

**EFFECTS OF ANTI-RETROVIRAL THERAPY ON SEXUAL BEHAVIOUR
AMONG PEOPLE LIVING WITH HIV/AIDS IN KIBERA SLUMS IN NAIROBI,
KENYA**

LOTIENO, BEATRICE AKINYI (BSC HONS)

REG. NO.157/5032/03

**A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE ACCORD OF A DEGREE OF MASTER OF
PUBLIC HEALTH IN THE SCHOOL OF HEALTH SCIENCES, KENYATTA**

UNIVERSITY

Otieno, Beatrice
*Effects of
antiretroviral*



2009/339356

NOVEMBER, 2008

DECLARATION


I, Otieno Beatrice Akinyi hereby declare that this thesis is my original work and has not been presented for a degree in any other university or any award.

Signed..........date.....17/11/2008.....

SUPERVISORS' APPROVAL

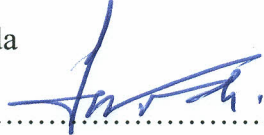
We confirm that the work reported in this thesis was carried out by the candidate under our supervision as university supervisors.

Dr. Michael F. Otieno

Signed..........date.....17th Nov 2008.....

Department of Preclinical Medicine,
Kenyatta University.

Dr. George Orinda

Signed..........date.....18/11/2008.....

Department of Biochemistry and Biotechnology,
Kenyatta University.

DEDICATION

To my dear parents Mr. Washington O. Kagutu and Mrs. Lilian A. Otieno for their love and support that made this effort worthwhile.

To my entire family members whose prayers and patience enabled me to complete my studies successfully and finally to all my friends for their encouragement especially when I needed it most.

ACKNOWLEDGEMENT

I acknowledge with deep appreciation and joyous heart the advice, encouragement, assistance and cooperation received from the following that made it possible for me to carry out this study and successfully complete my MPH course at Kenyatta university; Supervisors, Dr. Michael Otieno and Dr. George Orinda for their guidance, critic, moral support and close interest in seeing the work through.

Am grateful for the support provided by the academic staff of the Public Health Department of Kenyatta University led by the chairman Dr. Mwanzo and all other course lecturers. Special thanks to many individuals who assisted in one way or another, especially the staff of AMREF, MSF Belgium, KICOSHEP, and all those health facilities in Kibera and in the catchment area for making it possible for me to carry out my study.

Last but not least, I must sincerely extend my gratitude to all those who participated in the study as respondents, without whose contribution this objective would not have been achieved.

TABLE OF CONTENTS

DECLARATION.....	i
SUPERVISORS' APPROVAL.....	i
DEDICATION.....	ii
ACKNOWLEDGEMENT.....	iii
TABLE OF CONTENTS	iv
LIST OF TABLES	vii
LIST OF FIGURES.....	viii
LIST OF APPENDICES	ix
ABSTRACT.....	xiv
CHAPTER ONE: INTRODUCTION.....	1
1.1 Background to the study	1
1.2 Statement of the problem.....	4
1.3 Justification of the study	5
1.4 Objectives of the study.....	6
1.5 Research question	6
1.6 Null hypotheses.....	6
1.7 Significance of the study.....	7
1.8 Limitations of the Study.....	7
CHAPTER TWO: LITERATURE REVIEW.....	8
2.1 Introduction.....	8
2.2 Comprehensive care and support of PLWHA in Kenya.....	11
2.3 Antiretroviral therapy in Kenya.....	12
2.4 ART and behaviour change	13
2.5 Voluntary Counseling and Testing (VCT).....	15
2.6 Condom promotion, distribution and use.....	18
CHAPTER THREE: METHODOLOGY	20
3.1 Introduction.....	20
3.2 Research design	20

3.3 Variables	20
3.3.1 Independent variable.....	20
3.4 Location of the study	21
3.5 Study population	22
3.5.1 Inclusion criteria	22
3.5.2 Exclusion criteria	22
3.6 Sampling techniques and sample size.....	22
3.6.1 Sampling techniques	22
3.6.2 Sample size	23
3.7 Construction of research instruments.....	23
3.7.1 Structured questionnaire	23
3.7.2 Interview schedule	24
3.7.3 Focus group discussions (FGD).....	24
3.8 Pilot study	24
3.9 Data collection procedures.....	25
3.9.1 Interviews.....	25
3.9.2 Focus group discussions (FGD).....	25
3.10 Methods of data analysis.....	26
3.10.1 Data cleaning and entry	26
3.10.2 Storage and retrieval	26
3.10.3 Analysis and presentation	26
3.11 Logistical and ethical considerations.....	27
CHAPTER FOUR: RESULTS AND DISCUSSION	28
4.1 Introduction.....	28
4.2 Results.....	28
4.2.1 Socio-demographic profile of respondents	28
4.2.1.1 Marital status.....	29
4.2.1.2 Level of education.....	30
4.2.1.3 Religious background	30
4.2.1.4 Monthly income	31
4.2.1.5 Occupation	32
4.2.1.6 Ethnic classification	33
4.2.1.7 Sources of ART.....	33
4.2.1.8 Daily work attendance	33
4.2.1.9 Health status.....	34
4.2.2 Awareness and perceptions of PLWHA about ART	34
4.2.2.1 Awareness of PLWHA about ART.....	34
4.2.2.2 Perception of PLWHA about ART	35
4.2.3 Risky behaviour that enhance chances of HIV infection.....	37

4.2.4 Sexual behaviour.....	37
4.2.4.1 Condom use among PLWHA	37
4.2.4.2 Spouse disclosure.....	37
4.2.4.3 Multiple sexual partners in the last 12 months	38
4.2.4.4 Condom use with multiple sexual partners.....	39
4.2.4.5 Presence of symptoms related to STIs in the last three months.....	40
4.2.5 Influence of level of ART awareness and sexual behaviour.....	40
4.2.5.1 Level of ART awareness and spouse disclosure.....	41
4.2.5.2 Level of ART awareness and presence of multiple sexual partners	41
4.2.5.3 Level of ART awareness and condom use.....	42
4.2.6 Influence of health status on sexual behaviour of PLWHA	43
4.2.6.1 Health status and spouse disclosure	43
4.2.6.2 Influence of health status on condom use	44
4.2.6.3 Influence of health status on multiple sexual partners.....	45
4.2.7 Suggestions on how to improve ART services	45
4.2.8 Measures useful in changing the sexual behaviour to curb HIV spread.....	46
4.3 Discussion	47
4.3.1 Socio-demographic profile of PLWHA	48
4.3.2 Influence of ART related factors on sexual behaviour	54
CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS	57
5.1 Introduction.....	57
5.2 Summary	57
5.3 Conclusions.....	60
5.4 Recommendations.....	61
5.4.1 Recommendations for policy:	61
5.4.2 Recommendations for practice	62
5.4.3 Further research	63
REFERENCES.....	64
APPENDICES	68

LIST OF TABLES

Table 4. 1: Frequency distribution of the respondents by religion	31
Table 4. 2: Frequency distribution of the respondents' income.....	31
Table 4. 3: Frequency distribution of respondents by ethnicity.....	33
Table 4. 4: Distribution of PLWHA by failure to go to work due to illness	34
Table 4. 5: Distribution of respondents' numbers of sexual partners by marital status....	39
Table 4. 6: Distribution of condom use among PLWHA with multiple sexual partners..	39
Table 4. 7: Distribution of level of ART awareness by spouse disclosure among	41
Table 4. 8: Distribution of level of ART awareness among PLWHA by presence of.....	42
Table 4. 9: Distribution of level of ART awareness among PLWHA by condom use.....	43
Table 4. 10: Distribution of PLWHA health status by spouse disclosure	44
Table 4. 11: Distribution of PLWHA health status by condom use	44
Table 4. 12: Relationship between PLWHA health status and presence of multiple	45

LIST OF FIGURES

Figure 4. 1: Frequency distribution of respondents by age.....	28
Figure 4. 2: Marital status of the respondents.....	29
Figure 4. 3: Level of education of respondents.....	30
Figure 4. 4: Other sources of income of the respondents	32
Figure 4. 5: what the respondents don't like about the ART programs.....	36
Figure 4. 6: What the respondents like about ART	36
Figure 4. 7: Prevalence of different symptoms of STIs in the last 12 months.....	40

LIST OF APPENDICES

Appendix 1: Interview consent form.	68
Appendix 2: Questionnaire	69
Appendix 3: Key informant interview schedule	76
Appendix 4: Guide for focus group discussion.....	77
Appendix 5: Research authorization by Moest.....	78
Appendix 6: Research Authorization by Msf-Belgium	79
Appendix 7: Map of the Area	81

ACRONYMS

AIDS	- Acquired Immune Deficiency Syndrome
AMREF	- African Medical and Research Foundation
APHRC	- African Population and Health Research Centre
ARV	- Anti -Retroviral
ART	- Anti-Retroviral Therapy
BCC	- Behaviour Change Communication
BSS	- Behavioural Surveillance Survey
CBO	- Church Based Organization
CDC	- Centres for Disease Control
CBHC	- Community Based Health Care
FBO	- Faith Based Organizations
GOK	- Government of Kenya
HAART	- Highly Active Anti - retroviral Therapy
HIV	- Human Immune Deficiency Virus
HCW	- Health Care Workers
KDHS	- Kenya Demographic Health Survey
KICOSHEP	- Kibera Community Based Self Help Project
MOEST	- Ministry of Education Science and Technology
MOPHS	- Ministry of Public Health and Sanitation
MOH	- Ministry of Health
MSF-B	- Medicenes Sans Frontiers –Belgium
MSN	- Men having sex with men

NACC	- National AIDS Control Council
NCSS	- National Cross- Sectional Slum Survey
NGO	- Non-Governmental Organizations
NASCOP	- National AIDS and STD Control Program
PLWHAs	- People Living with HIV/AIDS
STIs	- Sexually Transmitted Infections
UNAIDS	- Joint United Nations Program on AIDS
VCT	- Voluntary Counselling and Testing
WHO	- World Health Organization

OPERATIONAL DEFINITION OF TERMS

- a. Awareness about ART:** Ability of a respondent to name and describe the components of ART which include triple combination ARV drugs, prevention, care and support activities such as VCT, nutritional care, early treatment of opportunistic infections, active living and psycho social support.
- b. Risky sexual behaviour:** Behaviour that directly predisposes one to the risk of contracting or spreading HIV/AIDS virus. They include failure to use a condom or inconsistent condom use, presence of multiple sexual partners, and failure to disclose HIV status to ones spouse or sexual partner.
- c. Improved health status:** The ability of a PLWHA to live a normal and active life which is free from opportunistic infections and to be able to undertake daily activities uninterrupted.
- d. Antiretroviral Therapy (ART):** A comprehensive approach to the management of HIV/AIDS that cuts across a continuum from the health facility through the community implemented through home based care. It involves triple combination ARV drugs as well as prevention, care and support services.
- e. People Living With HIV/AIDS (PLWHA):** Persons who have undergone counselling and testing to confirm their sero-status and have been found to be HIV positive.

f. Regular Partner: Spouse/live-in sexual partner/ regular boyfriend or girlfriend; never paid for sex.

g. Casual partner: Sexual partner the respondent is not living with; had sex rarely or only once.

h. Unprotected sex: Non-condom use at last sex or inconsistent condom use in past 12 months.

ABSTRACT

The effects antiretroviral therapy on sexual behaviour among people living with HIV/AIDS has been obscure. This has implications on the ability to combat the spread of the virus through behaviour change. With the rapid urbanization amid economic deterioration, it is imperative that we understand the sexual behaviour of PLWHA in general and the poor ones in particular. Moreover as a result of the success of ART in dramatically decreasing morbidity and mortality from HIV infection, many HIV infected persons are now living healthier and more sexually active lives. Since 2002, the feasibility of providing ART in resource poor settings has been recognized in Kenya. Currently increasing attention is being focused on a comprehensive approach to the management of HIV/AIDS which involves provision of ARV drugs as well as care and support services. However risky sexual behaviour by PLWHA is an area of concern because they risk transmitting the virus and re-infecting themselves with new drug resistant strains of the virus. This work therefore taps two rich data sets (qualitative and quantitative) to present a portrait of how ART influences the sexual behaviour of PLWHA I Kibera slum. A two-stage random sampling was applied in which a total of 340 respondents were selected to participate in the study. Data was collected using questionnaires, key informant interview schedules and focus group discussions. Quantitative data analysis was done using SPSS in which data was subjected to tests such as Chi square and correlation. Verbatim reports were recorded as direct quotations. The study results indicated that most 229 (87.9%) of the respondents had improved health status following ART. There was a significant difference in having sexual partners among married and unmarried PLWHA ($\chi^2 = 35.92, p \leq 0.05$). There existed a positive correlation ($r = 0.162, p \leq 0.05$) between improved health status among PLWHA and having multiple sexual partners. There was no significant difference in the PLWHA level of ART awareness ($\chi^2 = 108.84, p \leq 0.05$). Majority of the respondents were found to use condoms, there was a positive correlation ($r=0.128, p \leq 0.05$) between condom use and level of ART awareness. Nonetheless a significant difference was noted in condom use between the married and the unmarried PLWHA ($\chi^2 = 27.16, p \leq 0.05$). Less than half 57 (41.3%) of those who had disclosed their status to their sexual partners had fair level of understanding while those with poor level of awareness had the least disclosure. A few 25 (13.7%) of PLWHA who were married had other sexual partners other than their spouses while majority 117 (74.1%) of their unmarried counterparts admitted that they had multiple sexual partners in the 12 months preceding the assessment. Pearson correlation results showed that there was a significant positive correlation ($r = 0.94, p \leq 0.05$) between ART level of awareness and having multiple sexual partners. The findings are therefore significant to policy makers, programme managers and donors in understanding the functioning, utilization, effectiveness and sexual impact of ART in low socioeconomic set ups. The results suggest that there is a need to plan for the most efficient interventions and review of current strategies such BCC and VCT, which will ultimately enhance the quality of life of PLWHA while at the same time ensuring positive sexual behaviour change.

CHAPTER ONE: INTRODUCTION

1.1 Background to the study

Despite global efforts to prevent and control HIV/AIDS, the pandemic still has a solid grip in Kenya reversing gains made in key health measures and in many sectors of the economy (Piwoz *et al.*, 2003). HIV/AIDS remains a serious public health and socioeconomic problem in many countries around the world (KDHS 2003). About 70% of the world's total HIV/AIDS patients are found in sub Saharan Africa, especially in those countries located in the eastern, central and southern parts, where the disease is becoming the leading cause of mortality (UNAIDS, 2003). The principal mode of transmission is through heterosexual contact, which accounts for 75% of all HIV infections in Kenya (MOH, 2001). Programmes designed to slow the spread of HIV/AIDS therefore need to focus on reducing transmission through sexual contact (KDHS, 2003).

The most recent prevalence rate of HIV/AIDS in Kenya is at 7.8% which is still relatively high; nonetheless, the prevalence is lower in rural as compared to the urban areas (KAIS, 2007). This could be so because urban residents have a significantly higher risk of HIV infection than rural residents (KDHS, 2003). For example the prevalence rate in Nairobi province stands at 9.3% (KAIS, 2007). The social, health, and development impacts of HIV/AIDS in Kenya are enormous. Its effects are complex and compounded; about 75% of all AIDS cases occur among people aged 20-45 years, which is the most economically productive age group (MOH, 2001).

