondingly child bearing and STIs prevalence showed signs of high risk sexual behaviors among respondents.

These behaviours were influenced by a number of factors. The guiding theory and conceptual framework of this study, the health belief model (HBM), identified population factors, interventions factors and the opportunity, ability and motivation factors (OAM factors) as major influencers of the sexual behaviors of people on ART. The opportunity, ability and motivation factors are commonly referred to as the OAM factors. Much as sexual behaviours may be broadly defined as such, ensuing from the findings of this research, it is important to note that a clear analysis of sexual behaviour has to separately look at the specific components of the sexual behaviours of respondents to help identify what factors influence the specific facets of risky sexual behaviour. This discussion has attempted to discuss consistent condom use and having more than one sexual partner as two distinct facets in the analysis of the sexual behaviours of people on ART. Other factors considered in this study were child bearing and STIs prevalence among respondents.

To being with, this discussion will firstly focus on multiple sexual partnerships. The prevention of sexual transmission of HIV is among the prime strategic objectives in the Zambia national strategy for the prevention of HIV and STIs (NAC 2009). Under this strategic objective, Zambia is promoting the ABC approach to prevention; abstinence for the youth and the unmarried; be faithful to one uninfected partner, for the married population; and correct and consistent use of condoms for the sexually active youth and adults (NAC 2009). The core strategy under the ‘B’

component of the ABC approach is the reduction of multiple and concurrent sexual partnerships among all sexually active adults (NAC 2009).

Regarding multiple sexual partnerships, the findings of this study are worrying in that they depict a picture of high risk sexual behaviour. A significant proportion of people on ART reported to have multiple sexual partners. Multiple sexual partnerships potentially increase the momentum for HIV transmission in the general population. Findings from Mathematical modelling of sexual behaviours showed that in the general population, the risk of HIV transmission increases exponentially when levels of multiple sexual partners in the general population reaches a quarter (25%) of the general population (Morris 1997) . Now with levels of MCP reported at about 21% among people on ART, one can only imagine the huge negative epidemiological impact this is likely to have on the general population of Zambia especially that this level of MCP is among people who are HIV positive. In the Zambia general population, multiple partnerships were reported to range from 5% to 23% of the sexually active men and women (PSI 2009, CSO et al 2009, CSO et al 2010) The infection rates are likely to be high especially considering the low prevalence of consistent condom use among respondents. It was however, consoling to find that, in terms of types of partners, the trend among respondents was that a spouse was the dominant type of primary partner. It is consoling in that if most people on ART were married, then they would, more likely, have more sexual intercourse with their marriage partners hence reducing coital frequency with non-regular sexual partners. This, it is assumed, may tend to reduce the momentum for HIV transmission in the general population of a country like Zambia where HIV transmission is predominantly through heterosexual sexual intercourse.

As postulated by the framework, population characteristics of people on ART play a pivotal role in the sexual behaviours of having more than one sexual partner. Gender and particularly males, was positively associated with having more than one sexual partner as opposed to women. Similar to conclusions made in many studies including the Zambia Demographic Health Survey of 2007 (CSO et al. 2009), this study also found that levels of MCP were highest among males as they were reported to be about 11 times more likely to have multiple sexual partners. As such, much as HIV interventions should target a wider audience, there is need to pay particular attention to findings such as these to understand the differentials in sexual behaviour in order to address the unique information needs and barriers faced by specific target audiences if behaviour change is to take place and for the fight against HIV to be fruitful.

Similarly, education level of respondents was also a significant correlate of having multiple sexual partners. This study found that respondents who had secondary education and higher were found to have two or more sexual partners within the reference period as compared to those with primary or no education. Ideally, people who have higher education attainment are expected to have a superior understanding of risks associated with practicing specific sexual behaviours such as engaging in multiple sexual partnerships. Lurie et al (2008) found that respondents who had higher education and who were seeking ART in South Africa were practicing safer sexual behaviours than those with lower education attainment. However, it is important to note that the primary sexual behaviour measured by Lurie et al (2008) was consistent condom use with regular sexual partners. Therefore, as it will be shown, later, in this paper, despite that the more educated respondents were having sexual intercourse with multiple sexual partners; they also countered the effects of this behaviour by consistently using condom with all partners.

Therefore, if this scenario could be replicated in the general population, there would be less need to worry as the momentum of HIV transmission in the general population would be reduced by high levels of condom use.

Another important variable measured in this study was duration on ART. This factor was found to be significantly and positively associated with having multiple sexual partners. As people stayed longer on ART, they tended to have fewer numbers of sexual partners. This finding was contrary to what was hypothesized in this study that people who stay long on ART are more likely to have more than one sexual partner. A study conducted by Bunnell (Bunnell 2006) arrived at similar findings and concluded that as people lived longer on ART, they tended not to practice risky sexual behaviours. Regarding duration on ART, the worry was that if people on ART engaged in risky sexual behaviours as they live longer on ART, then the effect on the momentum of HIV transmission would be very high especially that most of the countries in the world are almost achieving universal access to ART translating in more people living longer with the HIV virus.

As evidenced by the findings of this study, not all population characteristics are important in explaining variability in the sexual behaviours of people on ART. However, in the broader sense, what is important would be to always attempt to understand which variables are relevant in the context and analysis of sexual behaviours depending on the setting and population under study. Population factors cannot be modified or changed by any intervention aimed at influencing the behaviours of people to adopt better sexual behaviours; they are static. However, as postulated by the health belief model, the sexual behaviours of people on ART may be modified through interventions that change the opportunities or chance for the individual to perform the

recommended behaviors, the motivations for adopting specific behaviours and the people's ability to practice the recommended behaviours. In this study opportunity was defined as any factors that improved respondents' chances to practice the recommended behaviours of consistent condom use and reduced number of sexual partners.

Motivation factors investigated in this study included attitude or beliefs that ART reduces HIV infectivity, and HIV status disclosure. These factors increased the respondents desire to perform the recommended behaviours such as condom use and reduction of number of sexual partners. The HBM postulated that beliefs that ART reduces infectivity increased the likelihood of engaging in risky sexual behaviours including having more than one sexual partner.

