

FACTORS AFFECTING ADHERENCE TO HIV ANTI-RETROVIRAL THERAPY
AMONG HIV POSITIVE ADULTS IN KIBRA, NAIROBI COUNTY, KENYA.

by

Susan N. Kahema

A thesis presented to the School of Human and Social Sciences

of

Daystar University
Nairobi, Kenya

In partial fulfillment of the requirements for the degree of

MASTER OF ARTS
in Counseling Psychology

June 2020

APPROVAL

FACTORS AFFECTING ADHERENCE TO HIV ANTI-RETROVIRAL THERAPY
AMONG HIV POSITIVE ADULTS IN KIBRA, NAIROBI COUNTY, KENYA.

by

Susan N. Kahema
16-0333

In accordance with Daystar University policies, this thesis is accepted in partial fulfillment of the requirements for the Master of Arts degree

Date:

Susan Muriungi, PhD,
1st Supervisor

Naomi James, PhD,
2nd Supervisor

Susan Muriungi, PhD,
HoD, Counseling Psychology

Kennedy Ongaro, PhD,
Dean, School of Human and Social Sciences

Copyright © 2020 by Susan N. Kahema

DAYSTAR UNIVERSITY

DECLARATION

FACTORS AFFECTING ADHERENCE TO HIV ANTI-RETROVIRAL THERAPY
AMONG HIV POSITIVE ADULTS IN KIBRA, NAIROBI COUNTY, KENYA.

I declare that this thesis is my original work and has not been submitted to any other college or university for academic credit.

Signature _____

Date

Susan N. Kahema
16-0333

ACKNOWLEDGEMENTS

First, special thanks go to my Almighty God for giving me strength, discipline, and good health to pursue my postgraduate studies, especially throughout the journey of writing this thesis. Secondly, I am grateful to my employer, Amani Counselling Centre and Training Institute, for allowing me to undertake my postgraduate program.

Thirdly, I recognize the contribution of my supervisors, Dr. Susan Muriungi, and Dr. Naomi James, and the Dean, School of Human and Social Sciences, Dr. Kennedy Ongaro, for their unwavering support. I sincerely thank Ms. Jane Wambua-Yobera, Daystar University, for her support and valuable guidance. Much appreciation to my counselors who supported me throughout the entire process. It has not been easy, especially with my failing health, but the faculty team of Daystar, my counselors, family, and friends have supported me immensely. To my colleagues in the master's program, Alphina, Mercy, Margaret, Kevin, Esther, Gladwell, and Sarah, to name but a few, I say thank you for the support and encouragement.

Fourthly, my appreciation goes to Dr. Chakaya, Dr. Wambua, Dr. Kibwana, Dr. Kigamwa, Dr. Kigera and Prof. Oyoo, who worked tirelessly to ensure my health, was manageable throughout the study period. You did not get tired of the many phone calls, consultations, and hospital visits.

Finally, I am entirely grateful to my family and friends for the support and moral encouragement during my thesis journey. Moments of giving up and depression were evident, but your love, support, and encouragement pushed me forward.

May God entirely bless all of you and grant you the desires of your hearts.

TABLE OF CONTENTS

APPROVAL	ii
DECLARATION	iv
ACKNOWLEDGEMENTS	v
LIST OF TABLES	viii
LIST OF FIGURES	ix
LIST OF ABBREVIATIONS AND ACRONYMS	x
ABSTRACT	xi
DEDICATION	xii
CHAPTER ONE	1
INTRODUCTION AND BACKGROUND OF THE STUDY	1
Introduction	1
Background to the Study	2
Statement of the Problem	6
Purpose of the Study	8
Objectives of the Study	8
Research Questions	8
Justification for the Study	9
Significance of the Study	9
Assumptions of the Study	10
Scope of the Study	10
Limitations and Delimitations of the Study	10
Definition of Terms	13
Summary	13
CHAPTER TWO	14
LITERATURE REVIEW	14
Introduction	14
Theoretical Framework	14
General Literature Review	23
Empirical Literature Review	43
Conceptual Framework	45
Discussion	45
Summary	47
CHAPTER THREE	48
RESEARCH METHODOLOGY	48
Introduction	48
Research Design	48
Population	49
Target Population	49
Sample Size	50
Sampling Techniques	51
Data Collection Instruments	52
Data Collection Procedures	54
Pretesting	55
Data Analysis Plan	57
Ethical Considerations	57
Summary	59

CHAPTER FOUR.....	60
DATA PRESENTATION, ANALYSIS, AND INTERPRETATION	60
Introduction	60
Analysis and Interpretation	60
Summary of Key Findings	89
Summary	90
CHAPTER FIVE	91
DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS.....	91
Introduction	91
Discussions of Key Findings.....	91
Conclusion.....	98
Recommendations	99
Recommendations for Further Research	101
REFERENCES	102
APPENDICES	109
Appendix A: Introductory Letter to the Respondents	109
Appendix B: Consent Form for the Respondents.....	110
Appendix C: Questionnaire	111
Appendix D: Ethical Clearance.....	121
Appendix E: Research Permit	122
Appendix F: Approval Letter from the Ministry of Education	123
Appendix G: Approval Letter from Nairobi City County.....	124
Appendix H: Plagiarism Report	125

LIST OF TABLES

<i>Table 2.1: Global Statistics for HIV/AIDs in 2016.....</i>	<i>23</i>
<i>Table 2.2: National HIV Estimates for 2017</i>	<i>24</i>
<i>Table 4.1: Respondents' Socio-demographic Characteristics.....</i>	<i>60</i>
<i>Table 4.2: Frequency, Duration, Distance and Cost Incurred by the Respondents</i>	<i>62</i>
<i>Table 4.3: Perception of Clinic Characteristics by the Respondents</i>	<i>64</i>
<i>Table 4.4: Reasons for Disclosure and Non-disclosure of HIV Status.....</i>	<i>66</i>
<i>Table 4.5: Ways Respondents were Treated Differently by Family Members because of HIV Positive Status.....</i>	<i>67</i>
<i>Table 4.6: Benefits Gained from Using ARV.....</i>	<i>68</i>
<i>Table 4.7: ARVs and HIV Knowledge.....</i>	<i>69</i>
<i>Table 4.8: Ever Skipped taking ARV Medication</i>	<i>72</i>
<i>Table 4.9: Counseling, Alternative Drugs and Alcohol Use</i>	<i>74</i>
<i>Table 4.10: Alcohol Risk Level Intervention Score</i>	<i>78</i>
<i>Table 4.11: Prevalence of Depression.....</i>	<i>79</i>
<i>Table 4.12: Socio-demographic Factors Associated with ARV Non-adherence</i>	<i>80</i>
<i>Table 4.13: Frequency, Duration, Distance, Service Received, & Cost Associated with Non-adherence to ARVs</i>	<i>82</i>
<i>Table 4.14: HIV & ARVs Knowledge Influences Associated with ARVs Non-adherence</i>	<i>83</i>
<i>Table 4.15: Psychosocial Factors Associated with ARVs Non-adherence.....</i>	<i>85</i>
<i>Table 4.16: Independent Predictors of Non-adherence to ARVs.....</i>	<i>86</i>
<i>Table 4.17: Socio-demographic Factors Associated with Depression.....</i>	<i>87</i>

LIST OF FIGURES

<i>Figure 2.1: Conceptual Framework</i>	44
<i>Figure 4.1: Identity of Persons Disclosed to Other than HCWs</i>	65
<i>Figure 4.2: Proportion of Respondents who Missed Appointment at the Clinic</i>	70
<i>Figure 4.3: Reasons for Missing Clinic Appointment</i>	71
<i>Figure 4.4: Reasons for Skipping Medication</i>	73
<i>Figure 4.5: Motivation for Use of ARV Medications</i>	75
<i>Figure 4.6: Main Challenges in Using ARV Medications</i>	76
<i>Figure 4.7: Ways of Dealing with Challenges of Taking ARVs</i>	77
<i>Figure 4.8: Prevalence of ARVs Non-Adherence</i>	79

DAYSTAR UNIVERSITY

LIST OF ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
AUDIT	Alcohol Use Disorders Inventory Test
ART	Anti-retroviral Therapy
ARV	Anti-retroviral
BDI	Beck Depression Inventory
CBT	Cognitive Behavioral Therapy
EMTCT	Elimination of Mother to Child Transmission
HBM	Health Belief Model
HCW	Health Care Worker
HIV	Human Immune Deficiency Virus
HAART	Highly Active Antiretroviral Therapy
KAIS	Kenya AIDS Indicator Survey
NACC	National AIDS Control Council
NACOSTI	National Commission for Science, Technology and Innovation
NACADA	National Authority for the Campaign Against Alcohol and Drug Abuse
NASCOP	National AIDS and STI Control Program
PLWH	People Living with HIV
PLWHA	People Living with HIV and AIDS
UNAIDS	Joint United Nations Programme on HIV/AIDS
WHO	World Health Organization
SPSS	Statistical Package for the Social Sciences

ABSTRACT

The purpose of this study was to investigate factors affecting adherence to Human Immune Deficiency Virus (HIV) anti-retroviral therapy (ART) among HIV positive adults in Kibra, Nairobi County, Kenya. Specifically, the study sought to explore factors that affect adherence to HIV antiretroviral (ARV) treatment, assess the psychological implication of ART non-adherence, and determine the socio-demographic characteristics of ART non-adherence among HIV positive adults in Kibra. The study embraced a descriptive survey design and the target population comprised HIV positive adults (above 18 years old) registered on ART in two treatment Centres within Kibra. A sample of 60 HIV positive adults was selected through purposive sampling. Data was collected through self-administered questionnaires, Beck Depression Inventory (BDI), and Alcohol Use Disorders Inventory Test, and analyzed using the Statistical Package for the Social Sciences (SPSS), version 23.0. The study established that 82.4% of the respondents took medication twice daily and more than one pill, thus, non-adherent, while 23.3% were taking medication once a day, thus, adherent. Further, 67% of the respondents indicated that they skipped taking ARVs because of cost-related issues among other factors. Depressed clients were likely to be non-adherent at 65.5% compared to 16.1% that were not depressed. Critically, gender affected adherence to ARVs drugs since 51.4% of the males were non-adherent compared to 24.0% of the females that were non-adherent. Similarly, clients with knowledge of HIV, ART, and positive perception towards efficacy of ART were more adherent than those without knowledge. Therefore, the study recommends the need for enhancement of awareness on HIV and ART efficacy.

DEDICATION

This thesis is dedicated to my late son, Babu Magwaro Rioba. Sickness and intense pain did not prevent you from making my world brighter with your smile. Your laughter, songs of encouragement, and hope remain in my soul, giving me the strength to soldier on. I have learned to find strength and beauty in my broken vessels, which continue to be restored with precious memories. I face health challenges with strength and boldness because you taught me never to give up. Indeed, there is hope in the storm. Your memories live in me.

DAYSTAR UNIVERSITY

CHAPTER ONE

INTRODUCTION AND BACKGROUND OF THE STUDY

Introduction

This chapter provides the background information to the study ranging from global, regional, and local circumstances on HIV drug adherence. Other areas covered in this chapter include the statement of the problem that this study sought to address, the purpose of the study, the research objectives and questions, the justification, the assumptions, the scope, and the limitations and delimitations of the study. Lastly, the Chapter provides the definitions of the key terms that were used in this study.

The HIV and AIDS epidemic is one of the life-threatening humanitarian catastrophes of all times, whose impact lingers for a long time. AIDS was first clinically found in June 1981 by the Centre for Disease Control (CDC) in the United States of America (USA) (World Health Organization [WHO], 2008). As indicated by the World Health Organization (WHO), AIDS is the fourth leading cause of death worldwide and the main source of death in sub-Saharan Africa (Chepkwony, 2004). The Kenya AIDS indicator survey's decades report of 2007 expressed that the first case of AIDS in Kenya was identified and recorded in 1984. By 2016, individuals infected HIV were projected at 36.7 million worldwide (Joint United Nations Programme on HIV/AIDS [UNAIDS], 2017).

Joint United Nations Programme on HIV/AIDS (UNAIDS, 2017) estimated that 19.5 million HIV positive clients worldwide were accessing Anti-retroviral Therapy (ART) in 2017 as compared to an estimate of 100,000 HIV positive clients who enrolled on treatment by the end of 2003 and approximately 2 million by December 2007. Albeit perceptible increment number of those getting ARV therapy worldwide, has moved

from access of treatment to adherence in view of different issues not restricted to severe and complex regimens, unfavorable symptoms, costs identified with treatment plans, liquor abuse, and dysfunctional behaviors among other social, monetary and mental variables (WHO, 2008).

Adherence to ART is a prevailing forecaster for existence of HIV positive clients (WHO, 2010). ART guidelines adherence to ART includes clients' aptitude to follow a strict treatment plan, nutrition, fluid, reduce reinfection rates, and different prescriptions (WHO, 2010). According to Paterson (2009) 95% adherence level to ARV treatment, normally alluded to as near perfect adherence, is depicted as the least level fundamental to get and maintain viral load suppression, reduce infection rates and upgrade immune status.

