

**IMPACT OF ANTIRETROVIRAL THERAPY ON THE RISKY
SEXUAL BEHAVIOUR OF PEOPLE LIVING WITH HIV/AIDS
ON ART IN MANSA**

By

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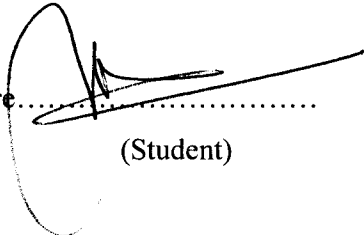
**A Dissertation submitted in partial fulfilment of the
requirement for the Degree of Master of Public Health**

**The University of Zambia
School of Medicine
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January, 2008


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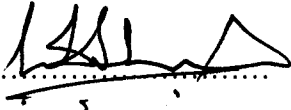
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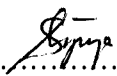
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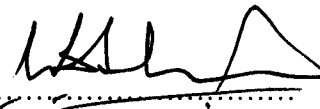
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ABSTRACT

The use of ART has transformed HIV/AIDS into a chronic manageable condition among infected individuals. However, its use has raised concerns that it will increase the risky sexual behaviour among PLWHA on ART. ART enhances the health and longevity of HIV infected persons. This is accompanied most likely by greater sexual activity among this group, consequently fuelling the opportunity for the spread of HIV and the worsening of the pandemic. Studies on risky sexual behaviour of PLWHA on ART have reported as high as one-third PLWHA on ART engaging in risky sexual behaviour. This has been argued to be significant to be ignored (Crepaz et al. 2004, Rio de, 2004). Zambian government introduced ART programme in public health institutions in 2003, and currently has about 65,000 clients on ART. Their risky sexual behaviour pattern has not been investigated. This study was conducted to investigate the risky sexual behaviour practices of PLWHA on ART accessing treatment from Mansa General Hospital.

Objectives

To determine the impact of ART on the risky sexual behaviour practice among PLWHA on ART. To compare the following outcomes; socio-demographic characteristics, HIV related medical outcomes, perceptions on ART and risky sexual behaviour practices between PLWHA on ART and those not on ART.

Methodology

A retrospective cohort study conducted at Mansa General Hospital in Mansa and University Teaching Hospital in Lusaka. A total of 119 PLWHA on ART and 111 PLWHA not on ART were recruited through a convenient sampling method. The data was collected using a structured questionnaire and analysed using SPSS version 11.0 and EPI 6 software. Chi square test was used to determine association between variables of interest. A result yielding a p-value of 0.05 or less was considered significant. Relative risk was reported to determine the degree of risk of engaging in risky sexual behaviour on ART.

Results

119 PLWHA on ART and 111 PLWHA not on ART took part in the study. No statistically significant differences in socio-demographic characteristics were observed between the two groups.

Participants on ART had better HIV related medical outcomes; 87.4% reported weight gain, 86.4% no hospital admission and 94.1% improved health status compared to 27.0%, 64.0% and 44.1% for those not on ART respectively ($p < 0.001$). Most participants on ART (84.0%) had information on ARVs compared to 54.1% among their counterparts ($p < 0.001$), while 73.4% not on ART had not received HIV care providers explanation on ARVS ($p < 0.001$). No statistically significant difference on receiving follow-up counselling was observed.

Participants on ART (58.8%) were more sexually active than their counterparts (37.8%) not on ART ($p = 0.001$). No statistical differences on sexual intercourse with steady and casual sex partners in the last three months, and condom use at last sexual intercourse with the spouse and casual sex partners. Most participants not on ART (8 out of 13) did not use a condom at last sexual intercourse with a steady sex partner compared to (5 out of 21) among those on ART ($p = 0.028$). More participants not on ART (33.3%) reported having STI in the last 6 months compared to 20.2% participants on ART.

Conclusion

Participants on ART had better HIV related medical outcomes; improved health and functional status resulting from use of ART, and were more sexually active than their counterparts. The study found a significant higher risky sexual behaviour practices involving unprotected sexual intercourse with steady sex partners and higher incidences of STIs among participants not on ART than those on ART. Use of ART among PLWHA is not associated with increased risky sexual behaviour. However, the study found about one third of participants on ART engaging in risky sexual behaviour.

To my late dad who desired to see all his children educated

I would like to thank the following people and organizations that assisted in one way or the other in making this study a success.

My Supervisor Prof. S. Siziya for his tireless support and guidance throughout the project.

Ministry of Health particularly the Provincial Health Office and Mansa General Hospital Management in Mansa for granting me the study leave. United States Agency for International Development (USAID) for the scholarship to enable me pursue my MPH programme.

Once again Mansa General Hospital Management, University Teaching Hospital Management through the Executive Director and Managing Director for allowing me to use their sites to conduct the study. Special thanks to Gladys and entire staff in ART clinic, Mansa, Mrs Mainza and her staff in Clinic 5 UTH, for helping in data collection. Extended gratitude to all the participants who volunteered their information, to them all I say thank you.

The faculty of Community Medicine, UNZA and other members of staff; Dr N. Likwa, Mr G. Akpey, Prof. K.S. Baboo and Marjory for academic support through out the MPH programme. Mr J. Banda for helping in data analysis and all my classmates for their constructive criticism.

Sincere gratitude to my entire family for their continuous support and love. Lastly but not the least to Ms Chiluba for being dear to me and assisting in the editing of the work.

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ABBREVIATIONS

AIDS:	Acquired Immunodeficiency Syndrome
ARV:	Anti-retroviral
ART:	Anti-retroviral therapy
CHAZ:	Churches Health Association of Zambia
CSO:	Central Statistical Office
DHMT:	District Health Management Team
HAART:	Highly Active Anti-retroviral Therapy
HBM:	Health Belief Model
HIV:	Human Immunodeficiency Virus
IBM:	Information-motivation Behavioural skill Model
IDU:	Intravenous Drug Users
IFRCCS:	International Federation of Red Cross and Red Crescent Societies
MoH/CBoH:	Ministry of Health/ Central Board of Health
MSM:	Men who have sex with men
NAC:	National AIDS Council
PLWHA:	People Living with HIV/AIDS
SS:	Sample Size
STI:	Sexually Transmitted Infection
UNAIDS:	Joint United Nations Program on HIV/AIDS
UTH:	University Teaching Hospital
VCT:	Voluntary Counselling and Testing
WHO:	World Health Organization

CHAPTER 1: INTRODUCTION

1.1.0 Background

The use of antiretroviral therapy (ART) has transformed Human Immune-deficiency Virus and Acquired Immune Deficiency Syndrome (HIV/AIDS) a fatal disease without treatment into a manageable chronic illness. However, there is concern that the use of ART may be linked to increased risky sexual behaviour among people living with HIV and AIDS (PLWHA) on ART. A recent meta-analysis reviewed the evidence available on the association between ART and risky sexual behaviour (Crepaz et al., 2004)

The treatment of HIV and AIDS has raised two new public issues. ART has brought enhancement in the health and the longevity of HIV positive persons, and this is thought to be likely accompanied by greater sexual activity. This in turn has increased the opportunity for HIV transmission. Secondly, the success of new treatment regimes may be reducing concern about HIV and consequently weakening adherence to safer sex practices.

1.1.1 Global and regional HIV and AIDS prevalence.

The total number of people living with Human Immunodeficiency Virus (HIV) rose to reach the highest ever in 2004. It was estimated that 39.4 million people worldwide are living with the virus. The newly acquired infections in 2004 alone were estimated at 4.9 million worldwide and AIDS related mortalities at 3.1 million globally [Joint United Nations Program on HIV/AIDS and World Health Organisations (UNAIDS/WHO), 2004].

The sub-Saharan Africa is by far the worst affected region in the world. The number of people living with HIV/AIDS by the end of 2004 was estimated at between 23.4 million and 28.4 million (UNAIDS/WHO, 2004). The primary mode of transmission among adults in this region is heterosexual sex. The HIV/AIDS pandemic in the region is complicated further by high poverty

levels said to be the highest in the world. This has made the fight and control of the pandemic difficult. Several factors have fuelled the spread of HIV in sub-Saharan Africa. These include higher poverty levels, many sexual partners per person, high commercial sex activities, high rates of Sexually Transmitted Infection (STI) incidences and high risk sexual activities most of which are unprotected.

The region by end of 2004 had only 310 000 accessing treatment from more than four million people living with HIV and AIDS in need of it. Many countries in this region have already declared HIV and AIDS pandemic a national disaster [International Federation of Red Cross and Crescent Society (IFRCCS), 2004]. Zambia is affected by this depicted regional HIV and AIDS pandemic.

1.1.2 HIV and AIDS pandemic in Zambia

Zambia is a land locked country located south of the equator in southern Africa. It has an area of 752,600 sq km and a population of 10.3 million people growing at 2.9 percent per annum. Fifty per cent of this population is made up of youths who are below the age of 25 years. The life expectancy at birth for males is estimated at 48 years with women living 4 years longer [Central Statistical Office/Central Board of Health/ORC Macro international (CSO/CBoH/ORC Macro), 2003]. The life expectancy with improved health services and standards of living should have been higher in the absence of HIV than is seen today. According to Zambia Demographic and Health Survey (ZDHS) of 2001-2002, about 15.6% of the adult population is HIV infected (CSO/CBoH/ORC Macro, 2003).

The first confirmed case of HIV/AIDS in Zambia was diagnosed in 1984. However, many clinicians had noted a number of opportunistic infections among suspected cases (CSO/CBoH/ORC Macro, 2003). From the first confirmed case in 1984, the number rose to 830 000 adult cases by June 2000

of which 450 000 were women. The majority of HIV infected persons were between 16 and 49 years old, with the peak age for females between 20 to 29 years and 30 to 39 years for males [National AIDS Council (NAC), 2003a]. During the adolescence stage which is associated with experiments and discovery in life, many females aged 15 to 19 years are said to be six times more likely to be infected than their male counterparts (CSO/CBoH, 2002). Zambia as of 2003 had an estimated 1.2 million people living with HIV/AIDS (WHO, 2004; UNAIDS, 2006).

1.1.3 Socioeconomic impact of HIV/AIDS in Zambia.

The HIV/AIDS pandemic has led to serious negative economic impact on many sectors of the country. Under the health sector, 50 percent of hospital bed spaces are occupied by patients with HIV/AIDS related illnesses. This scenario has led to increased health budgets due to long hospital stay and expensive drugs to treat opportunistic infections. In the education sector, most classes for pupils are unattended to because of death of class teachers. There were more than 1600 teachers who died in 1999 alone (NAC, 2004a). The major social impact of HIV/AIDS has been on the family unit. The families have been destabilized with death of one or both parents leaving behind a number of children as orphans. Most of these orphans are forced into the streets to fend for themselves as a result of lack of parental care. There are over 620,000 orphans due to HIV/AIDS in Zambia today. Its estimated six percent of these are in the streets with less than 1 percent in orphanages (NAC, 2004a).

1.1.4 Preventive measures and behavioural change

Promotion of preventive measures pillared on safe sex methods namely abstinence, condom use, and sticking to one faithful sex partner, is a key strategy in halting the spread of HIV infection in highly affected regions like sub-Saharan Africa (CSO, 1999; UNAIDS, 2000).

Zambia had 176 Voluntary Counselling and Testing (VCT) established centres spread throughout the country by April 2004 (NAC, 2004a). However, the uptake for VCT remained low. According to Zambia Demographic Health Survey of 2001/2002, only 9% men and 14% women countrywide knew their HIV status (CSO/CBoH, 2003). The introduction of ARVs with highly stepped up campaigns on VCT is likely to increase the uptake.

There has been change reported in the use of condoms among those who are sexually active. Condom use among those aged 15 to 49 years was reported at 42% for males and 34% for females in 2003 compared to 39% and 33% respectively in 2000 (CSO/MoH/MEASURE, 2004). According to ZDHS of 2001/2002, 29 percent males and 16 percent females reported having a non-regular sex partner (CSO/CBoH, 2003; CSO/MoH/MEASURE, 2004). The figures may not be accurate because of the difficulties associated with obtaining reliable data, which in most cases is self-reported. Furthermore, sampling in sexual risky behaviour studies is usually individual rather than couples and often excludes high-risk individuals (WHO, 2002).

1.1.5 Introduction of ARV programme in public health institutions in Zambia

By 2003, only 400 000 HIV infected people globally had access to ARVs, and most of them were in developed countries. The cost of treatment in developing countries was so expensive to be afforded by most patients. WHO and UNAIDS in December 2003, jointly launched a "3 by 5" initiative in trying to mitigate the negative impact of HIV/AIDS in poor regions. The aim of this initiative was to make anti-retroviral therapy available to 3 million people in developing countries by the end of 2005 (WHO, 2004; UNAIDS/WHO, 2006). Sub-Saharan African by end of 2004 through this initiative had managed to put 310 000 people ART out of more than four million people living with HIV/AIDS in need of it.

Zambia was among the first most affected sub-Saharan countries that responded to this partnership initiative through the Ministry of Health (MoH). The first pilot public sector ART programme in the country was initiated at the two country's largest hospitals; University Teaching Hospital (UTH) and Ndola Central Hospital in early 2002. Under phase two of the ART programme, ART services were scaled up to all provincial hospitals and selected mission hospitals in the country. By June 2004, the country had 19 centres under the public sector programme that were providing ART services under MoH and Churches Health Association of Zambia (CHAZ) (NAC, 2004b). Government health institutions were mostly catering for urban and semi-urban populations while mission hospitals catered for rural areas.

The government through MoH committed itself to put 100, 000 HIV positive people out of the 200, 000 eligible patients needing antiretroviral therapy by the end of 2005 (NAC, 2004b). According to CBoH update reports on antiretroviral therapy, by June 2005 27,700 HIV positive people were receiving free or subsidized ARVs from government health facilities. The aim was to recruit as many people as possible in line with the "100,000 HIV positive people on the programme by end of 2005" as a goal set by the Zambian government (CBoH, 2005). However, by the end of 2005, MoH had failed to meet this set target mostly because of operational factors. Nevertheless, with intensified campaigns to recruit more patients on ART programme, the response became overwhelming. By April 30, 2006, Lusaka DHMT alone had enrolled 25 542 patients on ART programme (Stringer et al., 2006).