As proposed in the conceptual framework, intervention factors are various activities that are aimed to influence the OAM factors and by improving their scores, people on ART will increase their likelihood of improving their sexual behaviors. For example if negative beliefs are reduced by implementing interventions that redress the same negative beliefs, it is anticipated that sexual behaviours would more likely improve as sexual behaviours are positively associated with improved OAM factors. In this study, intervention factors, particularly the implementation of health communications was found to positively influence the numbers of sexual partners among respondents. Respondents who were exposed to health communication interventions were twice (OR: 2.1) more likely to use condoms. This finding echoes the significant importance that health communication plays in helping to improve the health status of the population by providing the necessary knowledge and skills required for people to adopt healthy sexual behaviours. In this study, messages on partner reduction were the second most (8% and 7%) discussed topics during

the last 6 months and last visits respectively when respondents visited ART centers. As can be seen, these levels of exposure were extremely low especially when looked at by specific topics discussed. In a study conducted by Bunnell in Uganda, it was also concluded that providing ART prevention counselling was a significant and positive correlate of improved sexual behaviours among people on ART. This was so because as people lived longer on ART, they were exposed to even more positive living interventions and messages which improved their skills to pursue healthy sexual behaviors such as consistent condom use and having only one sexual partner. A report by the National HIV/AIDS/TB Council (NAC 2012), revealed that there has been an increase in the number of IEC materials produced and distributed to the Zambian population. However, the same report also lamented the extremely low fraction of people at risk of HIV who have been exposed to meaningful access to basic prevention information. In Zambia, no data exists at a national level on the levels of exposure to behaviour change communication (BCC) interventions by specific segments of the population including people living with HIV. This is worrying given that people on ART are right at the center of the fight against the spread of the HIV virus in the general population.

This discussion proceeds to look at condom use which is another important facet of sexual behavior being analyzed in this study. The prevalence of unprotected sex among people on ART has many negatives. Unprotected sex among people on ART is likely to give rise to increased risk of HIV transmission to negative partners, increased risk of re-infection with new or drug-resistant viruses among people on ART, and the spread of drug-resistant viruses in the community (Sarna 2008). As stipulated in the NASF 2012-2015, Zambia aims to reduce the annual rate of new HIV infections by 50% by 2015 through a combination prevention strategy

(NAC 2010). Bunnell's study in Uganda proved the efficacy of this strategy in reducing HIV transmission among discordant couples (Bunnell et al 2008). This strategy entails the use of various proven strategies aimed to reduce multiple sexual partnerships, prevention of Mother to child transmission (PMTCT) and promoting consistent use of condoms among others. Condom use is at the centre of Zambia's national HIV preventions response. It is widely accepted that condom use has over 90% efficacy in reducing HIV transmission if used correctly and consistently (NAC 2010). However, the Council also laments the low use of condoms among the Zambian population. The levels of condom use in Zambia have been reported to be too low to have a significant impact on HIV transmission rates (NAC 2010).

The counselling modules for people on ART recommend and encourage consistent condom use for prevention of secondary infections and transmission of the HIV virus (Sarna et al 2008). To the contrary, consistent condom use was very low among respondents in this study. The Zambia Sexual Behavior Survey (2009) and the ZDHS (CSO et al. 2009) echoes similar woes regarding the low levels of consistent condom use in Zambia's general population.

Many factors affect the levels of condom use in Zambia. The factors associated with consistent condom use were not very different from those associated with multiple sexual partnerships. The sexual behaviour of consistent condom use was also influenced by some demographic variables. Specifically, higher education level was proved to be associated ($p < 0.05$, OR: 2.56) with consistent condom use among respondents. Respondents who had secondary education or higher, were about 3 times more likely to consistently use condoms when having sexual intercourse than those with primary or no education. In this study, save for education, a number of population characteristics which are shown in the conceptual framework did not appear to

influence condom use. . Unsurprisingly, a study conducted in South Africa in 2008 also found that education was a significant predictor of consistent condom use with regular sexual partners among both men and women (Lurie et al 2008). Education may work to facilitate exposure to health messages through increased access to multiple information sources and channels, skills which come with being literate. Having high proportions of educated people in the population therefore creates an opportunity and a good environment to be able to disseminate health information with a relatively increased probability of being received positively. It would be highly recommended therefore to couple prevention interventions with long term programs to improve literacy among people so that it is easy to share development information even beyond the fight for HIV.

Similarly, the OAM factors of duration of being on ART, attitude on infectivity, and HIV status disclosure showed no significant association with consistent condom use among respondents. Despite that marital status was not significantly associated with consistent condom use, this study revealed an inclination by marital partners to not use condoms consistently during sexual intercourse. These findings are similar to what Elfold and Moatti's found in Cote d'Ivoire and Switzerland, where they found marital condom use to be lower than among any other marital status group. Bunnell et al (2006) further reiterated that despite that risky sex generally goes down when people living with HIV initiate ART, condom use among married respondents tends to lag behind improvements made by other marital status groups. The ZSBS (CSO et al 2010) showed similar findings in the general population of Zambia.

This study only had one intervention factor to be analysed within the proposed framework. As postulated in the model, intervention factors are activities performed to address the negatives of prevailing behaviours and provide the required motivation for target audiences to perform improved behaviours. Exposure to positive living messages was positively associated ($p=0.05$, OR: 2) with consistent condom use among respondents. In this study, 25% of respondents were exposed to positive living messages centered on condom use among respondents. This was the second best level of exposure among specific topics discussed during counselling as well as the general exposure to positive living messages among respondents.

In line with the prevention with positives, the Zambia national strategy for the prevention of HIV emphasizes the integration of prevention interventions into HIV and health services, with special attention to prevention with the positives (PwP). Indicative interventions under this core strategy include: the incorporation of prevention counselling for HIV infected persons into the counselling and testing, PMTCT and ART guidelines, working closely with counseling and testing (CT) and clinical care settings to identify discordant couples and provide on-going prevention and counselling and support, promoting correct and consistent use of both female and male condoms among people living with HIV and scaling up clearly defined, standardized, minimum prevention package in clinic and community-based settings for HIV-positive persons who know their HIV status.; and for all treatment and care sites to incorporate this package of PwP interventions among others.