Background to the Study

HIV and AIDS Prevalence

Globally, 34 million people were infected with HIV towards the end of 2011 (UNAIDS, 2012). A projected 0.8% of adults aged 15-49 years worldwide are infected with HIV. More than 25 million individuals are living with HIV and AIDS in sub-Saharan Africa, making it the most affected region on the planet. In South Africa, statistics show that 5.6 million people are living with HIV and AIDS, Uganda 1.4 million people, Tanzania 1.6 million people, while in Kenya 1.6 million people are living with HIV and AIDS (UNAIDS, 2012). Worldwide patterns show that there has been a drop recently regarding the number of adults infected with HIV/AIDS, a drop of 11% somewhere between the years 2010 and 2016, as connected to a drop of just 8% between the year 2010 and 2015 (UNAIDS, 2017). The decline has been attributed to free and easy accessibility to ART in most parts of the world.

In Kenya, recent results from National AIDS & STI Control Programme (NAS COP, 2018) estimated that 1.5 million individuals are living with HIV, representing approximately 105,200 children below 15 years of age and 1,388,200 adults above 15 years of age. Kenya AIDS Indicator Survey (2007) indicated that 7.4% Kenyans aged between 15 and 64 years infected with HIV. By 2013, National AIDS and STI Control Program (NAS COP, 2014) estimated that 1.6 million adults and children in Kenya infected with HIV, out of which 5.1% of the total number of adults and adolescents infected with HIV and AIDS living in rural areas and 6.5% adults and adolescents are living in urban areas. According to NAS COP (2008) and KAIS (2007), HIV pervasiveness is most elevated in Nyanza at 13.9% urban and 18.3% rural. Different territories with commonness comparative or greater than nationwide inclination are; Nairobi at 9 %, Coast at 7.9 % and Rift Valley at 7.0% On the Kenya County HIV service delivery profiles, NAS COP (2011) indicated that Nairobi County had a prevalence of 5.2 %

National AIDS and STI Control Program (2014) noted that women are undoubtedly infected at 6.9% compared with men at 4.4%. Besides, women have greater HIV transcendence than males in both national and urban living arrangements. HIV affect more women in urban centers as 8.0% as compared to 6.2% at rural regions. Amongst men, pervasiveness is at 5.1% in urban regions compared with 3.9% at rural regions. Kenya's North Eastern region has bottom most HIV incidences in both rural and urban areas at 1.5% and 3.6% respectively. In any case, HIV occurrence is consistently advanced amongst females than males in all regions.

Additionally, Kenya's Nyanza region has the highest ladies' HIV prevalence at 16.1% and Nairobi and Coast regions have the second most elevated levels at 6%. North

Eastern and North-Rift regions have the most reduced HIV pervasiveness among ladies at 3.6% each. Nyanza has the most elevated male HIV prevalence at 13.9%, Nairobi is second at 3.8%, while North Eastern has the least at 0.8%.

Kibra, formally known as Kibera, is Nairobi's biggest slum and the second-biggest slum in Africa after Soweto in South Africa. This study was conducted in Kibra slum, which hosts people from different ethnic communities from all parts of Kenya and East Africa. The figure of individuals infected with HIV and AIDS in Kibra slum remains very high (Shorter & Onyancha, 1998). Most analysts suggested that the percentage of Kibra's population that is HIV positive is most certainly above the national average of 15-20% (Bodewes, 2005). It is impossible to know the true HIV prevalence in Kibra, because the population is transient. Nonetheless, Umande Trust (2007) estimated that 12 to 15% of Kibra's population is infected with HIV and AIDS. However, recent statistics by the Ministry of Health (MOH) and NASCOP indicated that by December 2018, there were 27,531 people living with HIV in Kibra of whom 27,358 are on ART (MOH & NASCOP, 2018)

United Nations Programme on HIV/AIDS (2011) stated there has been improved admission to HIV treatment throughout the years, prompting diminished HIV ailments and AIDS-related losses to insignificant levels ever since the pinnacle of the pandemic. Oyore (2005) ascertained that ART has successfully decreased the morbidity and mortality caused by HIV infection. Roughly, 95% or abundance levels of adherence are essential for fruitful treatment that incorporates viral burden concealment, improved insusceptible status, and easing back the ailment movement from HIV to AIDS status.

Antiretroviral (ARV) medications have been reported to reduce HIV replication and multiplication, thus enhanced the health status of the infected individual. In the perspective of treatment with drugs, WHO (2003) and Achappa et al. (2013) characterized adherence as capacity to monitor treatment plans, take prescription at endorsed occasions and frequencies, and track guidelines with respect to food and different prescriptions. Adherence is beneficial in lowering the viral load of the infected individual, and improving their immunity, thus leading to better health. Non-adherence, on the other hand, is linked with detectable viral loads, and decreasing CD4, which quickens the disease evolution leading to poor health and resulting in death.

Muthiani (2010) noted that about 2% of projected 160,000 People living with HIV /AIDS (PLWHA) who were on free ARVs in Kenya established resistance to first line treatment régime in the year 2007. It was forecast that an increasing number of PLWHA would require to be transferred from the first line to the second line ART regimens due to treatment failure. The risk of substantial drug resistance is factual, and significances critical. Kenya has excluded PLWHA from standard cost-sharing necessities for both anti-retroviral drugs and tuberculosis treatment. Nonetheless, PLWHA remains responsible for individual costs related with transport, nutritious sustenance, laboratory examinations, and treatment of opportunistic infections. Desclaux (2003) noted that the failure of PLWHA to accommodate the expenses of medication to treat infections remains a critical obstruction to ART adherence. Those who cannot afford such drugs end up dying from treatable illnesses.

Anti-retroviral therapy has significantly enhanced the health of many seropositive persons who otherwise would be deceased due to full-blown AIDS. Nevertheless,

treatment effectiveness relies on firm adherence, which is unfortunately faced by serious challenges by those receiving therapy. Due to various factors, a majority of those receiving ART are not able to adhere effectively to the therapy. According to the guidelines on ART by WHO (2010) adherence to ART involves the capacity to strictly monitor treatment strategy that entails taking medication at prearranged periods, regularities, subsequent guidelines regarding food, fluid, and other medication.

Statement of the Problem

Admission to ART has improved tremendously in sub-Saharan Africa. UNAIDS' (2017) fact sheet estimated that 19.5 million HIV positive individuals were accessing ART in 2017 worldwide as compared with an earlier estimation by WHO that 100,000 HIV positive clients were getting treatment by 2003 and above two million by December 2007. As indicated earlier, use of ART among patients has changed the clinical course of HIV ailment with a noteworthy decrease in sickness and death rates. Although there is noticeable increase number of those receiving Anti-retroviral Therapy, the current tests have moved from access of treatment to adherence because of diverse challenges not limited to complex regimens, adverse side effects, costs related to treatment plans, alcoholism, and mental illnesses among other social, economic and psychological factors (WHO, 2008).

In an investigation by Paterson (2009) a 95% adherence level of ARV treatment was accounted as the base level imperative to keep up viral burden concealment and improve insusceptible status. Tragically, adhering to a 95% endorsed routine is a provoking objective accomplishing and maintaining. Hence, the drawn-out

accomplishment of treatment plans in asset-restricted settings requires building up levels and long-haul factors of adherence to ARV treatment.

Anti-retroviral therapy adherence is supreme to holistic management of HIV and AIDs. Non-adherence issues are reported, particularly in sub-Saharan Africa countries. HIV ART adherence has been affected by many factors that are both internal and external. It is critical to note that vast of the investigation on ART adherence has been piloted in the developed countries. The findings, however, cannot be replicated to the sub-Saharan physical, social and environmental settings to some extent, thus the need to study factors of ART adherence in sub-Saharan region. Therefore, it is paramount to have findings that suit the African context and, most importantly, regional geographical settings such as the area under this study to offer and enhance relevant intervention.

Prominently, in spite of facts that reviews have been directed, concern of non-adherence to ART keeps on being accounted for. Additionally, despite ART being provided freely and being easily accessible within many health facilities globally and locally, achieving optimum benefits from the treatment is still a significant challenge. Many individuals on treatment are not observing the treatment due to various reasons ranging from adverse drug side effects, high drug count, stigmatization, cost, cultural beliefs, nutrition, and fluid restrictions, depression, and alcoholism, among others. Due to such factors, some clients have skipped taking drugs and others stopping altogether. Because of skipping or stoppage of ART consumption, HIV positive individuals continue to remain susceptible to opportunistic infections, increased viral load, drug resistance, and weakened immunity leading to the development of full-blown AIDS and ultimately AIDS-related deaths.

This study therefore intended to connect the existing gap in investigations on factors affecting HIV adherence and also determine the variables that impact ART adherence. This is with the intent of offering recommendations on strategies to help battle the issue of non-adherence.

Purpose of the Study

The purpose of this study was to investigate the factors affecting adherence to HIV anti-retroviral therapy among HIV positive adults in Kibra slum, Nairobi County, Kenya.

Objectives of the Study

The study utilized three objectives which empowered the researcher in discovering the variables influencing adherence to HIV anti – retroviral therapy among HIV positive adults in Kibra, Nairobi County, Kenya.

1. To explore factors that affected adherence to ART among HIV positive adults in Kibra, Nairobi County, Kenya.
2. To assess the psychological implications of ART non-adherence among HIV positive adults in Kibra, Nairobi County, Kenya.
3. To determine socio-demographic characteristics of ART non-adherence among HIV positive adults in Kibra, Nairobi County, Kenya.

Research Questions

The study used the following research questions in exploring the factors influencing adherence to HIV anti – retroviral therapy among HIV positive adults in Kibra, Nairobi County, Kenya.

1. What factors affected ART amongst HIV positive adults in Kibra, Nairobi County?
2. What were the psychological implications of ART non-adherence amongst HIV positive adults in Kibra, Nairobi County?
3. What were the socio-demographic characteristics of ART non-adherence amongst HIV positive adults in Kibra, Nairobi County?

Justification for the Study

Health-related concerns and deaths among the HIV positive people in the county have been connected to ART non-adherence. Despite provision for free ART treatment by the Kenyan government and private sectors in Kibra, ART adherence among PLWHA had not been fully realized. This is due to both patient and treatment facilities factors. If these factors are not established, then full benefits of ART are not fully achieved. In return, this leads to increased numbers of drug-resistant levels, increase HIV infection, reduced CD4 counts levels, increased in opportunistic diseases, and, most importantly, HIV related deaths. This study sought to find out the factors influencing ART adherence and offer relevant recommendations.

Significance of the Study

The expected outcome of the finding was by exploring and examining the factors influencing adherence to HIV anti-retroviral therapy among HIV positive adults in Kibra, Nairobi County, Kenya, and the findings would be useful to PLWHA individuals who are facing challenges with ART Adherence. At the same time, the study would enrich already existing knowledge and information on ART Adherence. Moreover, the findings would be helpful to service providers such as psychologists, clinicians, and other care providers working with PLWHA who were on ART therapy.

Most importantly, the findings would be beneficial to policymakers, government agencies such as, National AIDS and STI Control Program (NACADA) and National Authority for the Campaign Against Alcohol and Drug Abuse (NASCOP); non-governmental organizations (NGOs); faith-based organizations (FBOs); and other stakeholders who make informed decisions on strategies and interventions addressing HIV matters, most specifically on ART adherence.

Assumptions of the Study

The study was conducted with the following assumptions:

1. Information given by respondents on HIV anti-retroviral adherence would be accurate and truthful.
2. All respondents recruited for this study would be cooperative and would provide required information without any biasness.
3. Many individuals living with HIV and enlisted on ART were confronted with difficulties in adhering to ART treatment schemes.

Scope of the Study

Though it was clear that the problem under study remains a worldwide phenomenon, the researcher conducted this study in two health centres in Kibra. The participants were male and female HIV positive adults, who were receiving ART care and treatment in the two selected health facilities within Kibra. Most analysts suggests that the percentage of Kibra's population that is HIV positive is most certainly above the national average of 15-25% (Bodewes, 2005). As noted earlier, it was impossible to know the actual HIV prevalence rate in Kibra because the population is transient. The study area was selected due to its rapid extent of HIV and AIDS in the recent past.

Limitations and Delimitations of the Study

As indicated by Mugenda and Mugenda (2003), limitations refer to parts of the study that may contrarily influence the results and over which the researcher or investigator has no power. On the other hand, delimitation alludes to how the researcher intends to go round the impediments. The subsequent limitations were well-thought-out in this study:

1. Kibra being a slum dwelling, insecurity issues were expected. To overcome this limitation, the researcher enrolled research assistants who were conversant with the security dynamics in the region and, most importantly, ensured the local administration was aware and involved to some extent in the study.
2. Getting HIV positive adults to participate in the study was a significant limitation. Additionally, the sensitivity of HIV positive status and non-adherence raised anxiety among the respondents. In respect to the affectability of HIV seropositive status and non-adherence, the researcher guaranteed the respondents' privacy of the data accumulated. The respondents likewise agreed to participate in the study.
3. There were risks of not getting accurate and correct information from the respondents because of the alcohol usage in the region. In addition, drunkards in Nairobi County slums start their drinking spree very earlier in the morning. To curb this limitation of getting distorted information due to drunken status of the respondents, the researcher embarked on the data collection procedures very early in the morning.
4. The stigmatization and discrimination nature of HIV and AIDS disease made some PLWHA uncomfortable to participate publicly in the study. Stigmatization could also have led to some of the respondents to drop from the study. Regarding

stigmatization, the researcher ensured that the clients and their information were handled with the utmost confidentiality. Initials of their names and coding numbers were used to conceal the respondents' identity.

5. Most respondents expected financial compensation after participating in the study. To curb this, the researcher discussed the matter with the health centre leadership and the respondents at length before their participation in the study. They were made mindful that they would not be paid to partake in the exercise.