During the last two decades of the national response to HIV/AIDS, focus of programme interventions has shifted from general prevention and supportive care to more specific health services such as voluntary testing and counselling (VCT) and Antiretroviral Therapy (ART). Linking various interventions such as behaviour change communication (BCC) and VCT with prevention of mother to child transmission (PMTCT) and ART has created a continuum of prevention and care services (MOH, 2005).

As access to treatment expands, and the success of highly active antiretroviral therapy (HAART) in dramatically decreasing morbidity and mortality from HIV disease, many HIV-infected persons are now living longer, healthier, and more sexually active lives. However, unprotected sex by people living with HIV/AIDS (PLWHA) is an area of concern because they risk transmitting HIV to sero-discordant partners and re-infecting themselves with new, drug-resistant strains of the virus.

Recent research has found a reduction in protective and preventive behaviour among HIV-positive persons once their physical conditions improve in response to antiretroviral therapy (Van den Ven *et al.*, 2002). Those results raise new concerns within the public health community. Do HIV-positive persons receiving ART engage in more risky sexual behaviour after feeling better in response to the therapy? Even if unsafe behaviour does not increase after treatment, do patients on ART continue to have unprotected sex with their partners? (Avina *et al.*, 2006).

A review of studies on sexual risk behaviour among PLWHA shows that a considerable percentage (between 10%- 60%, depending on the specific sex act) of sero-positive individuals continue to engage in unprotected sexual behaviour that place their partners at risk of infection as well as placing themselves at risk for contracting secondary infections (Crepaz *et al.*, 2002).

Both the government of Kenya and non-governmental organizations have greatly advanced their efforts to combat the epidemic (MOH, 2005). The increase in the affordability and financing for antiretroviral drugs (ARVs) has resulted in a rapid expansion of programs providing ART. Similarly the prospects for expanded access to ART in resource poor settings have significantly improved as a result of global and national efforts to reduce the cost of ARV drugs, growing availability of cheaper generics and increased financing available through the Global Fund to fight HIV/AIDS, TB and Malaria, private foundations, corporate initiatives, government budgetary resources and multi-sectoral and bilateral donors (GOK, 2004).

Of the estimated 1.5 million people infected with HIV in Kenya, about 273,000 was estimated to be in urgent need of ART, and it was targeted that 95,000 should have received ART by the end of 2005 (WHO,2005). However the reported number of people receiving antiretroviral therapy (0-49 years) by November 2005 was 55,000 (WHO/UNAIDS, 2005).

The government of Kenya is committed to increasing access to ART as part of its declaration of total war on HIV/AIDS and therefore developed a plan for the rapid up scaling of ART services in government hospitals. In the past years, the government through the Ministry of Health started providing ART in seven provincial hospitals and thirteen large district hospitals in high prevalence areas. However it has come to its realization that a lot more is needed in the care of PLWHA than just the provision of ARVs especially in resource limited settings (GOK, 2004).

1.2 Statement of the problem

HIV/AIDS in Kenya is a national disaster and a public health emergency (MOH 2003). It remains a major concern in Kenya because of the relatively high prevalence rate among adult populations and significantly higher rates among younger ages (MOH, 2001). The most recent Kenya national HIV/AIDS prevalence of 7.8% is still considered to be relatively high (KAIS, 2007). Kibera slum prevalence rates stand at 12% and are almost double the national rates (NASCOP, 2005).

Since 2004 ART programs have been emphasised, overshadowing programmatic activity on prevention. Despite the fact that there have been many activities which involved the provision of comprehensive care to people living with HIV/AIDS being carried out in Kibera by both the government and non-governmental organizations at the time of the study, the area still suffered a very high prevalence rate of HIV/AIDS. Moreover since the inception of comprehensive care approach to the management of HIV/AIDS in Kenya, very limited attempt has been made to elucidate the impact the programs on the sexual behaviour of the beneficiaries particularly in resource limited dwellings. Most

agencies proffering ART services in Kibera lack data on what impact the programs have had on the sexual behaviour of the PLWHA. It was therefore these scenarios that prompted the researcher to find out whether ART, which is one of the major components of comprehensive care, influences the sexual behaviour of PLWHA, and how lessons learnt, could be used to scale up war against HIV/AIDS and mitigate its impacts.

1.3 Justification of the study

Provision of ART services by both the government and NGOs has enhanced accessibility to these services even in resource limited dwellings (GOK, 2004). The result has been a dramatic decrease in morbidity and mortality among PLWHA hence many HIV-infected persons are now living longer, healthier and more sexually active lives (Avina *et al.*, 2004). The management of HIV/AIDS therefore involves a process in the close monitoring of both the affected and the infected population by applying cost effective measures such as ensuring positive behaviour change.

As the number of PLWHA continues to rise, so do the demands for alternative approaches to the provision of comprehensive care and support services. Behaviour change and ART are the main components of comprehensive care and support services (GOK, 2001). The effect of antiretroviral therapy (ART) scale-up in Africa on sexual risk behaviour and the prevention of new HIV infections are least unknown. Models demonstrating that ART can reduce HIV incidence also show that small increases in risky sexual behaviour can mask and reverse gains achieved by therapy. Studies from the developed world suggest that prevalence of unprotected sex and incidence of sexually transmitted infections have increased since the introduction of ART.

It is possible that misperceptions about ART or reduced concern about HIV because of ART availability lead to more permissive sexual behaviour in both HIV-infected persons and the general population. Risky sexual behaviour among PLWHA is therefore an area of concern because they risk transmitting HIV to sero-discordant partners and re-infecting themselves with new drug-resistant strains of the virus. It was due to these reasons that it deemed important for the researcher to elucidate whether ART could have an influence on the sexual behaviour patterns of PLWHA in Kibera slums.

1.4 Objectives of the study

The general objective of the study was to determine how ART influences the sexual behaviour of PLWHA. The specific objectives were:

- a. To establish level of awareness and perceptions of PLWHA about ART.
- b. To determine how the level of ART awareness influences the sexual behaviour of PLWHA.
- c. To determine the effects of improved health status of PLWHA due to ART on their sexual behaviour.

1.5 Research question

Does awareness and utility of ART have any significant influence on the sexual behaviour of PLWHA?

1.6 Null hypotheses

- a. PLWHA level of awareness and perception about ART has no effect on sexual behaviour.

- b. Utilization of ART does not have any influence on the sexual behaviour among people living with HIV/AIDS in Kibera slums.

1.7 Significance of the study

The findings of this study are relevant to policy makers, programme managers, and donors in the understanding of the functioning, utilization and effectiveness of ART in low socio-economic set ups such as Kibera. They can be utilized to plan for the most efficient interventions, which may enhance the quality of life of PLWHA while at the same time ensure positive behaviour change, which is the ultimate goal of any care, and support strategy.

1.8 Limitations of the Study

At the time the study was undertaken, the national ARV program had just been initiated while at the same time most people could not afford to pay for the services. Hence very few patients were receiving ARVs in the public sector. The sample thus included clients accessing ART from either NGO or faith based organizations. Nevertheless, the findings provide useful data that are relevant to the scale-up of the national program. Data collection took a slightly longer duration to be completed owing to the stigma associated to the HIV/AIDS, as such some respondents failed to consent to the study.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Global estimates suggest that at the end of 2007, about 33 million people were living with HIV in the world. Almost every day about 6,800 persons are newly infected and 57,000 AIDS related deaths occur in the world (UNAIDS/WHO, 2008). Despite the falling prevalence rates in some countries and advances made in prevention and care, the global HIV/AIDS epidemic shows no signs of abating, mainly in developing countries. It is causing myriad devastating health, socio-economic and development problems. As a result the 2000 Millennium Development Summit acknowledged and affirmed the crucial link between health and development by committing itself to the goal of reversing the spread of HIV/AIDS by 2015 (WHO, 2003).

An estimated 1.9 million [1.6 million–2.1 million] people were newly infected with HIV in sub-Saharan Africa in 2007, bringing to 22 million [20.5 million–23.6 million] the number of people living with HIV. Two thirds (67%) of the global total of 32.9 million [30.3 million–36.1 million] people with HIV live in this region, and three quarters (75%) of all AIDS deaths in 2007 occurred there. Sub-Sahara Africa has continued to shoulder the greatest burden of the epidemic with about 23 million (that is, about two out of every three adults) people living with the epidemic in the region. In addition, about 1.7 million people were newly infected in the region and almost 90% of children infected worldwide live in Africa (UNAIDS/WHO, 2008).

It is estimated that about 1.6 million (that is, 76%) people in Africa, lost their lives due to HIV/AIDS related illness in 2007, thus making AIDS the single largest cause of mortality

in the region. In the countries most heavily affected, HIV has reduced life expectancy by more than 20 years, slowed economic growth, and deepened household poverty. In sub-Saharan Africa alone, the epidemic has orphaned nearly 12 million children aged under 18 years. The natural age distribution in many national populations in sub-Saharan Africa has been dramatically skewed by HIV, with potentially perilous consequences for the transfer of knowledge and values from one generation to the next (UNICEF, UNAIDS and USAID, 2004).

In Kenya HIV/AIDS is still viewed as the biggest threat to social and economic development (KDHS, 2003). In spite of over 90% awareness, HIV infection rate in Kenya still remains an epidemic. To date, more than 2.2 million Kenyans are HIV positive and 1.5 million have died since 1984 (the 2002-2008 Kenya National Development Plan; NASCOP, 2003; NACC, 2003). The majority are young people aged between 15-49 years with peak ages of HIV/AIDS and 15-25 years for females and 25-35 for male's years for males (NACC, 2001; NASCOP, 2003).

Only 14% of Kenyan adults know their HIV status, limiting access to care (KDHS, 2003). It is important to note that HIV/AIDS is not a random event; the situation is graver for those living in slum dwellings and whose opportunities to safeguard their sexual health are particularly limited in view of conditions of economic deprivation. The surrounding social, economic and political environment profoundly influences the spread of the virus as it happens whenever people are struggling against adverse conditions such as poverty, oppression, and discrimination (Piwoz *et al.*, 2002).

The urban poor are more disadvantaged in terms of health and educational status than their rural counterparts (Brockerhoff *et al.*, 1998). The health disadvantages of the urban poor extend to sexual health (Zulu *et al.*, 2002). Studies have shown that extreme conditions of poverty and deprivation in urban slum communities may compel residents to engage in risk taking behaviour for economic survival (Odutolu *et al.*, 2003). There are signs that governments and international aid agencies are beginning to fully appreciate the tremendous scale of this epidemic and the huge resources required to slow its inexorable march through all regions and communities of the world. A glimmer of hope emerged in 2001 when the United Nations General Assembly Special Session (UNGASS) formally recognized that access to medication is integral to the human right to health (Geoff *et al.*, 2002).

The declaration committed the United Nations to put in place national and international strategies by 2003, to strengthen health care systems and to address factors affecting the provision of antiretroviral drugs (UNGAS, 2001). A comprehensive approach to prevention requires that HIV-positive persons do not fall outside the scope of prevention efforts. Instead, these individuals need to take protective and preventive measures since they run the risk of both infecting their sexual partners and re-infecting themselves with different strains of the virus (Avina *et al.*, 2004).

The lowered fear of contracting HIV/AIDS during unprotected sex is partially attributable to an inappropriate sense of “treatment optimism” (Kalichman *et al.*, 1998; Stall, 2000). Researchers have found associations between a sense of HIV treatment

optimism and increased high-risk sexual behaviour. Therefore, knowledge of new, emerging, and existing HIV treatments will continue to pose challenges to HIV/AIDS prevention (Stall, 2000).

2.2 Comprehensive care and support of PLWHA in Kenya

Care and support of PLWHAs involves much more than just writing a prescription (NASCOP, 2004). The goal of the HIV care and treatment programme in Kenya is to provide a continuum of holistic care that meets the needs of those infected with or affected by HIV/AIDS. This includes not only physical but also social, psychological, emotional and spiritual care (MOH, 2005).

In Kenya, where there is no formal security or insurance mechanisms for the vast majority of the population, the cost of care and treatment for HIV/AIDS often places a tremendous burden on families, particularly in slum areas where poverty is endemic. The government, NGOs, FBOs as well as CBOs are trying ways in which they can provide care and support of PLWHA in such resource poor settings (NACC, 2001). From the year 2002 the feasibility of providing antiretroviral drugs in resource poor settings has been recognized in Kenya. The government has since adopted a strategy known as 'ART' due to the unique and overwhelming need for long term and extremely strict adherence to treatment and close monitoring of PLWHA to ensure quality life (GOK, 2004).

Antiretroviral therapy which is a comprehensive care programme aims at reducing HIV related morbidity and mortality, by improving the quality of life of affected people and families. Psychological support is provided through the formation of support groups

where the members are able to meet and share experiences and hence are able to accept their status thereby living a relatively more fulfilling life. This also helps in reducing the stigma associated with the condition (GOK, 2004).

2.3 Antiretroviral therapy in Kenya

The government of Kenya established the National AIDS Control Council (NACC) in November 1999 to lead the multi-sectoral response to HIV/AIDS (NASCOP, 2005). The strategic approach to control the epidemic, outlined in the Kenya National HIV/AIDS Strategic Plan 2000–2005, consists of prevention of new infections; treatment, care and support for those infected and affected by HIV/AIDS; mitigation of the impact of the epidemic on social and economic development efforts; monitoring and evaluation; and management and coordination (WHO,2005).

Antiretroviral therapy has received much national and international attention and support in recent years (MOH 2005). Nationally the government of Kenya is committed to deliver ART progressively to 75% of eligible patients by 2008 (NASCOP 2005). In the recent past ART has been redefined to involve holistic care that provides physical, medical, and social needs (GOK, 2001). It is a comprehensive care that cuts across a continuum from the health facility through the community and involves triple combination ARV drugs, prevention, care and support activities such as VCT, nutritional care, early treatment of opportunistic infections and leading an active life. These entirely compliment each other and are usually implemented through home- based care (GOK, 2004).

VCT is an important step in the development of a comprehensive package of HIV/AIDS services; it is an effective strategy in reducing risk behaviour among individuals at risk for HIV/AIDS. VCT is the setting of information exchanges between a provider and a client, it helps the individual to reach an appropriate decision and act on it (Sweat, 2000). The counselling is supposed to include a discussion of medical and lifestyle issues grounded on individual's concerns, fears and values related to reproductive and sexual health (Esmeralda, 2005).

Highly Active Antiretroviral Therapy (HAART) uses a standard regime approved by the ministry of health and following selection criteria for recipients that were long discussed by various stakeholder committees. It uses combinations of drugs that can inhibit the progression of HIV within a person's body (World Bank, 1997).

Nutritional care and support are also essential elements of the therapy especially in resource-limited settings where malnutrition and food insecurity are endemic. Nutritional processes, which include, ingestion, digestion, absorption, metabolism, and effective utilization of nutrients may be impaired during HIV infection hence placing the PLWHA at a greater nutritional risk (Esmeralda, 2005). Recent research, much of it conducted in Africa, has shown that nutritional status may affect the progression of HIV/AIDS in adults (Piwoz *et al.*, 2000).

2.4 ART and behaviour change

ART must be viewed as a means for both reducing morbidity and mortality and for lowering rates of transmission within populations (Geoff *et al.*, 2002). Since the mid

1990s, new combination antiretroviral therapies have led to major declines in the mortality rate and serious morbidity (Palella *et al.*, 1998). On the other hand treatment has changed the way people think about risk and sex, frequent changes or multiple concurrent sexual partners are key factors in driving an epidemic of a sexually transmitted infection such as HIV/AIDS (MOH, 2005).