1.1.6 Secondary benefits of ARVs in HIV transmission control

Antiretroviral therapy is part of the continuum of prevention to care. A strong relationship between antiretroviral therapy and prevention exists (Tannede, 2003). Treatment has synergistic effect on prevention and its availability enhances prevention in a number of ways:

- *Increasing demand for VCT.* In Haiti, introduction of ART was accompanied by 300 percent increase in VCT service demand. Similar experiences were observed in Senegal, Uganda, Cote d' Ivoire, Chile and Brazil following availability of ARVs (WHO, 2004).
- *Enhancing opportunities for secondary prevention.* The care and support rendered play a critical role in assisting infected people understand the need for prevention and enable them protect others (Mac Neil et al., 1999).
- *Lowering risk of HIV transmission.* Treatment lowers the likelihood of HIV transmission in case of unprotected sex.

ARTs are capable of suppressing viral loads to undetectable levels. This improves the immune function and clinically the health of an individual, subsequently slowing down the AIDS-related mortalities (Carpenter et al., 1998; Hammer et al., 1997).

1.2 STATEMENT OF THE PROBLEM

The observed risky sexual behaviour practices among people on antiretroviral therapy following the introduction of HIV treatment have raised public health challenges in the prevention and control of the pandemic. The Ministry of Health in Zambia recently introduced ART in public health institutions and over 65,000 people as by June 2007 were accessing ARV treatment. Majority of the people living with HIV/AIDS on antiretroviral therapy within months of commencing treatment improve their health status, gain strength, become productive and return to normal social life.

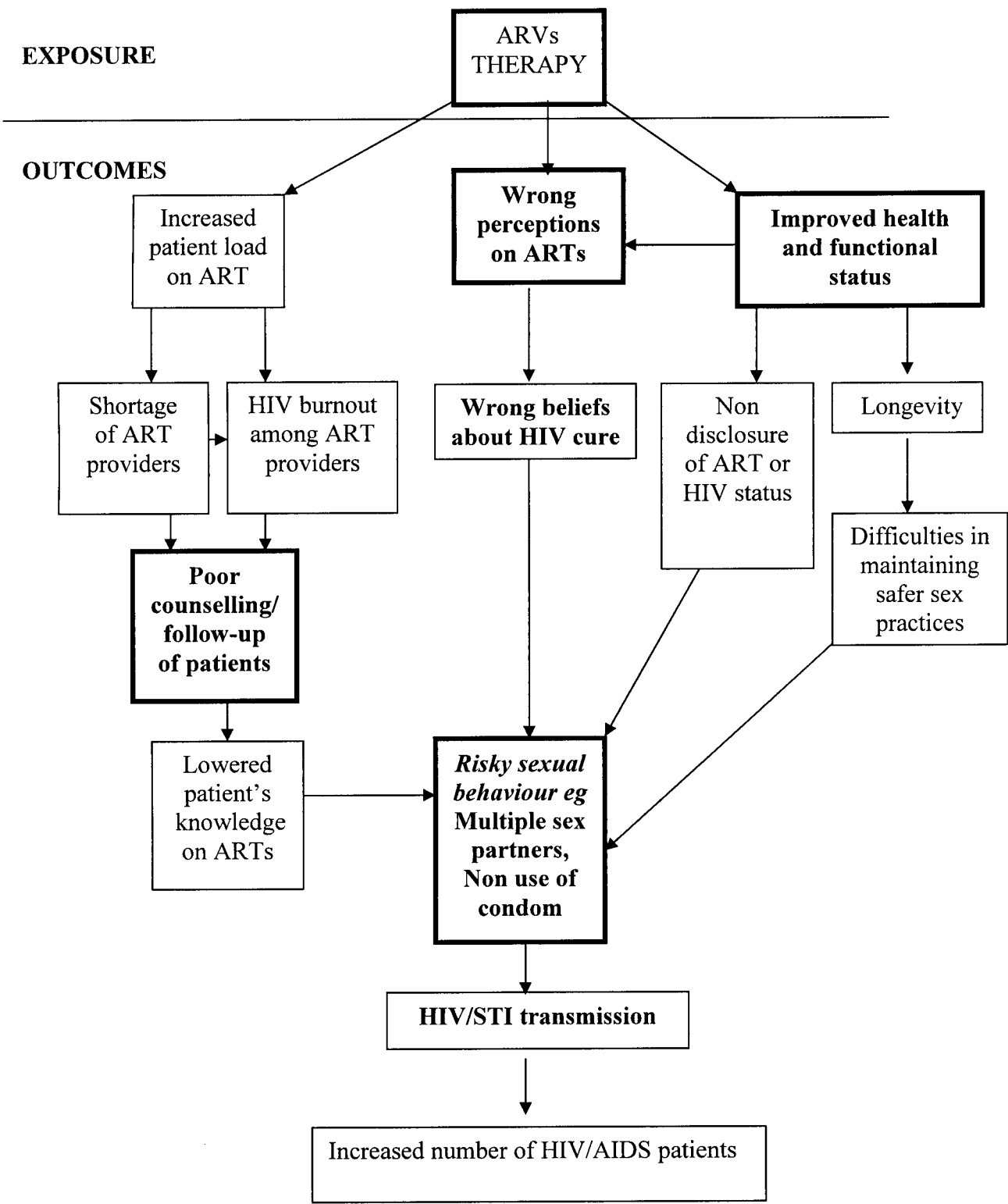
People living with HIV/AIDS on ART before commencing treatment are counselled on the sexual behaviour practices. This is to prevent them from engaging in risky sexual behaviour while on ART which might expose them to either acquisition of HIV resistant strains to ARVs or spread this strain of

virus to newly infected persons. Despite receiving counselling however, concerns indicate that as many as one third people on ART continue engaging in risky sexual behaviour as observed in certain circles of western countries (Crepaz et al., 2004). In a mathematical model by Goldman et al., (2005) it is estimated that an HIV positive person living healthier and longer in absence of risky sexual behaviour change, has 132% increase in the number of sex partners and 165% number of new partners. This poses a double infection risk to sexually active HIV negative individuals. Therefore, in the absence of behavioural change, the HIV pandemic will worsen consequently leading to a further health and economic burden of caring for these new patients. Some of these patients may be carrying an HIV drug resistant strain.

There are certain factors that have been implicated as contributing to the observed risky sexual behaviour among people on ART. Among the factor implicated are treatment optimism, wrong perceptions on ART, improved health and longevity leading to failure to maintain sexual behaviour change. However, many studies have failed to demonstrate the causal relationship of these factors to risky sexual behaviour. The quality of follow up counselling services provided by HIV health care providers during monthly clients review may influence maintenance of safer sex practices. This service could be compromised by high patient load against fewer HIV health care providers.

Relapse of risky sexual behaviour of PLWHA on ART will continue to be a public health challenge even in advances of HIV care and management. Therefore, the association between risky sexual behaviour and ART should be known if preventive measures are to be formulated.

Figure 1: Problem analysis diagram showing the associations between ART and outcomes of ART



1.3 STUDY VARIABLES

Background information

The variables that were used to assess socio-demographic information are age, sex, marital status, and education level.

Medical outcomes

The variables that were studied to assess medical outcomes are; duration of ART/since last diagnosed HIV, weight progression, number of hospitalization, health status, quality of health and amount of energy for a normal every day activity.

Perceptions about ART and ART services

The perceptions on ART were assessed in the context of HIV transmission while on ART. Variable used are transmission risk, behaviour change and ability of ARV to cure HIV.

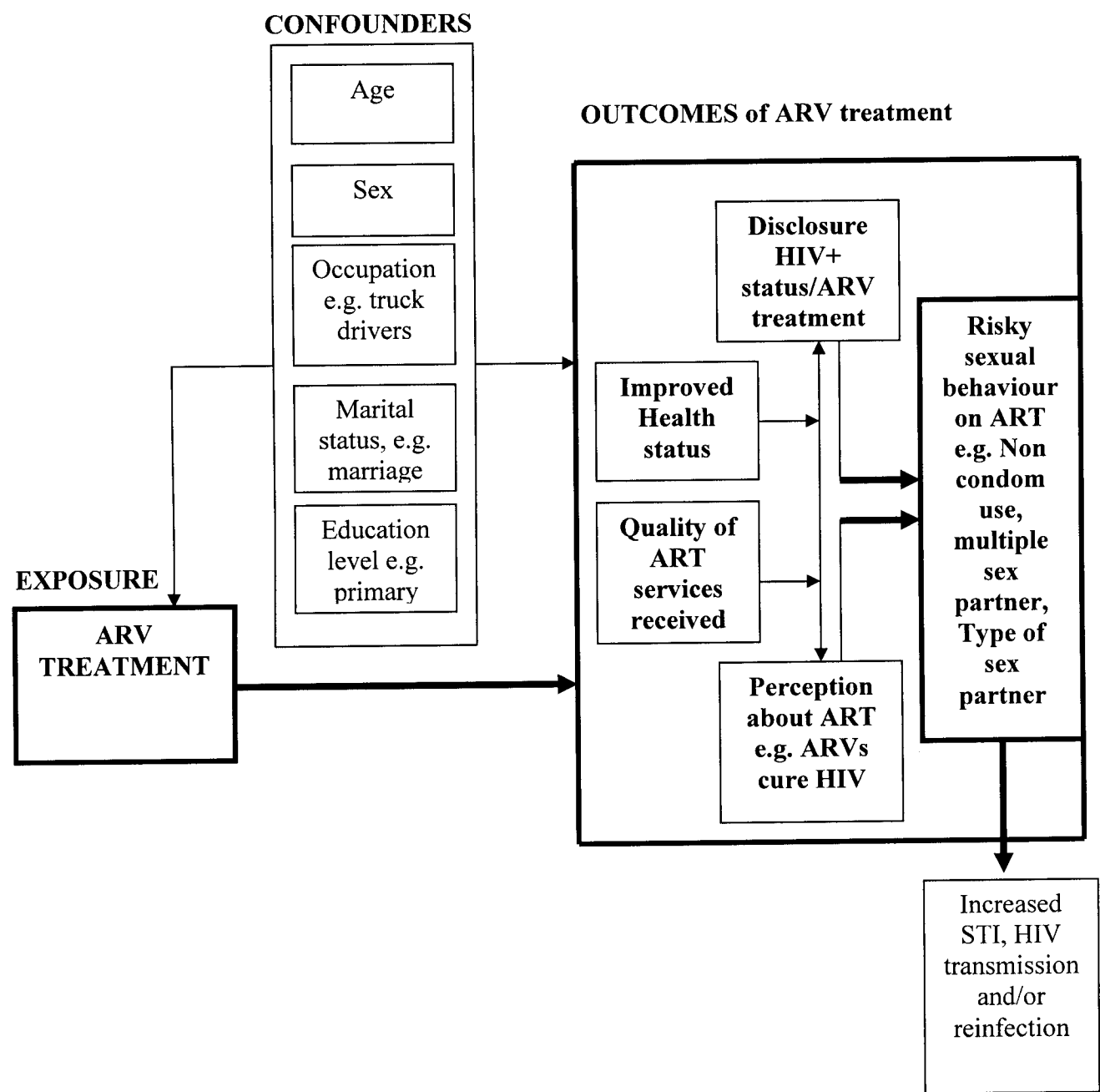
Risky sexual behaviour practices

Risky sexual behaviour practices were explored through employing the following variables; types of sexual partners, number of sex partners, condom use with different sex partners, and disclosure of HIV sero-status or antiretroviral treatment. Recall periods of last sexual intercourse activity, 3-months and 6-months were employed.

For the purpose of this study analysis, a participant was considered engaged in risky sexual behaviour if he/she reports one or more of the following practices increasing the opportunity of HIV transmission;

- Sex with multiple sex partners.
- Unprotected sexual intercourse.
- Sexually Transmitted Infections (STIs) in the last 6 months.
- Non disclosure of the treatment or HIV status to a sex partner.

Figure II: Diagram showing the relationship of variables to each other.



1.4 OBJECTIVES

1.4.1 GENERAL OBJECTIVES

- 1) To determine the impact of antiretroviral therapy on the risky sexual behaviour practices of people living with HIV and AIDS on ART.

1.4.2 SPECIFIC OBJECTIVES

- 1) To compare the socio-demographic characteristics of PLWHA on ART and those of PLWHA not on ART.
- 2) To compare the HIV related medical outcomes of people living with HIV and AIDS on anti-retroviral therapy and those not on ART
- 3) To compare the perceptions about antiretroviral treatment among PLWHA on anti-retroviral therapy and those not on ART.
- 4) To determine whether ART service factors contribute towards risky sexual behaviour among PLWHA on anti retroviral therapy.
- 5) To determine the association of risky sexual behaviour of PLWHA on ART to ART by comparing the risky sexual behaviour outcomes among people living with HIV/AIDS on ART and people living with HIV/AIDS not on anti-retroviral therapy.
- 6) Draw conclusions and make recommendations based on the study findings that will influence strengthen positive prevention intervention for people living with HIV/AIDS on treatment

1.5 RESEARCH QUESTIONS

- Is there a relationship between ARV treatment and risky sexual behaviour among PLWHA on ARV treatment?
- Are there identifiable factors that are directly related to antiretroviral therapy which are responsible of influencing risky sexual behaviour among PLWHA on ARV therapy?
- Can the improvements in the health and functional status of PLWHA on ARTs alone explain the risky sexual behaviour patterns that have been observed among PLWHA on ARV treatment?
- Are there factors within the provision of ART services that can be identified as contributing towards relapse of risky sexual behaviour among PLWHA on antiretroviral therapy?

1.6 JUSTIFICATION

Prevention of HIV transmission centred on sexual behaviour change in the prevention-treatment continuum is the cornerstone and single most strategy in controlling the spread of the HIV even in this era of ARVs.

Considerable expansion of ART programme in affected sub-Saharan African countries has occurred rapidly ahead of prevention interactions. Traditionally, HIV prevention efforts focus mostly on protecting uninfected individuals forgetting HIV positive individuals. Strengthening preventive interventions (positive prevention) among HIV positive individuals on ART living longer and healthier than before will reduce the risk of HIV transmission to uninfected population and reinfections.

Continuous risky sexual behaviour practices by PLWHA on ART will lead to further fuelling of HIV infection, transmission of HIV already exposed to ARV that maybe predisposed to developing of ARV resistant strains in the community. Risky sexual behaviour among certain populations in developed countries has been observed and has raised public health concerns. In Zambia following the introduction of ART four years ago, no study has been conducted to describe the risky sexual behaviour practices of people on antiretrovirals. If the problem exist what is the magnitude of risk on HIV negative people?