DAYSTAR UNIVERSITY

Definition of Terms

Affecting: Elements that impact the ways by which an HIV positive individual follows or fails to observe anti-retroviral therapy treatment.

Anti-retroviral therapy: Comprise administration of ARV drugs, counseling, nutrition guidance, prophylaxis and treatment of opportunistic infections.

Anti-retroviral drugs: Standard ARV treatments comprising a blend of ARV drugs to stifle the disease and reduce progression of HIV to AIDS and at the same time forestall the onward transmission of HIV.

Adherence: The capacity of a patient to monitor treatment plans; take medication at the recommended time and frequencies; and track laid down procedures such as lifestyles, food, and other medication.

HIV/AIDS: The general description is kept for this investigation, Human Immune deficiency Virus (HIV) and Acquired Immune Deficiency Syndrome (AIDS).

Non-adherence: Incapability of patients to follow treatment regime, take medication at prescribed times, and follow restrictions such as food and other medication.

Summary

This section has outlined the foundation of the investigation by highlighting on the problem statement, objectives and research questions, justification, importance, and assumption of the investigation. The limitations, delimitations, and definitions of terminologies utilized in the study have also been provided. The subsequent chapter covers theoretical framework, general and empirical literature review together with a conceptual structure of the study.

DAYSTAR UNIVERSITY

CHAPTER TWO

LITERATURE REVIEW

Introduction

This section covers past writing accessible on factors influencing HIV anti-retroviral therapy. A theoretic framework is deliberated, concentrating on two models and an all-inclusive general and empirical review highlighted. Lastly, the conceptual structure of the study is illustrated in an outline with a clarification given to improve understanding of the topic.

Theoretical Framework

A theoretic framework identifies models, which relate to the topic of investigation. In this study, several theories were used to enhance understanding of factors affecting adherence to HIV anti-retroviral therapy. Health belief model (HBM), cognitive behavioral theory (CBT), and gestalt theory were used as the overarching framework.

Health Belief Model

Health belief model is a social-psychological model, which endeavors to clarify and foresee an individual's health behavior through concentrating on perspectives, attitudes, and convictions an individual holds. According to Becker and Rosenstock (1997), the model was formed during the 1950s by Rosenstock to foresee how an individual will take explicit actions to escape ailment. Rosenstock accepted that to be healthy and to remain so is a target normal to all individuals. The HBM depends on three major significant parts, specifically, individual perceptions, modifying factors, and variables affecting wellbeing actions.

As noted by Becker and Rosenstock (1997), individual perceptions relate to two factors: susceptibility and severity. Perceived predisposition recognizes that when people believe they are in danger for an infection, they have higher odds of planning something to keep it from occurring, however in the event that patient do not see that they are in danger, they will do nothing. For this situation, an individual's belief that she/he is predisposed to HIV ailment and ultimately death, they will adhere to ARV treatment to prevent the disease progression. Perception may be impacted by components, for example, age, gender, social convictions, cultural beliefs, and personal attitudes (Becker & Rosenstock, 1997).

Perceived severity, on the other hand, relates to the seriousness, difficulties, and threats associated with a particular disease (Becker & Rosenstock, 1997). In this case, if a client becomes aware of the seriousness and consequences associated with disease progression and possible outcomes such as AIDS, hospitalization, loss of employment, severe opportunistic infections, and possible death, the client will take possible health interventions to advertise the risks. Relevant health actions in case of HIV disease are enrollment, and adherence to ART and change of risky behavior.

Becker and Rosenstock (1997) noted that modifying factors that impact a client's awareness towards taking a health action comprise age, gender, and marital status. According to the authors, regarding marital status, a single older patient has high chances of making relative health actions than a married older client. In this case, studies have shown that single HIV positive clients take positive health actions to ART adherence than married ones because they do not suffer stigmatization or rejection from their partner.

According to Becker and Rosenstock (1997), a key modifying factor in cues to action are occasions, individuals or things that move individuals to change behavior. Cues can either be internal or external. Inner cues concerning HIV disease will include and not limited to HIV symptoms, fatigue, and thoughts of an AIDS patient. External factors, on the other hand, are cues that may affect adherence to ART, such as stigmatizations, wrong or harmful advice from people, and possibly seeing an AIDS patient. These cues will facilitate the client to prompt action to adhere to ART to achieve the desired goal, which in this case is better and improved health status. The likelihood of taking health actions refers to those behaviors implemented to reduce the risk. The likelihood of taking action is based on a client's perceived benefits of relevant actions, apparent barriers of those actions, and self-efficacy.

Perceived benefits are individual's assessment of worth or usefulness of embracing new actions by understanding its advantages (Becker & Rosenstock, 1997). The new behavior in this case is adherence to ART to decrease disease progression and related risks, including death. When clients becomes aware of the benefits of adhering to ART and improved health status, they will make informed decisions or take actions to adhere to treatment to curb disease progression. With perceived benefits on ART adherence, the individual will evaluate those factors that are obstacles in the way of achieving expected benefits in ART and behavior change. About this study, the client will identify the barrier that hinders ART adherence, such as pill burden, drug side effects, food restriction, stigmatization, to name but a few. The client will make a conscious decision to possibly avoid or work through the barriers to enhance ART adherence. The critical element is identifying the barriers and resolving them (Becker & Rosenstock, 1997).

Lastly, if the client can work through the above, they will develop an enhanced self-efficacy and gain confidence in their ability to adhere to ART successfully. This means they will develop internal strength and motivation to live healthier, and reduce effects of HIV disease progression by ultimately adhering to ART. The above coincides with the concept of the HBM, that an individual will implement health-related activities to diminish the danger and successfully execute the action essential to yield anticipated result devoid of obstacles (Becker & Rosenstock, 1997).

In relation to the study topic and HBM, adherence is the preferred health-related action or conduct, which is predisposed by individual views, philosophies, and attitudes, among other factors (Becker & Rosenstock, 1997). If such factors are adhered to, an individual can achieve near-perfect adherence. However, if the aspects are not imposed might lead to non-adherence. As indicated by Becker and Rosenstock (1997) the focus of clients' subjective beliefs is a key strength of HBM. The client is able to look at the disease subjectively and make informed decisions and live healthier life. This subjective focus enhances the clients to perceive the benefits of drug adherence to enable them to achieve the desired goal of improved health status.

Although HBM has been very useful in public health, especially in drug adherence and depression, it has several limitations. A study by Bensley and Fisher (2009) indicated that HBM does not take account an individual's attitudes, beliefs, and other individual factors that order an individual's recognition of a health behavior. About ART adherence, HBM focuses more on the severity of the disease and the importance of ART adherence rather than the beliefs and attitudes of the client (Bensley & Fisher, 2009). Besides, the model assumes that people have skills to alter behaviors. This is not necessarily correct because not everyone has the skills to change a particular

behavior. Additionally, some people may have the skills to alter behaviors but choose not to use the skills. Equally, one may have the skills but has no will power or self-efficacy to start and maintain behavior change. In this study, one may have the skills to reduce disease progression by adhering to strict regulations associated with ART but may not use the knowledge to adhere to the treatment requirements.

Importantly, HMB does not take into consideration behaviors that are habitual. In this case, HBM does not consider other behaviors such as condom use, alcohol addiction, and risky sexual behaviors, which are paramount part of ART adherence. Much focus is only on improved health status and minimal focus on other determining factors. Significantly, the model does not consider behaviors that are performed for non-health-related reasons, for example, social agreeableness and support. It is noted that social acceptability and support for HIV positive individuals is sufficient for proper adherence to take place (Bensley & Fisher, 2009).

Of importance to note, the theory assumes behavior is rational and ignores emotional response to perceived risk (Becker & Rosenstock, 1997). This is a significant limitation regarding HIV positive status and ART adherence because emotions are critical in both the disease and drug adherence. It is important to note that HIV positive status affects individual's emotions as much as thought processes and behavior. HBM does not address such emotions in its intervention.

Finally, yet important, a fundamental limitation of the theory is that it does not recognize environmental or economic influences that may have an impact on health behaviors. Some of these factors include patients' perspectives of their illness, psychosocial influences, socio-economic and environmental influences. A study by

Munro (2007) indicated that environmental, social influences, and socio-economic aspects are vital to ART adherence; therefore, a significant limitation. In this regard, cognitive behavioral theory (CBT) was practical in countering the limitations of HBM by focusing on changing behavior through changing individual attitudes towards HIV positive status, ART, and related factors such as environmental, social-economic, and behavior change. This indicates that HBM should not be entirely relied upon in public health services, especially in drug adherence, thus the need for the service provider to use an integrative approach for holistic service delivery.

Cognitive Behavioral Theory

Cognitive behavioral theory (CBT) was developed by Aaron T. Beck, who was born in 1921. CBT psychotherapy combines cognitive-based together with behavior-based techniques to effect behavioral change (Corey, 2009). The essential concept of CBT is that emotional disturbances are primarily the product of irrational thinking. A psychological methodology is essential for changing the pattern of reasoning, while conduct therapy centers on accompanying activity, therefore a practical method to the treatment of psychological, behavioral, and mental diseases. The goal of CBT is to achieve behavior change through change of thought patterns and distorted thought process (Corey, 2009).

A key assumption in CBT is that individuals can change their cognitive, emotive and behavioral processes. As far as this study, CBT accepts that people are not really affected by the HIV positive status but instead by the thoughts they have towards HIV disease and related treatment. Therefore, regarding the study topic, the theory addressed the effects of maladaptive thought processes and behaviors such as alcoholism, denial, death, anxiety, and stigmatization, which influence ART

adherence. CBT facilitated a change of negative beliefs, attitudes, and behaviors towards ARV treatment and perception towards HIV seropositive status. Studies have shown that CBT has also been effective in handling adherence cases among PLWHA (Chattopadhyay et al., 2017).

According to Corey (2009) the activating beliefs and consequences (ABC) theory of personality is central to CBT. Therefore, an individual needs to learn the art of disputing irrational beliefs that might be leading to negative consequences. Techniques that were beneficial in this study include disputing irrational beliefs aiming at changing perceptions, changing one's language to avoid self-limiting statements, and thought-stopping techniques aiming at disputing intrusive negative thoughts (Corey, 2009).

Consequently, an all-inclusive CBT practice might help upsurge treatment adherence among HIV clients by changing individual perceptions, self-limiting statements, and disputing irrational beliefs associated with HIV positive status and ART use and efficacy. An investigation by Chattopadhyay et al. (2017), at Care Hospital of Kolkata, related cognitive-affective weaknesses with alleged obstacles to treatment adherence in HIV positive individuals. The findings indicated that poor ART adherence was linked to the limited cognitive and behavioral status of the patients. The investigation concluded that CBT was operational in minimizing intensity of drug side effects and enhanced ability to adhere to treatment regulations. Chattopadhyay et al. (2017) concluded that an accurately organized CBT management considerably advances ART adherence levels. In this regard, the study recommended the inclusion of CBT for health specialists in the management of HIV and other correlated infections such as depression.

To explain how CBT relates to this study, the researcher explored and consequently deputed irrational beliefs and negative perceptions regarding HIV and ART. The researcher ultimately overcame self-limiting statements associated with HIV infection such as denial, self-blame, guilt, and fear of death.

Cognitive behavioral theory (CBT) has proven to be useful for the treatment of mental health disorders. It requires a relatively shorter period in therapy as compared to other therapies. Additionally, the theory focuses on re-training clients' thoughts and altering behavior in order to make changes to their feelings. Notably, the highly structured nature of CBT means that it can be useful for both individual and group counseling formats. A much appreciated strength of CBT is that skills gained can be useful, practical and offer helpful strategies that a client can incorporate into everyday life to help cope with life challenges, difficulties, and other stressful events.

Although CBT has many strengths, it has noticeable limitations. To fully benefit from CBT, a client requires a lot of commitment and cooperation in the process. This may not be fully achieved, especially with clients who are abusing alcohol and other drugs. CBT focuses on the client's capacity to bring change to themselves without focusing on external factors affecting a client, such as family, social systems, and socio-economic status. Importantly, due to the structured nature of CBT, it may not be suitable for people with complex mental disorders, for example, severe depression, which is common among HIV positive individuals and alcohol users.

Additionally, as noted by Corey (2009) CBT requires much cognitive restructuring, which might be difficult for persons with learning disorders and those with minimal education. Notably, CBT does not address clients' underlying causes of mental

disorders and other issues related to HIV positive status. It involves confrontation of emotions and behaviors, which may make clients feel anxious, judged, and emotionally uncomfortable, and may result in them being uncooperative in the process (Corey, 2009). Nonetheless, CBT was appropriate for this study topic. Some of the limitations of the area were addressed with the Gestalt theory.

Gestalt Theory

Gestalt theory was founded by Frederick (Fritz) S. Pearls and Laura Pearls in the 1940s. Frederick and Laura Pearls lived from 1893 to 1970 and 1905 to 1990 respectively. Gestalt theory viewed human beings as having the capacity to self-regulate if they have an awareness of what is happening in and around them. The theory aims at confronting maladaptive behavior in a bid to change behavior (Corey, 2009). In the case of alcoholism and addiction, Gestalt theory is helpful in confronting denial of alcoholism as a disease. In this study, Gestalt theory was beneficial in enhancing self-awareness, and confronting maladaptive behavior among PLWHAs, which affect ART adherence.