Studies have shown that there has been a substantial increase in high-risk sexual behaviour and sexually transmitted infections in gay men around the developed world (Palmer *et al.*, 2001). The likelihood of risky sex has been found to be much higher among people who are very optimistic about HIV/AIDS treatments. For example, results of a past study show that men who engage in unprotected sex do so because they believe that antiretroviral therapy has made HIV/AIDS easier to live with and more difficult to transmit. Similarly it raises the possibility that the sero-discordant couples who don't use condoms all the time are engaging in risky sex due to optimistic beliefs about antiretroviral and HIV (Crepaz *et al.*, 2004).

Undetectable viral loads have been found to lead to higher rates of unprotected sex for some sero-discordant couples (Van de Ven *et al.*, 2005). A longitudinal study conducted in Amsterdam among gay men revealed that the decreased threat of HIV/AIDS since the advent of HAART explains at least part of the increase in risk behaviour and sexually transmitted diseases seen at the population level among gay men since HAART became available (Stolte *et al.*, 2004).

2.5 Voluntary Counseling and Testing (VCT)

HIV prevention and care are inextricably linked components of the stepped up war against AIDS (UNAIDS & WHO, 2001). VCT serves as a unique bridge between the two (prevention and care). It is a gateway to prevention and treatment, an essential tool in the control of HIV/AIDS epidemic (WHO, 2004). HIV testing and counselling is a direct, personalized and person-centred intervention, tailored to prevent transmission and obtain referral to additional medical care, preventive, psychosocial and other needed services in order to remain healthy (CDC, 1994).

Recent studies indicate that overall coverage of testing and counselling is extremely poor in countries with highest HIV/AIDS burden. Worldwide, only 5% of people with HIV/AIDS are estimated to be aware of their status (WHO, 2004). Therefore, access to testing and counselling is the key for successfully implementing antiretroviral therapy and avoiding re-infection and transmission by behavioural changes (Sweat, *et al.*, 2000). VCT services are not available in most regions in Africa (Gibier *et al.*, 2002). However presently in Kenya there are a number of VCT centres distributed all over the country in almost all regions (GOK, 2001). Knowledge of HIV sero-status has been advocated as a prerequisite for access to support and care as well as a prevention measure in its own right. VCT is an important strategy for the prevention of HIV/AIDS since it is associated with behaviour change that reduces HIV transmission and serves as a point of entry into care for those testing positive (NASCO, 2005).

With the continuing high demand for VCT and with the growing number of AIDS treatment programs, an increasing percentage of those living with HIV infection are learning of their infection. Intensive programs for prevention among PLWHA have not been implemented, and disclosing ones HIV status to sexual partners remains difficult and inconsistent. Expanding the access to antiretroviral drugs needs to be accompanied by services that help patients on these drugs to inform and protect their partners (MOH, 2005).

Research over the last decade has demonstrated the public health benefit of VCT in terms of reductions in risk behaviour that is significant (Crepaz *et al.*, 2001). It has also been proven to be cost effective (Sweat *et al.*, 2000; Forsythe *et al.*, 2002). Studies in both the United States and the developing world have demonstrated that VCT can lead to self-reported changes in high-risk sexual behaviour among both HIV positive and HIV negative people. In the United States based studies, participant reports of sexual behaviour change have been further corroborated by a reduction in sexually transmitted infections. The body of evidence is especially strong for VCT as a tool to help HIV positive persons to reduce their high-risk behaviour to avoid spreading the disease to uninfected persons (Communicable Disease Surveillance Centre, 2002).

It is difficult to attribute behaviour change directly to the provision of testing and counselling versus counselling alone. Even without testing, counselling helps people to assess their risk of infection and provide information that people can use to reduce the risk of acquiring HIV or passing it on (Jean *et al.*, 1998). Counselling is also essential to

reinforce safe behaviour among those who test negative as well as in helping people to cope with the results of a positive test. However, counselling along with testing probably offers the greatest benefits (UNAIDS, 2003).

There are valuable reasons for increasing access to VCT. People who know they are infected may be able to maintain their health better by eating appropriately and by seeking prophylaxis and treatment of common opportunistic infections and other illness (WHO, 2000). Through counselling, PLWHA can plan for their future needs and those of their families such that they can choose to use condoms to protect their sex partners and make informed choices about child bearing. They may choose to join with others to increase support in the community for HIV infected people, so as to gradually reduce the stigma, which can adversely affect prevention and care efforts. And they may increase pressure on local or national authorities to improve standards of care and support services for the affected individuals, families and community (Jean *et al.*, 1998).

Furthermore there is growing body of evidence to suggest that people who have received counselling and know their sero-status are more likely to adopt or maintain safe behaviour, either to protect themselves from future infections if they are uninfected, or, if HIV-positive to protect their partners from infection (UNAIDS, 1998). An individual's experience of VCT or the energetic promotion of local VCT activities might prompt behavioural change. It is reported that the number of people using HIV testing and counselling services quadrupled in the past five years in several countries; however, very

little is known about whether VCT is effective in stimulating behaviour change (Bunnell *et al.*, 2006).

Despite the significant contribution of VCT to improving health status of PLWHA, its impact on stimulating behaviour change has not been elaborated. Likewise, while expanded treatment access offers opportunities for increasing prevention services for PLWHA, little is known about the effectiveness of behavioural interventions. Behavioural change might also be prompted spontaneously, without explicit external interventions, by an individual's experiences of an epidemic (e.g. the AIDS deaths of relatives and friends). VCT can help to connect clients with services including hospice care, legal services, and support for orphans and vulnerable children. Experience has shown that VCT clients benefit from ongoing support and counselling to cope with their diagnosis and facilitate disclosure (Kyuvi *et al.*, 2006)

2.6 Condom promotion, distribution and use

The use of condoms has increased markedly in recent years in Kenya. Condoms are available through free distribution from the government, subsidized sales through socially marketed, donor-funded projects and sales in the private sector. Free condoms supplied by the MOH are available at the ministry dispensaries, health centres and hospitals. Social marketing plays an increasingly important role in the growing availability and use of all condoms in Kenya (MOH, 2005). The most effective method for preventing the transmission of HIV during sexual contact is the use of a male latex condom (CDC, 2004).

In some studies conducted among gay men, treatment with protease inhibitors was found to be strongly associated with failure to use condoms during sexual intercourse (Communicable Disease Surveillance Centre, 2002). A study conducted among women on ART in France revealed that being anti-retroviral-treated (whether on HAART or on other antiretroviral therapy) was positively associated with inconsistent condom use with occasional partners (Carrieri *et al.*, 2003).

Condoms are effective for HIV prevention. Targeted condom programmes can be extremely cost effective. The provision of condoms to those most in need remains hindered by multiple hurdles; including provider bias, ready physical access, and myth/rumour (Carrieri *et al.*, 2003). Inconsistent condom use coupled with a high proportion of discordant couple relationships and couples with partners of unknown status is a matter of concern. Inconsistent condom use is also a concern for seroconcordant partners because of the risk of re-infection with new viral strains, which in turn accelerate disease progression (Avina *et al.*, 2006).

CHAPTER THREE: METHODOLOGY

3.1 Introduction

In this chapter the various methodologies employed to attain the study objectives have been explicitly described. Data management procedures used have been outlined as well as statistical and qualitative information acquired from the respondents presented. Since the study was mainly conducted within the health facilities offering ART services, two research assistants who were recruited locally were trained to aid in data collection, and who in turn worked hand in hand with the principal researcher to ensure accuracy.

3.2 Research design

A cross-sectional research design was used in the study. The results of the Kenya Demographic Health Survey (KDHS, 2003) on the sexual behaviour of population formed the basis of the study. Respondent's data were utilized in order to test hypotheses and to answer questions concerning the sexual behaviour patterns of the PLWHA who were on ART at the time of the study. Other views were also obtained from key informants such as program managers, clinicians, nurses, nutritionists, community health workers, social workers and counsellors.

3.3 Variables

3.3.1 Independent variables

- a. Awareness about ART
- b. Improved health status

3.3.2 Dependent variables

- a. Condom use
- b. Presence of multiple sexual partners
- c. Spouse disclosure

3.4 Location of the study

The study was carried out in Kibera slum (Appendix 7), Nairobi province in Kenya. Kibera is the site of one of the largest slums in sub-Saharan Africa with very peculiar problems compared to other slum areas (UN-HABITAT, 2002). Kibera slum is located in the South East of Nairobi city around seven kilometres from the city centre. The area covers 225.6 hectares of land (Matrix development consultants, 1993). The population is approximately 750,000 (GOK, 1999 population census).

The NCSS study reveals that compared to other areas in Kenya, including rural dwellings, slum residents have worse health and reproductive health conditions. Kibera has 3,000 persons per hectare; there is not any other place in the world that has such a density. The prevalence of HIV/AIDS in Kibera is averagely 12% (NASCO, 2003). This could be partly ascribed to the poor living conditions such as overcrowding, below average housing and poverty among others.

3.5 Study population

3.5.1 Inclusion criteria

The study included the following;

- a. Those who consented to the study
- b. Those who were on ART at the time of the study
- c. Those aged 18 years and above

3.5.2 Exclusion criteria

The following were excluded from the study:

- a. Those who didn't agree to participate in the study
- b. Those who were under 18 years

3.6 Sampling techniques and sample size

3.6.1 Sampling techniques

Two-stage random sampling was used in the study. At the first stage of sampling five health facilities offering ART services in Kibera slums and the catchment areas were randomly selected through simple balloting. The five health facilities selected were AMREF, KICOSHEP, MSF-Belgium, Coptic and St. Mary's hospital-Langata. All the PLWHA on ART from all the selected health facilities formed the sampling frame and stood an equal chance of being included in the study. In the second stage of sampling, systematic sampling was applied where the respondents were every fifth PLWHA was selected each day from the sampled health facilities as they turned up for the doctors' appointments.

3.6.2 Sample size

The number of PLWHA on ART in Kibera slums at the time of the study was estimated to be approximately 3000. The sample size was calculated using the formula as used by Fisher *et al.*, (1998) for the target population less than 10,000, where a final sample estimate (nf) was calculated using the formula:

$$nf = \frac{n}{1 + (n/N)}$$

nf - desired sample size (when the population is less than 10,000)

n - The desired sample size (when the population is more than 10,000)

N - The estimate of population

Therefore

$$n = 384$$

$$N = 3000$$

$$nf = \frac{384}{1 + \left(\frac{384}{3000}\right)} = 340 \text{ people therefore comprised the sample size.}$$

3.7 Construction of research instruments

3.7.1 Structured questionnaire

A questionnaire guarantees anonymity and confidentiality and therefore encourages honest responses from respondents. It is the only way to elicit self-reports on people's opinions, attitudes, beliefs, and values. Both open ended and close ended questions were formulated to capture both qualitative and quantitative information and to enable each respondent to effectively give his or her views. The questionnaire was constructed in such a way that all objectives to be accomplished were captured. The items in the questionnaire were arranged in a logical sequence so as to enable respondents to find

their way around with ease and for easy coding during analysis (Mugenda and Mugenda, 1999).

3.7.2 Interview schedule

An interview schedule consists of a list of questions that the interviewer administers to the respondent and writes out the responses. This was used to collect qualitative data about the respondents. The questions were either open or closed ended or both, depending on the objectives of the study. Closed ended questions permit only certain responses (such as multiple-choices questions). On the other hand, open ended questions allow respondents to make any response they wish (Gall *et al.*., 1996). The interview was carried out using this method in order to obtain in-depth responses with clarity to meet the specific objectives of the study. Both English and Kiswahili languages were used during the interview.

3.7.3 Focus group discussions (FGD)

Focus group discussion is a good tool for capturing information which may not otherwise be possible to gather individually. It also gives opportunity for a wide range of ideas and experiences. Certain questions are therefore outlined based on the objectives to elicit such information from a group of carefully selected respondents.

3.8 Pilot study

The structured questionnaire was pre-tested on 10 HIV patients who were on ART at the study period and were drawn from the sampled health facilities; they did not form part of final sample. The aim of the pre-test was to ensure validity and reliability of the data

collected from the final sample. Adjustments were made to rectify some of the errors noted in the questionnaire during the pre-test.

3.9 Data collection procedures

Data was collected through an interactive process between the respondent and investigator using questionnaires and focus group discussions. More information was obtained from interviews with health care providers in the MCH clinics.

3.9.1 Interviews

Interviews were conducted for the health service providers and the management staff in the selected health facilities offering ART to elicit their views on the effect of ART on sexual behaviour among PLWHA. Through probing, additional information was gathered. They included program managers, clinicians, social workers, counsellors, nurses, community health workers and administrators.

3.9.2 Focus group discussions (FGD)

These were mainly conducted by the principal researcher. Two series FGDs comprising of 14 and 16 PLWHAs respectively were held. The purpose was to gather additional information concerning the sexual behaviour of PLWHA, mainly those who were on ART. Various topics were outlined for discussion to tackle issues which might not have been possible to address by individual respondents.

3.9.3 Structured questionnaire

These were administered by the principal investigator orally to the illiterate with the help of trained research assistants who translated the questionnaire in a language best

understood by the respondents. They were administered to all the PLWHA who were selected randomly as they turned up for doctors appointments. In this regard about 348 questionnaires were completed conformingly with the sample size out of which 8 were disregarded due to aberrant data hence 340 were ultimately retained for analysis.

3.10 Methods of data analysis

3.10.1 Data cleaning and entry

During data collection, data from structured questionnaires were screened at the end of each day to ensure completeness, consistency and reliability before being entered into the computer. Similarly, data gathered from interview schedules and focus group discussions was checked to select relevant information.

3.10.2 Storage and retrieval

Necessary precautions were undertaken to safeguard the data. Accessibility to the collected information was restricted only to the researcher. Following data entry and analysis, the information was stored in a flash disk and deleted from the computer to ensure confidentiality.

3.10.3 Analysis and presentation

Statistical data was analysed with the help of Statistical Package for Social Sciences (SPSS) software for windows (version 10.0). Qualitative information was processed by thematic analysis. Both Chi -Square and adjusted Chi square test were used to assess any difference in the perception of PLWHA about ART. The advantage of chi-square test is that, no rigid assumptions are necessary in regard to the type of population, there is no need of parameters values, relatively less mathematical details are involved and that the

test can use data at lower scales of measurement such as nominal. The choice of Chi-Square was determined by the nominal nature of the data collected.

Correlation was used to determine the relationship between ART and sexual behaviour. To achieve this, variables for analysis were entered into an SPSS package as numeric. A correlation command, specifically bivariate, was executed and results presented. The results have been presented in descriptive form using frequency tables, pie charts, figures and percentages. Correlation is the degree of relationship to which two measurable variables vary together. The degree of relationship is commonly measured by a correlation coefficient, r and vary between $+1$ and -1 . A positive correlation indicates that the two variables have a tendency to increase as the other increase. Zero correlation indicates absence of relationship. A correlation exceeding 0.5 (or -0.5) is considered in many cases to be perfect. However more often than not, there are correlations that are usually less than 0.5 but are significant at a specified significant level.