The study will further explore other challenges arising from the antiretroviral treatment outcomes that may contribute to relapse of risky sexual behaviour. The information the study will generated will aid policy makers and HIV care providers in improving secondary (positive) prevention programme interventions aimed at reducing transmission of the HIV by PLWHA on ART in the community.

1.7 OPERATIONAL DEFINITIONS

Risky sexual behaviour: Any form of sexual behaviour practice(s) that might lead to a risk of promoting transmission or reinfection with human immune deficiency virus (HIV).

Risky sexual behaviour relapse: Any form of sexual behaviour practices by PLWHA on ART assumed to have been counselled on safe sexual practices prior to commencing treatment that might expose them to a risk of HIV transmission or reinfection.

Secondary (positive) prevention: Preventive measure(s) that promote(s) PLWHA from transmission or self reinfection of STI/HIV.

Casual sex partner: A person the respondent had sex with once or a few times but not in a steady sexual relationship, and had involved exchange of gifts or money or not.

Steady (regular) sex partner: A person the respondent had been having sex with regularly and is in this steady sex relationship for at least a month or more other than a spouse married to.

Spouse: A person the respondent is married to legally and/or lives with.

CHAPTER 2: REVIEW OF LITERATURE

2.1 Introduction

There is considerable controversy over the relationship between antiretroviral therapy and risky sexual behaviour of people living with HIV and AIDS on treatment. Many have expressed concerns that wide spread use of Highly Active Antiretroviral Therapy (HAART) will lead to increased risky sexual behaviour among people living with HIV and AIDS on ART. Yet others still have argued that ART will strengthen health-related interventions through encouraging testing and counselling, and the knowledge of HIV status will increase protective behaviour (WHO, 2004).

A number of studies around the world especially in the western countries where the practice of HAART has been around since the mid 90's have tried to demonstrate the relationship between risky sexual behaviour and ART. However, many studies have failed to demonstrate this association. Crepaz et al., (2004) in a Meta analytic review study involving 25 publications sampled from 464, concluded that risky sexual behaviour was not associated with HAART. Despite failing to demonstrate the association, the same study reported the prevalence of unprotected sexual intercourse as one third among people on ART. Unprotected sex among PLWHA on ART was found to be associated with beliefs about ART and Viral load. The belief about ART such as ART reduces transmission of HIV though not a consistent finding other than ART itself were reported to influence the risky sexual behaviour.

Most studies on risky sexual behaviour of people on antiretroviral therapy have been conducted in developed western countries and most are focused on [Men who have Sex with Men (MSM)] - a special population with abnormal sex orientation (Elford et al., 2002; Rietmeijer et al., 2003). Many studies conducted before the wide-spread availability of ART (Kelly et al., 1993; Lemp et al., 1994; Robins et al., 1994) found as many as one-third HIV

positive people on antiretroviral therapy continue engaging in unprotected sexual activities (Catz et al., 2001). However, why this happened was not clear (Mcelleli et al., 2003; Katz et al., 2002).

There are fewer studies that have been conducted in Developing countries. Recently studies conducted in Kenya and India, where heterosexuality is common found that people on ART were more likely to practice safer sex than HIV positive people not on ART (Sarna et al., 2005; Sarna et al., 2006). The same studies have however, cited that about a third engaged in some form of risky sexual behaviour practices. This is similar to what Crepaz et al., (2004) found despite not finding an association to ART. However, Rio de (2004) in a commentary argued that the Meta analytic review by Crepaz et al., (2004) failed to confirm widespread belief among clinicians that patients on HAART or with undetectable viral load are more likely to engage in sexual risky behaviour. He concluded that risky sexual behaviour was common among PLWHA on ART despite studies failing to demonstrate its relationship to ART by highlighting that one third of patients on ART engaged in unprotected sex.

2.2 ART related factors with possible influence on risky sexual behaviour

Attempts to try and explain the relationship between risky sexual behaviour among people living with HIV/AIDS on ART and ART has been attempted for many times. Certain factors have been implicated though they fail short of demonstrating a causal relationship.

2.2.1 Improved health and functional status coupled with longevity

ART improves the health and functional status of people with HIV/AIDS, consequently making them live longer and healthier lives. The increase in unprotected sexual behaviour may be one of the unintended consequences of ART. This may result from a lessened concern about HIV transmission (Scheer et al., 2001). Many people on ART are living longer and healthier as

a result many face greater challenges in maintaining safer sexual practices than infected persons not on ART.

Symptomatic illness of HIV infection and adverse drug effects in a person on ART may lead to loss of sex interest. According to Crepaz et al., (2004) a person on HAART who is feeling well is prone to engage in unprotected sex. Rawstorne et al., (2002.) reported that risky sexual behaviour was independently related to better health, multiple sex partners, great HIV optimism and use of ART.

2.2.2 Perceptions about ART

There are theoretical models that have been used to explain how reduced concern of HIV transmission might influence safe sexual behaviour. One such model is the Health Belief Model (HBM) in which Rosenstock et al., (1994) stated that the “perceived severity of a disease influence behavioural change efforts, with lower perceived disease severity expected to lessen motivation for reducing HIV transmission risky behaviour”. Availability of ART has changed the course of HIV and AIDS. Before the advent of ARVs, people perceived HIV and AIDS as a non treatable severe terminal disease. This was a motivating factor to change the sexual behaviour with hope of avoiding catching HIV. Similarly, Fisher & Fisher (1992) predicted in Information-Motivation-Behavioural skills model (IMB) that HIV-related information and perceptions of disease severity contribute to the development of accurate risk perceptions and subsequent behaviour change. Increases in risky sexual behaviour could be driven by situation-based perceptions that an HIV-positive person taking antiretroviral medications is less infectious or by global perceptions that risky sexual behaviours have much less serious health consequences than earlier in the epidemic (Venable et al., 2000).

There are perceptions that ART reduces HIV transmission though not a consistent finding, because while the plasma viral load drops to undetectable

levels, the semen still contains a lot of virus (Tachet et al., 1999). This perception was found to be associated with unprotected sex among HIV patients and Intravenous Drug Users (IDU) (Ostrow et al., 2002; Tun et al., 2003). Other related studies have also reported an association between ARVs, undetectable viral load and decreased perceptions of sexual transmission risk (Venable et al., 2000).

Treatment optimism has been implicated to influence risky sexual behaviour in the era of ART. However, there is considerable controversy over the relationship between HAART optimism and resurging risk sexual behaviour especially among men who have sex with men (MSM). Some studies have rejected the existence of such an association while others have suggested a possible association though not implying causal. Some studies have argued that there is scientific rationale for the perception that reduction in HIV viral load through ART will affect the likelihood of HIV transmission (Rietmeijer, 2005).

2.2.3 ART related services

There is little that has been said on the relationship between ART related service factors and their possible influence on sexual risky behaviour of people living with HIV and AIDS on treatment. ART related service factors like prevention; counselling and education strategies for HIV transmission risk reduction should be integral component and a priority of HIV management. The quality of ART services offered to PLWHA on ART will influence the positive prevention. Physicians especially working as HIV care providers are important sources of information on HIV transmission and treatment (Metsch et al., 2004).

In a study done in the United States of America involving physicians on prevention, found that less than optimal HIV prevention counselling was provided to both new and established patients. The physicians were more

likely to provide HIV risk reduction counselling to newly diagnosed patients than to established patients (Metsch et al., 2004). ART related service factors like health education and counselling have greater influence on maintenance of safe sexual practices among PLWHA on ART. Lack of attention to HIV transmission behaviour during HIV care provider visit represents a missed opportunity for delivery of preventive messages (Metsch et al., 2004).

2.3 Risky sexual behaviours among people on ART

Social, cultural and economic factors are central as to how individuals perceive and understand health risks. Understanding the health risk and reacting to the risk of HIV and AIDS is not just a matter of factual knowledge but encompasses diverse values, beliefs, and circumstances relating to the virus and its transmission (WHO, 2002).

2.3.1 Non condom sexual intercourse

Unprotected heterosexual intercourse in developing country is the commonest route through which HIV is transmitted (WHO, 2004). Condoms have been found to reduce the transmission of the virus from infected partners during sexual intercourse. However, unprotected sexual practices among HIV positive people is still common and may border on many factors for example beliefs, stigma, culture and non availability of or accessibility to condoms. Crepaz et al. (2004), in a Meta-analytic review study found the prevalence of unprotected sex among HIV positive people on ART ranging from 9 to 56 percent (median, 33%). Many other studies (Kelly et al., 1993; Lemp et al., 1994 and Robins et al., 1994) have reported unprotected sexual activities among HIV positive persons to be around one-third (Catz et al., 2001).

In one Ugandan study, among HIV positive people who were sexually active before initiating ART, 45% reported unprotected intercourse in a 3-months period (Bunnell et al., 2006). Similarly the South African study by Simbayi et al., (2006) found 55% of people who did not disclose their HIV-positive

status engaging in unprotected vaginal intercourse. In one study done in Uganda, condom use was higher in sexual intercourse with casual sex partners than spouses or steady regular sex partners (Bateganye et al., 2005). People will perceive the risk of HIV transmission in unprotected sexual intercourse with casual or commercial sex partner than with a spouse or regular steady sex partners.

Unsafe sexual behaviour practice with occasional sex partners is of particular concern in the transmission of HIV. These sexual relationships may contribute to a more rapid transmission of HIV infection (Wolf et al. 2003). This is an area where maintaining safer sexual practices fails. Condom use and risk reduction behavior such as abstinence are problematic in long-term unions not the least because they preclude many of the expected benefits of such union like procreation and desire for children (De Zoysa, 1996). This may further be compromised by culture and traditions rendering condom use problematic among HIV positive or HIV discordant couples.

2.3.2 Disclosure of HIV positive status and/or ART to sex partner

The process of handling and controlling the issue of disclosure of HIV positive status and/or antiretroviral treatment to the family, friends or sexual partners is one big challenge for people living with HIV and AIDS battle with everyday. Failure to disclose ones HIV positive status and /or antiretroviral treatment to a sexual partner for fear of rejection, stigma, discrimination and loss of economic support may lead a person on ART to engage in risky sexual practice (Simbayi et al., 2006). HIV and AIDS hold the possibility of either corrupting the relationship or strengthening and deepening it (Kevin, 2001). Many choose not to reveal their status to their sexual partners placing their partner(s) at continuous risk (Mac Neil et al., 1999).

The rate of disclosure is higher to spouse, regular sex partner than casual sex partners. The studies done in Kenya and South Africa found less than one

third of people on ART disclosed their status to casual sex partner and HIV negative sex partners (Sarna et al., 2006; Simbayi et al., 2006). Mistrust and lack of confidence in a casual sex partner or HIV negative sex partners may lead to non disclosure putting these sex partners at risk of HIV transmission more likely than sexual relationship involving a spouse or a steady sex partner.

2.3.3 Sexually Transmitted Infections

HIV and STIs recently have now been known to cause an epidemiological synergy called lethal synergy (Cohen, 2004). As shown by many studies, STIs increase the risk of HIV transmission and acquisition and are associated with increasing HIV viral load in genital secretion (Cohen, 1998). At the same time HIV increases the risk of acquiring STIs. STIs are often used as the surrogate marker for HIV transmission risk (Scheer et al., 2001b). In Zambia, STIs have been documented as a major public health problem with about 200 000 cases treated annually. It is estimated that more than 50% seeking treatment for STIs have HIV (MoH, 1997). In one study done in a certain district of Zambia, STIs were viewed as a simple problem and their curability made people overlook the risk of HIV (Ndubani and Hojer, 2001). This perception and attitude may influence people's behaviour to engage in risky sexual behaviour knowing that many STIs are treatable and curable overlooking the bigger risk of HIV exposure.

CHAPTER 3: METHODOLOGY

3.1 Conceptual framework

According to the Health Belief Model (HBM), “the perceived severity of the disease influences behaviour change effort and with lower perceived disease severity there is less expected motivation for the transmission of risky behaviour” (Rosenstock et al., 1994). Based on this model, hypothesis can be made that “the dramatic clinical improvement people on ART experience will make them perceive HIV and AIDS as a less severe disease consequently lead to minimal efforts to change and stick to safer sexual practices while on ART.”

The assertions of this model suggest that good health status enjoyed by PLWHA on ART will make them perceive HIV and AIDS differently than before.

- The perception of susceptibility of uninfected individuals to HIV from a person on ART changes. For example, can people get infected by having unprotected sex with a person on ARVs?
- The perception of seriousness of HIV and AIDS changes. Is HIV/AIDS serious in the era of ARVs?
- The perception of benefits of preventive action changes. For example, should I continue using condoms while on ART?
- The barriers to take action are created because of improved health. For example, “I don’t like condoms because it reduces sensitivity”.
- The belief in effectiveness of the new behaviour is questioned. Are condoms necessary while on ARTs?

The perceptions may impact negatively on people living with HIV and AIDS on treatment in changing and maintaining safer sexual behavior. The resulting consequence is self reinfection or transmission of ARV exposed HIV that might end up as drug resistant strains in the community.

3.2 Study Design

This was a retrospective cohort study. A cohort defined as a group of people who share a common characteristic or experience within a defined period (Park, 2002). A cohort study investigates the outcome of interest associated with an exposure through comparing the exposed to non exposed group. For the purpose of this study, a cohort of PLWHA was defined as laboratory diagnosed PLWHA not for less than a period of six months but not longer than 36 months. The exposure under study was antiretroviral therapy (ART) and the main outcome was risky sexual behaviour.

3.3 Study setting

The study was conducted at Mansa General Hospital in Mansa. It is a second level hospital with the largest ART centre in Luapula Province. At the time of data collection, ART clinic was under the Medical High Cost department and the centre was catering for clients from all the districts in the province. It had about 317 clients both old and new.

The second centre that was used was the Medical clinic 5 at the University Teaching Hospital (UTH) in Lusaka.

3.4 Study population

The study population was drawn from PLWHA in Luapula province and Lusaka Urban. Luapula Province has a prevalence of 11% HIV cases estimated at 49 462 (NAC, 2004). The exposed cohorts defined as persons living with HIV/AIDS on anti-retroviral therapy were recruited from Mansa General Hospital ART clinic. The non-exposed cohort defined as laboratory diagnosed people living with HIV/AIDS not on antiretroviral therapy were recruited from two sites; Mansa General Hospital Medical General Clinic and Medical outpatient Clinic 5 at UTH.