As described by Corey (2009) the 'here and now approach' of Gestalt theory is beneficial in enabling PLWHAs to learn to acknowledge and fully experience HIV positive status in the present-day moment. This helps an individual to stop focusing on the past or future thus dealing with the issue of denial common among PLWHAs. Consequently, in staying in the present, the individual is capable of exploring their seropositive status, fears, and challenges they are experiencing in drug adherence in the present.

The techniques that were relevant to this study include the empty chair technique that explores unfinished businesses, the use of experiments, use of confrontation, and changing of internal dialogues (Corey, 2009). The empty chair technique enabled the participants to share their fears and any defenses regarding their HIV positive status and ART related concerns in a non-threatening manner. On the other hand, exploring unfinished businesses was beneficial in dealing with any emerging unresolved emotions such as resentment, rage, pain, anxiety, grief, among others, which are common among PLWHAs.

By use of experiments, the HIV positive individuals would internalize the different issues they had in positive living and gain insight on possible effects. Importantly, an individual gains from the confrontation technique ability to confront self-limiting statements and maladaptive behaviors that are in this regard affecting ART adherence. Notably, changing of internal dialogues helped HIV positive individuals to start having positive self-talk, despite the HIV positive status and related stigmatization. At the same time, change of internal dialogues facilitated the HIV positive individual to own his/her personality that might have been disowned or denied after HIV infection.

The application of gestalt theory to this study relates to facilitate opportunities for PLWHAs to identify; deal with, and resolve self-limiting thoughts, negative self-talk, maladaptive behaviors, and the effect of stigmatization associated with HIV positive status and the prerequisite to ART adherence.

General Literature Review

HIV Prevalence Globally

World Health Organization (2011) noted that HIV/AIDS remains a significant public health concern through all continents, opening the demise of a huge number of grown-ups in their prime, disrupting and devastating families and transforming a huge number of children into orphans. UNAIDS (2012) indicated that the pandemic affects the most productive fragments of the populations. Worldwide, according to WHO (2015), a projected 36.9 million individuals were infected with HIV by the end of year 2014, while 36.7 million people comprising 34.5 million adults and 2.2 million children were infected with HIV in the year 2016 (UNAIDS, 2017). African sub-Saharan area stays generally influenced, with 25.8 million individuals infected with HIV representing just about 70% of the worldwide aggregate (WHO, 2015). Table 2.1 presents global statistics for HIV/AIDS in 2016.

Table 2.1: Global Statistics for HIV/AIDSs in 2016

	Adults & Children living with HIV	Adults & Children newly infected with HIV	Adult and child deaths due to AIDS
Eastern & Southern Africa	19.4 million	790,000	420,000
Western & Central Africa	6.1 million	370,000	310,000
Middle East & North Africa	230,000	18,000	11,000
Asia & Pacific	5.1 million	270,000	170,000
Latin America	1.8 million	97,000	36,000
Caribbean	310,000	18,000	9,400
Eastern Europe & Central Asia	1.6 million	190,000	40,000
Western & Central Europe & North America	2.1 million	73,000	18,000

Source: UNAIDS (2017)

HIV Prevalence in Kenya

According to NASCOP (2014) an approximate 1.6 million children and adults in Kenya were infected with HIV in 2013, out of which 5.1% of the all-out number of adults and adolescents living with HIV and AIDS are living in rural areas contrasted with a projected 6.5% adults and adolescents in urban areas. NASCOP noted that ladies are bound to be filthy (6.9%) than men (4.4%), and furthermore had propelled HIV prevalence than men in both rural and urban residences. HIV pervasiveness among ladies in urban areas was 8.0% contrasted with 6.2% in rural areas. Among men, the occurrence was 5.1% in urban areas contrasted with 3.9% in rural areas.

According to Kenya HIV Estimates report (2018), HIV prevalence is uppermost in Nyanza for both rural and urban areas at 13.9% and 18.3%, respectively. North Eastern has most reduced prevalence in rural and urban areas at 1.5% and 3.6%, respectively. Nevertheless, HIV predominance is high amongst women than men in all regions. Nyanza has the highest women HIV predominance at 16.1%, and Nairobi and Coast have the second highest at 6.1%. North Eastern and North-Rift provinces have minimal HIV prevalence amongst women at 3.6% each. For men, Nyanza has most elevated HIV predominance (13.9%); Nairobi is second at 3.8%, while North Eastern has least at 0.8%. Statistics of 2015 indicated that 1.5 million are living with HIV, annual new infections were at 77,600, while annual AIDS-related deaths were reported at 35,800. Table 2.2 shows the national HIV estimates as at 2017.

Table 2.2: National HIV Estimates for 2017

Indicator	HIV Estimates in 2017
People living with HIV (all ages)	1.5 (1.3-1.8) million
Annual new HIV infections (all ages)	52,800 (33,400-77,500)
Annual AIDS-related deaths (all ages)	28,200 (18,100-45,300)
HIV prevalence (adults aged 15-49)	4.85% (4.02-5.80%)
HIV incidence (adults 15-49)	0.19% (0.13-0.29%)
Adult 15+ living with HIV	1,388,200 (1,167,000-1,645,900)
Annual new HIV infections (Adult 15+)	44,800 (28,800-67,100)
Annual AIDS-related deaths (Adult 15+)	23,900 (15,400-39,000)
Adult 15+ on ART; ART coverage (%)	1,035,615 (75%)
Children (0-14 years) living with HIV	105,200 (73,800-134,000)
Annual new HIV infections (Children 0-14)	8,000 (3,500-13,000)
Annual AIDS-related deaths (Children 0-14)	4,300 (2,100-7,500)
Children (0-14) on treatment; ART coverage (%)	86,323 (84%)
HIV prevalence (young adults 15-24); male	1.34% (0.71-1.91%)
HIV prevalence (young adults 15-24); female	2.61% (1.34-3.98%)
Annual new HIV infections (young adults 15-24); male	5,200 (1,100-8,600)
Annual new HIV infections (young adults 15-24); female	12,500 (7,200-18,800)
Annual AIDS deaths (young adults 15-24)	2,800 (1,700-4,700)
Adolescents living with HIV (10-19)	105,200 (62,800-47,700)
Annual new HIV infections (adolescents 10-19)	8,200 (2,400-15,900)
Annual AIDS deaths (adolescents 10-19)	2,100 (1,200-3,200)
Mothers needing PMTCT	69,500 (31,800-106,800)
Mothers on PMTCT; PMTCT coverage (%)	53,236 (77%)
EMTCT rate	11.5%

Source: NASCOP (2018)

According to UNAIDS (2012) there has been a dramatic transformation in the worldwide HIV/AIDS scene because of expanded consideration regarding treatment.

Towards the close of 2014, a global projection of 14.9 million individuals living with HIV had approached ARV treatment and 13.5 million were accepting ART in developing countries. In the 2014 World AIDS Day gathering, UNAIDS propelled an initiative termed as the '90-90-90' plan to end the pandemic by 2030 (UNAIDS,

2014). This indicate that 90% of individuals infected with HIV know their HIV status, 90% of individuals diagnosed with HIV disease ought to get ART, and 90% of those on ART are retained in treatment and are virally suppressed (UNAIDS, 2014).

Anti-Retroviral Therapy (ART)

Achappa et al. (2013) noted that ART has enhanced quality of life expectancy to individuals with HIV globally by reducing the disease's related illnesses and mortality rates. To realize optimum health, ART adherence is of great importance. There are different barriers to adherence, including stigmatization and discrimination, lack of family support, alcohol and drug abuse, socio-economic influences, medication side effects, religious and cultural beliefs health care, and systems related challenges, among others. Adherence to ARV therapy is a powerful predictor to the survival of PLWHs (WHO, 2010). Numerous investigations have stated improved virology immunologic effectiveness of ART.

Prominently, close to consummate adherence to ART is basic for powerful treatment, and for the counteraction of viral duplication and transmission. Notably, adherence to ART is basic for effective management, principally to prevent duplication and transmission of the virus (Chesney, 2009). In spite of the fact that sufficient degrees of adherence are totally outlined, on account of highly active anti-retroviral therapy, levels of adherence that are over 95% are viewed as close to great or significant. On the other hand, levels of adherence that are below 95% are termed as low adherence or non-adherence and have adverse health implications on the clients (Paterson et al., 2010).

Global Update on HIV Treatment

Numeral yearly worldwide AIDS-related deaths have dynamically diminished from 2.1 million in the year 2004 to an estimated 1.8 million in 2009. The decline has been accredited to the improved accessibility of ART just as support and care of PLWHs (Bangsberg, 2006). As noted by UNAIDS (2017) HIV global statistics as at 2016 indicated that individuals living with HIV were 36.7 million, and those getting treatment were 19.5 million. Persons recently infected with HIV estimate were at 1.8 million, and around one million individuals succumbed to AIDS associated illness in 2016 down from 1.5 million in 2010 and 1.9 million in the year 2005. The number of deaths have decreased throughout the years because of the openness and accessibility of ART. Of significance to note is that 19.5 million PLWHs were getting to ART in 2016, and 17.1 million in 2015 as contrasted with 7.7 million in 2007 (UNAIDS, 2017).

The numbers of those seeking ART has increased over the years due to availability and accessibility of ART. ART regimens have also been simplified with most clients reporting few side effects, increased number of facilities offering therapy, limited costs, increased knowledge of HIV and ART, and enhanced care and support for PLWHs (WHO, 2010).

HIV Treatment in Kenya

The overall government policy is to provide HIV and AIDS treatment services free to all HIV positive patients. As indicated by NASCOP (2008) ARV treatment administrations were first brought into the public sector in Kenya in 2003, with just under ten health facilities giving treatment. These services begun in five pilot public health facilities in August 2003, including Nyeri, Nyanza, Rift Valley, and Coast

provincial general hospitals, as well as Kenyatta National Referral Hospital (NASCOP, 2008). The number of health facilities managing ARV treatment has amplified in the recent past. Although in 2002, the cost of ARV treatment was on average KES 30,000-40,000. Today ARV are provided free in public and some private health facilities. NASCOP (2014) indicated that the number of treatment-eligible adults and adolescents in Kenya was estimated at 888,000, and approximately 860,000 of them were receiving ART by 2013. Statistics of 2015 indicate that 1.5 million are living with HIV, annual new infections were at 77,600, while annual AIDS-related deaths were reported to be at 35,800 (UNAIDS, 2017).

World Health Organization guidelines, through Guidelines for ART in Kenya (2011) outlined the following ART goals: to improve and prolong the quality of lives of PLWHs; reduce viral load; stop/halt disease progression; reduce mother to child transmission, reduce transmission among adults; and achieve immune reconstitution, therefore, reducing opportunistic infections and mortality associated with HIV infections. According to Muthiani (2010) approximately two out of a hundred of the projected 160,000 PLWHAs who were on unrestricted ARVs in Kenya had established resistance to the first line treatment régime in 2007. It was forecast that an increasing number of PLWHA would require to be swapped from the first line to the second line of ART regimens due to treatment failure.

Factors that Affect HIV Anti- Retroviral Therapy Adherence among PLWHs

As indicated by Chesney (2007) it is critical to recognize the central factors that contribute to the inability of the clients to take their medication as envisioned. Notwithstanding the way that there are differed clarifications behind non-adherence to ART, WHO (2006) indicated various reasons that would fuse ART adherence such as

financial factors, unemployment, stigmatizations, and discrimination, significant distance travel to get treatment, insufficient food, and clean water and inadequate social support. Additionally, healthcare framework highlights the following: insufficient information by health care providers on centrality of adherence to ART, untimely appointments, incapability of the health care provider to strategize the treatment plan with the client, client-related factors such as deficient access to appropriate information regarding ART treatment, medication exhaustion, cultural and religious beliefs about the ailment, alcohol addiction, and stress-related issues. Furthermore, disease related elements incorporate pill load, adverse challenging effects of the drugs, core-morbid diseases, for example, depression and opportunistic infections.

Socio-economic Challenges and Healthcare Provision and System

A study in Nepal indicated that distance to health centers, related travel costs for refill were mentioned as a significant hindrance in adherence. A lot of money is required to meet transportation costs to and fro the health clinics, to treat HIV related infections, and to maintain an appropriate diet (Wasti et al., 2012). The same study also highlighted that a short period of medication prescription as a significant factor influencing adherence among alcohol users.

According to Desclaux (2003) Kenya has exempted PLWHAs from typical cost-sharing necessities of anti-retroviral therapy and treatment of tuberculosis. Nonetheless, PLWHAs remains accountable for individual costs related with transport, nutritious support, laboratory investigations, and treatment of opportunistic infections. Desclaux (2003) noted the powerlessness of PLWHAs in catering costs of prescriptions to treat infections remains critical barrier to ART adherence. Those who

cannot afford such drugs end up dying from treatable illnesses. Prophylaxis and treatment of opportunistic infections is an integral component of ART. Lack of money to purchase drugs to deal with opportunistic infections is fanning non-adherence among PLWHAs in Kibra.

Desclaux (2003) notes that user fees for laboratory examinations and different components of HIV care and treatment administration stay a noteworthy barrier to adherence. Laboratory services are not available in most health facilities in the slum setting of Kibra. HIV screening is provided free to PLWHA; however, future costs of screening to deal with other infections have to be met by individual PLWHA or their relatives. This, in turn, is causing delays in the diagnosis of such diseases and is influencing negatively on adherence.

Poverty was recognized to forestall individuals infected with HIV from getting cash to utilize for transport costs to health amenities, decreasing their commitment to medical appointments and drug top-ups, and treatment was noted as a significant hindrance. Poverty additionally prompts food inadequacy and other nutritional benefits of the treatment. As indicated by Rosen et al. (2007) where the expense of treatment is unrestricted, the transportation cost might be a hindrance. Also, deficient food among PLWHAs has additionally been seen as a critical obstruction to adherence to ART.