3.11 Logistical and ethical considerations

The study was carried out with clearance from the Kenyatta University Graduate School. Ethical clearance was granted by the Ministry of Education Science and Technology. Informed oral consent was obtained from the respondents to ensure that participation was voluntary. Feedback from the respondents was treated with a lot of confidentiality; identity was anonymous since no names were written on the questionnaires. The findings of the study were made available to the respondents through the health facilities offering ART so as to improve efficiency.

CHAPTER FOUR: RESULTS AND DISCUSSION

4.1 Introduction

In this chapter, the findings have been explicitly discussed and possible explanations provided in regard to the findings. A total of 348 PLWHA residing within Kibera slums at the time of the study were interviewed with the aim of determining the effect of ART on their sexual behaviour. However, only 340 questionnaires were selected to be used for analysis. Two focus group discussions were also conducted and additional information got from key informants in an attempt to obtain more qualitative data.

4.2 Results

4.2.1 Socio-demographic profile of respondents

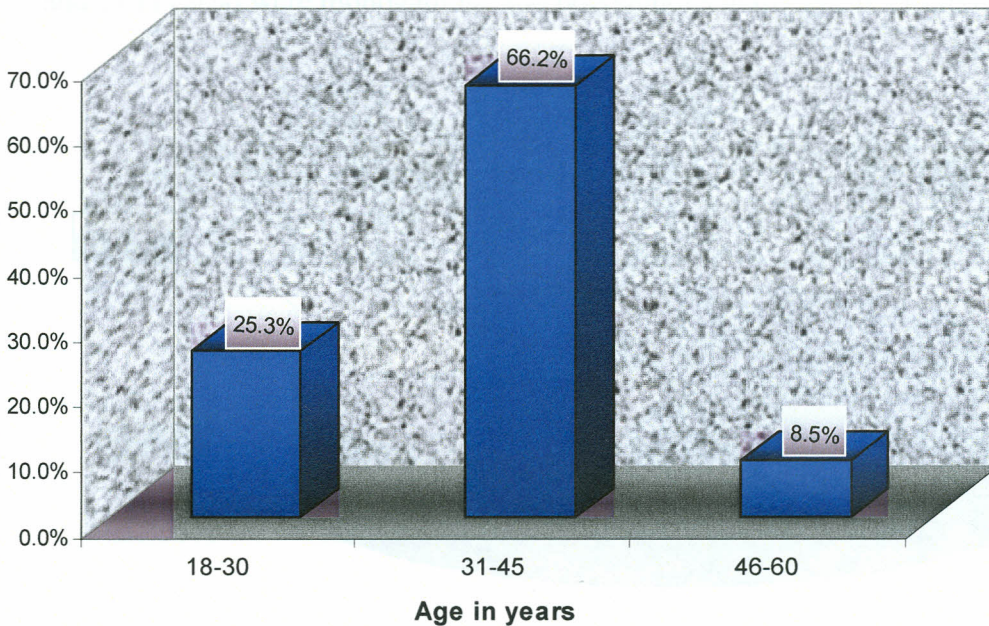


Figure 4. 1: Frequency distribution of respondents by age

Out of the 340 respondents, 182 (53.5%) were females while the remaining 158 (46.5%) were males. Figure 4.1 demonstrates that the age range between 31-45 years were the majority; 225 (66.2%), with only 86 (25.3%) falling in the category of 18 – 30 years. However people aged 46-60 years of age accounted for only 8.5% of the respondents. These results indicate that majority of Kenyan slum dwellers who are in their most productive are the most affected by HIV/AIDS. These findings are consistent with the KDHS (2003) results.

4.2.1.1 Marital status

More than half; 182 (53.5%) of the respondents were married while 158 (46.5%) were unmarried; either single, widowed, separated or divorced). Of the married 151 (82.9%) and 31 (17.0%) were monogamous and polygamous marriages respectively (Figure 4.2).

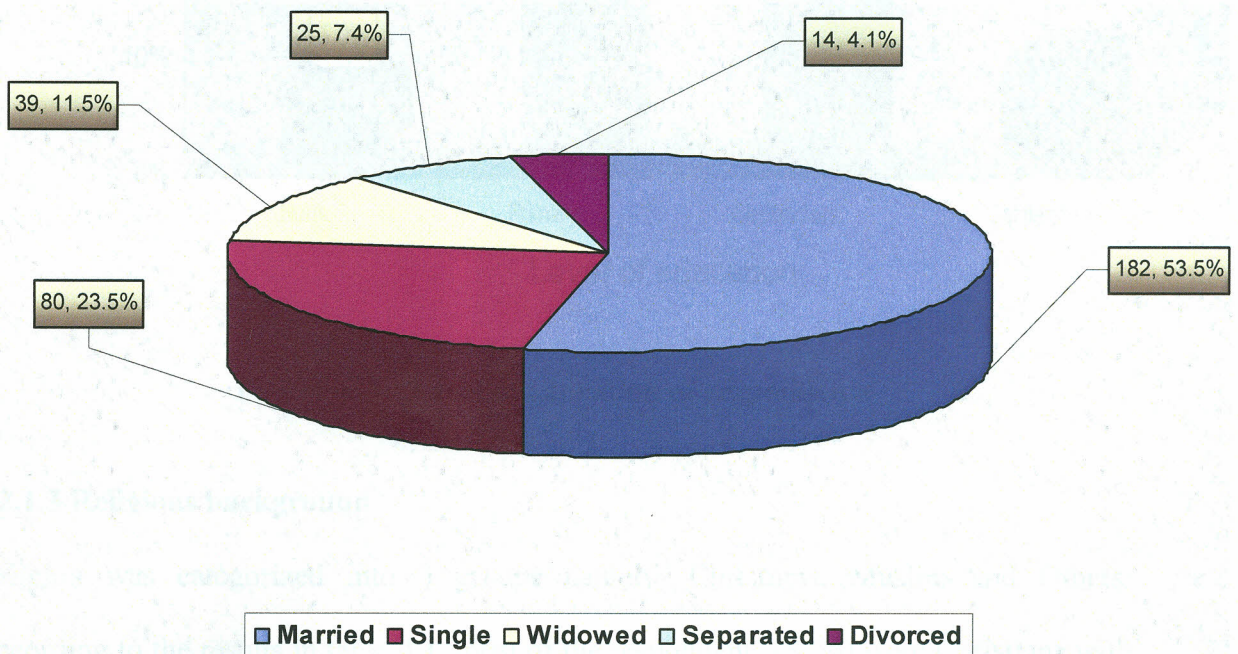


Figure 4. 2: Marital status of the respondents

4.2.1.2 Level of education

Of the 340 respondents, 177 (52.1%) had secondary education whilst 119 (35.0%) had primary education. Only 5% of the respondents had no formal education at all (Figure 4.3).

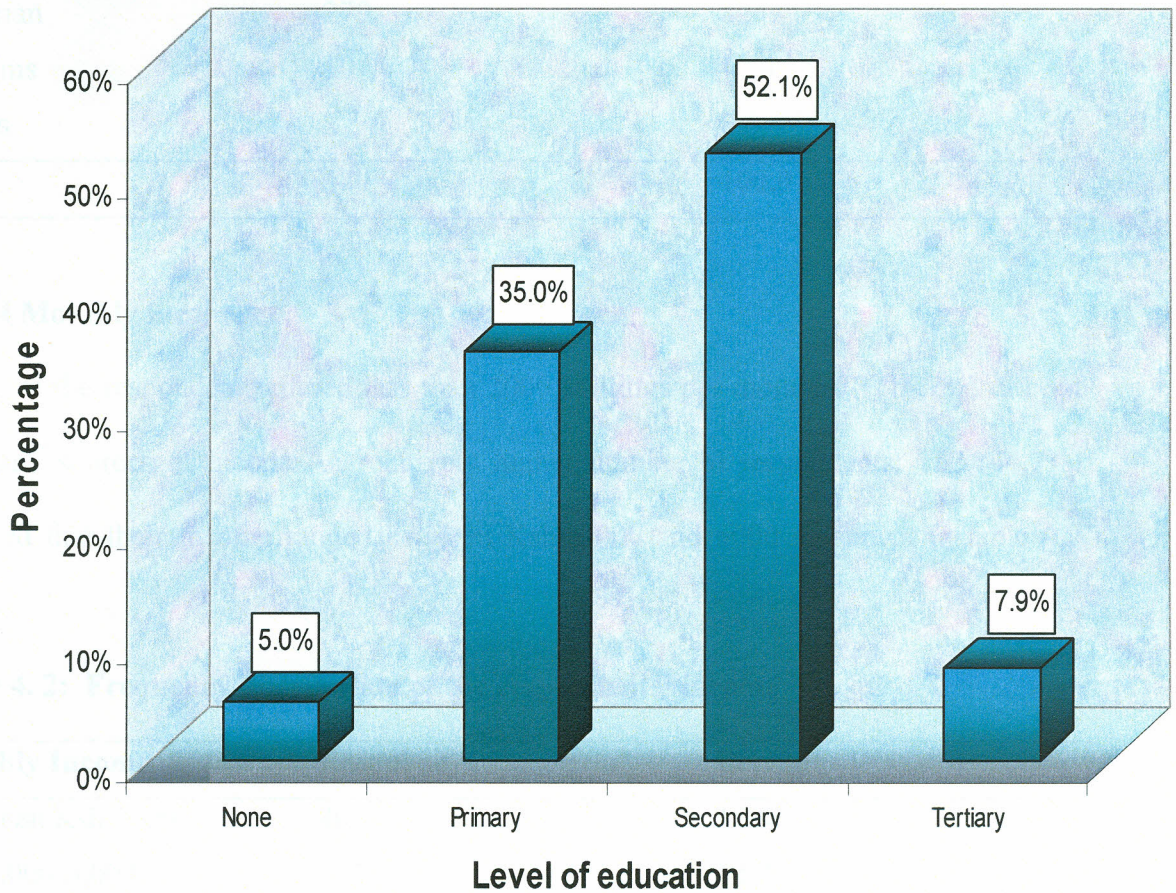


Figure 4. 3: Level of education of respondents

4.2.1.3 Religious background

Religion was categorized into 3 groups namely: Christians, Muslim and Others. According to the results in table 4.1, most of the respondents (82%) were Christians with

the vast majority being Protestants; few belonged to the Roman Catholic Church. Muslims constituted 17.4% while other religions accounted for only 0.6%.

Table 4. 1: Frequency distribution of the respondents by religion

Religious background	Frequency	Percent
Christian	279	82
Muslims	59	17.4
Others	2	0.6
Total	340	100.0

4.2.1.4 Monthly income

11.8% of the respondents earned less than 2000 shillings per month, 57 (16.7%) did not have any sources of income. A relatively higher number of respondents; 152 (44.7%) revealed that their income ranged between Ksh. 2000 and 5000 as shown in table 4.2 below.

Table 4. 2: Frequency distribution of the respondents' income

Monthly Income	Frequency	Percent
Less than Ksh 2000	40	11.8
Ksh 2,000-5,000	152	44.7
Ksh > 5,000	91	26.8
None	57	16.7
Total	340	100.0

Support from relatives was the most common other income source cited; 39 (40.2%), second to it was farming 33 (34%), while entrepreneurship and support from organizations accounted for 11 (11.3%) and 14 (14.4%) respectively (Figure 4.4).

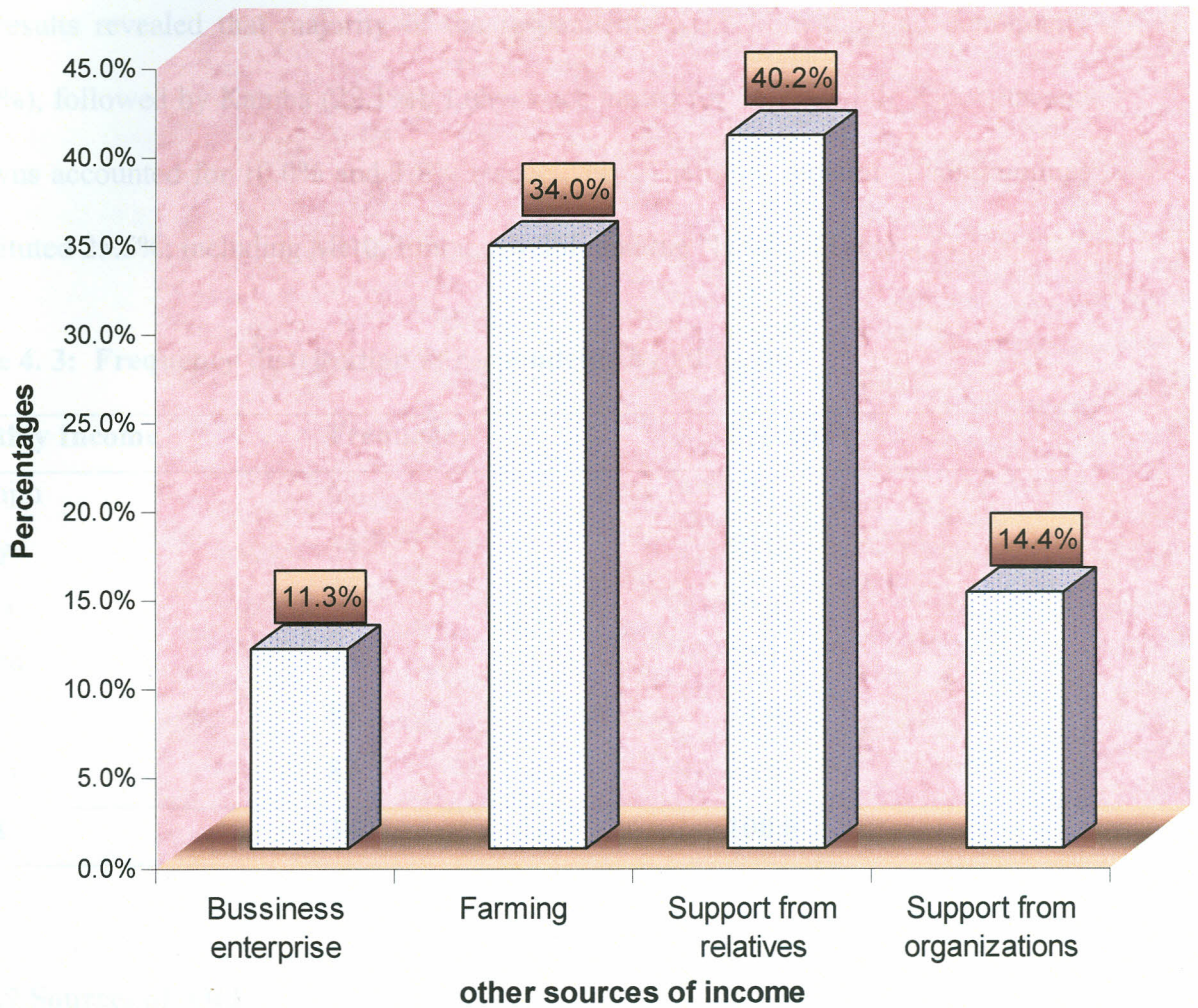


Figure 4. 4: Other sources of income of the respondents

4.2.1.5 Occupation

The most predominant occupation mentioned was salaried employment accounting for 149 (43.8%), another 120 (35.3%) were self-employed. Besides having occupations, 97 (28.5%) of the respondents said they had other sources of income other than employment, but still majority 240 (70.6%) did not have other sources of income.