3.5 Study unit description

3.5.1. Exposed cohort

The exposed participants were defined as PLWHA on ART based on WHO eligibility criteria; CD4 cell count of 200 cells/mm³ or less, or WHO clinical stage 3 or 4 disease. Convenient sampling method was used to recruit participants due to limited number of clients accessing ART.

Inclusion Criteria for exposed cohort

The participants from PLWHA on ART eligible for the study were on ART for 6 to 36 months. Both sexes, aged between 16 and 49 years with fair to good health status based on clinical criteria (no active opportunistic infection, ambulant and active).

3.5.2. Non-exposed cohort

The non-exposed participants were drawn from laboratory diagnosed PLWHA not on ARVs. A convenient sampling method was used to recruit the participants.

Inclusion Criteria for non-exposed cohort

Participants from Laboratory diagnosed PLWHA between 6 to 36 months, not on ARVs, both sexes, aged between 16 and 49 years and with a fair to good health status based on clinical criteria (no active opportunistic infection, ambulant and active).

3.6 Sample Size

Pococks formula (1982) was used to calculate the sample size (n) involving two study groups. The following should be known before the formula is used:

- I. Estimate (P1), the likely percentage in the non-exposed group.
- II. Value of (P2), percentage in the exposed group with a good chance of being different from (P1).
- III. Significance level (α) and either one-tailed or two-tailed test.

IV. Power of the test (β).

$$n = \frac{P1 (Q1) + P2 (Q2)}{(P1 - P2)^2} \times f(\alpha, \beta)$$

Where $Q = 100 - P$, and $f(\alpha, \beta)$ is 3.84.

According to Crepaz et al. (2004) Meta-analytic review study, the prevalence of unprotected sex among PLWHA on ART from the 25 of 464 publications meeting the inclusion criteria done between 1996 and 2003, was between 9% and 56% (median, 33%), and for PLWHA not on ART between 11% and 77% (median, 44%), giving $P1=44\%$, $Q1=56$, $P2=33\%$, $Q2=67$, $(P1-P2)^2=121$. Substituting these in the formula using two-tailed test at 5% significance level calculated sample size (n) is 148 for each group.

The exposed participants made up of 119 people on ART were recruited from ART Clinic at Mansa General Hospital. The non exposed participants made up of 111 PLWHA not on ART were recruited from two sites; 27 from General Medical clinic at Mansa General Hospital and 84 from Medical Clinic 5 at UTH.

3.7 Data Collection Tool and Techniques

Data collection was carried out over a period of 5 months from September 2005 to January 2006. A Structured questionnaire divided into 6 Section namely (A) socio-demographic data, (B) HIV related medical outcomes, (C) service outcomes, (D) perceptions on treatment outcomes, (E) risky sexual behaviour outcomes, and (F) STI outcomes was used to collect the desired data.

The questionnaire for the non-exposed group had some questions modified in section B without changing the variables of interest. (Appendix IV).

Structured interviews were conducted lasting about 20 to 25 minutes after explaining the purpose of the study.

3.8 Pilot study

The questionnaires were piloted on 10 participants; 5 on PLWHA on ART and 5 not on ART from Mansa General Hospital to test the clarity of questions. Questions, which were not clear, were revised.

3.9 Data Quality Control

Three nurses working in ART and Medical Clinic 5 were used as research assistants. They were trained on how to conduct the interviews and enter information on open-ended questions. Every question was reviewed.

3.10 Data Analysis

Data was entered and analysed using the Statistical Package for Social Sciences (SPSS) and EPI info 6 Software. Raw data was edited for completeness and accuracy. Open-ended questions were categorized and suitable items were formulated to bring all related data together which were coded like closed ended questions. Prior to analysis, data was cleaned by browsing and frequency range checked and where errors were detected correction was made. The tables were used to summarize the data descriptively. Pearson's chi square test was used to assess statistical significance for categorical variables between the two groups, and Relative risk (RR) for risk association to ARV treatment. A result yielding a p-value of 0.05 or less was considered significant.

3.11 Ethical Consideration

The ethical clearance was obtained from University of Zambia (UNZA) Research Ethics Committee, and permission to conduct the study was sought from the Executive Directors and heads of departments (appendix V). No invasive procedure was involved during data collection, and all participants

gave a written consent for participation. Participants were interviewed separately and information submitted was treated with strict confidentiality except for the intended purpose of the study. No client names or medical record number was included on the questionnaire. The questionnaires were coded for easy data entry and secured in a safe place.

3.12 Study limitations

The number of clients on ARVS who met the criteria of inclusion was limited and could not meet the desired sample size. Due to the limited number of clients on ART programme, a convenient sampling technique was used and therefore study findings could not be generalized to the entire population.

Part of the non exposed cohort (PLWHA not on ARVs) was recruited from a different site of study- UTH. However, this did not introduce a significant bias Mansa being a peri urban area with similar sexual behaviour pattern as Lusaka.

Collection of sexual information like in many sexual risky behaviour studies from participants was challenging. Risky sexual behaviour borders on ones private life and information is volunteered as self-report which has limitation on social desirability and reliability.

CHAPTER 4: RESULTS

4.1 Description of the sample

The findings of the study are based on the analysis of the responses from the two study groups of people living with HIV/AIDS on ART and those not on ART. The expected sample size for each group was 148; however, 119 PLWHA participants on ART were interviewed giving a response rate of 80.4 percent, and 111 PLWHA not on ART were interviewed giving a response rate of 75 percent.

The 119 PLWHA participants on ART interviewed, 72 (60.5 percent) had been on treatment for less than 12 months, 28 (23.5%) for 13 to 18 months and 19 (16.0%) for more than 18 months to 36 months. Of the 111 PLWHA participants not on ART, 80 (75.5%) were laboratory diagnosed HIV positive in the last 6 to 12 months, 6 (5.7%) in the last 13 to 18 months while 20 (18.9%) in the last 18 to 36 months.

4.2 Shortfall in the sample size

The shortfall in the sample size was due to the limited number of PLWHA on ARVs at the time of data collection meeting the inclusion criteria. Some questionnaires from PLWHA not on ART were rejected due to a lot of missing information.

4.3 Comparison of the socio-demographic characteristic outcomes of the two groups

The study compared age, sex, marital status and education as socio-demographic characteristics of interest between the two groups on ART (exposed) and not on ART (none exposed). The study findings are summarised in tables' 4.3.1 to 4.3.3.

Table 4.3.1: Comparison of age distribution between the two groups

Study groups	AGE GROUPS								P-Value
	Below 20		20 to 29		30 to 39		40 to 49		
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	
ARV n=119	2	1.7	16	13.4	56	47.1	45	37.8	0.252
NARV n=111	3	2.7	25	22.5	42	37.8	41	36.9	
Chi square (χ^2)	4.09								

Majority of the participants [56(47.1 percent) on ART and 42(37.8 percent) not on ART] were in the range of 30 to 39 years. There was no statistical difference ($p=0.252$) between the two study groups in the age distribution (Table 4.3.1).

Table 4.3.2: Sex and marital status distribution between the two groups

Study groups	SEX				P-Value
	Males		Females		
	<i>f</i>	%	<i>f</i>	%	
ART n =119	42	35.3	77	64.7	0.273
NART n= 111	47	43.3	64	57.7	
χ^2					1.20
	MARITAL STATUS				
	Married		Single*		
	<i>f</i>	%	<i>f</i>	%	
ART n=119	66	55.5	53	44.5	0.149
NART n=111	51	45.9	60	54.1	
χ^2					2.80

*Singles include never been married before, separated and widowed.

There was no statistical difference ($p=0.273$) in the sex distribution of the two study groups. Majority of the participants [77(64.7 percent) on ART and 64(57.7 percent) not on ART] were women. Most of the participants 66(55.5 percent) on ART were married while 60(54.1 percent) not on ART were single. The two groups were similar ($p=0.149$) in the marital status distribution (Table 4.3.2).

Table 4.3.3: Education distribution of the two groups

Study groups	EDUCATION LEVELS						P-Value
	Tertiary*		Secondary*		Primary*		
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	
ART n=119	41	34.5	58	48.7	20	16.8	0.192
NART n=111	46	41.4	41	36.9	24	21.7	
χ^2							3.30

*Tertiary: College or University education

*Secondary: Grade 8 to 12

*Primary: No formal education to grade 7

Most of the participants 58(48.7 percent) on ART had secondary education while 46(41.4 percent) of participants not on ART had tertiary education. No statistically significant difference in educational levels was noted between the two study groups ($p=0.192$) (Table 4.3.3).

4.4 Comparison of HIV related medical outcomes of PLWHA on ART and those not on ART

The following variables of interest were measured to assess HIV related medical outcomes of the two study groups (i) weight progression, (ii) number of hospitalisation in last 6 months, (iii) self reported health status in the last 3 months, (iv) self reported quality of life in the last 6 months and (v) energy for day to day activities. The study findings are summarised in table 4.4.

Table 4.4: HIV related medical outcomes for the two groups

Study groups	Weight progression (in the last 12 months)						p-value
	Gained		Same		Lost		
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	
ART (n=119)	104	87.4	11	9.2	4	3.4	<0.001
NART (n=111)	30	27.1	27	24.3	54	48.6	
	Number of hospitalization (last 6 months)						
	None		Once		More than once		
ART (n=118*)	102	86.4	10	8.5	6	5.1	<0.001
NART (n=111)	71	64.0	29	26.9	11	9.1	
	Self reported health status (last 6months)						
	Improved		Same		Worsened		
ART (n=119)	112	94.1	6	5.1	1	0.8	<0.001
NART (n=111)	49	44.1	42	37.8	20	18.1	
	Self reported Quality of life (last 6 months)						
	Good		Fair		Poor		
ART (n=119)	87	73.1	31	26.1	1	0.8	<0.001
NART (n=111)	35	31.5	32	28.8	44	39.4	
	Energy for day to day activities (last 6 months)						
	Complete		Moderate		Little		
ART (n=119)	58	48.7	58	48.7	3	2.6	<0.001
NART (n=111)	23	20.7	35	31.6	53	47.7	

* less by 1 due to missing information

Statistically significant differences in all the variables measured on HIV related medical outcomes between the two groups were observed ($p<0.001$). The PLWHA on ART had better HIV related medical outcomes compared to those not on ART. The majority of participants on ART 104 (84.7 percent) reported a weight gain in the last 12 months compared to 30 (27.0 percent)

not on ART. The participants on ART were 3.23 ($RR=3.23$, $95\%CI$, $2.36 - 4.42$) times more likely to have gained weight compared to participants not on ART. The majority of participants in both groups [102 (86.4 percent) on ART and 71 (64 percent) not on ART] reported no episode of hospitalization in the last 6 months. However, a difference between the two study groups was noted. Participants on ART were 35 percent ($p<0.001$, $RR=1.35$; $95\%CI$, $1.16 - 1.58$) more likely not to have been hospitalized compared to those not on ART.

The majority of respondents on ART 112 (94.1 percent) self reported improvement in health status in the last 3 months. There were more people not on ART who reported their health status as worsening 20 (18 percent) or remained the same 42 (37.8 percent) in the last 3 months. The participants on ART were 2.13 ($p<0.001$, $RR=2.13$; $95\%CI$, $1.72 - 2.64$) times more likely to have reported improvement in health status compared to those not on ART.

Most participants on ART 87 (73.1 percent) reported experiencing a good quality of life while 44 (39.4 percent) participants not on ART reported experiencing a poor quality of life. The participants on ART were 2.32 ($p<0.001$, $RR=2.32$, $95\%CI$; $1.73-3.11$) more likely to report a good quality of life than their counterparts. Most of the participants on ART 58 (48.7 percent) were 2.35 ($p<0.001$, $RR=2.35$, $95\%CI$; $1.56-3.54$) times more likely to report complete energies for day to day activities compared to their counterparts not on ART (Table 4.4).

4.5 Comparison of ART related service outcomes for PLWHA on ART and those not on ART

The ART related service outcomes that the study assessed in both groups are (i) follow-up counselling, (ii) information on ARVs and (iii) ART provider's explanation about ARVs. Findings are summarized in table 4.5.

Table 4.5: ART related service outcome among the two groups

Study group	Follow up counselling in the last three months				P-VALUE
	YES		NO		
	<i>f</i>	%	<i>f</i>	%	
ART (n=116*)	35	30.2	81	69.8	0.070
NART (n=107**)	21	19.6	86	80.4	
	Information on ARVs				
ART (n=119)	100	84.0	19	16.0	<0.001
NART (n=111)	60	54.1	51	45.9	
	Explanation on ARV from HIV/ART care provider				
ART (n=119)	65	54.6	54	45.4	<0.001
NART (n=109***)	29	26.6	80	73.4	

*less by 3, ** less by 4 and ***less by 2 due to missing information,

The majority of the participants not on ART [86 (80.4 percent)] and on ART [81 (69.8 percent)] reported not receiving follow-up counselling in the last three months. There was no significant difference between the two groups receiving follow-up counselling ($p=0.070$, $RR=1.54$, $95\%CI$; $0.96-2.47$).

Significantly more participants on ART 100 (84 percent) than those not on ART [60 (54.1 percent)] reported having information on ARVs ($p<0.001$). The participants on ART were 55 percent ($RR=1.55$; $95\% CI$, $1.29-1.88$) more likely to have information on ARVs compared to those not on ART.

Significantly more participants [80 (73.4 percent)] not on ART reported not receiving any explanation on ARVs from their HIV health care provider compared with 65 (54.6 percent) participants on ART who reported receiving some explanation on ARVs ($p<0.001$). People on ART were 2.05 times ($RR=2.05$; $95\% CI$, $1.44-2.92$) more likely to receive HIV/ART care providers explanation on ARVs than their counter parts.

Table 4.5: ART related service outcome among the two groups

Study group	Follow up counselling in the last three months				P-VALUE
	YES		NO		
	<i>f</i>	%	<i>f</i>	%	
ART (n=116*)	35	30.2	81	69.8	0.070
NART (n=107**)	21	19.6	86	80.4	
Information on ARVs					
ART (n=119)	100	84.0	19	16.0	<0.001
NART (n=111)	60	54.1	51	45.9	
Explanation on ARV from HIV/ART care provider					
ART (n=119)	65	54.6	54	45.4	<0.001
NART (n=109****)	29	26.6	80	73.4	

*less by 3, ** less by 4 and ***less by 2 due to missing information,

The majority of the participants not on ART [86 (80.4 percent)] and on ART [81 (69.8 percent)] reported not receiving follow-up counselling in the last three months. There was no significant difference between the two groups receiving follow-up counselling ($p=0.070$, $RR=1.54$, $95\%CI$; $0.96-2.47$).