Therefore, the pivotal role played by health communication interventions at encouraging healthy sexual behaviours among people on ART cannot be over emphasized. However, what was shown

by the findings on this study was a gloomy picture on this end as it showed that the quality of the counselling on key prevention topics among people on ART was not impressive. The topic that was reported to dominate the counselling sessions for people on ART was ART adherence at 35% and condom use at 25%, partner reduction was low at 8.1%, child bearing at 1.9%, and PMTCT (7.2%) was also among the least discussed topics. Generally exposure to BCC interventions by topic was very low among respondents. These results suggest that the prevailing sexual behaviours may result from the flawed health communication delivery system for people on ART which may place more emphasis on providing clients with medications without accompanying medical efforts with communications interventions. So if people do not receive the proper guidance on how they should behave while on ART, it is likely that their behaviours will be risky as they are not empowered with interventions to assess their risk to secondary infections and also the risk of HIV transmission to their partners.

Proxy measures of sexual behavior in this study included the occurrence of sexually transmitted infections (STIs) and child bearing among respondents. About 10% of the respondents reported experiencing an STI. Gender and age were the two population variables that were positively associated with having an STI in the 12 months preceding the survey. Females were more likely to report an STI as compared to their male counterparts. Bunnell's findings in Uganda also found that women practice more risky sex as compared to male respondents in sexual intercourse particularly, in marriage.

Similarly, the population aged 15-27 was also associated with having an STI and hence, presumed to be practicing high risk sexual intercourse than the other age- groups combined. This

is contrary to what Lurie found in South Africa where young people were found to be more likely to adopt safer sexual practices than older respondents (Lurie et al 2008). This difference may be owed to the different environments where these two groups of youths were living in. If young people are to adopt safer sexual behaviours, there is need to create an enabling environment which encourages the use of and access to information, health services and specifically products such as condoms so that they are empowered with the right skills to pursue healthy behaviours.

With regard to child bearing as a measure of risky sexual behaviours, the study revealed that marital status, one of the population variables, was positively associated with child bearing and consequently, risky sexual behaviours. Another variable which in this study was classified as a population variable was duration of being on ART. This factor was proved to be significantly associated with child bearing among respondents. From this analysis, it is clear that the factors that were influencing child bearing among respondents were more of population variables than the other factors of opportunity, ability and motivation variables which appeared to be more influential with the sexual behaviours of consistent condom use and multiple sexual partnerships. In light of the prevailing reported low levels of ART adherence in Southern Africa, it is worrying to find that levels of child bearing were high among respondents. The implication of this is that there is likely to be high levels of mother to child transmission (MTCT), re-infections, and the transmission of resistant strains of the HIV in the general population.

Considering the prevailing situation of having high multiple sexual partnerships and low consistent condom use, Zambia is faced with a complex HIV situation which requires multi-dimensional and multi-sectoral HIV interventions in her path to an HIV free environment.

With the high prevalence of HIV in Zambia, it is clear that a lot more has to be done. Currently the vast majority of HIV interventions are targeted at the general population, presumably the HIV negative population. This strategy tends to assume that the prevention of HIV is entirely dependent on the behaviours of the HIV negative populations to protect themselves by using condoms and sticking to one faithful partner. While this may be conceptually correct, this is not what is currently happening. In Zambia, multiple sexual partnerships, low and inconsistent condom use are evidently key drivers of the HIV prevalence (NAC 2009). And so, in a country where HIV testing is low (CSO et al 2009), a lot of people are having sex without protection and yet they may not know that they are HIV positive. This results into blindly transmitting the HIV virus to unsuspecting sexual partners.

The national HIV prevention response acknowledges the significance of counselling and testing for HIV especially couples counselling and testing. The NASF 2012-2015 laments the low levels of couples counselling in Zambia (NAC 2010). The framework emphasizes that couples testing and counselling has many benefits including facilitating treatment adherence and in safely planning for children by minimizing the risk of HIV transmission to their partner and/or child. However, NAC also acknowledges that few couples in Zambia go for couples' counselling and testing (CVCT) (NAC 2010). Currently, Zambia is yet to start collecting nationally representative data on the levels of couples counselling and testing. In the national strategy for prevention of HIV, NAC seeks to deliberately develop and implement interventions to encourage

HIV partner notification and disclosure of the HIV status. Findings in this study also shows low levels of HIV status disclosure among people on ART. With this scenario, it is likely that despite that people may know that they are HIV positive, they do go on to practice sex without condoms further predisposing their sexual partners to high chances of contracting the HIV virus and for themselves to high chances of contracting secondary infections and contraction of resistant HIV strains which may not be controlled by available medications. This is contrary to guidelines provided to people on ART under the Prevention with Positives (PwP) and Positive Health, Dignity and Prevention strategies and initiatives (PHDP) (Bechman et al. 2007, Sarna 2008).

Now that people on ART are living longer, if they engage in unsafe sex, in the absence of interventions, it means more long years of transmitting the HIV virus and ultimately high prevalence of HIV. This situation should not be allowed to happen.

Studies (Bunel et al 2006) have shown that reducing HIV transmission may be more effective if positive sexual behavior change occurs among people on ART or generally people who are living with HIV. This is because, obviously, for any transmission to occur there has to be contact with infected bodily fluid and like in Zambia this has to be, mostly, through heterosexual sexual intercourse. Therefore, the findings of this study reveal potential gaps in the current HIV interventions and an opportunity for interventions to reduce the prevailing low levels of HIV status disclosure, reinforce beliefs that ART does not reduce HIV infectivity, reduce high levels of multiple sexual partnerships, increase condom use and ensure that staying longer on ART translate into even more safer sexual behaviours that result from increased exposure to positive living messages.