4.2.1.6 Ethnic classification

The results revealed that majority of the respondents were from the Luo community (24.4%), followed by Kamba (22.1%), Luhyas accounted for 16.2% while Kalenjins and Kikuyus accounted for 10.0% and 1.8% respectively. The other remaining communities constituted 25.5%; including Meru, Embu, Swahili and the Nubians (Table 4.3).

Table 4. 3: Frequency distribution of respondents by ethnicity

Monthly Income	Frequency	Percent
Kalenjin	6	1.8
Kikuyu	34	10.0
Luhya	55	16.2
Kamba	75	22.1
Luo	83	24.4
Others	87	25.5
Total	340	100.0

4.2.1.7 Sources of ART

Majority of the respondents 273 (80.3%) got their ART services from NGOs such as AMREF and MSF- B which are located within the slum. The remaining 19.7% received the services either from Faith-based or community based organizations. None of the respondents received the service from public institutions.

4.2.1.8 Daily work attendance

The study further sought to establish if the health status of PLWHA affects their daily work attendance and 155 (45.5%) said they were affected. More than half 185 (54.4%) were however not affected. 65.2% and 23.8% of the respondents affected had failed to go

to work at least once and twice respectively. Cases of absenteeism for three times or more accounted for less than 11% (Table 4.4).

Table 4. 4: Distribution of PLWHA by failure to go to work due to illness

Days failed to go to work	Frequency	Percent
Once	101	65.2
Twice	37	23.8
Thrice	14	9.0
Four times and over	3	1.9
Total	155	100.0

4.2.1.9 Health status

Most of the respondents, 229 (87.9%) reported improved health status citing reduced incidences of ill ness ever since they started antiretroviral therapy. A small percentage 41 (12.1%) however said that their status of health had not improved.

4.2.2 Awareness and perceptions of PLWHA about ART

4.2.2.1 Awareness of PLWHA about ART

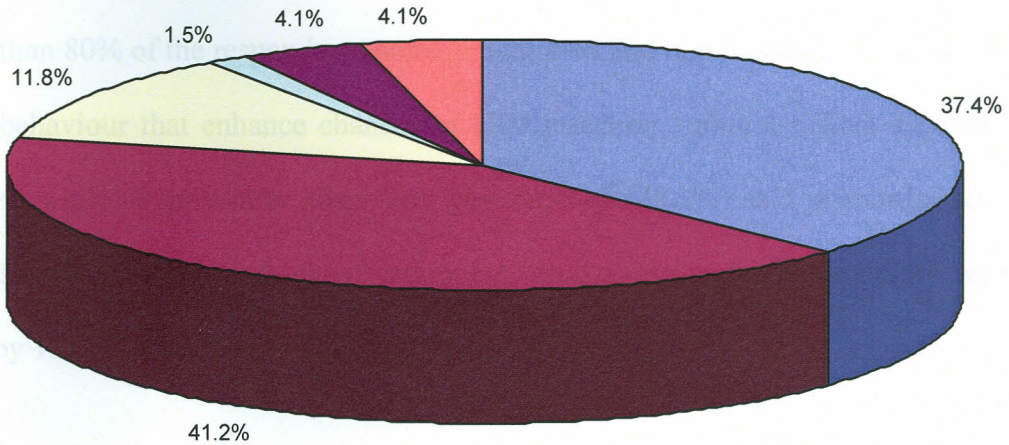
Chi-square (X^2) is a statistical test used to evaluate whether observed frequencies differ significantly from those which would be expected under theoretical assumptions.

From the column headed 0.05, the critical tabulated value was 7.815 while the statistical test arrived at was 108.84 thus falls within the rejection region. Awareness of PLWHA about ART was therefore not by random implying that ART services increase the level of awareness and play a crucial role in the people's perception and utilization of ART ($\chi^2 = 108.84, \leq 0.05, df = 3$).

4.2.2.2 Perception of PLWHA about ART

248 (72.9%) of the respondents reported that ART programmes had a positive influence on the sexual behaviour of PLWHA. Majority of the respondents cited boosted immunity and ARV drugs as some of the things they liked most about ART program as reported by 87 (25.6%) and 88 (25.9%) respectively (Figure 4.6).

When asked what they didn't like about the program, over 140 (41.2%) of the respondents said they liked every aspect of the program, while still a large number 127 ((37.4%) quoted the long duration of drug use in that the drugs are taken for life. Nonetheless 40 (11.8%) did not like the group therapies, while 14 (4.1%) dreaded the routine blood screening and the fact that the services were only available in the urban areas. Moreover some respondents complained of lack of food supplements 5 (1.5%) as demonstrated in Figure 4.5.



■ Duration of dosage ■ Everything □ Group therapy □ Lack of food supplements ■ Limited services ■ Routine blood test

Figure 4. 5: PLWHA dislikes about the ART programs

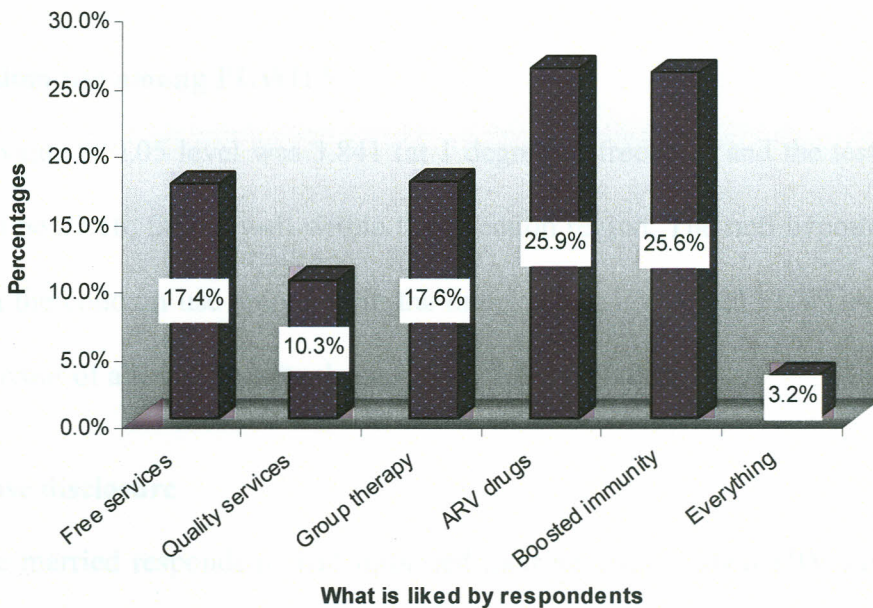


Figure 4. 6: PLWHA like about ART

4.2.3 Risky behaviour that enhance chances of HIV infection

More than 80% of the respondents noted prostitution and non- condom use as some of the risky behaviour that enhance chances of HIV infection, cultural beliefs accounted 165 (48.5%) while slightly more than forty percent; 137 (40.3%) said premarital sex was a risky sexual behaviour. Lack of awareness, drug abuse and homosexuality were also cited by 132 (38.8%), 96 (28.2%), and 99 (29.1%) respectively.

4.2.4 Sexual behaviour

In this study adjusted chi-square was used to test the difference in condom use as well as having multiple sexual partners amongst married and unmarried PLWHA. Adjusted chi-square test is used in a case of a 2x2 contingency table where there is only one degree of freedom. It involves the reduction of the deviation of the observed from the expected frequencies by 0.5 (correction factor), giving it the advantage of providing a more accurate results. The results were then tested for significance at 0.05.

4.2.4.1 Condom use among PLWHA

The critical value at 0.05 level was 3.841 (at 1 degree of freedom) and the test statistics was found to be 27.16, falling well within the rejection region. The null hypothesis of no difference in the condom use among both the married and unmarried PLWHA was then rejected in favour of alternative hypothesis, ($\chi^2 = 27.16, p \leq 0.05$).

4.2.4.2 Spouse disclosure

73.6% of the married respondents had informed their spouses of their HIV status while 44 (24.2%) had not done so.

4.2.4.3 Multiple sexual partners in the last 12 months

There were only 24 (13.2%) married respondents who said they had other casual sexual partners other than their spouses in the last 12 months compared to 158 (86.8%) who said they had not had any. Nonetheless, a larger number; 117 (74.1%) of the unmarried respondents admitted to be having sexual partners, out of whom only 27 (23.1%) said they had had one partner in the last 12 months. The calculated Chi square statistic results exceed the tabulated value of 11.07 at 0.05 confidence levels thus the null hypothesis of no difference in having sexual partners among married and unmarried PLWHA was thus not accepted ($\chi^2 = 35.92, p \leq 0.05$). It is notable that there were more unmarried people having multiple sexual partners than the married.

Among the married PLWHA who had casual sexual partners, the majority 11(45.8%) had only one partner, 10 (41.7%) had two, 3 (12.5%) had three, while none had more than three sexual partners. The remaining 58 (49.6%), 15 (12.8%) and 17 (14.5%), had two, three and more than three partners respectively (Table 4.5). At least 90 (76.9%) of the unmarried respondents said they had had more than one sexual partner in the last 12 months.

Table 4. 5: Distribution of respondents' numbers of sexual partners by marital status

Marital status	No. of sexual partners in the last 12 months					Total
		One	Two	Three	>three	
Married	Count	11	10	3	0	24
	%	45.8	41.7	12.5	0	100.0
Unmarried	Count	27	58	15	17	117
	%	23.1	49.6	12.8	14.5	100.0
Total	Count	38	68	18	17	141
	%	26.9	48.2	12.8	12.1	100.0

4.2.4.4 Condom use with multiple sexual partners

There were 15 (62.5%) married respondents who used condoms every time they had sex with another partner other than their spouses. 6 (25%) said they did not use condoms completely while 3 (12.5%) used condoms sometimes. But the risk was still high among the unmarried respondents where only 35 (29.9%) used condoms during sexual encounters with different partners, while 38 (32.5%) and 44 (37.6%) did not use condoms and used them sometimes respectively (Table 4.6).

Table 4. 6: Distribution of condom use among PLWHA with multiple sexual partners

Marital status	Condom use among PLWHA with multiple partners				Total
		Always	Never	Sometimes	
Married	Count	15	6	3	24
	%	62.5	25	12.5	100.0
Unmarried	Count	35	38	44	117
	%	29.9	32.5	37.6	100.0
Total	Count	50	44	47	141
	%	35.5	31.2	33.3	100.0

4.2.4.5 Presence of symptoms related to STIs in the last three months

The results revealed that among the PLWHA interviewed, 219 (64.4%) had not exhibited any symptoms associated with STIs in the last three months. Bad smelling discharge, unusual discharge and genital sores were reported among 48 (14.1%), 40 (11.8%) and 33 (9.7%) of the respondents respectively (Figure 4.7)

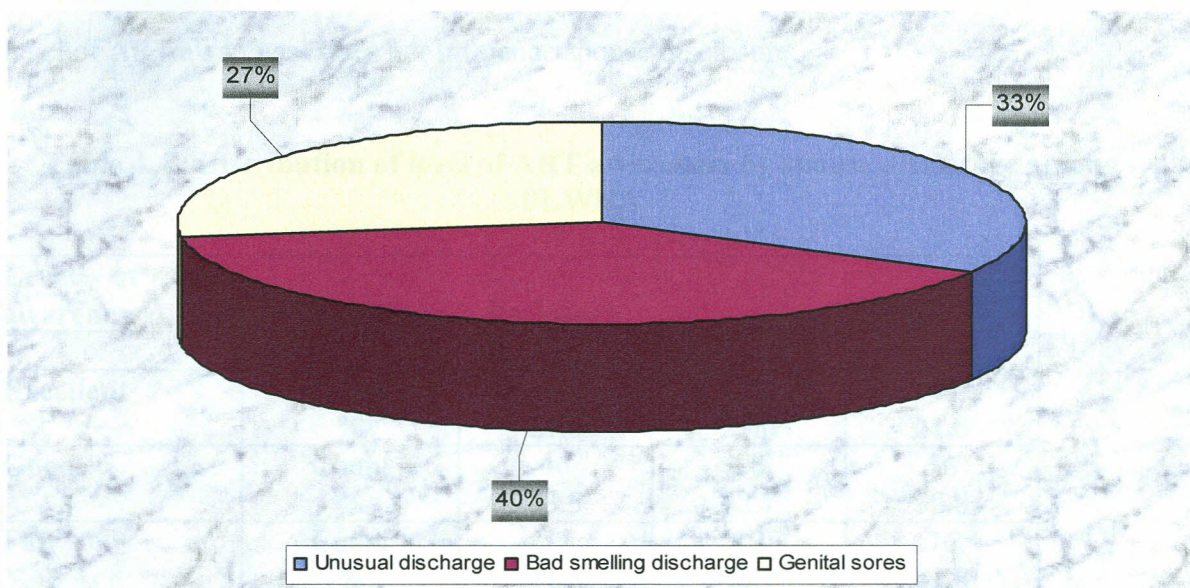


Figure 4. 7: Prevalence of different symptoms of STIs in the last 12 months

4.2.5 Influence of level of ART awareness and sexual behaviour

In this study, correlation was used to determine the relationship between health status of PLWHA on ART, their levels of ART awareness and their sexual behaviour. Sexual behaviour studied were condom use, spouse disclosure and presence of multiple sexual partners. ART related factors considered to influence sexual behaviour of PLWHA that were assessed in the study were level of awareness of ART and improved health status of the PLWHA.

4.2.5.1 Level of ART awareness and spouse disclosure

The results in Table 4.7 indicate that a large proportion 57 (41.3%) of married PLWHA who had disclosed their HIV status to their spouses had fair level of awareness of ART while those with poor level of awareness had the least disclosure 6 (4.3%) of their status to their spouses. However there was neither a positive nor negative ($r = 0$, $p \leq 0.05$) correlation between level of ART awareness and spouse disclosure signifying that that level of ART awareness does not influence spouse disclosure.

Table 4. 7: Distribution of level of ART awareness by spouse disclosure among PLWHA

Level of ART awareness	Spouse disclosure		Total	
	Yes	No		
Excellent	Count	29	11	40
	%	21.0	25.0	21.8
Good	Count	46	10	56
	%	33.3	22.7	30.8
Fair	Count	57	19	76
	%	41.3	43.1	41.8
Poor	Count	6	4	10
	%	4.3	9.0	5.5
Total	Count	138	44	182
	%	75.8	24.2	100.0

Correlation is not significant at the 0.05 level (2-tailed).

4.2.5.2 Level of ART awareness and presence of multiple sexual partners

The results revealed that 88(44.4%) of the respondents who had fair level of ART awareness did not have multiple sexual partners in the 12 months preceding the assessment compared to 64(45.1%) who did so. Similarly there were fewer respondents with good and excellent levels of ART awareness who had multiple sexual partners as

demonstrated in the table below. It was evident from the results that most of the unmarried PLWHA had sexual partners in the last 12 months compared to their married counterparts. Pearson correlation results showed that there was significant relationship ($r = 0.94$, $p \leq 0.05$) between ART level of awareness and having multiple sexual partners among PLWHA. This suggests that sex is common among the unmarried PLWHA, more so among those with good and fair level of ART awareness.

Table 4. 8: Distribution of level of ART awareness among PLWHA by presence of multiple sexual partners

Level of ART awareness	Other sexual partners			Total
		Yes	No	
Excellent	Count	20	35	55
	%	14.1	17.7	16.2
Good	Count	47	64	111
	%	33.1	32.3	32.6
Fair	Count	64	88	152
	%	45.1	44.4	44.7
Poor	Count	11	11	22
	%	7.7	5.6	6.5
Total	Count	142	198	340
	%	41.8	58.2	100.0

* Correlation is significant at the 0.05 level (1-tailed).