Food inadequacy was identified with HIV related wasting syndrome amongst HIV-positive drug consumers in Miami, Florida (Campa et al., 2005). Insufficient food is additionally associated to compromise ART adherence and fragmented virology HIV concealment (Vogenthaler et al., 2010). Notwithstanding of these provocative findings, assessments concerning the experience of food inadequacy and instability among individuals living with HIV stay meager.

Medication Side Effects and Discomfort

HAART comprise of complex regimes that may incorporate at least three or several dosage in a day with explicit food and liquid related directives. This dosing may be problematic to track for the general clients. Chesney (2009) noted that the higher the pill burden, that is the number of pills a client is taking, the lesser the adherence level. Medicine side effects have consistently been connected to diminished adherence. Clients with unfavorable medicine reactions are likely to stop or suspend management or request change of the treatment regime. Some of the side effects as reported by Chesney (2009) are nightmares, hallucinations, lipodystrophy, unbearable itches, neuropathy, diarrhea, vomiting, and headaches, among others.

Alcoholism and Drug Use

According to Reda and Biadgiliga (2012) alcohol use is an influence that threatens appropriate adherence to ART. Alcohol abusers reported missing a dose. Some did not adhere to the clock implication of taking drugs, while others said that they missed hospital appointments altogether. An investigation by Parsons, Rosof, and Mustanski (2007) discovered that alcohol utilization is frequent among individuals contaminated with HIV and the most significant predictor in ART adherence. Parson et al. (2008) added that alcohol causes cognitive impairment, which has an instant consequence on the cognitive operational that may influence self – effectiveness for anti-retroviral adherence. In spite of the fact that alcohol usage may have straight ill effects on wellbeing, drug non-adherence that occurs with alcohol use, partly accounts for the poor health of individuals who are taking ARV drugs and consume alcohol.

Alcoholism influence perception, attention, and simple intellectual functioning, prompting missed dosages of medications. Additionally, alcoholism has been

associated with HIV progression and risky sexual practices. Parson et al. (2008) noted that alcohol use does not just affect adherence, but also has a biological impact on HIV health, relating to higher levels of viral burden, diminished CD4 counts, and expanded disease progression. As studied by Schneider et al. (2014) alcohol acts through social and physiological pathways affect acquisitions, transmission, and advancement of HIV sickness. Alcohol was indicated with risky sexual practices, reduced immunity, drug interaction, and adherence to ART.

As indicated by Schneider et al. (2014) unfavorable medication reactions brought by alcohol are characterized as the clinical outcomes of alcohol consumption before, during, and following taking ARV. Alcohol and ARVs are metabolized by CYP450 enzymes, which are either inhibited or induced within the system. These chemicals hasten the medicine clearing process in the liver and different organs, which might cause HIV medications be prepared rapidly, sabotaging their viability and encouraging drug resistance. Szabo and Mandrekar (2010) noted that harm to the liver, among other body organs, is profoundly connected with alcohol consumption. Studies have demonstrated that alcohol usage lead to liver disease. It is good to note that the liver metabolizes individually alcohol and ARVs, and an unhealthy liver cannot process either efficiently. Too much exposure of alcohol to the liver may result in liver cirrhosis and hepatitis viruses (Schneider et al., 2014).

Alcoholism and other drugs use is rampant in Kenya, and specifically, in the slum settlements, Kibra included. As noted by Basangwa et al. (2006), WHO estimated around 2 billion (33%) individuals worldwide were consuming alcoholic beverages making alcohol the most widely used and abused substance world over. In Kenya, alcoholism and drug use has been rated as a national disaster. In 2012, the National

Authority for the Campaign against Alcohol and Drug Abuse conducted nationwide survey on alcohol and drug abuse, found out that 13.3% Kenyans were consuming alcohol, another 9.1 percent smoke tobacco, 1.0% use bhang while 0.1 percent use heroine. In regards to dependency on different drugs, NACADA (2012) revealed that 5.5% of Kenyans are dependent on alcohol, 4.5% on tobacco, 1.5% on miraa, and 0.4% on bhang use. PLWHA's abusing alcohol and other drugs have often missed taking their medications and also missed their clinic appointments due to their drunken state.

Alcohol and drug abuse alters an individual's perception, therefore, PLWHAs struggling with drug addiction might not adhere to nutrition, safer sexual practices, as well as counseling. To some extent, alcohol consumption interferes with the chemical development in the body mechanism. Additionally, Achappa et al. (2013) indicated that alcohol consumption, medicine side effects, depression, stigmatization, absence of family support were considered aspects associated with diminished ART adherence. Similarly, other factors related to substance abuse, for instance absent-mindedness, exhaustion, and confusion, negatively impact adherence (Mukumbang & Wyk, 2016).

Stigmatization and Discrimination

Stigmatization is composed of four segments, in particular, naming contrasts, relationship with adverse physical appearance, the partition between the vilified individual, and the general public and status misfortune (Sundas, 2011). Stigmatization related to HIV and AIDS is a critical barrier to ART and remains an issue in Africa. This may lead to patients' fear of attending clinical appointments and also not taking drugs in good time especially when there are people around. An

investigation by Beckwith et al. (2005) established that stigmatization against individuals with HIV and anxiety of separation were key clarifications behind low uptake of purposeful counseling and testing to forestall HIV transmission from mother-to-child transmission.

UNAIDS (2002) noted that PLWHAs are discriminated against by individuals close to them including relatives and the greater society. Stigmatization inclines individuals to unfortunate life results through threatening their confidence, educational accomplishment, and psychological or physical wellbeing. Stigmatization likewise prompts brutality among African settings where ladies living with HIV are physically abused by their life partners after an HIV positive definite result. Stigmatization goes about as a hindrance to ART as infected individual feel humiliated to look for treatment (Krain & Fitz, 2005). Stigmatization could prompt delay in seeking, forsaking or defiance of treatment. HIV related stigma in Kenya is responsible of PLWHAs vanishing from the treatment centers.

Disclosure of HIV Status

Divulgence of one's health status and the readiness to live with the HIV disease is a complicated procedure. In a study by Mukumbang and Wyk (2016), a few clients avoided their medication, neglected medical clinic appointments or travelled substantial distances to health facilities to obtain treatment to guarantee that relatives and employers did not discover their HIV status. A research by Karanja (2008) at Pumwani HIV Comprehensive Care Centre in Nairobi County discovered that client disclosure of ones HIV status was a profound barricade to medicine adherence. Disclosure is related to fear of stigmatization and discrimination. A client who has not revealed their HIV positive status delayed or deferred seeking scheduled clinic

appointments. Similarly, clients who have not disclosed their status to their partners did not adhere well to the medications because of fear of rejection or intimate partner violence.

Disclosure may have negative and positive impact in adherence. Mukumbang and Wyk (2016) noted that clients who have intentionally divulged to family, friends or religious groups, gain social, physiological, monetary and otherworldly help, which inspire them to step up ART as equated to the individuals who do not uncover their positive status.

Knowledge Regarding HIV, Anti-Retroviral Therapy and Individual Perceptions
Patersons (2009) asserted that clients who understand the HIV disease and the connection between ART adherence and efficient health wellbeing status detailed near-perfect adherence than those who did not have any comprehension of the connection between HIV illness progress and medication adherence. Similarly, a study by Musembi (2013) at Mbagathi hospital indicated that clients with low understanding of disease progression and the importance of ART adherence also presented with low levels of ART adherence while others stopped taking ART altogether.

Patients' negative attitudes and beliefs towards HIV and ART treatment have also been linked with non-adherence (Wakibi, 2010). PLWHA's negative attitude towards HIV and importantly, ARVs, and perceived benefits of ARVs negatively influence their adherence to ART (Wagner, 2004). Additionally, sociocultural characteristics of the PLWHA's health belief is a significant, powerful influence with regards to treatment adherence.

Besides, Patersons (2010) stated that negative philosophies regarding the effectiveness of ART might impact adherence leading to non-adherence. It is noted that clients who have a positive attitude towards HAART have a near-perfect adherence. A research by Musembi (2013) at Mbagathi District Hospital in Nairobi County revealed that clients with positive attitudes and perceptions towards ART had a near-perfect adherence while those with negative attitudes towards ART and HIV infection presented with non-adherence.

Cultural and Religious Barriers

Wasti et al. (2012) noted that barriers relating to religion, citing AIDS as a curse from the gods, and related rituals and lack of family support were identified to be hindrances to ART adherence. Patients with close family support were rated to have better adherence levels to ART. Some cultural beliefs, such as the Luo community belief that AIDS is Chira. According to Omon (2009), the Luo people (who make a more significant number in Kibra) believe that people who break customary rules attract Chira, which causes death through gradual body wasting. The belief in Chira may interfere with seeking for ART and also affect adherence levels to those already on ART. In conclusion, as noted earlier, the Luo community regards HIV and AIDS as a taboo, Chira (Omon, 2009). This, is a significant hindrance for seeking treatment, instead, PLWHA seeks alternative therapy such as traditional healers and soothsayers.

Moreover, religious beliefs, the myths that HIV is presumed to be a curse from God might similarly influence the acceptance of ART. As noted by Mukumbang and Wyk (2016), strict religious beliefs add to PLWHAs' non-adherence to ART. Some PLWHAs surrendered ARV treatments subsequent joining different religious

organizations whereas others made extensive trips to Tanzania to get the famous "babu drink," which they believed cured all manner of illnesses. When their condition did not get better despite their religious beliefs and traditional medicine, PLWHAs resumed to ART when their health had changed for the worse. Notably, Mukumbang and Wyk (2016) stated that the usage of herbal drug with ART was stated a possible obstacle to ART adherence in Uganda. In a similar report, clients proclaimed to utilize concoctions and other herbal mixtures organized by conventional / traditional healers aimed at cleaning the disease or curse off their bodies.

Social Support

PLWHAs depends on social and emotionally supportive networks from the Health care providers, relatives, friends, and other support groups. These interactions influence PLWHAs' adherence to ART, both positively and negatively. Distress from those near the PLWHA and particularly relatives elevates non-adherence to ART. Dimatteo (2004) observed that social help for ART adherence incorporates support from family members for a patient to co-work with the recommendations and solutions of the wellbeing proficient. Social institutions and the individual require a harmonious social relationship where one blooms with and influences the other.

Social support from family members is a traditional phenomenon in the African family settings, which has found great prominence with the emergence of HIV. Most PLWHAs experience low mental satisfaction in spite of being on ART because of stigmatization from family, friends, and the community (Ogbuji & Oke, 2010). Social support can also affect PLWHAs' health negatively, especially in cases where interacting with others leads to feelings of stigma and alienation.

Clinical Setting and Service Delivery

According to Sayles et al. (2009), a hostile association among individual infected with HIV and Health care providers' blocks ART adherence by driving out individual living with HIV from the health amenities. Supportive and collective connection amid a client and Health care provider is important in overcoming barriers to ARV drugs. If the connection is not helpful non-adherence may be reported. A study by Patersons (2010) noted that a productive client-provider relationship based on trust and confidentiality has been reported to enhance good adherence.

According to NACC (2009) health care settings' impact on ART adherence ought not to be underestimated. An enticing, accommodating, and non-critical mentality of Health care service providers, appropriate clinical scheduled appointments, and privacy improve ART adherence. Health care characteristics that hinder ART adherence includes and not limited to prolonged postponements of clinical schedules, health center opening and closing intervals, absence of amenities, for example, child care, confidentiality, secrecy, and indifferent or discourteous staff (NACC, 2009).

Additionally, Machtiger and Bangsberg (2006) noted that proper communication, sufficient training on treatment, providers' tendency to inclusion of PLWHAs in treatment plan procedures, prolonged ART administration times in weekdays, weekends and holidays and satisfaction by past encounters in the Health care framework urge PLWHA's ART to adherence. Likewise, an investigation in Tanzania established that extensive waiting hours (>10 hours) in health center setting getting ART, diminished hospital attendance, inadequate follow-up, and absence of trust in health authorities impeded adherence (Mukumbang & Wyk, 2016).

Disease Factors

Clients who are experiencing adverse opportunistic infections may have better chances of drug adherence. However, those who have lost hope due to prolonged illness, and those suffering denial, extreme anxiety due to HIV infection may not adhere to ART (Bangsberg, 2010).

Intensive Counseling before HAART Initiation

An investigation by Karanja (2008) found out that intensive counseling during ART inception elevated high level of adherence and altogether diminished treatment failures. Counseling of clients on ART commencement provided channels for improving communication, build rapport, confidence, and trust among clients and HCW. Counseling likewise improved information on HIV and ART building confidence in the effectiveness of ART.

Psychological Implication of Non-adherence

Depression

Mental illness symptoms are common among individuals with chronic illnesses, including HIV/AIDS, which can add to non-adherence to treatment, including ART (WHO, 2003). Depression is connected to non-adherence in numerous chronic medical ailments. WHO (2003) noted that depression, AIDS-related dementia, and other mental disorders illness have significantly affected drug adherence. When a client does not adhere to treatment, they present with depressive symptoms such as changes in sleep pattern, mood change, loss of hope in life, anxiety, among other symptoms. Those suffering of the same forget when, how, or the quantity of pills to be taken altogether. A study by Wagner et al. (2011) noticed that people infected with

HIV in America, 37% presented with depression. Subsequently, depression has been related with a triple increment non-adherence with clinical treatment recommendations in general and HIV investigations have consistently demonstrated that depression hinder ART adherence.