This study like many other studies clearly shows the pivot position of people on ART in the fight against HIV and need to integrate ART with strong prevention interventions among people on ART. The results of this study are clearly very important to the fight against HIV despite the fact that the results may not be sufficient to meet the external validity required to make confident generalizations about all people on ART. Its findings still have a wider application even beyond the confines of the locations where the study was conducted. This is because the environment and the selection process of respondents was systematic and efforts were made to ensure that people from diverse backgrounds participated in the study by collecting the data from multiple ART centres from respondents who came from different communities across Lusaka. However, it is important to mention that a larger sample and the inclusion of a control group, would definitely increase the generalizability of the findings and more important a larger sample would facilitate a more in depth analyses of sexual behaviours of people on ART. Furthermore, to assess differences in sexual behaviour, a more rigorous case-control longitudinal study would produce more informative findings.

As already alluded to, the preoccupation of this study was to shade light on the prevalence of risky sex among people on ART and what factors may be influencing their sexual behaviours. This study has therefore provided a basis for thinking through issues around prevention among HIV positive populations to help HIV programmers identify potential areas for improvement in the implementation of HIV programs and also to help them reassess their focus in the fight against HIV.

5.2 Conclusion:

This study measured levels of sexual behavior and factors that influence sexual behavior among people on ART. A significant proportion of people on ART were practicing risky sexual behaviours including non and inconsistent condom use and having multiple sexual partners. Generally, the study revealed that people on ART do not believe that they are less or not infectious as a result of being on ART.

The study also found that longer duration on ART was associated with slightly higher risky sexual behaviours-. As time passed, people on ART reported less and less condom use, a trend which does not favour reductions in the incidence of HIV especially in a country like Zambia which has millions living long on ART. Results further showed sexual behaviour differentials among respondents; males, high income groups, and higher education levels were associated with risky sexual behaviours. In addition, the study revealed low HIV status disclosure to regular sexual partners.

Ensuing from the findings of this study, it is clear that the health belief model is a valuable model that may be used to design effective behaviour change interventions. The model appears to correctly predict associations between factors and the resulting behaviours of sexual behaviour. Therefore the study concluded that health communication is a very important component in the delivery of ART as it was positively associated with safer sexual behaviours among respondents. Finally, the overall conclusion of this study is that in Zambia's quest to further understand the context of its HIV situation, there is need to learn more about the sexual behaviours of people on ART.

5.3 Recommendations

The general recommendation of this study was that the National HIV prevention response should seriously focus on people on ART in all HIV/AIDS prevention interventions. This may be achieved through strengthening and improving positive living communication strategies that will provide timely information to people on ART as they live longer on ART.

This study also provides some specific recommendations as follows:

- 1.The national prevention strategy should put in place programs and also strengthen the existing programs to encourage disclosure of HIV status because disclosure works to reinforce the reality of HIV risk among discordant couples and increases the likelihood of protective behaviours
- 2.The Zambia national HIV response should strengthen interventions that encourage condom use as a method of HIV prevention especially among people on ART who are in stable relationships
- 3.The national HIV response should design more and strengthen existing targeted interventions aimed at encouraging unmarried PLWHA to adopt sexual abstinence as an HIV preventive strategy.

4. National guidelines on prevention with people living with HIV should be updated regularly and therefore incorporate new and emerging developments to address issues such as ART as prevention of HIV transmission so that PLWHA are equipped with up to date information so that they are empowered with comprehensive information and so that they are able to make informed decisions.

5. In line with the finding that people on ART tend to practice risky sex as they live long on ART, this study recommends that prevention interventions should be designed and that the interventions should be tailored to address issues at different stages (in time) in the life of a person living with HIV.

6. HIV prevention interventions should explore the use of the health belief model and any related models to design effective behavior change interventions

7. Lastly, this study recommends that programs to reduce multiple sexual partnerships should be strengthened so that people on ART confine sexual relations to one sexual partner at any given time to reduce the momentum for HIV transmission.

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Appendix 1: Informed Consent Form

Good morning/afternoon. My name is _____. I am working on the data collection team of a research looking at the topic; **ART and Sexual Behaviour among People on ART-A Case Study Lusaka**. If it is alright with you, we would like to interview you.

Who is conducting this study and why: This study is being coordinated by the University of Zambia, school of humanities and social sciences, Demography division. It is primarily being conducted as a partial fulfilment of the award of a Master of Population study. This study is also aimed at providing insights on how to improve the medical and health education services received by people in the community, particularly the people living with HIV, to inform HIV communication programming and policy development among others.

Who will be in the study: About 300 people living with HIV will participate in this study. It will include adolescent and adult men aged 15-50 and women in the age group 15-55.

Procedure: I am going to give you full details about this study and on the basis of which, you will have to decide whether to participate or not. If you agree to participate in the study, I will ask you questions about your age, housing situation, sexual behavior and practices, schooling, perceptions about HIV infectivity after commencing ART among others. This study is purely verbal and no physical examinations will be conducted. The interview will take about 30-45 minutes.

Benefits & Risks: The information you give me will assist to establish and improve future HIV communication programming. A risk to participating in this study is that you may be stressed with questions that you will be asked and the time spent answering the questions. On the other hand, the benefit of your participation is that you will contribute useful information to researchers and public health managers so they may better provide HIV related programs in Zambia.

Possibility of withdrawal or declining specific questions: your participation is completely voluntary. You may ask me to stop discussions if you are uncomfortable, or you may also decline to answer any single question. Not participating in the study will not attract any penalty or jeopardize your access to the services and or good that you may be receiving.

Confidentiality: The interview is strictly confidential; so your responses will not be shared with anyone. Your name will not appear on the questionnaire, any of my notes, or any of the reports.

Reimbursement: You will not be charged, nor will you be paid for participating in this study.

Who has reviewed the study: The study has been reviewed by the ethical review board of the University of Zambia.

Offer to answer questions: I can answer any questions you may have. If I don't have the information you require, I will tell you so and, if you wish, I will try to get an answer for you.

Do you have any questions? (If yes, note the questions) Yes No

Do you consent to participate? Yes No

PARTICIPANT AGREEMENT

The above document describing the benefits, risks and procedures to participate has been read and explained to me, the participant. I also understand that participating in this study is voluntary and that I can withdraw at any time. I have been given an opportunity to ask any questions about the activity and be satisfactorily answered.