4.2.5.3 Level of ART awareness and condom use

Generally most 172(67.5%) of the respondents used condoms with 49(28.5%), 51(29.7%) and 65(37.8%) of those with excellent, good and fair level of awareness of ART reporting condom use with their sexual partners respectively. Cases of non-condom use were fewer among the respondents ranked to be having excellent awareness of ART 3 (3.6%) while more than half 47(56.6%) of the respondents with fair level of awareness failed to

use condoms. Nonetheless majority of the unmarried respondents did not use condoms consistently as revealed by 40(95.2%) who reported that they used condoms sometimes. The results of Pearson correlation depicted a positive correlation ($r = 0.128$, $p \leq 0.05$) between condom use and level of ART awareness at 0.05 level of confidence.

Table 4. 9: Distribution of level of ART awareness among PLWHA by condom use

Level of ART awareness	Condom use		Total	
		Yes		No
Excellent	Count	49	3	52
	%	28.5	3.6	20.4
Good	Count	51	28	79
	%	29.7	33.7	31.0
Fair	Count	65	47	112
	%	37.8	56.6	43.9
Poor	Count	7	5	12
	%	4.1	6.0	4.7
Total	Count	172	83	255
	%	67.5	32.5	100.0

* Correlation is significant at the 0.05 level (2-tailed).

4.2.6 Influence of health status on sexual behaviour of PLWHA

4.2.6.1 Health status and spouse disclosure

Table 4.10 indicates that majority of the married PLWHA with improved health status following comprehensive care and support from ART had disclosed their HIV status to their spouses as revealed by 119 (74.4%) of the respondents. 19 (86.4%) of those who had not disclosed their status to their spouses had improved health status. Nonetheless there existed no correlation between health status and spouse disclosure.

Table 4. 10: Distribution of PLWHA health status by spouse disclosure

Improved health status	Spouse disclosure			Total
		Yes	No	
Yes	Count	119	19	138
	%	74.4	86.4	75.8
No	Count	41	3	44
	%	25.6	13.6	24.2
Total	Count	160	22	182
	%	87.9	12.1	100.0

Correlation is not significant at the 0.05 level (2-tailed).

4.2.6.2 Influence of health status on condom use

Generally most 167 (87.0%) of the PLWHA with improved health status practiced safe sex with either their sexual partners or spouses. Similarly a larger proportion 95(88.8%) of those with improved health status still did not use condoms. However there was no correlation between the two variables. There were very few cases 12(11.2%) of non condom use among those whose health had not improved as reflected in the table 4.11 below.

Table 4. 11: Distribution of PLWHA health status by condom use

Improved health status	Condom use			Total
		Yes	No	
Yes	Count	167	95	262
	%	87.0	88.8	87.6
No	Count	25	12	37
	%	13.0	11.2	12.4
Total	Count	192	107	299
	%	64.2	35.8	100.0

Correlation is not significant at the 0.05 level (2-tailed).

4.2.6.3 Influence of health status on multiple sexual partners

The table below indicate that majority (90.1%) of the PLWHA who had improved health status had multiple sexual partners in the last 12 months with most 56 (87.5%) of the respondents reporting to have had two sexual partners. Pearson correlation results indicated a positive correlation between health status and having multiple sexual partners ($r = 0.162, p \leq 0.05$).

Table 4. 12: Relationship between PLWHA health status and presence of multiple sexual partners

Improved health status	Multiple sexual partners					Total
		One	Two	Three	>3	
Yes	Count	43	56	14	15	128
	%	91.4	87.5	93.3	93.8	90.1
No	Count	4	8	1	1	14
	%	8.5	12.5	6.7	6.2	9.9
Total	Count	47	64	15	16	142
	%	33.1	45.1	10.6	11.2	100.0

* Correlation is significant at the 0.05 level (2-tailed).

4.2.7 Suggestions on how to improve ART services

From the two focus group discussions held with some of the 14 and 16 PLWHA respectively, the responses were analyzed through transcription from were tapes recorded and notes taken. Most participants suggested that extension of ART services to the rural areas could greatly help in improving the ART services by ensuring wide coverage and efficiency. *‘It would be great if considerations are made to extend similar services to the rural areas so that people back home can also benefit from the same.....as we talk people are actually dying in rural areas just because thy cannot afford the high costs of*

ART treatment’. Other suggestions included more social support through group therapies, improving nutritional care and support by giving supplements, continuing the free services, reducing drug dosage, economic support and offering assistance to orphans. *“Being a widow I find it challenging to support my eight children... .., most of the time they are out of school due to lack of school fees, I therefore appeal to AMREF and other NGOs to look into supporting the orphaned children*’. Nonetheless a few individuals felt that ART services were as good as they were therefore require no further improvement. *“The program is simply wonderful, I like everything to do with the program and thank all those NGOs working in this area for restoring hope among those souls which had lost hope in life”*

4.2.8 Measures useful in changing the sexual behaviour to curb HIV spread

When asked to suggest some of the measures they thought were useful in changing the sexual behaviour of Kibera residents, more than 70% of the respondents suggested that faithfulness, use and availability of condoms would curb the spread while slightly more than 50% said awareness creation and promotion of abstinence would help. Discarding risky cultural practices and the use of ARV drugs to prevent mother to child infection was also mentioned by more than 40% of the respondents while 39.8% felt that poverty reduction especially in the slum was an important factor in curbing the spread. Control of STIs and VCT accounted for 27.4% and 21.6%, respectively.

Through the focus group discussions and key informant interviews it was noted that improved health status had a bearing on the sexual behaviour especially among the infected youths within the slum dwelling as they went around practicing unsafe sex with

multiple partners thence spreading the virus. Most participants were therefore for the opinion that the current behaviour change communication strategies should be enhanced in a bid to curb the spread of HIV/AIDS. *“ It is quite unfortunate that we the people living with HIV/AIDS have forgotten so fast the immense suffering we underwent as well as stigma as a result of our status before being enrolled in the program.it is therefore such a pity that once again we do contrary to what we are taught in the group therapies by practicing un safe sex.....forgetting the risks involved.....”*

4.3 Discussion

Despite the major efforts that have been put to control the spread of HIV/AIDS, the pandemic still has a solid grip in the country and continues to reverse gains made in key health measures. With increased availability of ART, HIV-positive individuals are living healthier lives and continuing or resuming sexual activity. But, optimism related to ART success in slowing disease progression, reducing viral load, and improving health status may lead to more risky sexual practices and a possible increase in transmission of infections. Determining the sexual behaviour of HIV-positive persons on ART has since been found to be an area of special interest and concern.

The primary objective of the study was to assess the effect of ART on the sexual behaviour of the PLWHA living in Kibera slums. These results therefore come at a time when there is need to harmonize interventions and responses from various actors with the hope that it will contribute towards further reduction of the spread of HIV/AIDS especially in resource limited settings.

4.3.1 Socio-demographic profile of PLWHA

The study involved 340 respondents who were all enrolled in ART programs in various health facilities. More than half of the respondents were found to be females 182 (53.5%). This compares well with the KDHS, 2003 results which indicated that women are more vulnerable to HIV infection compared to men. The age range between 31-45 years were the majority among those interviewed indicating that majority of Kenyan slum dwellers who are in their most productive are the most affected by the epidemic. These findings are in line with the KDHS (2003) and the first national Behavioural Surveillance Survey (BSS) results which showed an older median age of sexual debut. More than half of the respondents were married while only a small proportion was unmarried. Whereas most marriages were monogamous, those who were unmarried were widowed, divorced, separated or single (had never been married before).

Level of education is critical in having people accept new ideas such as ART. It can therefore be observed that with majority of the respondents reportedly having basic education, awareness of ART was likely to increase hence leading to a positive impact on the sexual behaviour of PLWHA in the slum.

A relatively high number of respondents had an income of between Ksh. 2000 and 5000. This compares well with past research such as the one conducted in the location (AMREF, 2002), which showed high poverty levels among most slum dwellers hence they survive on less than one dollar per day. To cope, most respondents sought support from relatives while other coping mechanisms included entrepreneurship and support

from organizations. Good income is important in assisting PLWHAs in meeting their basic needs and helps to reduce dependency on CBOs and relatives. However in a country like Kenya where unemployment is rife it would be necessary for CBOs and ART service providers to encourage the unemployed PLWHAs to indulge in income generating activities.

The most predominant occupation mentioned by the respondents was salaried employment, most of who were employed as either house helps or casual labourers. Self employment such as carpentry and petty trade were equally common among the respondents. Besides having occupations some of the respondents said they had other alternative sources of income other than employment, but majority did not have other sources of income.

Majority of the respondents were from the Luo community, probably because of the high population of Luos living in Kibera slums. It could also be partly attributed to the fact that regional HIV/AIDS variations indicate that Nyanza has the highest HIV/AIDS prevalence rates compared to other seven provinces (KAIS, 2007). Other tribes included Kamba, Luhyas, Kalenjins, Kikuyu, Meru, Embu, Swahili and the Nubians. Based on ethnicity, the results are in agreement with the reports in other studies (Mukiri, 2002).

The government of Kenya, international donor partners, local and international non-governmental organizations, faith based organizations and many other facets of civil society are involved in activities and services to prevent HIV/AIDS (NACC, 2005). The

findings of this study revealed that majority of the respondents got their ART services from NGOs such as AMREF and MSF- B which are located within the slum while the remaining received the services either from church based or community based organizations. None of the respondent acquired the services from the public hospitals. This could be due to the fact that ART services were either free of charge or offered at a minimal cost in these health facilities as opposed to the public clinics where they acquired the services at relatively higher fees as the government ART up scaling exercise had just been initiated.

Moreover, most of the respondents reported improved health status since they started antiretroviral therapy. This justifies the fact that ART is instrumental in reducing HIV related morbidity and mortality (MOH, 2005). Moreover the minimal cases of absenteeism from work due to opportunistic infections is in line with similar studies which have shown that ART helps PLWHA to live a healthy normal life and are therefore able to attend to daily duties/chores undisrupted (Avina *et al.*, 2004).

Very high levels of patient adherence are required for antiretroviral therapy (ART) to be effective and to prevent the emergence of resistant viral strains (Zulu, 2002).. High levels of awareness about ART is also considered to play a crucial role in the people's perception and utilization of ART while at the same time having a positive impact on the health status and sexual behaviour of the PLWHA. Awareness of PLWHA about ART was therefore not by random implying that ART services increase the level of awareness of PLWHA hence improved adherence to the therapy ($\chi^2 = 108.84, p = <0.05, df = 3$).

More than half of the respondents were of the opinion that ART programmes had a positive influence on the sexual behaviour of PLWHA. This observation supports past research conducted in Uganda (CDC, 2004). Majority of the respondents cited boosted immunity and ARV drugs as some of the things they liked most about ART program. Slightly more than forty percent of the respondents said they liked everything about the program while still a large number quoted the long duration of drug use in that the drugs are taken for life as a dislike. Nonetheless some did not like the group therapies, routine blood screening and the fact that the services were only available in the urban areas. Moreover some respondents complained of inconsistent supply of food supplements.

Majority of the respondents noted prostitution and non- condom use as some of the risky behaviour that enhanced chances of HIV infection in Kibera slums. Other risky behaviour that enhanced chances of HIV infection to a lesser extent included cultural beliefs, premarital sex, lack of awareness, drug abuse and homosexuality. These results correspond to other studies (Stall *et al.*, 2000; Zulu, 2002). According to Stall and Purcell (2000), studies about whether MSM who combine alcohol or drugs with sex are more likely to engage in high-risk sexual behaviour show statistically significant relationships between substance abuse and the likelihood of participating in high-risk sex (Stall *et al.*, 2000).

More than half of the infections in Kenya are as a result of heterosexual exposure, this call for significant sexual behaviour change so as to mitigate the impacts of HIV/AIDS (KDHS, 2003). Condom use is an effective means of lowering the risk of HIV

transmission for people living with HIV/AIDS who are sexually active (Avina *et al.*, 2004). In this study adjusted Chi square was used to test the difference in condom use amongst married and unmarried PLWHA. There IS a significant difference in condom use between the two groups. As such, it can be concluded that married PLWHA who were on ART were more informed of sexual behaviour that encourage spread of HIV/AIDS and as a result, they used condoms to prevent possible re-infection.

Frequent changes or multiple concurrent sexual partnerships are key factors in driving an epidemic of a sexually transmitted infection such as HIV/AIDS (NACC, 2005). Results show that there were only a few married respondents who said they had other casual sexual partners other than their spouses in the last 12 months compared to more than eighty percent who said they had not had any. It was notable that there were more unmarried people having multiple sexual partners than the married as shown by the chi square statistic results ($\chi^2 = 35.92$, $p \leq 0.05$). This could be due to the fact that some of them were commercial sex workers thus used sex as a survival means.

The study findings further revealed that among the married PLWHA who had casual sexual partners, the majority had only one partner, compared to more than seventy percent of the unmarried respondents who said they had had more than one sexual partner in the last 12 months. This therefore implies that the unmarried PLWHA stand higher chances of transmitting the virus and also being re-infected by other strains of HIV/AIDS (Avina *et al.*, 2004). Any preventive interventions should therefore pay specific attention to this group of individuals.

The use of condoms has increased markedly in recent years in Kenya. Condoms are available through free distribution from the government, subsidized sales through social marketed, donor funded projects and sales in private sector. More than half of the married respondents used condoms every time they had sex with another partner other than their spouses. A quarter of the respondents said they did not use condoms completely while 3 (12.5%) used condoms sometimes. But the risk was still high among the unmarried respondents where only 35 (29.9%) used condoms during sexual encounters with different partners, while 38 (32.5%) and 44 (37.6%) did not use condoms and used them sometimes respectively. It would therefore be prudent for the ART service providers to further mobilize resources and channel them towards the unmarried (single, widowed, separated and divorced cases) group of people who still engage in risky behaviour that promote HIV/AIDS.

Ensuring the prevention of HIV transmission requires a range of protective measures, including knowledge of partners' HIV status and disclosure of one's sero-status to sexual partners (Avina *et al.*, 2006). Intensive programmes for prevention among PLWHA have not been implemented, however disclosure of ones HIV status to sexual partners remains difficult and inconsistent (GOK, 2005). Slightly more than seventy percent of the married people interviewed had informed their spouses of their HIV status while less than a quarter had not done so.

Sexually transmitted infections spread easily among sexually active groups. HIV/AIDS and other STIs are both spread through the same type of risky behaviour such as having

multiple sexual partners. The results revealed that among the PLWHA interviewed, more than sixty percent had not shown any symptoms associated with STIs in the last three months. Bad smelling discharge, unusual discharge and genital sores were reported among a few respondents. This may attest to the involvement by PLWHA in unprotected sex.

4.3.2 Influence of ART related factors on sexual behaviour

The present study results revealed that the largest proportion of those married PLWHA who had disclosed their HIV status to their spouses had fair level of awareness of ART while those with poor level of awareness had the least disclosure of their status to their spouses. However there was no correlation ($r = 0$, $p \leq 0.05$) between level of ART awareness and spouse disclosure suggesting that that level of ART awareness does not influence spouse disclosure.