As indicated by Moosa (2012) depression is accounted as one of the significant hazard factors influencing ART adherence in HIV positive individuals. This, is attributed to fear of death and hopelessness associated with a HIV positive status. Depression is likewise linked to neglected clinic appointments, inability towards inception of ART, treatment failure, and provider unwillingness to recommend ART due to anxiety of depression interfering with adherence (Wagner et al., 2011). The authors take note of the fact that psychological symptoms of depression present difficulties in treatment adherence. Additionally, psychological symptoms, for example, low disposition and loss of concern may bring about loss of inspiration of everyday activities, including taking one's medication on scheduled timelines.

Simultaneously, vegetative symptoms, for example, sleep disruption and exhaustion cause confusion with day-by-day schedules, as such as dosage routines. Changes of appetite pattern might cause challenges with eating food required to appropriately ingest drugs may lead patients to skip dosage in an attempt of trying to alleviate side effects strengthened by deprived nutritional consumption (Wagner et al., 2011).

Moosa (2011) concurred with Wagner (2004) by expressing that ART adherence is low among depressed HIV positive individuals as contrasted to those not depressed. Depressive symptoms remain associated with worse health results in HIV patients, mostly because of the interceding job of ART non-adherence. A study by Campos, Guimaraes, and Remien (2008) in Brazil pointed out that individuals with depression,

anxiety, or panic disorder were bound to be non-disciple to drug adherence than those without a psychological issue. A meta-investigation concentrate across 95 samples discovered depression symptoms were altogether identified to ART non-adherence (Sin & DiMatteo, 2014).

A study by Gonzales, Batchelder and Safren (2007) indicated that approximately 36% of HIV positive individuals screened positive for clinical depression. The study continues to note that depressive signs have been interconnected to worse HIV health results, including treatment efficacy and mortality. A study by Mooraes and Jorge (2017) among men who engaged in sexual relations with men (MSM) in South America, found that HIV positive men with low adherence rates were diagnosed with higher depression rates. Furthermore, the study found out that chances of MSM developing depression were four times greater in those not adhering to treatment than those adhering to treatment. Their sexual orientation was not a major factor concerning depression. Of importance to note, some ART side effects include depressive symptoms, which have also contributed to clients missing pills or stopping altogether. According to WHO (2003), a couple of drugs used to treat HIV can cause or fuel depression, for example, Efavirenz.

Stress and Anxiety

Emotive suffering is a feature connected with treatment adherence. Kalichman and Grebler (2010) noted that constant worry and undesirable lifetime events are connected to the HIV illness which may consequently influence treatment adherence. Stress can be a result of the HIV positive status, prolonged illnesses, and also due to the restrictions and side effects associated with ART treatment. Kalichman and Grebler (2010) identified a connection between the number of stressors experienced

and drug non-adherence. Causes of stress, for instance, social, health, finances, family issues, issues of disclosure, fear of death and disease progression, and other related stressors among PLWHAs is essential in addressing HIV treatment adherence. HIV positive individuals who are undergoing severe stress levels may not adhere to the treatment restriction and, in return, may result to alcohol and other drug use to cope with the stressful life events. Therefore, Sheldon, Kalichman, and Fielder (2008), emphasized the importance of stress management and practical coping mechanisms training for PLWHAs in improving ART adherence.

Socio-demographic Characteristics to Non-adherence

The role of socio demographic attributes such as gender, age, and education level are cited as indicators of ART adherence. Nevertheless, according to Ndayanga et al. (2005), there have been conflicting results interfacing the relationship of these attributes with ART adherence. The investigation concluded that socio-demographic characteristics and non-disclosure were not significantly linked with ART non-adherence. The most regular explanations behind missing pill, as cited in the study, included alcohol consumption, utilization of alternative treatment, delay ART refill, logistical factors to the clinics, and financial constraints. Additionally, inadequate knowledge on ART and provider-patient relationship were indicated as critical factors of non-adherence.

An investigation by Wakibi et al. (2011) in Nairobi established that age, gender, marital status, education status, and finances do not have a critical relationship with ART adherence. Similarly, an investigation by Wanjohi (2009) discovered that profession and training were connected to adherence while sex and marital status were not. At the same time, Karanja (2008) showed that the socio-demographic of the

clients do not influence ART adherence in any way. Nonetheless, this study investigated and compared socio-demographic attributes with ART adherence and reported its findings.

Empirical Literature Review

As per UNAIDS (2012) there are worldwide dramatic change in HIV/AIDS scene due to extended regard for care, treatment and support. The inception of ART and its scale-up has motivated enhancement of value of life among individuals living with HIV and AIDS worldwide and in Kenya as well. Taking anti-retroviral drugs remains a lifetime requirement that expects individuals commit to recommended treatment management to forestall disease progression additionally to enhance ideal wellbeing. ART permits individuals infected with HIV to live longer, with better quality of life, and encounter less ailments. Notwithstanding, well-established advantages of ART (WHO, 2015), attrition keep on increasing amongst individuals on ART. This necessitates Health care providers and Public health agencies focus on this contextual health issues to improve ART adherence levels among PLWHAs.

Anti-retroviral treatment has been effective in decreasing adverse effects of HIV. Improved health, livelihood, and reduced mortality rates have been recorded thanks to ART. Nonetheless, individuals on ART do not obey treatment guidelines. To benefit from the treatment, total adherence to ART is required (WHO, 2013). Adherence in this setting, according to WHO (2013) includes treatment of opportunistic infections, allotting of ARVs, prophylaxis, and nutrition. Studies by Scott et al. (2014) shows an excess of 50% of individuals cease treatment through insufficient patient trail and death. In spite of revealed advantages of ART, there have been a few factors that have influenced adherence.

Chesney (2007) stated that before procedures to enhance adherence are executed, it is critical to distinguish principal influences, which affect clients taking treatment as prescribed. There are a variety of factors that impact ART adherence. WHO (2003) described these variables as "interacting dimensions", which can either apply positively or negatively on drug adherence. WHO (2003) continued to note that these factors include socio-economic factors, stigmatization, long distance to health centers, inadequate foods and fluids, poor health systems, low knowledge of HIV and ART among HIV positive individuals and health care providers. Other factors are low level of education among individuals living with HIV, depression, stress, other mental illnesses, adverse medicine side effects, high pill count, medicine fatigue, beliefs and perceptions towards HIV and ART, alcohol use, among other factors.

Further studies by Ickovics and Meads (2002) clustered impacts affecting adherence to ART in five fundamental classifications, to be specific client factors; medicine aspects; disease attributes; client-provider connections; and clinical setting. Chesney (2007) recognized client aspects to be socio-demographic factors, for instance, age, gender, education level, and ethnicity. Medicine factors, as noted by Chesney (2010), were high pill burden, adverse side effects, food restrictions, strict dosing schedules, among others. The author discovered the higher the pill burden, the lower the adherence level. An examination by Mwale (2016) in South Africa discovered that medication side effects may influence individual seeking treatment might prompt steady attrition to ART care.

Other factors that highly influence ART adherence include individual belief systems and perceptions towards HIV and ART. Those who believe that HIV is a curse from the gods or an act of witchcraft do not appreciate the role of ART in HIV management.

Importantly, those who perceived that ART is effective in HIV management recorded high adherence levels (Mwale, 2016).

Conceptual Framework

Robson (2002) defined a conceptual outline as an illustrative demonstration of a study issue which highlights whatever will be studied. A conceptual framework displays key variables and the assumed relationship among them. To emphasize, Chandran (2004) indicated that a conceptual framework helps in explaining the investigator's topic. Figure 2.1 shows the study conceptual framework based on the literature that was reviewed.

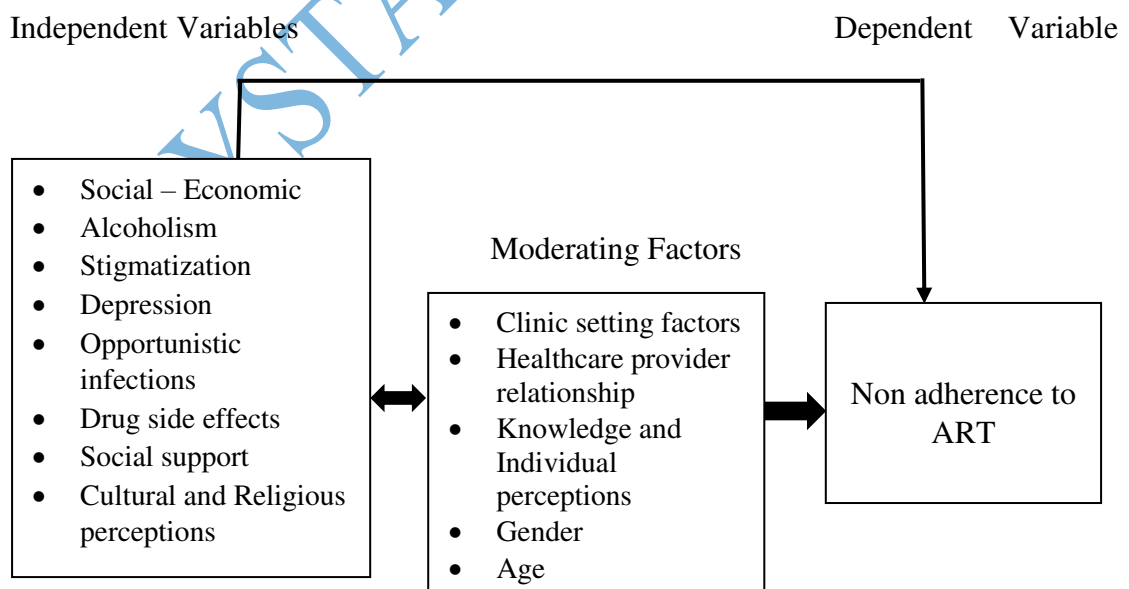


Figure 2.1: Conceptual Framework

Source: Author (2020)

Discussion

In this study, various variables were considered, which included independent variables, moderating factors, and dependent variables. Independent variables were the aspects affecting adherence to ART, and dependent variables were the effects. Both independent and dependent variables were predisposed by factors such as socio-demographics, clinical factors, and health care provider relationships herein referred to as the moderating factors. Notably, the independent variables could directly influence the dependent variables. At the same time, the moderating factors and independent variables could influence each other, thus, the arrow moving in the same direction. On the other hand, it was also expected that the moderating variables could directly influence the dependent variables.

The study highlighted several factors affecting ART adherence. As noted in the conceptual framework, these factors may be both internal and external factors that affect the client's adherence level in one way or the other. For example, if the client perceives the disease to be severe and life-threatening, or if a client is motivated to live a fulfilling, healthy life and desire to live longer, they will take appropriate action to adhere to the treatment. This means that if the factors affecting adherence are addressed, the client can automatically choose necessary measures as cited by HBM to enhance drug adherence; therefore, improve livelihood. However, if the factors are not well addressed, the client may not take appropriate action, which will prompt non-adherence. Psychological factors can be because of the disease progression and emotional distresses associated to the treatment restrictions, which can consequently lead to non-adherence.

Importantly, if the client does not adhere to strict treatment plans due to the factors indicated, it may lead to / health implications to the client, such as the development of opportunistic infections, drug resistance, treatment failure, and possible death. At the same time, non-adherence will also have a negative impact to the public health sector.

Summary

This chapter has concentrated on general and empirical relevant literature review for the study. Theoretical and conceptual frameworks have likewise been presented, discussed, and outlined to improve comprehension of the research topic. The next chapter looks at research methodology and ethical considerations for this study.

DAYSTAR UNIVERSITY

CHAPTER THREE

RESEARCH METHODOLOGY

Introduction

This chapter addresses the research methodology that was adopted in achieving the objectives of this study as well as to answer the research questions. Kothari (2006) defined research methodology as an organized way of solving a study problem. Methodology is a process that gives guidance to a research on how to carry out the study and is developed from the researcher's interpretation of reality and directed by objectives and questions. This chapter, therefore, outlines and discusses the following aspects of research methodology; the research design, the population, the sampling techniques, the research instruments, pretesting, data collection methods, validity and reliability of the research instruments, and the data analysis plan. Finally, the chapter outlines the research ethics that were considered.

Research Design

According to Bryman (2016) research design is a formulated outline of information collection and explanation that allows the researcher to theorize the issue being investigated and answer the study questions. In agreement, Kothari (2005) alluded a research design as an arrangement or guide for information assortment and translation which empowers the researcher to intellectualize the issue under examination. Similarly, Orodho (2003) portrayed the study design as the pattern or sketch used to provide answers for the research problem. This study embraced a descriptive research survey. National EMSC Data Analysis Resource Center (2010) highlighted that this is a design that depicts respondents in an accurate way without manipulating anything. The research design was viewed as proper on the grounds of improved collaboration

between the researcher and respondents simultaneously empowered the researcher to gather wide scope of data needed to analyze the elements influencing ART adherence. This concurs with Mugenda and Mugenda (2003) who stated that the descriptive research design approach is preferred in light of its action-oriented and encourage greater interaction between the researcher and the target population.