Date Signature of respondent *(mark)

*In case the respondent is not able to sign this form, this attests that the consent form has been read and explained accurately by a member of the research staff, and that the respondent has fixed his/her thumbprint as consent.

If you have any doubts or questions in future, you may contact:

The Chairperson Research Ethics Committee, University of Zambia, Great East Road Campus, P.O Box 32379 Lusaka and or John Manda who is the Principal Investigator, University of Zambia, P.O. Box 32379, Lusaka. Cell: +260-0977760944. *Thank you.*

Study Team Member’s Statement

I, the undersigned interviewer, have explained to the participant in a language he/she understands, and he/she understands the procedures to be followed in the study and the risks and benefits involved.

Signature of interviewer Date

Appendix 2: Study Information Sheet

ART and Sexual Behaviour among People Living with HIV in Lusaka- A Case Study of Lusaka

Introduction

My name is ----- I am working on the data collection team of a research looking at the topic; **ART and Sexual Behaviour among people on Antiretroviral Therapy (ART) - A case study of Lusaka**

I am going to give you information and invite you to be part of this research. Before you decide, take your time, think well and you can talk to anyone you feel comfortable with about the research.

If there is anything that you do not understand, ask me to clarify the information and I will take time to explain. If you have questions, you can ask them to me. If you accept to participate you will also be asked to sign this consent form.

What is this research about?

In this research, we want to learn more about the sexual behavior, positive living practices, knowledge, perceptions and beliefs regarding HIV and ART, HIV disclosure among others. If you accept to be interviewed, you will be interviewed alone as an individual.

Who will be in the study: About 300 people who are on ART will participate in this study. It will include adolescent and adult men aged 15-50 and women in the age group 15-49.

Why we want to talk to you and what it will involve

We will ask and report about your sexual behavior, positive living practices, knowledge, perceptions and beliefs regarding HIV and ART, HIV disclosure among others and this information will refer to all participants collectively (information will not be reported at an individual level).

If you or any of the others to be interviewed do not want to answer any of the questions you may say so and the interviewer will move on to the next question. No-one else but the interviewer will be present unless any of you would like someone else there.

Are there any disadvantages or advantages involved in taking part?

The discussions should take approximately 20 to 30 minutes. There are no individual benefits to taking part, but in answering our questions you will help us improve the understanding of issues surrounding ART and sexual behavior. Unfortunately we are not in a position to assist with financial or other family problems that we come across.

Who will have access to the information I give?

We will not share individual information about you or other participants with anyone beyond our research team.

The knowledge gained from this research will be shared in summary form, without revealing individuals' identities, with all interested organizations or individuals who may find the information useful.

What will happen if I refuse to participate?

All participation in research is voluntary. You are free to decide if you want to take part or not. If you do agree you can change your mind at any time.

What if I have any questions?

For information about this study, you can contact the researcher who is responsible:

Who to contact

If you have any questions, you can ask them now or later. If you wish to ask questions later, you may contact any of the following:

The Study Principle Investigator: John Manda on +260-977760944

This study has been reviewed and approved by the Demography Division at the University of Zambia. This study has also been reviewed and approved by the University of Zambia Research Ethics Committee.

Appendix 3: Study Questionnaire

ART & SEXUAL BEHAVIOURS AMONG PEOPLE LIVING WITH HIV:A CASE STUDY OF LUSAKA

Instructions: Circle/Tick the code corresponding to the response for each question.

Questionnaire No.: ___/___/___/___

Date of interview (dd/mm/yyyy): ___/___/___/___

ART Center: _____

Start Time (24 Hour Time): ___/___/:___/___/___

Research Assistant No. ___/___

No.	Questions and filters	Coding Categories			Skip To
-----	-----------------------	-------------------	--	--	---------

BACKGROUND CHARACTERISTICS

1	Sex of the respondent.	Male	1		
		Female	0		
2	a) How old are you?	Age in completed years	<input type="text"/>		
	b) What is your birthday (dd/mm/yyyy)?		___/___/___/___		
3	What is your marital status?	Single	1		
		Separated/Divorced/partner Died	2		
		Partner died	3		
		Married	4		
4	What is your religion if any?	Protestant Christian	5		
		Catholic Christian	6		
		Muslim	7		
		Bhuddhist	8		
		Hindu	9		
		Other (specify)			
5	What is your usual area of residence?	High density	1		
		Medium density	2		
		Low density	3		
6	What highest level of education have you completed?	None	1		
		Primary	2		
		Secondary	3		
		Tertiary Vocational	5		
		College/University	6		

7	What is your main occupation/source of income at the moment?	I am unemployed	1		
		I work part time for a salary/wages	2		
		I work full time for a salary/wages	3		
		Self-employed	4		
		I do piece jobs for money	5		
		I am a full-time student/learner	6		
		Peasant Farmer	7		
		Commercial Farmer	8		
		Community-based NGO	9		
		Church	10		
		Given by family	11		
		other			
8	Approximately, what is your monthly income?	K___/___/___/___/___/___/___/___			

ACCESS TO ART

9	Are you on ART?	Yes	1		
		No	0		
10	Have you taken ARVs today?	Yes	1		
		No	0		
11	Why are you not taking ARVs as at now?	Have run out of stock	1		
		Prescribed by doctor	2		
		Have not collected but are available	3		
		Don't want to take them anymore	4		
		Other (specify)			
12	If response to q10 is 0, ask why?				
13	How long have you been on ART?	___/___/___/___ days			
14	In what year did you come to know about your HIV status? (dd/mm/yyyy)?	___/___/___/___/___/___			
15	Did you undergo pretest counseling?	Yes	1		>17
		No	0		

16	What kind of messages were you communicated to during pretest counseling?	condom use	1		
		Partner reduction/faithfulness	2		
		abstinence	3		
		disclosure	4		
		nutrition	5		
		Other (specify)			
17	Did you undergo posttest counseling?	Yes	1		>19
		No	0		
18	What kind of messages were you communicated to during posttest counseling?	condom use	1		
		Partner reduction/faithfulness	2		
		abstinence	3		
		disclosure	4		
		nutrition	5		
		Prevention			
	other (specify)				
19	What is the level of your viral load?	Detectable	1		
		Undetectable	2		
		Don't know	3		

The following statements are designed to learn more about your views about HIV and ART. Please feel free to state whether you agree or disagree to the following statements below:

KNOWLEDGE ABOUT ART "How do antiretrovirals work?"