It was evident from the results that most of the unmarried PLWHA had had multiple sexual partners in the 12 months preceding the assessment compared to their married counterparts. Pearson correlation results showed that there was a significant relationship ($r = 0.94$, $p \leq 0.05$) between ART level of awareness and having multiple sexual partners among PLWHA. This suggests that sex was common among the unmarried PLWHA, more so among those with good and fair level of ART awareness. These results were contrary to what would have been expected and are therefore a pointer that high levels of awareness do not necessarily guarantee improved sexual behaviour per se. As such, a lot more need to be done as far as BCC is concerned as well as post - test counselling (Brent *et al.*, 2001).

Generally most of the respondents used condoms with a considerably higher proportion of those with excellent, good and fair level of awareness of ART reporting condom use with their sexual partners respectively. Cases of non-condom use were fewer among the respondents ranked to be having excellent awareness of ART while more than half of the respondents with fair level of awareness failed to use condoms. Nonetheless majority of the unmarried respondents did not use condoms consistently as revealed by more than ninety percent who reported that they used condoms sometimes. The results of Pearson correlation depicted a positive correlation ($r = 0.128$, $p \leq 0.05$) between condom use and level of ART awareness. This implies that as the level of ART awareness increases, they tend to prevent transmission and re-infection by using condoms with their sexual partners. The study conducted by Horizons Group and Population Council in India and Mombasa (Kenya) reported similar results concerning condom use (Avina, 2004, 2006).

With increased availability of ART, HIV-positive individuals are living healthier lives and continuing or resuming sexual activity (Avina *et al.*, 2006). Majority of the married PLWHA with improved health status following comprehensive care and support from ART had disclosed their HIV status to their spouses as revealed by more than seventy percent of the respondents. Close to ninety percent of those who had not disclosed their status to their spouses had improved health status. Nonetheless there existed no correlation between health status and spouse disclosure.

Generally most of the PLWHA with improved health status practiced safe sex with either their sexual partners or spouses. An equally larger proportion 95 (88.8%) of those with

Generally most of the respondents used condoms with a considerably higher proportion of those with excellent, good and fair level of awareness of ART reporting condom use with their sexual partners respectively. Cases of non-condom use were fewer among the respondents ranked to be having excellent awareness of ART while more than half of the respondents with fair level of awareness failed to use condoms. Nonetheless majority of the unmarried respondents did not use condoms consistently as revealed by more than ninety percent who reported that they used condoms sometimes. The results of Pearson correlation depicted a positive correlation ($r = 0.128$, $p \leq 0.05$) between condom use and level of ART awareness. This implies that as the level of ART awareness increases, they tend to prevent transmission and re-infection by using condoms with their sexual partners. The study conducted by Horizons Group and Population Council in India and Mombasa (Kenya) reported similar results concerning condom use (Avina, 2004, 2006).

With increased availability of ART, HIV-positive individuals are living healthier lives and continuing or resuming sexual activity (Avina *et al.*, 2006). Majority of the married PLWHA with improved health status following comprehensive care and support from ART had disclosed their HIV status to their spouses as revealed by more than seventy percent of the respondents. Close to ninety percent of those who had not disclosed their status to their spouses had improved health status. Nonetheless there existed no correlation between health status and spouse disclosure.

Generally most of the PLWHA with improved health status practiced safe sex with either their sexual partners or spouses. An equally larger proportion 95 (88.8%) of those with

improved health status still did not use condoms. However there was no correlation between the two variables. Pearson correlation results indicated a positive correlation between health status and having multiple sexual partners ($r = 0.162$, $p \leq 0.05$).

From the FGDs held with some of the PLWHA, most participants suggested that extension of ART services to the rural areas could greatly help in improving the ART services by ensuring wide coverage and efficiency. Other suggestions included more social support through group therapies, improving nutritional care and support by giving nutrition supplements, continuing the free services, reducing drug dosage, economic support and offering assistance to orphans. Nonetheless a few individuals felt that ART services were as good as they were therefore require no further improvement.

Some of the measures cited to be useful in changing the sexual behaviour of Kibera residents were faithfulness to one partner, use and availability of condoms, awareness creation and promotion of abstinence. Discarding risky cultural practices and the use of ARV drugs to prevent mother to child infection, poverty reduction especially in the slum were also mentioned as important factors in curbing the spread as well as the control of STIs and VCT. Through the FGDs and key informant interviews it was noted that improved health status had a bearing on the sexual behaviour especially among the infected youths within the slum dwelling as they went around practising unsafe sex with multiple partners risking spreading the virus. Most participants were therefore of the opinion that the current behaviour change communication strategies should be enhanced in a bid to curb the spread of HIV/AIDS.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

Antiretroviral therapy must be viewed as a means for reducing morbidity and mortality as well as lowering rates of transmission within populations. Further there is an equal need for both care and prevention, and it is important to recognize that the two act synergistically. This chapter therefore presents a brief summary of the study findings, the implications and conclusions. Based on the results, various recommendations have been drawn which are deemed to be viable towards achieving the national goal of reducing the mortality and morbidity associated with HIV/AIDS in Kenya.

5.2 Summary

The effect of ART scale-up in Africa on sexual risk behaviours and the prevention of new HIV infections are unknown. Models demonstrating that ART can reduce HIV/AIDS incidence also show that small increases in risky sexual behaviours can mask and reverse gains achieved by therapy (Avina *et al.*, 2004). Studies from the developed world suggest that prevalence of unprotected sex and incidence of sexually transmitted infections have increased since the introduction of ART (Kalichman *et al.*, 1998; Stall, 2000). It is possible that misperceptions about ART or reduced concern about HIV because of ART availability lead to more permissive sexual behaviour in both HIV-infected persons and the general population.

Against the above background, the purpose of this study was to examine the association of ART level of awareness with risky sexual behaviours among PLWHA in Kibera slums and where HIV/AIDS prevalence is almost double the national prevalence (KDHS,

2003). The association of improved health status with risky sexual behaviours in HIV-infected persons receiving ART was also investigated. The study was conducted by sampling PLWHA receiving ART from 5 health facilities proffering ART within the slum and the catchments.

More than half of the 340 respondents were found to be females probably because women are more vulnerable to HIV infection compared to men. Intervention strategies should therefore pay more attention to female PLWHAs. The age range between 31-45 years being the majority confirms that majority of Kenyan slum dwellers who are in their most productive ages are the most affected by HIV/AIDS (KDHS, 2003).

Income is important in assisting the PLWHAs in meeting their basic needs such as improved access to food which ultimately determines proper nutrition. It may also help to reduce dependency on CBOs and relatives. However in a country like Kenya where unemployment is rife and more so in slum dwellings where poverty is endemic, it would be necessary for CBOs and ART service providers to encourage the unemployed PLWHAs to indulge in income generating activities. They may consider providing them with seed money that they utilize to start small scale businesses.

Like previous reports, this study revealed that ART helps PLWHA to live a healthy normal life and are therefore able to attend to daily duties/chores undisturbed. Similarly the improved health status of PLWHA following use of antiretroviral therapy attests to the fact that ART is instrumental in reducing HIV related morbidity. Those with

improved health status were however more likely to have multiple sexual partners as there was a significant positive correlation.

ART awareness in Kibera slums was acceptable as most respondents were found to have increased the level of awareness about ART nonetheless the positive correlation between ART levels of awareness and having multiple sexual partners among PLWHA vindicates that improved health status following ART may lead to involvement in risky sexual behaviour mainly having multiple sexual partners. However, it was evident that as the level of ART awareness increases PLWHA tend prevent transmission and re-infection by using condoms with their sexual partners.

Notably, the married PLWHA who were on ART were more informed of sexual behaviours that encourage spread of HIV/AIDS and as a result, they used condoms to prevent possible re-infection. It was notable that there were more unmarried people having multiple sexual partners compared to the married. The significant difference in having sexual partners among married and unmarried signified that sex was so rampant among the unmarried PLWHA, more so among those with good and fair level of ART awareness signifying that the unmarried PLWHA stand higher chances of transmitting the virus and also being re-infected by other strains of HIV virus. Any preventive interventions should therefore pay specific attention to this category.

5.3 Conclusions

A comprehensive approach to prevention requires that HIV-positive persons do not fall outside the scope of prevention and care efforts. Instead, these individuals need to take protective and preventive measures since they run the risk of both infecting their sexual partners and re-infecting themselves with different strains of the virus. Refocus on prevention is therefore inevitable as the UNAIDS Executive Director once stated that 'reaching or sustaining universal HIV treatment would be impossible without effective HIV prevention' and urging "a rapid increase in the scale and scope of prevention programmes." Experts calculate that comprehensive efforts that focus on both prevention and treatment could avert more than half of the new HIV infections that would otherwise occur through the year 2020 in sub-Saharan Africa, the region most affected globally by AIDS.

5.4 Recommendations

There has been a concern that the risky sexual behaviour may dramatically increase once the HIV positive feel better on treatment. The study results showed that those with improved health status were however more likely to have multiple sexual partners as there was a significant positive correlation. The findings further revealed that improved health status following ART may lead to involvement in risky sexual behaviour mainly having multiple sexual partners and inconsistent condom use among PLWHA. The risk was much higher among the unmarried PLWHA more so those with good and fair level of understanding of ART. Any preventive interventions should therefore pay specific attention to the unmarried PLWHA. Similarly, inconsistent condom use was also found to

be eminent among the study respondents. These are likely to have a negative impact on HIV/AIDS control mechanisms already in place.

The findings of this study come at a time when ART has since gained popularity in Kenya due to the numerous gains derived from its up-scaling. The results are therefore significant and have contributed to knowledge that besides to its effectiveness in reducing morbidity, a lot of focus is needed particularly among the unmarried PLWHA who are most likely indulging in risky sexual behaviour despite their sero-status. As such the findings will be quite useful in the sense that they will influence policy in terms of designing the most effective HIV/AIDS management programs in order to delineate the relationship between treatment and prevention efforts, more so in resource limited settings with an aim of bridging the gap.

5.4 Recommendations

The success of ART programs hinges on effective government policy. This is particularly important in instituting the necessary infrastructure and an enabling environment to all stakeholders in HIV/AIDS prevention programs. Two (2) sets of recommendations were drawn from the results of the study, these included recommendations for policy and practice.

5.4.1 Recommendations for policy:

1. The Ministry of Public Health and Sanitation (MOPHS) should review the extant Behaviour Change Communication (BCC) strategies with more emphasis on the

unmarried PLWHA who seemingly are at more risk of re-infection and transmission.

2. As part of its initiative to scale up national ART programs, there is need for the government through MOPHS, to expand the scope of prevention programs to include integration of current BCC strategies with PLWHA care and support services.
3. The MOPHS need to enhance VCT component as part of HIV management strategies, particularly post-test counselling with special focus on issues pertaining to multiple sexual partners as well as proper and consistent condom use.

5.4.2 Recommendations for practice

1. Despite the fact that condom use has increased markedly in recent years in Kenya, its use has been improper and inconsistent, social marketers should aim at promoting proper and consistent condom use especially among the unmarried PLWHA
2. ART service providers such as the government and Civil Society Organization should be encouraged to undertake advanced training on VCT to better provide post test counselling.

5.4.3 Further research

Strong research is important in bringing the database that will help inform policy makers thus help re-engineer antiretroviral therapy programs. From the study, the following recommendations for further research were made:

1. Similar research should be carried out to establish the effects of ART on the sexual behaviour in resource stable settings so as to offer a basis for comparison.
2. Investigations are required to establish the effectiveness of VCT services in Kibera slums.

REFERENCES

- Avina S., and Susan K. (2004).** Examining Adherence and Sexual Behavior Among Patients on Antiretroviral Therapy in India. Horizons/Population Council and Stanley Luchters of the International Centre for Reproductive Health.
- Avina S., Susan L., Geibel S., Munyao P., Kaai S., Shikely K., Mandaliya K., Van Dam J., Temmerman M. (2006).** International AIDS Conference. Toronto.
- Brent W., Barbara N., George K., Deo S., Anthony R. (2001).** Evaluation Of A Home-Based Voluntary Counselling And Testing Intervention In Rural Uganda.
- Brockerhoff M., Brennan E. (1998).** The Poverty of Cities in Developing Regions. Population and Development Review, Vol. 24 (1) March; 75-114.
- Bunnell R. (2006).** Changes in sexual behaviour and risk of HIV transmission after two years of antiretroviral therapy and prevention interventions in rural Uganda.
- Carrieri M. Rey D., Tremolieres F., Mechali D., Obadia Y., Moatti J. (2003).** Impact of antiretroviral therapy on inconsistent condom use with occasional partners in French HIV-positive drug user women. Regional Center for Disease Control (ORS PACA), Marseille, France.
- CDC (1994).** Revised classification system for HIV infection and expanded surveillance case definition for AIDS among adolescents and adults.
- Communicable Disease Surveillance Centre (2002).** AIDS and HIV infection in the United Kingdom. in CDR Weekly.
- Crepaz N., Hart, T., Marks, G. (2001).** Highly active antiretroviral therapy and sexual risk taking. JAMA: 292: 224 – 236
- Crepaz N., Hart, T., Marks, G. (2002).** Highly active antiretroviral therapy and sexual risk taking. JAMA: 292: 224 – 236
- Crepaz N, Hart, T., Marks, G. (2004).** Highly active antiretroviral therapy and sexual risk taking. JAMA: 292: 224 – 236
- Esmeralda M. (2005).** Clients' perceptions of HIV/AIDS voluntary counselling and testing (VCT) in Mozambique. Eduardo Mondlane University, Maputo, Mozambique. Training in Sexual Health Research, Geneva
- Fisher A., A, Laing J. E., Town Send, J.W. (1998).** A hand book for family planning operations, research design. Second edition population council. Nairobi.

Gall J. P., Bosch W., Gal, M. D. (1996) education research (6th edition). Longman. New York.

Geoff P., Garnett B., Nicholas C., Grassly, Roy M.A. (2002). Antiretroviral therapy to treat and prevent HIV/AIDS in resource-poor settings. Department of Infectious Disease Epidemiology. Faculty of Medicine Imperial College of Science, Technology and Medicine London University

Gibier de Souza L., Vergara A., Cardoso J., Manjate R.M., Barreto A. (2002). Using Moh-ngo partnership to implement voluntary counselling and testing in Mozambique, IAS, 14th International AIDS Conference Barcelona.

Government of Kenya (2002). Kenya national development plan. Government printers (2002-2008).

Government of Kenya (1999). Kenya National Population Census.

Government of Kenya (2001). AIDS in Kenya. NACC

Government of Kenya (2004). NASCOP. Government printers

Government of Kenya (2005). AIDS in Kenya. Government printers

Jean D., michel J. (1991). Socioeconomic determinants of sexual behaviour and condom use.

Kalichman S. C., Nachimson D., Cherry C., Williams E. (1998). AIDS treatment advances and behavioural prevention setbacks: Preliminary assessment of reduced perceived threat of HIV-AIDS.

Kenya demographic health survey (2003). Government of Kenya.

Kenya AIDS Indicator Survey (2007). Government of Kenya.

Kyuvi A. (2006). Universal offer of HIV testing to medical patients increases access to AIDS treatment: the experience of a district hospital in Kenya

Matrix Development Consultant (1993). Nairobi's informal settlements: an inventory, USA; USAID/ DISC.

Ministry of Health (2001). National Condom Strategy. Government printers.

Ministry of health (2003). Kenya National Clinical Manual for ARV Providers: a concise and practical guide to ARV provision. 1st ed.