Significantly more participants on ART 100 (84 percent) than those not on ART [60 (54.1 percent)] reported having information on ARVs ($p<0.001$). The participants on ART were 55 percent ($RR=1.55$; $95\% CI$, $1.29-1.88$) more likely to have information on ARVs compared to those not on ART.

Significantly more participants [80 (73.4 percent)] not on ART reported not receiving any explanation on ARVs from their HIV health care provider compared with 65 (54.6 percent) participants on ART who reported receiving some explanation on ARVs ($p<0.001$). People on ART were 2.05 times ($RR=2.05$; $95\% CI$, $1.44-2.92$) more likely to receive HIV/ART care providers explanation on ARVs than their counter parts.

4.6 Perception on the ARV treatment

Perceptions on the ARV treatment among PLWHA on ART and those not on ART were assessed within the context of HIV transmission while on ARVs. This was assessed through the following statements; (i) ARVs reduce the risk of HIV transmission, (ii) behavioural change for the PLWHA on ART is not important, (iii) Person on ART can not transmit HIV infection, and (iv) ARVs treatment leads to absolute cure. The findings are summarized in table 4.6.

Most of the participants [76 (63.9 percent) on ART and 64 (57.6 percent) not on ART] agreed to the statement that “*ARV reduce the risk of transmitting HIV infection*”. There was no difference between the two groups ($p=0.070$). Most of the participants 104 (87.4 percent) on ART agreed to the statement that “*Behaviour change was important for a person on ARVs*” compared to 81 (73.0 percent) not on ART. There was a significant difference ($p=0.006$) between the two groups on how they perceived the statement.

The majority of the participants [89 (74.8 percent) on ART and 86 (77.5 percent) not on ART] indicated that the statement “*people on ARVs can not transmit HIV infection*” is false and there was no significant difference ($p=0.633$) between the two groups in the way they perceived the statement. Significantly most participants 88 (79.2 percent) not on ART indicated that the statement “*ARVs lead to absolute cure*” was false compared to 77 (64.7 percent) on ART ($p=0.014$) (Table 4.6).

Table 4.6 Comparison of perceptions on ART between the two groups

Study groups	ARVs reduce risk of HIV transmission				P-Value
	Agree		Disagree		
	<i>f</i>	%	<i>f</i>	%	
ART n=119	76	63.9	43	36.1	0.070
NART n=111	64	57.6	47	42.4	
	Behavioural change is important for people on ARVs				
ART n=119	104	87.4	15	12.6	0.006
NART n=111	81	73.0	30	27.0	
	People on ARVs can not transmit HIV				
	True		False		
	<i>f</i>	%	<i>f</i>	%	
ART n=119	30	25.2	89	74.8	0.633
NART n=111	25	22.5	86	77.5	
	ARVs leads to absolute cure				
ART n=119	42	35.3	77	64.7	0.014
NART n=111	23	20.7	88	79.3	

4.7 Risky sexual behaviour outcomes of the two groups

The risky sexual behaviour was assessed through self-reported condom use with a spouse, steady or casual sex partner in the last sexual intercourse. Self-reported sexual intercourse with different types of sex partners, presence of STIs and, disclosure of HIV status and/or ART to a sexual partner was explored.

4.7.1 Sexual intercourse with different types of sex partners and condom use among PLWHA on ART and those not on ART

A 3 months recall period was used to assess sexual intercourse with different types of sex partners and condom use in the last sexual intercourse. Findings are summarised in table 4.7.1.

The majority 70 (58.8 percent) on ART reported being sexually active compared to 69 (62.7 percent) not on ART reporting as being sexually inactive in the last 6 months. PLWHA on ART were more sexually active than those not on ART ($p=0.001$). Participants on ART were 55 percent ($RR=1.55$; 95%CI, 1.17- 2.06) more likely to report being sexually active compared to those not on ART.

Among the sexually active, [21 (30 percent) on ART and 13 (31.5 percent) not on ART], ($p=0.915$) reported having sexual intercourse with a steady sex partner. Six (8.6 percent) on ART and 4 (9.5 percent) not on ART ($p=0.981$) reported having sexual intercourse with a casual sex partner in the last three months. There was no difference between the two groups in the pattern of sexual practices with non marital partners. The risk of having sexual intercourse was similar between the two study groups [steady sex partner ($RR=0.97$; 95%CI, 0.54-1.72) and casual sex partner ($RR=0.99$; 95%CI, 0.29-3.30)].

Table 4.7.1 Sexual activity, types of sex partners and condom use

Study group	Sexually active (last 6 months)				p-value
	YES		NO		
	<i>f</i>	%	<i>f</i>	%	
ART (n=119)	70	58.8	49	41.2	0.001
NART(n=111)	42	37.8	69	62.7	
	Sexual intercourse with steady sex partner in the last 3 months				
ART (n=70)	21	30.0	49	70.0	0.915
NART (n=42)	13	31.0	29	69.0	
	Sexual intercourse with casual sex partner in the last 3 months				
ART (n=70)	6	8.6	64	91.4	0.981
NART (n=42)	4	9.5	38	90.5	
	Non condom sexual intercourse with a spouse in the last intercourse				
ART (n=61)	20	32.8	41	67.2	0.387
NART (n=31)	13	41.9	18	58.1	
	Non condom sexual intercourse with a steady sex partner (last intercourse)				
ART (n=21)	5	*	16	*	0.028
NART (n=13)	8	*	5	*	
	Non condom sexual intercourse with casual sex partner (last intercourse)				
ART (n=6)	3	*	3	*	1.000
NART (n=4)	2	*	2	*	

*Percentage figure omitted because “n” is less than 30.

Continuation of table 4.7.1

Study group	Condom use with spouse in the last 3 months				P-Value
	Never		Always		
	<i>f</i>	%	<i>f</i>	%	
ART n=61	30	49.2	31	50.8	0.510
NART n=31	13	41.9	18	58.1	

Among the sexually active participants, 20 (32.8 percent) on ART and 13 (41.9 percent) not on ART ($p=0.387$) reported not using a condom in the last sexual intercourse with their spouse. Ten (32.2 percent) not on ART and 11(18 percent) on ART reported unprotected sex (non condom use) at every episode they had sex with their spouses in the last three months.

Participants who reported having sex with a steady sex partner, 5(21) on ART and 8(13) not on ART reported not using a condom during the last sexual intercourse. There were more participants not on ART who reported non condom use (unprotected sex) during the last sexual intercourse compared to those on ART ($p=0.028$). Participants on ART were 61 percent less likely to have unprotected sex with steady sex partner compared to their colleagues not on ART ($RR=0.39$; 95% *CL*, 0.16-0.95).

Among participants reporting sexual intercourse with a casual partner, 3 out of 6 on ART and 2 out of 4 not on ART had unprotected sex during the last sexual intercourse. The risk of engaging in unprotected sex with a casual sex partner was similar ($RR=1$; 95%*CL*, 0.28-3.59) in the two study groups.

4.7.2 Disclosure of ART/HIV to sex partner

The participants were asked which sex partner they were likely to reveal their ARV treatment or HIV positive status and the results to this assessment are summarized in table 4.7.2.

Table 4.7.2 Sex partners likely to disclose ART/HIV status to

Study groups	Disclose of ART/HIV status to Sex partners										P-Value
	Spouse only		Steady only		Casual only		Any sex partner		Not disclose to any sex partner		
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	
ART n=113**	71	62.8	17	15.0	1	*	12	10.6	12	10.6	0.350
NART n=108^	81	75.0	11	10.2	0	0.0	8	7.4	8	7.4	

* Percentage less than (0.1), ** less by 6 and ^ less by 3 due to missing information

Most of the participants 81 (75.0 percent) not on ART and 71 (62.8 percent) on ART said they would disclose their treatment or HIV positive status to a spouse. There was no significant difference ($p=0.350$) between the two groups on treatment or HIV status disclosure (Table 4.7.2).

4.7.3 Comparison of incidence of STIs as a measure of risky sexual behaviour outcome between the two study groups

The self-reported incidence of Sexually Transmitted Infection (STIs) and the number of STI episodes suffered in the last 6 months were assessed based on a 6-months recall period. The findings are summarized in Table 4.7.3.

There were 37 (33.3 percent) participants not on ART compared to 24 (20.2 percent) participants on ART who reported at least an episode of STIs in the last six months ($P=0.024$). Participants on ART were 39 percent ($RR=0.61$; 95% CL , 0.39-0.94) less likely to suffer an STI compared to their colleagues not on ART. The participants who reported STIs, 10 out of 24 on ART had experienced more than one episode of STI in the last 6 months compared to 15 (40.8 percent) not on ART. No significant difference was observed between the two groups on the number of episodes of STIs suffered ($p=0.930$) in the last six months.

Table 4.7.3 Incidence of STIs among the two groups

Study groups	Suffered STIs in the last 6 months				P-value
	Yes		No		
	<i>f</i>	%	<i>f</i>	%	
ART(n=119)	24	20.2	95	79.8	0.024
NART(n=111)	37	33.3	74	66.7	
	Number of STIs episodes suffered in last 6 months				
	More than once		Once		
ART(n=24)	10	*	14	*	0.930
NART(n=37)	15	40.8	22	59.2	

* Percentage figure omitted because “n” is less than 30.

CHAPTER 5: DISCUSSION

5.1 Introduction

The objective of this study was to investigate the impact of antiretroviral therapy (ART) on the risky sexual behaviour of PLWHA accessing ART from Mansa General Hospital in Mansa. The study compared the social demographic outcomes, HIV related medical outcomes and perceptual beliefs on antiretroviral therapy of PLWHA on ART and PLWHA not on ART. The study further determined the association of risky sexual behaviour to antiretroviral therapy by comparing the risky sexual behaviour practices outcomes of PLWHA on ART and PLWHA not on ART. The study findings are discussed below.

5.2 Comparison of Socio-demographic characteristic outcomes of PLWHA on ART and those not on ART

The study compared the socio demographic characteristics of people living with HIV/AIDS on ART and people living with HIV/AIDS not on ART. The variables of interest were age, sex, marital status and education. The study found no statistically significant differences in the socio-demographic characteristic outcome in the two study groups. The study thus observed that these socio demographic characteristics did not influence the ART seeking behaviour.

5.3 Comparison of HIV related medical outcomes of PLWHA on ART and those not on ART

A period of six months and more on ART or post HIV diagnosis was set as criteria to participate in the study. This was to allow clinical effects of ARVs in participants on ART and recovery from psychological trauma resulting from post HIV positive related diagnosis of participants not on ART thus allowing them return to normal social life.

PLWHA on ART had better HIV related medical outcomes (improved health and functional status) than their counterparts not on ART. This difference in the improved health and functional status can be attributed to positive effect of ART use. The difference was more pronounced in the number of episodes in hospitalization and self reported health status. The PLWHA on ART reported having complete energies for the day to day activities compared to PLWHA not on ART.

The assessment of HIV related medical outcomes based on self reported health and functional status of oneself had one major limitation of subjectivity. Nevertheless, the study findings give an insight on how the participants in the two study groups perceived their wellbeing in the presence or absence of ART use. A person perceiving one self to be well, gaining weight, with few or no hospitalization, and having complete day to day energies is more likely to engage in sexual activity than one perceiving one self to be unwell. However, the risk of engaging in risky sexual behaviour may not be directly related to ART but rather to the health status of an individual (Catz et al., 2001; Crepaz et al., 2004).

5.4 ART related service outcomes

The study considered ART related service outcomes such as; follow-up counselling to reinforce positive prevention and HIV care provider's explanation on ART limitation given to clients. These have an influence on maintenance of safe sex practices among PLWHA as pointed out by Metsch et al., (2004) that HIV care providers are important sources of information on HIV transmission and treatment.

The study did not observe any difference on follow up counselling received from HIV care provider in the last three months in the two study groups. However, the study anticipated that PLWHA on ART were likely to receive follow up counselling than their counterparts. Factors like high client load and fewer HIV care providers and providers attitudes that the study did not

investigate could have influenced this outcome. PLWHA on ART not receiving follow up counselling on risk reduction assessment are likely to engage in risky sexual behaviour practice. Engaging in risky sexual behaviour practices may be related to HIV care provider's failure to enforce safer sex practice following risk reduction assessment more likely on new patients than old (Metsch et al., 2004). Lack of attention to HIV transmission behaviour during HIV care provider - client encounter represents a missed opportunity for delivering prevention messages (Metsch et al., 2004), that may enforce safer sex practice and prevent risky sexual behaviour among PLWHA on ART. The risk behaviour observed in PLWHA on ART in this study may not be directly related to ART but failure to enforce follow up counselling by HIV care providers as observed.

There were more participants on ART significantly who reported having information on ARVs and receiving HIV care provider's explanation on ARV than those not on ART. The difference in this outcome could have been due to constant interactions participants on ART have with HIV care providers during planned medical reviews associated with drug refill visits. Participants not on ART's interactions with HIV care providers are random and spaced usually when they are seeking health care for their HIV related ailments beside planned medical review. When ill at times, appreciating explanation fully not only on ART may not be easy. Information on ART and HIV care provider's explanation helps correct wrong perceptions on ARVs. These outcomes have an effect on PLWHA reducing the risk of engaging in risky sexual behaviour practices while on ART. Information is a critical resource in efforts of prolonging the life of PLWHA and preventing transmission of HIV (Huber, 1998).

5.5 Comparison of perceptions on ART outcomes among the two groups.

The PLWHA on ART's and PLWHA not on ART's perceptions on antiretroviral therapy were determined in the context of HIV transmission risk

in relation to ART. This was assessed using statements of behaviour change while on ART, and ARVs ability to cure. There were significant differences in perception on the statement used, more participants on ART perceived *“behaviour change as important for an HIV positive person on ARVs”* and *“ARV as absolute cure for HIV”*. The belief that behaviour change is important is protective and will prevent people on ART from engaging in risky sexual behaviour. This may not be related to ART directly but to health benefits accrued to participants on ART. However, the observation of more participants believing that ART is absolute cure may be associated with risk sexual behaviour as observed by Vanable et al., (2000) that undetectable viral load led to reduced rate of HIV transmission belief.