Population

As noted by Mugenda and Mugenda (2003), population is a whole gathering of people, procedures or items having mutual noticeable features. Moreover, Bryman (2016) stated that the populace in a study alludes to the entire collection of people that interest the researcher. In this investigation, the population was HIV positive adults enrolled on ART in Kibra, Nairobi County. District health information system (DHIS) estimated that 27,531 people are living with HIV in Kibra, with 27,258 enrolled on ART management in approximately 20 health facilities in the region. The health centres within Kibra include; Kibera Amref Health Centre, GSU Kibera Health Centre, Kibera DC Health Centre, Woodley East Health Centre, Centre for Global Health and Prevention (CDC), Kibera South, MSF, SHOFCO, Mbagathi District, Ushirika Clinic, St. Joseph the Worker, KEMRI, Kenyatta National Hospital, Kibera Human Development Clinic, St, Mary's Hospital, DREAM VCT Centre, and Kikoshep Kenya.

Target Population

Mugenda (2008) characterized the target population as the populace determined in the study whose findings are utilized, to sum up, the whole populace. As indicated by Kombo and Tromp (2011) a target population is whole gathering of individuals or components that share something and from which samples are taken for estimation.

In this investigation, the target population comprised HIV positive adults, males and females above 18 years of age registered on ART in two treatment Centres within Kibra. The researcher accessed the target population through the ART Centres in the region.

This study was conducted in Kibera DC Health Centre and Shining Hope for Communities (SHOFCO). These two centers were selected to represent the total population of all health centers in Kibra. The two centers were selected because of several factors. Firstly, the researcher considered to engage both public and private health centers in the study, thus, Kibera DC health is a government ran health center while SHOFCO is a Kenyan registered non-governmental charity health organization whose major activities include; youth and gender empowerment, education, health, economic and community empowerment, and water sanitation. The researcher's choice of a public and private health centers believed that the information gathered on factors affecting ART adherence and recommendations thereafter were diverse, thus, enriched the outcome of the study. Secondly, the two health centers selected serves a high number of clients in a given day. Thirdly, proximity to the local chief, administration offices for security purposes, and ease accessibility were considered.

Sample Size

The sample size in a research is a smaller gathering of people derived from a sample frame. Stebbins (2007) characterized a sample as a gathering of objects or persons that are utilized to represent the entire population. Mugenda and Mugenda (2003) suggested that thirty cases or more are required for a study or a 10% of the accessible population is enough. In this regard, the sample was limited to sixty (60) HIV positive adults who were already enrolled on ART. For this study, the sample was

determined by means of technique by Cochran (2011) which states, if choosing a sample from a huge populace, such as the population of Kibra, then the following formula is appropriate in determining the sample size:

$$n = (z^2 pq)/d^2$$

Whereby:

n = is the preferred sample size when the population is huge

z = standardized normal deviations at a chosen confidence level, for instance, if the confidence level is 95per cent, then Z =1.96.

p= the proportion in the target population assumes the characteristics being pursued. In this study, the optimal 50:50 basis will be presumed.

q = The balance from p to add up to 100 per cent. That is 1-P, which in our case yielded 1- 50per cent (.5)

d = Applicable significance level, for instance, at 95per cent, the significance level is 0.016

Therefore, by use of this procedure, the sample size for this study was calculated as follows;

$$n = (1.96^2 \times 0.5 \times 0.5) / 0.016^2$$

$$= 60 \text{ respondents.}$$

Sampling Techniques

A sampling technique is a method utilized by the researcher to pick people who will take part in the investigation (Bryman, 2016). Two categories of sampling techniques include; probability sampling and non–probability (Mugenda & Mugenda, 2003). This study used stratified random sampling, which is a probability sampling where each participant or unit had a likelihood of being selected to participate in the study.

The method ensured that all parts of the population were represented. Additionally, purposive sampling, which is a non-probability sampling technique, was utilized. The study targeted HIV positive adult males and females who were already registered on ART care and treatment.

A sample of 90 was identified that met the criteria of the study. The researcher began by identifying respondents willing to participate in the investigation, selected them from a larger group. Secondly, the researcher distinguished respondents who were already enrolled on ART. Those not enrolled on ART, were omitted. Thirdly, researcher inquired the numerical age of the respondents, those not within the age bracket of the study were isolated. Finally, the researcher with the assistance of the nurse in charge identified respondents who were intoxicated and those struggling with depression were requested not to partake in the investigation. Out of the 90 initially identified, 60 qualified to take part in the data collection exercise.

Data Collection Instruments

According to Kombo and Tromp (2006), data collection denotes a gathering of information aimed at demonstrating or objecting truths. Simultaneously, according to Mugenda (2008), data collection tools or instruments are items used to measure the variables of the study and are expected to yield accurate and meaningful data for decision-making. This study used questionnaires to collect data.

Questionnaire

In this study, questionnaires were utilized to gather information. The questionnaire was structured into four segments: Section A was a research developed tool comprising of 31 items developed to seek information on socio demographic of the respondents; section B identified different components that influence adherence to

ART; and section C was an Alcohol Use Disorders Inventory Test (AUDIT) that was utilized to ascertain alcohol dependency and intervention as noted by Bador (2001). AUDIT is a tool that was developed by WHO to help in identifying individuals with harmful use of alcohol. A mark of 8 and above in the AUDIT scale indicate harmful alcohol consumption and possible alcohol dependence. Score rates for the AUDIT are as follows: 0 to 7 points which indicates low risk, meaning the individual possibly does not have difficulty with alcohol consumption; 8 to 15 points indicates medium risk, meaning the individual may drink too much on occasion and may be at jeopardy; points 16 to 19 shows high threat which could lead to harm if has not already happened; and lastly 20 points and above indicates drinking is already causing harm and it is in the addiction stage. Regarding risk level intervention, for AUDIT scores of between 0 to 7, alcohol education is offered, for scores within 8 to 15, simple advice is offered, for 16 to 19 scores the intervention entail simple advice and counselling with continuous observing, while for scores within range of 20 to 40 indicate there is need to refer to a professional for diagnostic assessment and treatment. In study, total score of 8 and above was used to indicate harmful alcohol use and possible alcohol dependence.

Section D of the questionnaire entailed Beck Depression Inventory (BDI). BDI was generated by Aaron T. Beck, which entails twenty one inquiry multiple-choice, self-report inventory for estimating the presence and seriousness of depression among the respondents. Scores within 1 to 10 express that the ups and downs are viewed as standard, 11 to 16 indicate mild mood disturbances, and 17 to 20 illustrate borderline clinical depression, 31 to 40 states severe depression and any score over 40 is viewed as extreme depression. The questionnaires were administered to the adult living with

HIV who sought ART treatment and care at the two selected health centers in Kibra, and this was done at individual level. Each questionnaire was attached with an approval forms, which were signed by the respondents giving consent for partaking in the study.

Types of Data

This study used both primary and secondary data. Primary data was obtained from questionnaires which were used for data collection. Secondary data was acquired from previous studies conducted on the same topic.

Data Collection Procedures

Data collection is the procedure of gathering all the data desirable for a given study (Mugenda & Mugenda 2003). For this research, questionnaires were used for data collection. Face-to-face interviews were conducted. Data collection was conducted on weekdays and weekends when the individuals were seeking treatment.

Prior to the data collection exercise, the researcher sought for consent and endorsement from Daystar University Ethics Review Board (DUERB), National Commission for Science Technology and Innovation (NACOSTI), Nairobi County Ministry of Education, Nairobi County Ministry of Health, and Health Centers Officers in – charge. The Health Centers Officers in-charge randomly selected those who were involved in the study and placed them in one room for registration and then referred to each one of them to the interview rooms. The researcher and two research assistants conducted the data collection.

The researcher had previously met the research assistants, and the centre staff took them through the questionnaires for their understanding. During the data collection

exercise, the respondents were first received by the centre staff, they were taken through the general health observations in then referred to the interview rooms before going to the drug dispensing station. Secondly, the respondents were taken through the reason of the investigation and consent form to obtain their approval. Once the consent was obtained through signing, the respondents continued with the process of filling in the questionnaire.

The process of filling the questionnaire took between 30 to 40 minutes. Due to the language barrier and education level, the researcher and research assistance took the respondents through the questions and filled in the questionnaire. This also allowed further exploration on adherence to ART. During the interview sessions, the respondents' name initials were used to identify them. The same initial was also clearly labeled on the consent form. Once the questionnaires were filled together with the consent forms, they were handed over to the researcher for numerical identification. The interview sessions were conducted immediately, the respondents had gone through the general observations in the first station, and before they went to the drug dispensing station.

Inclusion and Exclusion Criteria

The consideration standards was the number as expressed of HIV positive adults between ages 18 and 35 who are enlisted on ART care. Then again, respondents who were clinically depressed and on anti – depressants and respondents who were intoxicated with alcohol and other drugs during the information gathering procedures were excluded.

Pretesting

Mugenda (2008) characterized pretesting as leading a primer trial of the legitimacy and reliability of the data collection tools. Pretesting help identify any vague and ambiguous questions which might not have been understood by the respondents (Cooper & Schindler, 2006). The researcher pretested the data collection instruments. The pretesting aided the researcher to test appropriateness of the instruments, to ascertain their sensitivity to comprehensibility and to test whether they capture the information intended. It helped check the simplicity of the questions whether respondents understood them. The pretesting also helped the researchers evaluate the time taken in administering the instrument and made relevant adjustments.

Mugenda (2003) recommended that pretesting ought to be completed on individuals not exactly equivalent to those that will not participate in the study however with comparable attributes as the sample. For that reason, the pretesting of this study was conducted within a support group of respondents who received ART at the Satellite Health clinic in Nairobi County. The pretest centre was considered because of its proximity and the researcher's previous interaction with the centre. Six (6) respondents representing 10% of the study's target population were nominated to partake the pretest investigation. Respondents for pretesting were picked randomly with assistance of the support group leader.

Validity and Reliability of the Research Instruments

To ensure consistency of the study, the researcher conducted a pretest to determine reliability and legitimacy of the research instruments. Content legitimacy formula was used to measure the variables. Amin (2005) contends that content legitimacy is illustrative of the substance. Consequently, the content legitimacy of an instrument

relies upon the ampleness of a predetermined area of substance that is tested. The equation is; Content Validity Index= (Number of judges pronouncing thing legitimate)/ (Total number of things). As indicated by Amin (2005), suggestion is tools utilized in research ought to have CVI of about 0.78 or greater at least three specialists are viewed as proof substance legitimacy. The substance legitimacy equation was utilized in this investigation to measures the thoroughness and representativeness of the substance utilized in the study.

Data Analysis Plan

Kombo and Tromp (2011) defined data analysis as a systematic in – depth analysis and examination of coded information and making deductions, inferences and conclusion. Immediately the raw data was obtained from the field, all the questionnaires were coded for the purpose of entry and analysis using numbers and symbols by the researcher. The questionnaires were stapled for confidentiality and carried to the entry point. They were coded and entered. Data entered was cleaned and analyzed using Statistical Package for Social Sciences (SPSS) version 22. The analyzed data was presented in percentages, bar graphs, pie charts, frequency tables and descriptive statistics provided.

Ethical Considerations

It is important to note that researchers are directed with a set of ethics which guide their work. In this study, different ethical issues were considered to ensure the research was carried out within the stipulated standards:

Prior to data collection exercise, the researcher first acquired research approval from Daystar University Ethics Review Board (DU-ERB). Then the researcher obtained approval from NACOSTI, as well as from the Nairobi County Department of

Education and Nairobi County Department of Health. Importantly, the researcher sought research permission from the officer in charge of Kibera DC Health Centre and SHOFCO.

The researcher sought the respondent's approval before data collection exercise. Respondents were taken through objective of the investigation, reasons for their inclusion in the study, the duration of the exercise, and the process of publishing the findings. Respondents were educated on possible harm, including psychological, emotional, legal, and physical, for participating in the study. Respondents were taken through the informed consent form. They gave their consent by appending their signature or initials on the form before participating in the study. Those who declined to sign the consent form for various reasons, the verbal ascent, was obtained.

Confidentiality and anonymity are other ethical considerations the researcher upheld. The researcher assured the respondents that all information obtained and their identity was kept confidential. Confidentiality was maintained by ensuring anonymity by the use of pseudonyms, or initials were used to conceal identity. The research tool did not reveal any personal details of the respondents. The researcher ensured safety in the storage of the information gathered. The researcher collected all questionnaires and sealed them in envelopes. The consent forms were put in separate folders. Although research assistants were used in the study, the researcher ensured that they sustained professionalism and ensured that they observed confidentiality on the identity of the respondents and information gathered. Importantly, the limits of confidentiality was discussed beforehand at length.

Free and voluntary participation of respondents was guaranteed. As indicated by Silverman (2016), it is unprincipled to force or influence respondents to participate in a research investigation. Respondents ought to freely choose to take part in the any investigation.

Before administering the tool, the respondents were explained the importance of the investigation, which was to explore factors influencing ART adherence. Objectives of study, possible benefits of findings, and any compensation for participating in information collection exercise were disclosed to them. They were guaranteed that there was no invasive procedure that was to be used on them. The respondents were assured that they would be protected from any harm. If, however, during the interview session, the respondents may experience negative emotional feelings, they could take time to rest or opt-out of the interview session. Moreover, the researcher and research assistants gave more time to respondents who experienced emotional distress to explore further the possible triggers. Integrity and respect for autonomy were upheld as much as possible. The respondents were given time to give consent to participate or to opt-out. All respondents present gave their consent to participate. The interview sessions were conducted in soundproof rooms ensuring those in the waiting area did not hear the information being given by the respondent.