20	<i>ask, Do ARVs:</i>	yes	no	Don't know
21	Kill the virus	1	0	3
22	Cure AIDS	1	0	3
23	Prevent the spread of the virus	1	0	3
24	Improve ones health	1	0	3
25	Prevent transmission of the virus	1	0	3
26	Reduce transmission of the virus	1	0	3
27	Reduce the occurrence of illness	1	0	3
28	Suppress the multiplication of the virus	1	0	3
29	Make the virus inactive (<i>sleep</i>)	1	0	3

In the next few statements I am interested in hearing your opinion on certain issues. Please tell me if you "agree" or "disagree". Note: Interviewer to probe if they "agree strongly" or "agree somewhat", and if they "disagree strongly" or "disagree somewhat"

Attitude about ART and Sexual Behaviour

30		strongly Disagree	Disagree somewhat	agree somewhat	Strongly agree	Neutral
31	People on ART are less likely to transmit the HIV virus	1	2	3	4	5
32	An HIV positive person who is not on ART is more likely to transmit the HIV virus	1	2	3	4	
33	I see no need of using condoms now that I am on ART	1	2	3	4	5
34	I see no need of using condoms with my regular sexual partner	1	2	3	4	5
35	“A person on ART cannot transmit HIV”.	1	2	3	4	5
36	I see no need of using condoms with my casual sexual partners	1	2	3	4	5
37	I see no need of using condoms with commercial sexual partners	1	2	3	4	5
38	You cannot contract HIV if you have sex with a person who is on ART	1	2	3	4	5
39	If both partners are HIV+ there is less need to use condoms	1	2	3	4	5

Knowledge about Risky Sexual Behaviours

The following statements are designed to learn more about your views about HIV and ART. Please feel free to state whether you agree or disagree to the following statements below:

40	How is the HIV virus transmitted? (multiple responses possible) (unprompted-record all mentioned)	Yes	No	
	Unprotected sex with an infected person	1	0	
	Sexual intercourse with multiple partners	1	0	
	Using contaminated body piercing utensils	1	0	
	blood transfusion of contaminated blood	1	0	
	kissing an infected person	1	0	
	breast feeding through breast milk	1	0	
	mosquito bites	1	0	
	Don't Know	1	0	
	Other(specify)			
41	I am going to ask you a few questions. Please	yes	no	

	indicate whether you agree or not. <i>Ask, can the HIV virus be transmitted through:</i>	Unprotected sex with an infected person	1	0	
		Sexual intercourse with multiple partners	1	0	
		Using contaminated body piercing utensils	1	0	
		blood transfusion of contaminated blood	1	0	
		kissing an infected person	1	0	
		breast feeding through breast milk	1	0	
		mosquito bites	1	0	
42	Is there anything a person can do to avoid or reduce the chances of transmitting the HIV virus?	Yes	1		
		No	0		>q15
43	What can a person do to avoid or reduce the chances of being infected with the HIV virus? (unprompted responses)	Use condom	1		
		Abstain from sex	2		
		Avoid multiple sex partners	3		
		Avoid sex with prostitutes	4		
		Avoid kissing	5		
		faithful to one sexual partner	6		
		being circumcised	7		
	Other (specify)				
44	Can a person reduce the chances of being infected by: [prompted responses] <i>ask only those not mentioned in q36</i>		yes	no	Don't Know
		using a condom	1	0	3
		Abstaining from sex	1	0	3
		Avoiding multiple sex partners	1	0	3
		Avoiding sex with sex workers	1	0	3
		Avoiding kissing	1	0	3
		being faithful to one sexual partner	1	0	3
		Being circumcised	1	0	3
	Other (specify)				

SECTION E: SEXUAL BEHAVIOUR AND ART

45	Have you ever had sexual intercourse in the last 12 months?	Yes	1		>q47
		No	0		
46	if no when was the last time you had sex?	_____ days			
47	When was the last time you had sexual intercourse?	Days ago	1		
		Weeks ago	2		
		within 6 months ago	3		
		within 1 month	4		
		over 6 months ago	5		
48	How many sexual partners have you had in the last 12 months?		<input type="text"/>		IF 0 go to q57
49	How many of these partners are your:	spouse	<input type="text"/>		
		girl/boy friend	<input type="text"/>		
		casual partner	<input type="text"/>		
		sex worker	<input type="text"/>		
50	Which of these partners did you last have sex with?	your spouse	1		
		girl/boy friend	2		
		casual partner	3		
		sex worker	4		
51	Have you ever used a condom when having sexual intercourse?	Yes	1		>q53
		No	0		
52	Why don't you use condoms?	Not available	1		
		Too expensive	2		
		Partner objects	3		
		Don't like them	4		
		Don't think it is necessary	5		
		Other (specify)			
53	Did you use a condom the last time you had sex?	Yes	1		
		No	0		>q47
54	Who suggested condom use that time?	Myself	1		
		Partner	2		
		Joint decision	3		
		Can't remember	4		>q55
47	Why didn't you and your partner use a condom that time? (not read out)	Not available at the time	1		
		Too expensive	2		
		Partner objected	3		
		Don't like them	4		
		Did not think it was necessary	5		
		Didn't think of it	6		
		Other (specify)			