The study did not observe a significant difference between the two study groups on statements *“people on ARV can not transmit HIV”* and *“ARV reduce the risk of HIV transmission”*. Majority of the participants believed ARV reduce the risk of HIV transmission. This could be related to the belief that ARVs lead to absolute cure. Similarly as observed by Vanable et al., (2000), this belief may influence people’s behaviour to engage in risky sexual practices.

5.6 Comparison of risky sexual behaviour outcomes

Risky sexual behaviour outcomes among the two study groups were assessed through the following variables; number and type of sex partners, condom use within marriage (with spouse), condom use with a steady sex partner and casual sex partner, episodes of STIs and HIV positive or ART status disclosure to a sexual partner. The study assessed unprotected sex within marriage as risky sexual behaviour as this could lead to transmission of the virus to uninfected partner. A three month recall period was used in assessing sexual intercourse with different sex partners while last sexual intercourse with three months was used to assess condom use. Collecting reliable and validated self reported risky sexual behaviour data was a major limitation the

study faced like in many studies assessing risky sexual behaviour. Volunteering accurate risky sexual behaviour information or data may be associated with shame especially among participants on ART. This may have forced participants to volunteer unreliable self-reported data to cover up for this shame resulting in underestimation of the level of risky sexual behaviour associated with ARVs.

5.6.1 Comparison of the sexual patterns between the two study groups

The study observed a significant statistical difference on the sexual activity pattern between the two study groups with more participants on ART (58.8 percent) reporting as being sexually active compared to their colleagues. The Uganda, Kenya and India (Bateganya et al., 2005; Sarna et al., 2005 and Sarna et al., 2006) studies revealed similar findings. The observed outcome could be related to health status and not necessarily to ART. This study has demonstrated that participants on ART had better HIV related medical outcome. Most participants on ART had fewer hospital admissions, had improved health and functional status, and reported complete energy for day to day activities. The ART health related outcomes, and not necessary ART, may influence the sexual desire making them more sexually active than participants not on ART (Crepez et al., 2004).

5.6.2 Risky sexual behaviour practice involving sexual intercourse with different types of sex partners

The risky sexual behaviour involving sexual intercourse with steady or casual sex partners among participants in the two study groups did not show statistical differences. A third of participants from each study group reported having sexual intercourse with a steady sex partner in the last three months and about one tenth of participants from each study group reported having sexual intercourse with casual sex partners in the last three months.

The study has failed to demonstrate higher risky sexual behaviour practices involving sexual relationships with steady sex partners or casual sex partners among participants on ART than those not on ART. This is similar to many studies as shown by crepaz et al., (2004) in meta analytical study which concluded that risky sexual behaviour observed among participants on ART was not associated with ART. However, incidence of risky sexual behaviour involving 30 percent of the participants on ART reporting sexual relationship with steady sex partners and 8 percent with casual sex partner is a significant study finding. These may carry high risk of HIV transmission because of the nature of relationships.

5.6.3 Risky sexual behaviour involving unprotected sex

Risky sexual behaviour involving unprotected sex intercourse (non condom) with a spouse, steady and casual sex partner among participants on ART carries a high risk of HIV transmission. Condoms are highly effective in preventing sexual transmission of HIV if used consistently and effectively. The study showed no statistically significant differences in condom use with a casual sex partner and a spouse (in marriage) between the two study groups. The risky sexual behaviour of engaging in unprotected sexual intercourse was similar between participants on ART and those not on ART. Half the participants in each study group reported unprotected sex. Again the study could not demonstrate higher risk among participants on ART than their counterparts. Therefore, risky sexual behaviour involving unprotected sex could not be associated with ART use.

However, the risk of engaging in unprotected sex with a steady sex partner was less among participants on ART. The study observed significant statistical differences between the two study groups. Five participants on ART compared to (8) not on ART reported unprotected sexual intercourse with a steady sex partner. Further the study demonstrated higher level of

risky sexual behaviour among participants not on ART thus failing to prove the association between ART and risky sexual behaviour.

5.6.4 Risky sexual behaviour involving non-disclosure of ART or HIV status to sex partners

Non disclosure of ART or HIV status to sex partner has a risk of putting the partner at risk of contracting HIV. The study considered this as a risky sexual behaviour because of the risky of transmitting HIV in many cases. The study showed no statistical difference between the two study groups on HIV status or ART disclosure to different sex partners. Majority of the participants were free to disclose their HIV status or ART to their spouses, and less comfortable with casual sex partners. However participants who fail to disclose their HIV status or ART for a number of reasons are likely to engage in risky sexual behaviour as reported by Simbayi et al., (2006).

5.6.5 STI as a proxy of risky sexual behaviour

The study of sexually transmitted infections as a proxy of risky sexual behaviour showed a statistically significant difference on the incidence of STIs in the two study groups. More participants not on ART (about a third) reported at least an episode of STI in the last six months than among those on ART. However, there was no difference in the number of episodes of STIs suffered in the last 6 months period between the two study groups.

Assessing STI using self reported data than laboratory diagnosis was one major limitation in this study. Laboratory diagnosed STIs serve as a good indicator in assessing risky sexual behaviour practices in a population. However, self-reported STIs have been used as a proxy for risky sexual behaviour (Fennema, 1995; Ward et al., 1997). STIs often indicate an act of engaging in unprotected sex. The incidence of risky sexual behaviour was greater among participants not on ART than those on ART.

The study could not demonstrate a higher level of risky sexual behaviour among participants on ART than those not on ART using STIs as a proxy to risky sexual behaviour. The failure by the study to demonstrate high levels of risky sexual behaviour among participants on ART showed no association between ART to risky sexual behaviour. However, the study reported 20.2 percent incidence of STIs among participants on ART. This is a significant finding to conclude that risky sexual behaviour is common among participants on ART. According to WHO (2004), STIs increases the risk of HIV transmission by at least two to five times. Furthermore, in management and care for HIV/AIDS clients, STIs provide a useful window of opportunities for identifying PLWHA on ART who pose a risk of transmitting HIV to others. Therefore, periodic routine screening of STIs in PLWHA on ART for early diagnosis and treatment should be an integral component of comprehensive HIV care. This has potential to serve as a secondary (positive) prevention intervention.

CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

The study compared the risky sexual behaviour practices and incidence of STI as a proxy for risky sexual behaviour among participants on ART and those not on ART. The risky sexual behaviour was assessed through practices involving sexual intercourse with different type of sex partners, non condom sexual intercourse (unprotected sex) within and outside marriage among infected persons on ART, non-disclosure of HIV and/or ART status to a sex partner and incidence of STIs. The aim of investigating these practices and STI incidences among these two groups was to see whether risky sexual behaviour among participants on ART was associated with ART.

The study found no statistically significant difference among the two groups in the socio-demographic characteristic outcomes. Therefore, sex, age and educational levels did not influence the ART seeking behaviour among participants on ART. Participants on ART had better HIV related medical outcomes. These included weight gain, fewer episodes of hospitalizations, improved health and functional status which were attributed to use of ART. Participants on ART were more sexual active mostly related to their improved health and functional status accompanied by increased libido than directly from ART itself.

The study failed to demonstrate statistically significant differences in risky sexual behaviour practice involving sexual intercourse with different types of sex partners, unprotected sexual intercourse with the spouse and casual sex partners between the two study groups. However, a statistically significant difference between the two groups on risky sexual behaviour practices involving unprotected sex with steady sex partners and incidences of STIs which was higher among participants not on ART than those on ART. However, about one third of participants on ART were found engaging in risky sexual behaviour. Therefore, from these findings the study concluded

that risky sexual behaviour was not associated with ART. The observed risky sexual behaviour among participants on ART could have mostly been related to improved health and functional status accompanied by increased libido.

Based on the study findings and gaps identified in the provision of ART aimed at reducing risky behaviour practices, the following recommendations have been made to strengthen secondary prevention intervention programmes for PLWHA on ARVs:

1. HIV risk reduction assessment and follow-up counselling to clients on ART should be routine on every HIV clinical review. This will reinforce risk reduction strategies and reduce risk of HIV transmission.
2. STIs screening should be routinely done on all PLWHA on ART to serve as a window of opportunity to identify those that are engaging in risky sexual behaviour. This will help provide follow up counselling for risk reduction and prevent spread of HIV and other STIs.
3. Condoms distribution in ART clinics should be part of the integrated ART related services. This will make them easily accessible to sexually active clients on ART thus increasing and promote condom use among clients on ART.

REFERENCES

- Bateganya,M., G.Calfax., L.A.Shalfer., G.Kityo., P.Mugenyi and et al., 2005. "Antiretroviral therapy and sexual behaviour: A comparative study between antiretroviral naïve and experienced patients at an Urban HIV/AIDS Care and Research Centre in Kampala, Uganda." *Acquired Immune Deficiency Syndrome Patient Care and Sexually Transmitted Infection.*, November; 19(11):760-768.
- Bunnel,R., J.Ekwaru, P.Solberg, N.Wamai, W.Bikaako-kajura and et al., 2006. "Changes in Sexual Behaviour and Risk of HIV Transmission after Antiretroviral and Prevention interventions in Rural Uganda." *Acquired Immune Deficiency Syndrome.*, 20:85-92.
- Carpenter,C.C.J., M.A.Fischl., S.M.Hammer., M.S.Hirsch., D.M.Jacobsen., and et al. 1998. "Anti-retroviral therapy for HIV infection in 1998: Updated recommendations of the international AIDS Society-USA panel." *Journal of the American Medical Association.*, 280, 78-86.
- Catz,S.L., K.L.Meredith and L.M.Mundy. 2001. "Women's HIV transmission risk perceptions and behaviours in the era of potent antiretroviral therapies." *Acquired Immune Deficiency Syndrome education and prevention.*, 13(3), 239-251.
- Central Board of Health, 2005. Update on antiretroviral therapy: Director Clinical care & Diagnostic Services., June 2005 Report.
- Central Statistics Office, Central Board of Health, ORC Macro. 2003. *Zambia Demographic Health Survey 2001-2002*. Calverton, Maryland, USA: CSO, CBoH and ORC Macro.

Central Statistics Office, Ministry of Health, MEASURE Evaluation. 1999. *Zambia Sexual Behaviour Survey 1998*. Lusaka, Zambia: Government printers.

Central Statistics Office, Ministry of Health, MEASURE Evaluation. 2004. *Zambia Sexual Behaviour Survey 2003*. Lusaka, Zambia: Government printers

Cohen,M.S. 1998. "Sexually Transmitted Diseases Enhance HIV Transmission; No Longer a Hypothesis." *Lancet.*, 351(Suppl 3): 5-7.

Cohen,M.S. 2004. "HIV and Sexually Transmitted Diseases: Lethal synergy." *Tropical HIV Medicine.*, 12:104-7.

Crepaz,N., T.A.Hart and G.Marks. 2004. "Highly active antiretroviral therapy and sexual risk behaviour, A meta-analytic review." *Journal of the American Medical Association*, 292, 224-236.

Eldford,J., F.Ibrahim., C.Bukulu and J.Anderson. 2007. "Sexual Behaviour of People Living in London: Implications of HIV transmission." *Acquired Immune Deficiency Syndrome, Editorial*. January. 21 Suppl: S63-S70.

Eldford,J., G.Bolding and L.Sher. 2002. "High risk sexual behavior increases among London gay men between 1998 and 2001: what is the role of optimism?" *Acquired Immune Deficiency Syndrome.*, 16,1537-1544.

Fisher,J. D and W.A.Fisher. 1992. Changing AIDS risk behaviour. *Psychological Bulletin.*, 111, 455-474.

Goldman,D., D.Lakdawalla and N.Sood. 2005. HIV breakthrough and risky sexual behaviour. Rand Corporation. Mimeo.

International Federation of Red Cross and Red Crescent Societies (IFRCCS). 2004. "Service delivery models on access to care and antiretroviral therapy for people living with HIV/AIDS," Geneva, Switzerland: IFRCCS.

JHPIEGO/United States Agency for International Development/Government Republic of Zambia. 2004. Management of antiretroviral therapy. A reference manual for health workers. Government Printers.

Kevin,J., 2001. "Using psychology in the fight against HIV/AIDS." *Acquired Immune Deficiency Syndrome Bulletin.*, 10(3), 451-459.

MacNeil,J.M., F.Mberesero and G.Kilonzo. 1999. "Is care and support associated with preventive behavior among people with HIV?" *Acquired Immune Deficiency Syndrome Care.*, 11(5), 537-546.

Metsch, L.R., M. Pereyra., C. del Rio., L.Gardner., W. A. Duffus and et al., 2004. "Delivery of HIV Prevention Counseling by Physicians at HIV Medical Care Settings in 4 US Cities" *American Journal of Public Health*, 94(7): 1186-1192.

Ministry of Health (Zambia). 2004a. "Summary of National Health Strategic Plan (NHSP) 2001-2005." Lusaka: Government printers.

Ministry of Health (Zambia). 2004b. "National Health Strategic Plan 2001-2005, Mid Term Report 2004." Lusaka: Government printers.

Ministry of Health (Zambia). 1997. " New Epidemiological, demographic and behaviour research findings related to the HIV/AIDS epidemic in Zambia." Dissemination Seminar, 27th February. Lusaka, Zambia.

National AIDS Council. 2003a. "National HIV/AIDS/STI/TB intervention strategic plan 2002-2005." Lusaka: Government printers.

National AIDS Council. 2003b. "National HIV/AIDS/STI/TB Monitoring and Evaluation plan 2002-2005." Lusaka: Government printers.

National AIDS Council. 2004a. "Joint review of the National HIV/AIDS/STI/TB intervention strategic plan (2002-2005) and operations of the National AIDS Council." Lusaka: Government printers.

National AIDS Council. 2004b. "The HIV/AIDS Epidemic in Zambia. Where are we now? Where are we going?" Lusaka: Government printers.

Ndubani.P. and B.Hojer. 2001. "Sexual behaviour and Sexual Transmitted Diseases among young men in Zambia." *Health Policy and Planning* 16(1):107-112

Ostrow,D.E., J.K.Fox., J.S.Chmiel., A.Silvestre., B.R.Visscher and P.A.Vanable. 2002. "Attitudes towards highly active antiretroviral therapy are associated with sexual risk taking among HIV-infected and uninfected homosexual men." *Acquired Immune Deficiency Syndrome*. 16, 775-780.