Ministry of health (2005). AIDS in Kenya. Government printers

Mukiri J. (2002). The use of family planning methods among women of child-bearing age. a case study of Kibera slum

Mugenda, O.M., Mugenda, A.G. (1999). Research methods. Quantitative and qualitative approaches. ACTS press. Nairobi, Kenya.

National AIDS control council, (2001). Government of Kenya

National AIDS control council, (2003). Government of Kenya

National AIDS and STD control program. (2003). Government of Kenya

National AIDS and STD control program. (2004). Government of Kenya

National AIDS and STD control program. (2005). Government of Kenya

Odutolu O. (2003). Convergence of behaviour models for AIDS risk reduction in sub-Saharan Africa. *International Journal of Health Planning and Management* 20(3):239-252

Pallela F. D., Boric; K.M., Moorman A.C., loveless M.O., Fuher J., Stten G.A. (1998). Declining morbidity and mortality among patients with advanced human immunodeficiency virus infection in *Engl J Med*; 338: 852-860.

Palmer R., Bor R. (2001). The challenges to intimacy and sexual relationships for gay men in HIV sero discordant relationships: A pilot study, *Journal of Marital and Family Therapy*, 27(4), pp 419 - 431

Piwoz E. G., Elizabeth A. P. (2000). HIV/AIDS and nutrition a review of literature and recommendations for nutritional care and support in sub-Saharan Africa.

Piwoz E. G., Elizabeth A. P. (2002). HIV/AIDS and nutrition a review of literature and recommendations for nutritional care and support in sub-Saharan Africa.

Piwoz E. G., Elizabeth A. P. (2003). HIV/AIDS and nutrition a review of literature and recommendations for nutritional care and support in sub-Saharan Africa.

Stall, R., Purcell, D.W. (2000). Intertwining Epidemics: A review of research on Substance use among men who have sex with men and its connection to the AIDS epidemic. *AIDS and Behaviour*, 4, 2, 181–192.

Stolte I., Dukers N., Geskus R., Coutinho R.A., De Wit J. (2004). Homosexual men change to risky sex when perceiving less threat of HIV/AIDS since availability of highly active antiretroviral therapy: a longitudinal study.

Sweat M., Gregorich S., Sangiwa G., Furlonge C., Balmer D., Kamenga C., Grinstead O., Coates T. (2000). Cost-effectiveness of voluntary HIV-1 counselling and

testing in reducing sexual transmission of HIV-1 in Kenya and Tanzania. *Lancet*, 356(9224):113-21.

UNAIDS (1998). Progress report on the global response to the HIV/AIDS epidemic.

UNAIDS (2002). Reports on the global HIV/AIDS epidemic 3:190.

UNAIDS/WHO (2001). AIDS Epidemic Update: December (2001). (Joint United Nations Programme on HIV/AIDS (UNAIDS), Geneva, Switzerland.

UNAIDS (2003). Progress report on the global response to the HIV/AIDS epidemic pg 3-72.

UNAIDS (2005). Progress report on the global response to the HIV/AIDS epidemic.

UNAIDS/WHO (2008). AIDS epidemic update. Geneva. Page 13.

UN-HABITAT, (2002). The plight of Nairobi slum dwellers. Saturday Nation, Kenya.

UNAIDS, UNICEF, and USAID. 2004. *Children on the brink 2004: a joint report of new orphan estimates and a framework for action.* New York: United Nations Children's Fund.

Van den van P, Kippax, Knox, S Prestage, G, Crawford, J. (2002). HIV treatments optimism and sexual behaviour among gay men in Sydney and Melbourne. *AIDS* 13: 2289-2294.

Van de Ven, P., Mao, L., Fogarty, A., Rawstone, P, Crawford, J., Prestage, G., Grulich, A., Kaldor, J., Kippax, S., (2005). Undetectable viral load is associated with sexual risk taking in HIV sero discordant gay couples in Sydney. *AIDS* 19: 179 – 184

WHO (2003). AIDS images of the epidemic. Geneva pg 45-60.

WHO (2004). Kenya epidemiological facts sheet on HIV/AIDS and sexually transmitted infections. Pg 12-14.

WHO (2005). Investing in a comprehensive health sector response to HIV/AIDS – Scaling up treatment and accelerating prevention.

World Bank, (1997). Confronting AIDS: public priorities in a global epidemic. New York. Oxford press university.

Zulu, E. M., Dodoo F., Chika-Ezeh A. (2002). "Sexual risk-taking in the slums of Nairobi, Kenya, 1993-8." *Population Studies*. 56(3):311-23.

APPENDICES

APPENDIX 1: INTERVIEW CONSENT FORM.

This consent form must be signed by the clients to show willingness to participate in the study.

I am a student at Kenyatta University from the school of health sciences. I am carrying out a research on the **effect of Antiretroviral Therapy on the sexual behaviour among PLWHA on ART**. You have been chosen one of the participants of this study. Please assist me by answering the questions as accurately as possible. There will be confidentiality in the information given. It will be used for academic purposes only

Thanks for your cooperation.

I, the undersigned, agree to participate in the study.

Signature

Date

Serial number of respondent

.....

APPENDIX 2: QUESTIONNAIRE

INSTRUCTIONS

The questionnaire has been divided into various sections addressing the following issues: patients background information, socio-economic characteristics, risky behaviour, perception of ART, and intervention.

INFORMANT NUMBER.....

INTERVIEWER.....

DATE.....

SECTION ONE: socio-demographic information

Q1.1 which year were you born? Age in completed years.....

Q1.2 what is your gender? Male [] Female []

Q1.3 Current marital status

1) Married []

2) Single []

3) Windowed []

4) Separated []

5) Divorced []

Q1.4 If married type of marriage

1) Monogamous []

2) Polygamous []

Q1.5 what is your level of education?

1) None []

2) Primary []

3) Secondary []

4) University []

5) Tertiary

Q1.6 which ethnic group do you belong to?.....

Q1.7 which religion do you belong to?

1) Christian

2) Muslim

3) Buddhist

4) Hindu

5) Other specify

Q1.8 From which organization do you get you ART services?

1) MSF

2) AMREF

3) Other (specify)

SECTION TWO: Socio-economic status information

Q2.1 What is your occupation?

1) None

2) Salaried employment

3) Self employment

4) Other specify

Q2.2 Do you have any other sources of income other than employment?

1) Yes

2) No

Q2.3 If yes which one(s) (tick as appropriate)

1) Business enterprise

- 2) Farming
- 3) Support from relatives
- 4) Other specify

Q2.4 What is your average monthly income?

- 1) Less than 2000 ksh
- 2) 2000-5000
- 3) More than 5000 ksh
- 4) none

Q2.5 does your health status affect your daily activities?

- 1) Yes
- 2) No

Q2.6 If yes how many times have you failed to go to work due to illness in the last one month?

- 1) Never
- 2) Once
- 3) Twice

Q2.7 Has any of your children dropped out of school in the last one month?

- 1) Yes
- 2) No

Q2.8 If yes what where the reasons for drop out? (More than one answer allowed)

- 1) Lack of fees
- 2) To provide care to ailing relatives
- 3) Refusal to go to school
- 4) Un conducive school environment
- 5) To substitute family income
- 6) Don't know

Q2.8 Has your health status improved ever since you were started on ART?

- 1) Yes 2) No

SECTION THREE: Relates to risky sexual behaviour.

Q3.1 How well informed do you think you are in about HIV/AIDS?

- 1) Good
 2) Fair
 3) Poor

Q3.2 Indicate the risky behaviour which you think enhance chances of getting HIV infection (more than one answer allowed)

- 1) Premarital sex
 2) Prostitution e.g.(many sexual partners)
 3) Not using condom
 4) Cultural believes and practices e.g. (wife inheritance, female genital mutilation)
 5) Inadequate knowledge and information
 6) Drug abuse
 7) Homosexuality

Qs 3.3 to 3.7 to be answered by those whop are currently married only

Q3.3 Does your spouse know his or her status?

- 1) Yes 2) No

Q3.4 If yes do you use a condom every time you have sex?

- 1) Yes 2) No

Q3.5 Have you had sex with another person other than your spouse in the last 12 months?

- 1) Yes 2) No

Q3.6 If yes with how many different partners?

- 1) One
 2) Two

3) Three

4) More than three

Q3.7 Did you use a condom in all those encounters?

1) Yes 2) no 3) some

Qns 3.8 to 3.9.1 to be answered by those who are single, divorced or widowed only

Q3.8 Have you had any sexual partners in the past 12 months?

1) Yes 2) No

Q3.9 If yes, how many sexual partners have you had in the last 12 months?

1) One

2) Two

3) Three

4) More than three

Q3.9.1 If the answer is yes in the 3.8 above then did you use a condom in all these encounters?

1) Yes 2) No 3) some

Q3.9.2 have experienced any of the following problems in the last three months

1) Bad smelling discharge from the private parts

2) Usual discharge

3) Genital sore or wound

4) None

Q3.9.3 Do you know any cultural beliefs in your community, which promotes the spread of HIV/AIDS?

1) Yes 2) No

Q3.9.4 If yes which ones.....

SECTION FOUR: Knowledge and perception of ART

Q4.2What is ART all about? Explain.....

.....
.....

Q4.2 how well informed do you think you are about ART?

- 1) Excellent []
- 2) Good []
- 3) Fair []
- 4) Poor []

Q4.3What do you like the most about the ART program?.....

.....
.....

Q4.4What do you like about the program?.....

.....
.....

Q4.5 In your opinion do you think ART programmes are influencing the sexual behaviour of people living with HIV/AIDS in general in Kibera?

- 1) Yes []
- 2) No []

SECTION FIVE: INTERVENTION

Q5.1 suggest possible ways through which ART program can be improved to ensure efficiency and effectiveness.....

.....
.....
.....

Q5.2 what measures do you think are useful in changing the sexual behaviour of kibera residents to help curb spread of HIV?

- 1) Improving education and awareness on sexuality and reproductive health towards behavioural change[]
- 2) Promoting abstinence before marriage[]

- 3) Promoting faithfulness to one partner[]
- 4) Promoting VCT []
- 5) Promoting use and availability of condoms[]
- 6) Controlling other STIs []
- 7) Avoiding risky cultural practices such as wife inheritance []
- 8) Reducing poverty []
- 9) Use of antiretroviral drugs to prevent mother to child transmission

Q5.3 any additional interesting comments.....
.....
.....

Thank you

6) Suggest possible ways through which the intervention can be made more efficient and effective.....

7) Any additional interesting comments.....

Thank you

APPENDIX 3: KEY INFORMANT INTERVIEW SCHEDULE

- 1) What do you like the most about the ART program?.....
.....
.....
- 2) What do you like about the program?.....
.....
.....
- 3) In your opinion do you think ART programmes are influencing the sexual behaviour of people living with HIV/AIDS in general in Kibera?
1) Yes [] 2) No []
- 4) If yes explain how it affects the sexual behaviour of residents.....
.....
.....
- 5) What measures do you think are useful in changing the sexual behaviour of Kibera residents to help curb spread of HIV?
.....
.....
- 6) Suggest possible ways through which ART program can be improved to ensure efficiency and effectiveness.....
.....
.....
- 7) Any additional interesting comments.....
.....

Thank you

APPENDIX 4: GUIDE FOR FOCUS GROUP DISCUSSION

- 1) Do you think ART is helping to change the behaviour of people living in Kibera slums?
- 2) Which factors do you think contribute to irresponsible sexual behaviour among both the affected and infected people with HIV/AIDS in Kibera slums?
- 3) What factors do you think influence condom use among PLWHA who are married?
- 4) Despite concerted effort to reduce the spread of HIV/AIDS, the prevalence still seems to be high in Kibera. What do you think contributes to this scenario?
- 5) Suggest one of the measures that can be put in place to help curb the spread of HIV/AIDS.
- 6) How can ART services be improved to ensure efficiency?

Thank you

Dear Madam

RE: RESEARCH AUTHORIZATION

Following your application for authority to conduct research on the impact of antiretroviral therapy on the sexual behavior among people living with HIV/AIDS in Kibera slums, Nairobi, this is to inform you that you have been authorized to carry out your research in Kibera in Nairobi for a period ending 30th September, 2015.

You are advised to report to the Provincial Commissioner, the Provincial Director of Education, Nairobi and the District Officer, Kibera prior to embarking on your research project.

Upon completion of your research project you are expected to submit the research findings to this Office.

Yours faithfully


M. O. UNDIKI

PERMANENT SECRETARY

APPENDIX 5: RESEARCH AUTHORIZATION BY MoEST

MINISTRY OF EDUCATION, SCIENCE & TECHNOLOGY

Telegrams: EDUCATION", Nairobi

Fax No.
Telephone: 318581
When replying please quote



REPUBLIC OF KENYA

JOGOO HOUSE
HARAMBEE AVENUE
P. O. Box 30040
NAIROBI
KENYA

MOEST 13/001/35C 562/2

28th November, 2005

**Beatrice Akinyi
Kenyatta University
P.O. BOX 43844
NAIROBI**

Dear Madam

RE: RESEARCH AUTHORIZATION

Following your application for authority to conduct research on "the effect of anti-retroviral therapy on the sexual behavior among people living with HIV/AIDS in Kibera slums, Nairobi, this is to inform you that you have been authorized to carry out research in Kibera in Nairobi for a period ending 30th September, 2006.

You are advised to report to the Provincial Commissioner, the Provincial Director of Education, Nairobi and the District Officer, Kibera before embarking on your research project.

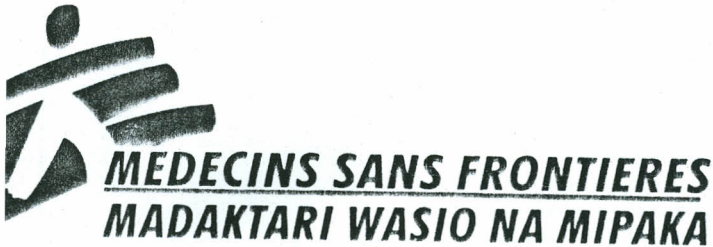
Upon completion of your research project you are expected to submit two copies of your research findings to this Office.

Yours faithfully


M. O. ONDIEKI

FOR: PERMANENT SECRETARY

APPENDIX 6: RESEARCH AUTHORIZATION BY MSF-BELGIUM

**MSF - BELGIUM**

Suguta Road
Off Mugoiri Rd.,
Kileleshwa
P. O. Box 38897, Nairobi
Tel: (254) 2 570021/570025
572094/577145
Fax: (254) 2 572157/573314
E-mail: kenya.nairobi@msf.be

25th November 2005

TO WHOM IT MAY CONCERN

Dear Sir / Madam,

RE: RESEARCH STUDY BY BEATRICE A. OTIENO

The bearer of this letter is conducting an educational research study on "The impact of Antiretroviral Therapy on the sexual behaviour among people living with HIV/AIDS in Kibera slums". This is not an MSF study but MSF agreed to facilitate access to patients who are can volunteer to be interviewed for the purpose of the study.

The interviews should take place as best as possible outside the clinic. MSF staff should not spend time on the interview process but can do so when required to facilitate and answer few questions outside working hours.

Thank you.

Olivier Bluteau
Field Coordinator, HIV/AIDS Programme
MSF - Belgium

APPENDIX 7: MAP OF KIBERA SLUM, NAIROBI