55	How often do you use condoms with your:		Occasional ly	Almost every time	Always		
	(a) your spouse	Never 1	2	3	4		
	(b) girl/boy friend	1	2	3	4		
	(c) casual partner	1	2	3	4		
56	In general, how often do you use condoms with all your partners?	never	1				
		occasionally	2				
		every time	3				
		always	4				
Sexual Behaviour before HIV diagnosis							
57	Before you were diagnosed with the HIV virus, how many sexual partners did you have?	<input type="text"/>				if 0 go to q63	
58	How many of those partners were your:	your spouse	<input type="text"/>				
		girl/boy friend	<input type="text"/>				
		casual partner	<input type="text"/>				
		sex worker	<input type="text"/>				
59	At that time, did you ever use a condom when having sexual intercourse?	Yes	1			>q61	
		No	0				
60	If no to q59 above, Why didn't you ever use condoms at that time?	Not available	1				
		Too expensive	2				
		Partner objects	3				
		Don't like them	4				
		Don't think it is necessary	5				
		Other (specify)					
61	At the time before you were diagnosed, how often did you use condoms with your:	Never	occasionally	Almost Every time	Always		
		(a) your spouse 1	2	3	4		
		(b) girl/boy friend 1	2	3	4		
		(c) casual partner 1	2	3	4		
		(d) sex worker 1	2	3	4		
62	At a time before you were diagnosed, generally, how often did you use condoms with all your partners?	never	1				
		occasionally	2				
		every time	3				
		always	4				
63	What is your general evaluation of condom use with a:	spouse/regular partner	Fill here				

		sexual worker	Fill here
		Casual partner	Fill here

Child Bearing and ART

64	Have you had a child of your own since you were diagnosed with the HIV virus?	Yes	1		
		No	0		
65	Have you ever had a child of your own since you commenced ART?	Yes	1		
		No	0		
66	Have you had a child of your own in the last 12 months?	Yes	1		
		No	0		
67	Would you recommend child bearing among individuals who are on ART?	Yes	1		
		No	0		
68	Give reasons for your answer above				

STIs Prevalence

69	In the past 12 months, how often have you experienced severe illnesses?	Very often	1		
		Rarely	2		
		Never	3		

Incidence of STIs: now, I am going to ask you a few questions regarding STIs / STDs in the past 12 months

70a	Have you ever had an STI/STD in your life?	Yes	1		
		No	0		
70b	Have you had or suspected yourself of having any STD or STI in the past 12 months? [<i>i.e. seen a discharge or experienced a foul smell on your private parts</i>]	Yes	1		
		No	0		
71	How many of these episodes have you had in the last 12 months?	<input type="text"/>			
72	In the past 12 months have you sought medical services for STI signs?	<input type="text"/>			
73	How many times have you sought medical treatment for STDs or STIs in the past 12 months?	<input type="text"/>			
74	Where did you go to seek treatment?	Hospital/ clinic	1		
		Traditional healer	2		
		Pharmacy	3		
		Family	4		
		Friend	5		
		Self-treatment	6		
		Other (Specify	Fill here		

HIV STATUS DISCLOSURE

75	Does your regular partner know your HIV status?	Yes	1		
		No	0		

76	Do you know the HIV status of your regular partner?	Yes	1		
		No	0		>q78
77	What is the HIV status of your regular partner?	HIV+	1		
		HIV-	2		
		Don't want to disclose	3		
78	After knowing your HIV status, how long did it take before you could disclose your status to your regular partner?	Almost immediately			
		After _____ days			
		Have not disclosed	888		
79	Give reasons for your <i>response</i> above	FILL HERE			
80	What is the HIV status of the person you last had sex with?	HIV+	1		
		HIV-	2		
		Do not know	3		
		Don't want to disclose	4		
81	Did you disclose your HIV status to the person you last had sex with?	Yes	1		
		No	0		>q83
82	How did you disclose your status to your regular partner	asked for disclosure	1		
		just found out	2		
		told by somebody else	3		
		I freely disclosed	4		

Exposure to Behaviour Change and Positive Living Messages & Activities

83	Have you received any positive living messages in the 6 months before today?	Yes	1		
		No	0		
84	From which source of information have you learnt most about antiretrovirals/therapy in the last 12 months? (not read out & only Single response allowed)	Radio	1		
		Television	2		
		Magazines	3		
		Newspapers	4		
		Posters	5		
		Family/Friends	6		
		Counsellors	7		
		Work	8		
		Health workers	9		
		school/teachers	10		
		church/place of worship	11		
		Other (specify)			

85	What kind of positive living information/counseling have you received in the last 6 months?	Condom use	1		
		Partner reduction	2		
		Abstinence	3		
		Work related	4		
		nutrition	5		
		PMTCT	6		
		ART adherence			
		Male circumcision	7		
		exercising/keeping fit	8		
		child bearing	9		
		<i>other (specify)</i>			
86	Do you ever receive any counseling after picking up medicines?	Yes	1		
		No	0		>q90
87	What kind of counseling did you receive the last time you went to collect your medicines (ARVs)?	Condom use	1		
		Partner reduction	2		
		Abstinence	3		
		Work related	4		
		nutrition	5		
		PMTCT	6		
		ART adherence			
		Male circumcision	7		
		exercising/keeping fit	8		
		child bearing	9		
		<i>other (specify)</i>			
88	Do you think the content of the information you have received in the last 6 months is enough to help you live a positive sexual life?	Yes	1		
		No	0		
89	Why do you say so?				

Condom Availability/accessibility

In the next few statements I am interested in hearing your opinion on certain issues. Please tell me if you “agree” or “disagree”. Note: Interviewer to probe if they “agree strongly” or “agree somewhat”, and if they “disagree strongly” or “disagree somewhat”

		strongly Disagree	Disagree somewhat	agree somewhat	Strongly agree
90	Condoms are easily accessible to people on ART	1	2	3	4
91	ART centers provide free condoms	1	2	3	4
92	I can easily access condoms if I needed them	1	2	3	4
93	collecting condoms is not difficult for me	1	2	3	4
94	I know a nearby place where I can get free condoms	1	2	3	4