Park,K. 2002. *Park's Textbook of Preventive and Social Medical*, 17th Ed. Jabalpur, India: M/s Banarsidas Bhanot Publishers.

Rawstorne.P., G.Prestage., A. Song., J.Crawford., A.Gulich and S.Kippax. 2002. "Use of Antiretroviral Therapy and Better Self Reported Health Predict Risky Sex Among HIV Positive Gay Men." *International Conference on Acquired Immune Deficiency Syndrome*, July 7-12;14.

- Rietmeijer, C.A., J.L. Patnaik., F.N. Judson and J.M.J. Douglas. 2003. "Increases in gonorrhea and sexual risky behaviours among men who have sex with men: a trend of 12 years analysis at the Denver Metro Health Clinic." *Sexual Transmitted Disease.*, 30, 562-567.
- Rietmeijer, C.A., 2005. "Resurgency of risk behaviour among men who have sex with men: the case for HAART realism. (Editorial)" *Sexual Transmitted Disease.*, 32(3), 176-177.
- Rio de, C. 2004. "Does good treatment really result in bad behaviour?" *Acquired Immune Deficiency Syndrome Clinical Care.*, [Edit] 10:2-3
- Rosenstock, I.M., V.J. Strecher and M.H. Becker, 1994. "The health belief model and HIV risk behavior change." In Di Clemente R.J and J.L. Peterson (Ed), *Preventing AIDS: Theories and methods of behavioral interventions*. New York: Plenum Press., 5-24.
- Sarna, A., I. Gupta., S. Pujai., R. Gary and E. Weiss. 2006. "Examining Adherence and Sexual Behaviour Among Patient on Antiretroviral Therapy in India." *Horizon Final Report*. Washington, DC: Population Council.
- Sarna, A., S. Luchter., S. Kaai., P. Munyao., S. Geibel and et al., 2005. "Does being treated with HAART affect the sexual risky behaviour of people living with HIV/AIDS? Insight from Mombasa, Kenya.," *Horizon Research Update*. Nairobi. Population Council.
- Scheer, S., P.L. Chu, J.D. Klausner, M.H. Katz and S.K. Schwarcz. 2001a & b. "Effect of Highly Active Antiretroviral Therapy on Diagnoses of Sexually transmitted diseases in people with AIDS." *Lancet.*, 357, 432-435.

Simbayi, I.C., S.C. Kalichman., A. Strebel., A. Cloete., N. Henda and A. Mgeto. 2007. "Disclosure of HIV status to sex partner and sexual risky behaviour among HIV positive men and women, Cape Town, South Africa." *Sexually transmitted infection.*, 83:29-34.

Stringer, S.A., I. Zulu., L. Levy., E.S. Stringer., A. Mwango and et al., 2006. "Rapid scale-up of antiretroviral therapy at primary care sites in Zambia. Feasibility and early outcomes." *Journal of the American Medical Association.*, 296(7): 782-793.

Tachet, A., E. Dulioust and D. Salim. 1999. "Detection and quantification of HIV-1 in semen." *Acquired Immune Deficiency Syndrome*, 13:823-831.

Tanneke, G. 2003. "Community preparedness for ARV treatment." *SAFAIDS: Sexual Health Exchange* 2003/3, 1-3.

UNAIDS. 1999. *Evaluation of a national AIDS programme: A methods package*. Geneva, Switzerland: WHO.

UNAIDS/World Health Organisation. 2004. *AIDS epidemic update, December 2004*. Geneva, Switzerland: WHO.

UNAIDS/World Health Organisation. 2006. Progress on global access to HIV antiretroviral. *A report on '3 by 5' and beyond*. Geneva, Switzerland: WHO.

Vanable, P.A., D.G. Ostrow., D.J. McKirnan., K.J. Taywaditep and B.A. Hope. 2000. "Impact of combined therapies on HIV risk perceptions and sexual risky among HIV-positive and HIV-negative gay and bisexual men." *Health Psychology.*, 19, 134-145.

Vincent,E., A.D.Bouhnik., M.P.Carrieri., D.Rey., P.Dujardin., and et al. 2004. "Impact of HAART –related side effects on unsafe sexual behavior in HIV- infected injecting drug users: 7-year follow-up". *Acquired Immune Deficiency Syndrome.*, 18(9),1321-1325.

Wolf,K.Y.J., M.Rickenbach., P.Vernazza., M.Flepp., H.Furrer and et al. "Prevalence of unsafe sexual behavior among HIV-1 infected individuals: The swiss HIV cohort study." *Journal of Acquired Immune Deficiency Syndrome.*, 33, 494-499.

World Health Organisation. 2002. *The World Health Report 2002: Reducing risk promoting health life.* Geneva, Switzerland: WHO.

World Health Organisation. 2004. *The World Health Report 2004: Changing History.* Geneva, Switzerland: WHO.

APPENDIX I

PARTICIPANT INFORMATION SHEET

IMPACT OF ANTIRETROVIRAL THERAPY ON RISKY SEXUAL BEHAVIOUR OF PEOPLE LIVING WITH HIV/AIDS ON ART IN MANSA

INTRODUCTION

I, Abby Makukula a student from University of Zambia in Public Health Programme is kindly requesting for your participation in this study were I am gathering information on the sexual behavior and ART you are taking. The information being collected may be used help improve the services in the near future. The information you will volunteer will be kept strictly confidential and will not be disclosed to anybody or used for anything other than the intended purpose of the study. It is important for you at this stage to know that while taking part in this exercise you will not be discriminated against or denied any information/services pertaining to the treatment you are taking. You will continue receiving the treatment normally as before. Your participation is entirely voluntary and you are under no obligation to take part in the exercise. I will explain to you what will be involved while taking part in the study and if you accept to take part a form will be issued were you will sign or put a thumbprint to show consent.

University of Zambia Research Ethics Committee which safe guards and protects the interest and rights of participants in any medical study has approved this exercise and should any ethical questions arise while taking part, the chairman of the committee can be contacted on the address to be given.

PURPOSE OF THE STUDY

The purpose of this study is to gather information on ART services and sexual behaviour practices of people on ART that may be used in future to improve the ART services.

PROCEDURE

After you have signed the consent form and asked any question related to this exercise you will be asked a number of questions on your health, services you are receiving and how you are protecting yourself from HIV re-infection while on this treatment. You will not be compelled to answer question(s) you feel uncomfortable with but it will help me if you try to answer all questions.

RISKS AND DISCOMFORTS

This study will not involve drawing of blood from you or any invasive procedures (for example pricking that may lead to pain, haematoma formation or secondary infection at site of collection) except for your time in answering the structured questions. You may find some questions uncomfortable however all information you will submit will be strictly kept confidential.

BENEFITS

The benefits you get from participating in the study will include receiving follow-up counselling on HIV transmission, secondary (positive) prevention of HIV re-infection /STI, and information of the nature of ARV treatment you are taking. This will help you protect yourself from re-infection and know more about the treatment you are on. Furthermore, the information that this study will generate will be passed on to policy makers and care providers for future improvement of services. No monetary favours will be given in exchange for information.

CONFIDENTIALITY

The information you will submit will be kept strictly confidential. No name will be written on the questionnaire except for the number to identify the questionnaire, which will only be known by the interviewer. The Ministry of Health, University of Zambia Research Ethics Committee may review your records under this study but again the information will be kept strictly confidential.

PLEASE NOTE

1. Your participation in this exercise is voluntary.
2. You are under no obligation to continue in the study should you decide to withdraw from the study at any time.
3. No blood will be collected from you for testing or invasive procedures will be involved for the purpose of this study while taking part.

APPENDIX II
CONSENT TO PARTICIPATE IN THE STUDY

I.....Hereby
CONSENT to take part in the study having been explained to the nature and
purpose of the study, risks, benefits and confidentiality, I here declare my
participation as voluntary and not forced.

Sign/Thumbprint..... Date.....

Witness (Name)..... Sign.....

CONTACT PERSONS FOR ANY QUERIES OR INFORMATION RELATED
TO THE STUDY.

1. Dr Abby Makukula, University of Zambia, Department of
Community Medicine, P.O. Box 50110, Lusaka. Cell: 097-748633,
Email: abmak02@yahoo.com
2. Prof Seter Siziya, Head of Department, Department of Community
Medicine, P.O. Box 50110, Lusaka. Cell: 096- 748988, 095-752646,
Email: ssiziya@yahoo.com
3. The Chairman, Research Ethics Committee, University of Zambia,
Box 50110, Lusaka, Zambia. Tel: 260-1-256067

APPENDIX III

UNIVERSITY OF ZAMBIA

SCHOOL OF MEDICINE

DEPARTMENT OF COMMUNITY MEDICINE

IMPACT OF ANTIRETROVIRAL THERAPY ON RISKY SEXUAL BEHAVIOUR OF PEOPLE LIVING WITH HIV/AIDS ON ART IN MANSA

QUESTIONNAIRE CODE: PLWHA on ART No.....

INSTRUCTIONS

1. Remember to enter the questionnaire code number
2. Make the respondent comfortable before and throughout the whole interview.
3. Read the question with the respondent and ensure she/he understands the question before answer is given.
4. Mark with the number in the box corresponding to the answer given.
5. For open-ended questions, write the information accurately or exactly as given in the spaces provided without distorting it.
6. At the end of the interview, remember to thank the respondent for his/her participation in the exercise.

SECTION A: DEMOGRAPHIC DATA

1. How old were you on your last birthday? _____

2. Sex of the participant.

1) Male

--

2) Female

3. What is your marital status?

1) Single

--

2) Co-habiting

3) Married

4) Widowed

5) Divorced

4. What is your highest education level you have attained?

1) Primary

--

2) Secondary

3) Tertiary

4) None

5. What is your current occupation?

1) Employed

2) Unemployed

SECTION B: MEDICAL OUTCOMES

6. How many months, years in total have you been on ARV medication?

Months...

--

 Years.....

--

7. What was your weight at the start of your ARV medication?

Weight (Kg)....

--

8. What is your current weight?

Weight (Kg)...

--

9. How many times have you been hospitalized in the last 6 months and what was the reason?

Number.....

Reason(s)

10. How would you describe your health today from the time you commenced treatment?

1) Worsened (Explain)

2) Same (Explain)

3) Improved (Explain)

11. How would you rate your quality of life in relation to the health you have experienced in the last 6 months?

1) Very poor

2) Poor

3) Fair

4) Good

5) Very good

12. Do you have enough energy to meet your day-to-day activity of life?

1) Not at all

2) A little

3) Moderately

4) Mostly

5) Completely

13 How satisfied are you with your sex life from time you commenced ARV medication especially in the last 6 months?

- 1) Very dissatisfied
- 2) Dissatisfied
- 3) Neither dissatisfied or satisfied
- 4) Satisfied
- 5) Very satisfied

14. How sexually active have you been in the last 6 months?

- 1) Not active (abstaining)
- 2) Fairy active (at least in 3 months)
- 3) Active(atleastoncein1month)
- 4) Very active (at least once in 2 weeks)

Skip Qn.

15

15. If not active (abstaining) state the reason(s).

SECTION C: SERVICE OUTCOMES

16 Besides the pre-test and post-test counselling have you ever received any follow-up counselling in the last 6 months?

- 1) Can not remember
- 2) NoSkip Qn. 17
- 3) Yes

17. If “Yes” what type of counselling did you receive?

1) Nutrition

2) Side effects of the drugs

5) N/A

3) Prevention of HIV re-infection and STIs

4) Others (specify) _____

--

18. If you have received counselling on “prevention of HIV re-infection and STIs” explain what you were told.

19. How would you rate the counselling and medical advice you get on the treatment and prevention of secondary re-infection of HIV and STIs from your Health Care Provider?

1) Very poor

2) Poor

3) Fair

4) Good

5) Excellent

--

20. How satisfied are you with the level of communication between your Health Care Provider and you?

1) Very dissatisfied

2) Dissatisfied

3) Neither dissatisfied nor satisfied

4) Satisfied

5) Very satisfied

--

26. After taking ARV medication for a long time what do you think will be the result of the HIV positive (HIV blood test) ?

- 1) Remain positive
- 2) Change to negative
- 3) Might change or might remain positive
- 4) I don't know

--

27. If you have been on ARV medication for a long period you **cannot** transmit HIV infection to other if engage in risky sexual behaviour like unprotected sexual intercourse.

- 1) False
- 2) True
- 3) I don't know

--

28. Taking ARV medication can lead to absolute cure of HIV infection. What do you think about this statement?

- 1) False
- 2) True
- 3) I don't know

--

29. Behavioural change for a person on ARVs is not important as he is already infected. What do you think about this statement?

- 1) Strongly disagree
- 2) Disagree
- 3) Not sure
- 4) Agree
- 5) Strongly agree

--

SECTION E: RISKY SEXUAL BEHAVIOR OUTCOMES

30. Have you ever had sexual intercourse in the last 6 months?		
1) No.....	Skip Qn. 31, 32	
2) Yes		
31. If “Yes” have you been using a condom in the last 3 months?		
1) No	3) N/A	
2) Yes		
32. If “Yes” what was the main reason why you used a condom (female or male condom)		
1) Avoid pregnancy		
2) Avoid transmitting infection including HIV	6) N/A	
3) Avoid getting infection and HIV reinfection		
4) Pressurized by partner		
5) Others (specify)		
33 Do you have a spouse? A person you are married to and live with		
1) No.....	Skip Qn. 34, 35	
2) Yes		
34. In the past 3 months how often have you used a condom with your spouse?		
1) Never		
2) Sometimes	4) NA	
3) Always (Every time having intercourse)		
35. The last time you had sexual intercourse with your spouse was a condom used?		
1) No	3) NA	
2) Yes		

36. In the past 3 months how many sex partners (apart from your spouse) have you had sexual intercourse with?

Number...

37. In the past 6 months have you been having sexual intercourse with a steady sexual partner? By steady sexual partner i mean someone other than a spouse you have been having sexual intercourse with regularly for at least a month and more.

1) No.....

Skip Qn. 38, 39

2) Yes

38. How many such steady sex partners have you had sexual intercourse with in the past 3 months?

1) Number...

2) N/A

39. The last time you had sexual intercourse with a steady sexual partner was a condom used (female or male condom).

1) No

3) N/A

2) Yes

40. In the past 3 months have you ever had sexual intercourse with a casual sexual partner? Someone you had sex with once or a few times and did not or involved exchange of money or gifts.