Male Circumcision Status, Ask men only

95	Are you circumcised?	Yes	1		>q98
		no	0		
96	Was your circumcision done before you tested HIV positive or after?	before	1		
		after	0		
97	If q95 is yes, ask, <i>why did you get circumcised?</i>				
General Questions					
98	Compared to the time before you were diagnosed positive and after the diagnosis, how would you rate your frequency of sexual intercourse with sex workers (or paying partner)?	remained the same	1		
		increased	2		
		decreased	3		
		can't tell	4		
		never have sex with CSWs	5		
99	During the same two periods, how would you rate your frequency of sexual intercourse with casual acquaintances?	remained the same	1		
		increased	2		
		decreased	3		
		can't tell	4		
		never have sex with CSWs	5		
100	During the same time, how would you rate your frequency of infection with STIs/STDs?	remained the same	1		
		increased	2		
		decreased	3		
		can't tell	4		
		Have never had an STI/STD in my life	5		
101	During the same period, how would you rate your frequency of condom use?	remained the same	1		
		increased	2		
		decreased	3		
		can't tell	4		
102	Whenever you have sex with a sex worker (or paying partner), how often do you ask about her HIV status?	never	1		
		sometimmes	2		
		always	3		
		never have sex with CSWs	4		
103	Whenever you have sex with someone you just met, how often do you ask about her HIV status?	never	1		
		sometimes	2		
		always	3		
		never do that	4		
104	Would you support the legislation to prosecute people living with HIV who do not disclose their HIV status to every sexual partner?	Yes	1		
		No	0		

End Time (24 Hour Time): :
Thank you for participating in this
interview!

APPENDIX 4: QUALITATIVE STUDY GUIDE

ANTIRETROVIRAL THERAPY (ART) AND SEXUAL BEHAVIOURS AMONG PEOPLE LIVING WITH HIV: A CASE STUDY OF LUSAKA

Introduction:

Hello, my name is _____ and I'd like to talk to you today about your experiences and perceptions regarding the impact of ART on the sexual behavior of People Living with HIV (PLH). Your participation in this study is purely voluntary and if you agree to participate, I'm going to ask you some very personal questions that some people may find difficult to answer. The information that you will provide will be kept completely confidential. Your name will not be written on the study forms, and will never be used in connection with any of the information you tell me.

This discussion will last for about thirty minutes to about an hour and half. I will be recording what we say on this device (the recorder). This device will not harm you in any way but will enable us store the information as it is not possible that we remember everything that we will discuss. You are free to answer or not answer any question as you wish and we can stop the interview at anytime. If you want to discuss what we talk about today with someone else or if you have any questions you may contact John Manda who is the study's principal investigator.

Are you ready to begin?

Before we begin, I would like to ensure that we are talking about the same subject. So what do you understand by "risky sexual behaviours/practices"?

After the respondent has given his/ her description consolidate and say: *when we talk about "risky sexual behaviors/practices" we are referring to sexual practices where a condom is not used, having more than one sexual partner at any given time and generally any sexual practices that predispose someone to contracting and transmitting the HIV virus (or other strains of the virus)?*

- i. As we proceed, would you tell me more about yourself? What do you do for a living? How do you spend your average day? If any, what does your spouse (boy/girl friend) do? How many children do you have?
- ii. Now let's us talk about your life as a person living with HIV? Briefly, how has your life been at a *community level, family level, friends, in your religious circles, etc?*
- iii. Going further into our discussion, what is your evaluation of sexual behaviours in the general population (Probe: *do you think more people are using condoms/ are sticking to one sexual partner*)? In what way do you think that is the case? What do you think are the factors contributing to the scenario you just explained? How is each of the factors you have mentioned contributing to the scenario you just described?

Evaluations of general Sexual Behaviours

1. Do you think there is a difference in sexual behavior between people on ART and the people who are negative or those who may not know their HIV status? In what way are they different? How is that so? Please elaborate on how each of the factors you just mentioned contribute to the scenario that you described?

Evaluation of sexual behavior among people on ART

Building on the earlier discussion, let us now focus on the sexual behavior among people on ART; remember all we are interested in are your perceptions based on your observations and or your experiences. You are encouraged to be as much open as possible.

Instructions to moderator: this section will only discuss ideas which were not covered in detail in the earlier discussion.

1. From your observations and or experiences, what are your perceptions regarding the sexual behavior of people on ART? Explain how that is the case? Who do you think is more likely to engage in risky sex? How is that so?
2. What prevention strategies do people on ART employ to reduce chances of transmitting and avoiding secondary infection?
3. Do you think there is any difference between the sexual behavior of an HIV+ individual before and after commencing ART? Please explain how that is so?
4. What factors do you think would make people on ART engage (or *not engage*) in sex without using a condom? Please share with me how that is the case. In what situations/circumstances are people on ART likely (or *not likely*) to engage in sex without using a condom? Please share with me how that is the case.
5. What factors do you think would make people on ART have more than one sexual partner at a time? Please share with me how that is the case. In what situations/circumstances are people on ART likely (or *not likely*) to have more than one sexual partner at a time? Please share with me how that is the case.
6. What role do you think partners (*spouse/boy/girl friend(s)*) play regarding sex without a condom or having multiple sexual partners at a time? What role do counselors play in this? Please share with me how that is the case.
7. Do you think duration on ART has any effect on the sexual behavior of people on ART? Who do you think is more likely to engage in risky sex (*beginners, or people long on ART*)? In what way is it likely to be that way?

Beliefs about ART

1. What beliefs exist in your community regarding being on ART and being able to transmit the HIV virus? (Probe: *Do you think people on ART are less or more likely to transmit the HIV virus?*) Please explain how that is the case. How are such perceptions likely to influence sexual behavior? How can you tell that a person has either of the above beliefs?

Disclosure

1. How do you think HIV status disclosure influence sexual behavior (Probe: *Does disclosure increase or decrease likelihood of risk sex?*) Please share with me that is the case?
2. Does testing together as a couple has any influence on sexual behavior (*in terms of increasing or decreasing likelihood of engaging in risky sex*)? In what way is that so?

Positive Living Interventions

1. What role do positive living messages and interventions play regarding the sexual behavior of the people on ART? How often do you receive counsel on the subject of sexual behavior?
2. What role do counselors or ART providers play regarding positive prevention interventions? In what way is that the case? What aspects do counselors and ART providers emphasize on regarding positive prevention?
3. Do counselors ever refer you to access other positive prevention information/products/services elsewhere? What are those services/products? In what way are they helpful?
4. *As we come to the end of this interview*, what else do you think should be done to encourage good sexual practices among people on ART?

Before we end this interview, please feel free to share with me anything that you feel we have left out but which you feel is very relevant.

Thank you for your participation today. Can I answer any questions for you?