1) No

Skip Qn. 41, 42

2) Yes

41. Last time you had sexual intercourse with a casual sex partner was a condom used?

1) No

2) Yes

42. Among which sexual partner(s) are you likely to reveal your HIV status or treatment to?

- 1) Spouse
- 2) Steady sex partner
- 3) Casual sex partner
- 4) Non of the above

--

43. What reasons would you give for one not to revealing his or her status to a sexual partner.

SECTION F: STI

QNS 44 – 46. (MEN ONLY).

44. Have you ever experienced either one or more of the following symptoms after sexual experience in the last 6 months?

- a) Pain or burning sensation on urinating
- b) Discharge from the penis
- c) Small multiple water discharging genital sores

1) No..... **Skip Qn 45, 46.& End of interview**

2) Yes

--

45. If “YES” to any one of them how many times?

1) Number....

--

2) N/A

--

46. What did you do?

- 1) Went to the clinic/ Hospital
- 2) Bought medicine (self medicated)
- 3) Used herbal medicine
- 4) Sought help from a friend, relative
- 5) Others (specify) _____

6) N/A

--

QNS 47-49. (WOMEN ONLY).

47. Have you ever experienced either one or more of the following symptoms after sexual experience in the last 6 months?

- a) Foul smelling vagina discharge?
- b) Itchiness around the vagina or genitalia?
- c) Small multiple water discharging sores around your genitalia?

1) No.....	Skip Qn. 48, 49 and end interview	<input type="text"/>	<input type="text"/>
2) Yes		<input type="text"/>	

48. If ‘YES’ to any one of the above how many times has it happened

1) Number...	<input type="text"/>	<input type="text"/>
2) N/A	<input type="text"/>	

49. What did you do?

1) Went to the clinic/ Hospital	<input type="text"/>	<input type="text"/>
2) Bought medicine (self medicated)		
3) Used herbal medicine		
4) Sought help from a friend, relative		
5) Others (specify) _____		

6) N/A

THANK YOU FOR PARTICIPATING

APPENDIX IV

UNIVERSITY OF ZAMBIA

SCHOOL OF MEDICINE

DEPARTMENT OF COMMUNITY MEDICINE

IMPACT OF ANTIRETROVIRAL THERAPY ON RISKY SEXUAL BEHAVIOUR OF PEOPLE LIVING WITH HIV/AIDS ON ART IN MANSA

QUESTIONNAIRE CODE: PLWHA not on ART No.....

INSTRUCTIONS

1. Remember to enter the questionnaire code number
2. Make the respondent comfortable before and throughout the whole interview.
3. Read the question with the respondent and ensure she/he understands the question before answer is given.
4. Mark with the number in the box corresponding to the answer given.
5. For open-ended questions, write the information accurately or exactly as given in the spaces provided without distorting it.
6. At the end of the interview, remember to thank the respondent for his/her participation in the exercise.

SECTION A: DEMOGRAPHIC DATA

1. How old were you on your last birthday? _____

2. Sex of the participant.

1) Male

2) Female

3. What is your marital status?

1) Single

2) Co-habiting

3) Married

4) Widowed

5) Divorced

6) Others (specify) _____

4. What is the highest education level you have attained?

1) Primary

2) Secondary

3) Tertiary

4) None

5. What is your current occupation?

1) Employed

2) Unemployed

SECTION B: MEDICAL OUTCOMES

6. How many months, years in total have you been aware of your HIV positive status (From time you tested positive)

Months..

Years.

7. How has been your weight in the last 6 months?

1) Loosing

2) Same

3) Gaining

8. What is your current weight?

Weight (Kg)...

9. How many times have you been hospitalized in the last 6 months and what was the reason?

Number.....

Reason(s)

10. How would you describe your health today from the time you tested HIV positive especially in the last 6 months?

1) Worsened (Explain)

2) Same (Explain)

3) Improved (Explain)

11. How would you rate your quality of life in the last 6 months?

1) Very poor

2) Poor

3) Fair

4) Good

5) Very good

12. Do you have enough energy to meet your day-to-day activity of life?

1) Not at all

2) A little

3) Moderately

4) Mostly

5) Completely

13. How satisfied are you with your sexual life especially in the last 6 months?

- 1) Very dissatisfied
- 2) Dissatisfied
- 3) Neither dissatisfied or satisfied
- 4) Satisfied
- 5) Very satisfied

--

14. How sexually active have you been in the last 6 months?

- 1) Abstaining
- 2) Fairly active (at least once in 3 months)
- 3) Active (at least once in 1 month)
- 4) Very active (at least once in 2 weeks)

**Skip Qn.
15**

--

15. If not active (abstaining) state the reason(s).

SECTION C: SERVICE OUTCOMES

16. Besides the pre-test and post-test counselling (if any) have you ever received any follow-up counselling in the last 6 months?

- 4) Can not remember
- 5) No**Skip Qn. 17, 18**
- 6) Yes

--

17. If “YES” what type of follow-up counselling did you received?

- 1) Nutrition
- 2) Side effects of the drugs **6) N/A**
- 3) Prevention of HIV re-infection and STIs
- 4) More than one answer
- 5) Others (specify) _____

--

18. If you have received counselling on “prevention of HIV re-infection and STIs” explain what you were told.

19. How would you rate the counselling and medical advise (if any) you have received on HIV and STIs, and prevention of secondary re-infection from your counsellors/HIV care providers?

- 1) Very poor
- 2) Poor
- 3) Fair
- 4) Good
- 5) Excellent

20 How satisfied are you with the level of communication between your Health Care Provider and you

- 1) Very dissatisfied
- 2) Dissatisfied
- 3) Neither dissatisfied nor satisfied
- 4) Satisfied
- 5) Very satisfied
- 6) NA

SECTION D: PERCEPTIONS ON TREATMENT OUTCOMES

21. Have you ever received information on ARVs medication before?

- 3) Yes
- 4) No.....Skip Qn. 23

22. If “YES” from which source(s)? (If more than one source indicate)

- 1) Health centre
- 2) Friend
- 3) Relative
- 4) Media
- 5) PLWHA on ARVs
- 6) Two or more
- 7) N/A

--

23 Has any Health Care Provider explained the nature of the ARV medication to you in the last 6 to 12 months?

- 1) No
- 2) Yes but cannot remember
- 3) Yes

Skip Qn. 24

--

24. If “Yes” and you are able to remember something what was said about the ARV medication?

25. The treatment with ARV medication makes HIV to be **less** infectious and **reduces** the risk of transmitting the infection than before. What do you think about this statement

- 1) Strongly disagree
- 2) Disagree
- 3) Agree
- 4) Strongly agree
- 5) I don’t know

--

26. After taking ARV medication for some time, what do you think will be the result of the HIV positive (HIV blood test)?

- 1) Remain positive
- 2) Change to negative
- 3) Might change or not
- 4) I don't know

--

27. If you have been on ARV medication for a longer period you **cannot** transmit HIV infection to other if engaged in risky sexual behaviours like unprotected sexual intercourse.

- 3) False
- 4) True
- 3) I don't know

--

28. Taking ARV medication can lead to absolute cure of HIV infection. What do you think about this statement?

- 1) False
- 2) True
- 3) I don't know

--

29 Behavioural change for a person on ARVs is **not** important as he is already infected. What do you think about this statement?

- 1) Strongly disagree
- 2) Disagree
- 3) Agree
- 4) Strongly agree
- 5) I don't know

--

SECTION E: RISKY SEXUAL BEHAVIOR OUTCOMES

30. Have you ever had sexual intercourse in the last 6 months?

- 1) No.....**Skip Qn. 32, 33**
- 2) Yes

31. If “YES” have you been using a condom in the last 3 months?

- 1) No.....**Skip Qn. 33**
- 3) N/A
- 2) Yes

32. If “YES” what was the main reason why you were using a condom (female or male condom)

- 1) Avoid pregnancy
- 2) Avoid transmitting infection including HIV
- 3) Avoid getting infection 6) More than one ans
- 4) Pressurized by partner 7) N/A
- 5) Others (specify) _____

33. Do you have a spouse? A person you are married to and live with

- 1) No.....**Skip Qn. 34, 35**
- 2) Yes

34. In the past 3 months how often have you used a condom with your spouse?

- 1) Never
- 2) Sometimes 4) NA
- 3) Always (Every time have intercourse)

35. The last time you had sexual intercourse with your spouse was a condom used?

1) No

3) NA

2) Yes

36. In the past 3 months how many sexual partners (apart from your spouse) have you ever had sexual intercourse with?

Number...

37. In the past 6 months have you had a steady sex partner? By steady sex partner i mean someone other than a spouse you have been having sexual intercourse with regularly for at least a month and more.

1) No.....Skip Qn. 38, 39

2) Yes

38. How many such steady sex partners have you had sexual intercourse with in the last 3 months?

1) Number...

2) N/A

39. The last time you had sexual intercourse with a steady sexual partner was a condom used (female or male condom).

1) No

3) N/A

2) Yes

40. In the past 3 months have you ever had sexual intercourse with a casual sexual partner? Someone you had sex with once or a few times and did not or involved exchange of money or gifts.

1) NoSkip Qn. 41

2) Yes

41. Last time you had sexual intercourse with a casual sex partner was a condom used?

1) No

2) Yes

3) NA

42. Among which sexual partners are you likely to reveal your HIV status?

1) Spouse

2) Steady sex partner

3) Casual sex partner

4) Non of the above

43. What reasons would you give for one not to revealing his or her status to sexual partner.

SECTION F: STI

QNS 44 – 46. (MEN ONLY).

44. Have you ever experienced one or more of the following symptoms after sexual experience in the last 6 months?.

a) Pain or burning sensation on urinating

b) Discharge from the penis

c) Small multiple water discharging genital sores

1) No..... **Skip Qn 45, 46.& End the interview**

2) Yes

45. If “YES” to any one of them how many times?

1) Number....

--

2) N/A

46. What did you do?

- 1) Went to the clinic/ Hospital
- 2) Bought medicine (self medicated)
- 3) Used herbal medicine 6) N/A
- 4) Sought help from a friend, relative

QNS 47-49. (WOMEN ONLY).

47. Have you ever experienced either one or more of the following symptoms after sexual experience in the last 6 months?

- a) Foul smelling vagina discharge?
- b) Itchiness around the vagina or genitalia?
- c) Small multiple water discharging sores around your genitalia?

- 1) No..... **Skip Qn. 48, 49 & end the interview**
- 2) Yes

48. If “YES” to any one of the above how many times has it happened?

- 1) Number...
- 2) N/A

49. What did you do?

- 1) Went to the clinic/ Hospital
- 2) Bought medicine (self medicated)
- 3) Used herbal medicine 6) N/A
- 4) Sought help from a friend, relative
- 5) Others (specify) _____

THANK YOU FOR PARTICIPATING



**THE UNIVERSITY OF ZAMBIA
SCHOOL OF MEDICINE**

Telephone: 096-454879/097-849302
Telegram: UNZA, Lusaka
Telex: UNZALU ZA 44370
Fax: + 260-1-250783

Dean's Office
P.O. Box 50100
Lusaka, Zambia
Your Ref:

21st September, 2005

Dr. Abby Makukula
Department of Community Medicine
School of Medicine

Dear Dr. Makukula,

Re: MASTER OF PUBLIC HEALTH RESEARCH PROPOSAL

Your research proposal for the Master of Public Health entitled: **"A Retrospective Cohort Study on Impact of ARVs on Risky Sexual Behaviour among People Living with HIV/AIDS on Treatment in Mansa"** was presented at the Graduate Studies Committee of the School held on 15th September, 2005.

I am pleased to inform you that your proposal was approved by the Committee subject to some corrections.

You can proceed to Part II of the programme and your Supervisor is Prof. S. Siziya.

I wish you every success in your studies.

Yours sincerely,

Mr. K. Bowa

ASSISTANT DEAN, POSTGRADUATE

c.c Director, Graduate Studies
Dean, School of Medicine
Head, Department of Community Medicine
Prof. S. Siziya, Department of Community Medicine

ABBY MAKUKULA

Mansa General Hospital

P.O BOX 710156

MANSA

9th August, 2005

The Executive Director

Mansa General Hospital

MANSA

Dear Sir,

RE: PERMISSION TO CARRY OUT A STUDY AT YOUR INSTITUTION

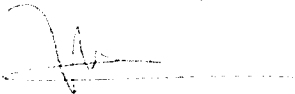
I am requesting for permission from your office to carry out a study at your institution on HIV/AIDS patients.

The little of the study is "Retrospective cohort study on impact of ARVs on risky sexual behavior among PLWHA on treatment in Mansa".

Ethical issues pertaining to the study have been cleared by the RESEARCH ETHICS COMMITTEE UNZA and find here attached a letter of clearance.

Your authorization to allow the researcher conduct the study will greatly be appreciated.

Yours faithfully,



ABBY MAKUKULA BS(HB), MB ChB



THE UNIVERSITY OF ZAMBIA

RESEARCH ETHICS COMMITTEE

Telephone: 260-1-256067
Telegrams: UNZA, LUSAKA
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Ridgeway Campus
P.O. Box 50110
Lusaka, Zambia

Assurance No. FWA00000338
RB00001131 of IORG0000774

August, 2005
Ref.: 006-06-05

Dr Abby Makukula, BSc (HB), MB ChB
Department of Community Medicine
School of Medicine
University of Zambia
LUSAKA

Dear Dr Makukula,

RE: SUBMITTED RESEARCH PROPOSAL

The following research proposal was presented to the Research Ethics Committee meeting held on July, 2005 where changes were recommended. We would like to acknowledge receipt of the corrected version with clarifications. The proposal has now been approved. Congratulations!

Title of proposal: **"Impact of Antiretroviral Therapy on the Risky Sexual Behavioural Among People Living with HIV/AIDS Accessing Treatment from Mansa General Hospital"**

CONDITIONS:

This approval is based strictly on your submitted proposal. Should there be need for you to modify or change the study design or methodology, you will need to seek clearance from the Research Ethics Committee.

If you have need for further clarification please consult this office. Please note that it is mandatory that you submit a detailed progress report of your study to this Committee every six months and a final copy of your report at the end of the study.

Any serious adverse events must be reported at once to this Committee.

Yours sincerely,

Prof. J. T. Karashani, MB, ChB, PhD
CHAIRMAN

RESEARCH ETHICS COMMITTEE

Date of approval: 2 August, 2005

Date of expiry:

1 August, 2006