Last but not least, measures of self-care were sustained throughout the study period. Debriefing sessions for the data collection team were conducted toward the finish data collection days. These enabled them to share their experience during the interview sessions. Issues of countertransference were addressed during the session. The debrief session helped reduce burnout issues and enhanced self-care.

Summary

The chapter has focused on methodology utilized in the investigation. The section has additionally clarified the research populace, sample size, sampling techniques used, data collection tools, procedures, pretesting, data analysis plan, and ethical consideration have been expressed. The succeeding chapter presents a detailed discussion on data presentation, analysis, and interpretation.

DAYSTAR UNIVERSITY

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS, AND INTERPRETATION

Introduction

This chapter focuses on analysis, presentation, and interpretation of data that was obtained during the data collection exercise. Information was gathered using questionnaires. The findings were examined, analyzed and interpreted to address the research questions. All information gathered was analyzed and presented in form of tables and figures.

Analysis and Interpretation

Response Rate

A sample size of 60 individuals registered on ART were targeted. The researcher administered 60 questionnaires to the respondents and all the questionnaires were filled, giving a 100% response rate. This is satisfactory in accordance with Mugenda and Mugenda (2008), who suggests that 70% or more response rate is excellent. Personal attention with the respondents, clarifying the motivation behind the investigation, and its usefulness to the entire society improved the response rate. Additionally, an introductory letter from Daystar University and Nairobi County Health Office improved the response rate. The involvement of the centres in charge and staff in the recruitment and data collection process profoundly influenced the high number of response rates.

Demographic Information of Respondents

Table 4.1 presents results of the respondents' socio-demographic characteristics.

Table 4.1: Respondents' Socio-demographic Characteristics

Variable	Category	Frequency (N=60)	Percent
Gender	Male	35	58.3
	Female	25	41.7
Age	Less than 18	3	5.0
	18-28	13	21.7
	29-39	25	41.7
	40-50	15	25.0
	Above 50	4	6.7
Marital Status	Single	18	30.5
	Married	26	44.1
	Widowed	8	13.6
	Divorced/separate	7	11.9
	Non-Response	1	
Religion	Christian	46	86.8
	Muslim	6	11.3
	Hindu	1	1.9
	Non-Response	7	
Level of Education	University	1	1.7
	Middle level / Tertiary college	3	5.0
	Secondary	27	45.0
	Primary	29	48.3
Occupation	Employed	19	39.6
	Unemployed	15	31.3
	Business	14	29.2
	Non-Response	12	
Monthly Income	Below 5000	18	40.0
	Between 5000-10000	21	46.7
	Between 10000-20000	5	11.1
	Above 20000	1	2.2
	Non-Response	15	

As noted in Table 4.1, more than half at 35(58.3%) were males while 25(41.7%) were females. In terms of age, 3(5.0%) of respondents were aged less than 18 years, 13(21.7%) were aged between 18-28 years, those between 29-39 years were 25(41.7%) another 25(25.0%) were between 40-50 years and 4(6.7%) per above 50 years of age.

About marital status, 26(44.1%) indicated they were married, 18(30.5%) reported they were single, 8(13.6%) of them were widowed while 7(11.9%) were divorced /separated, notably, one respondent did not divulge his marital status. On religion, majority of respondents 46(86.6%) were Christians, followed by 6(11.3%) of them Muslims and another 1(1.9%) Hindu. From the findings, 29(48.3%) of the respondents indicated they had primary level of education, 27(45.0%) of them had secondary level, and 3(5.0%) had middle level/tertiary while 1(1.7%) of them had university level of education.

Most respondents at 19(39.6%) of the respondents indicated that they were employed, 15(31.3%) were unemployed, 14(29.2%) indicated they engage in business while 12 respondents did not respond to this question. Regarding their monthly income, 18 (40.0%) of the respondents indicated their monthly income was below Kenya shillings 5,000, 21(46.7%) earn between the bracket of 5,000 and 10,000, 5(11.1%) income ranged between 10,000 and 20,000, while 1(2.2%) earned above 20,000 shillings. From the findings most respondents earn below 5,000 shillings per month.

Factors that affect HIV Anti- Retroviral Therapy Adherence

The first objective of the study sought to explore factors that affect adherence to HIV anti-retroviral among HIV positive adults in Kibra, Nairobi County, Kenya. To achieve this objective, respondents were required to specify some of the factors that affect their adherence levels. Findings were as presented, analyzed, and interpreted herein after.

Duration, Frequency, Number of ARVs Taken, and Cost Incurred

This study aimed at establishing the duration, frequency, number of ARVs taken and cost incurred by the respondents. Table 4.2 presents the findings.

DAYSTAR UNIVERSITY

Table 4.2: Frequency, Duration, Distance and Cost Incurred by the Respondents

Variable	Category	Frequency (N=60)	Percentage
Length of time on ARV	0-6 months	8	13.3
	6-12 months	5	8.3
	12 months to 3 years	14	23.3
	3 years and above	33	55.0
Frequency of taking ARV and number of pills taken in a day	Once per day	43	71.7
	Twice per day	17	28.3
	One table per day	34	57.6
	One tablet twice a day	2	3.4
	Two tablets twice a day	10	16.9
	Three tablets twice a day	5	8.5
	Two tablets per day	6	10.2
	Three tablets per day	2	3.4
	<i>Non-Response</i>	1	
	Distance to CCC	0-10 km	16
10-50 km		42	71.2
50-100km		1	1.7
<i>Non-Response</i>		1	
Means of Transport to CCC	Walking	24	42.1
	Public transport	18	31.6
	Motor bike /cycling	8	14.0
	Walking and Public transport	7	12.3
	<i>Non-Response</i>	3	
Financial cost to the Clinic	0-20 Kshs.	8	21.6
	20-100 Kshs.	25	67.6
	100-200 Kshs.	4	10.8
	<i>Non-Response/None</i>	23	
Other cost incurred by the respondents include and not limited to:-	Food	11	20.4
	Treatment of Opportunistic Infections	1	1.9
	Food and treatment infections	22	40.7
	Food, Hospitalization, and treatment of Opportunistic Infections	19	35.2
	Hospitalization and Treatment of Opportunistic Infections	1	1.9
	<i>Non-Response</i>	6	

On duration of taking ARV, 33(55.0%) respondents reported they had been on ARV for more than three years, 14(23.3%) reported that they had been on ARVs between 12 months and 3 years, those in the bracket of 6-12 months had a proportion of

5(8.3%), while another 8(13.3%) indicated they had taken ARVs for less than 6 months.

On frequency of taking ARVs, most of the participants 43(71.7%) indicated that they take ARVs once a day while another 17(28.3%) take ARVs twice a day. Regarding the number of pills taken in a day 34(57.6%) of the respondents stated they take one tablet per day, another 10(16.9%) take one tablet twice a day, 6(10.2%) reported they take two tablets per day, those taking three tablets were 5(8.5%) while 2(3.4%) take three tablets ones a day.

Concerning the distance to CCC, 16(27.1%) respondents reported that they travel between 0 and 10 km, a good number of respondents 42(71.7%) travelled between 10 and 50 km to the health center. Respondents were requested to give the means of transportation they use to the CCC, 24 (42.1%) indicated they walk to the CCC, another 18(31.6%) stated they use public transport, 8(14.0%) of the respondents use motorbike/cycling, while those who walk or use public transport when funds allow were at 7(12.3%). Additionally, on financial cost to the CCC, 8(21.6%) of the respondents used between 0–20 shillings, a good number 23(67.6%) spend between 20 and 100 shillings, while 8(12.3%) reported they use between 100 and 200 shillings.

Regarding other cost incurred by respondents included, 22(40.7%) reported extra costs was on food and treatment of opportunistic infections another 19(35%) of them incurred costs on food, treatment of opportunistic infections and hospitalization. Of importance to note, 11(20.4%) of the respondents reported they incurred costs on food alone, while another 1(1.9%) of them incurred costs on treatment of opportunistic infections only and 1(1.9%) respondents reported extra costs in hospitalization and treatment of opportunistic infections costs. Six (6) respondents did not incur any

other costs. As per the findings, a good number of respondents take medication ones a day and equally incur cost treatment of opportunistic infections, to buy food and transport to the clinic.

Perception of Clinic Characteristics

The study sought to establish the respondents' perception on clinic characteristics.

Table 4.3 presents the results.

Table 4.3: Perception of Clinic Characteristics by the Respondents

Variable	Category	Frequency (N=60)	Percent	P- Value
Rating of Services received at the clinic	Very good	41	68.3	0.040
	Good	16	26.7	
	Average	3	5.0	
Feel well attended by HCWs	Yes	59	98.3	0.000
	Not sure	1	1.7	
Privacy During Consultation and counselling	Yes	60	100.0	0.000
Disclosed status to someone other than HCWs	No	15	25.0	
	Yes	45	75.0	
Ever been treated differently by family and friends because HIV status	No	38	66.7	
	Yes	19	33.3	
	Non-Response	3		

Forty-one (68.3%) of the respondents stated that services received in the clinic were very good, 16(26.7%) reported good services, while 3(5.0%) said that the services offered at the CCC were average. When asked whether they felt they were attended well by the health care workers, 59(98.3%) agreed while 1(1.7%) was not sure.

Consultation and Counselling Sessions on HIV/AIDS Status

All respondents at 60(100%) reported that the consultation and counselling sessions were conducted privately. Regarding respondents' revelation of HIV positive status to

someone else other than the HCWs, a great number at 45(75.0%) indicated that they had divulged their HIV positive status to other people other than the HCWs, while 15(25.0%) stated that they had not revealed their status to someone else other than the HCWs. Respondents who had been treated differently by family and friends because of their HIV because of their HIV positive status were 38(66.7%), while 19(33.3%) stated that they had not been treated differently. From these findings, it was evident that patients receive counselling services at the clinics at the same time a good number of patients have disclosed their HIV positive status to HCW and other people.

Disclosure of the Identity of the Person

Figure 4.1 shows the identity of the person's the respondents had disclosed to other than HCWs.

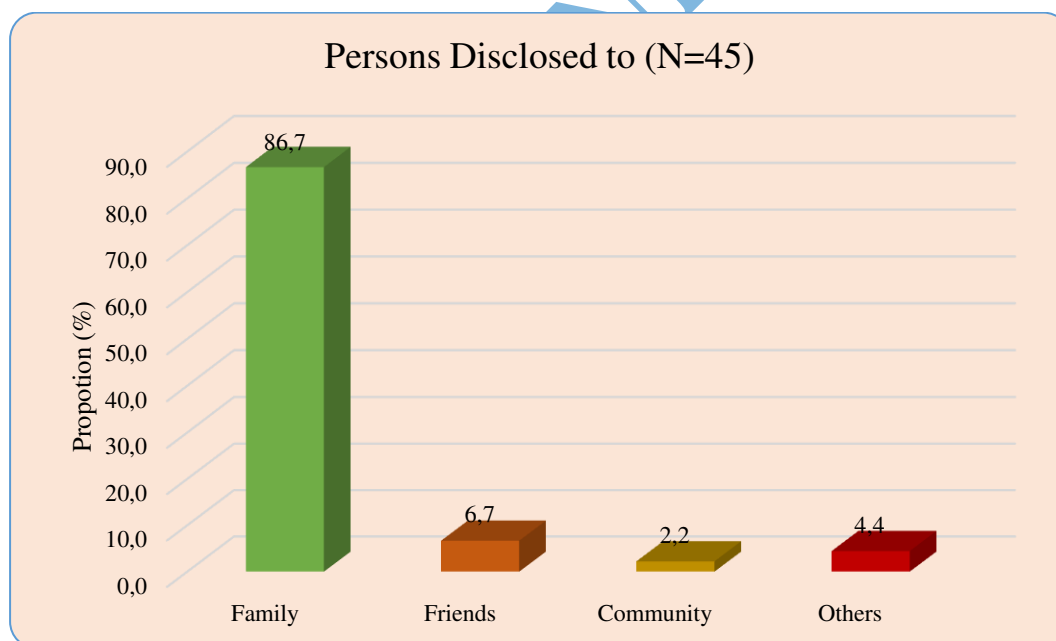


Figure 4.1: Identity of Persons Disclosed to Other than HCWs

As shown in Figure 4.1, majority of the respondents at 86.7% (39) indicated they had disclosed it to family members, 6.7% (n=3) friends, 2.2% (n=1) community members and 4.4% (n=2) disclosed to others. The study further indicates a positive significant

influence of perception of clinical services on adherence of HIV anti-retroviral therapy with a p-value of 0.000

Further, the researcher sought to know reasons for respondents disclosing and not disclosing their HIV positive status. Table 4.4 presents the results.

Table 4.4: Reasons for Disclosure and Non-disclosure of HIV Status

Reasons	No. of responses	Percent
Reasons for Disclosing		
Encouraged by health care workers; fear of serious illness and sufficient trust in the individual confided in	16	37.2
Encouraged by Health care workers	10	23.3
Encouraged by health care worker, and sufficient trust in the individual confided in	9	20.9
Sufficient trust in the individual confided in	4	9.3
Encouraged by Health care workers and fear of serious illness & thus need of support from friends and relatives	3	6.9
Fear of serious illness and need of support from friends and relatives	1	2.3
Reasons for Not Disclosing		
Fear of rejection	3	27.3
Fear of stigmatization and being perceived as unfaithful	4	36.3
Fear of being beaten by spouse and intimate sex partner	4	36.3

Out of the 45 (71.6%) respondents who indicated that they had disclosed their HIV positive status to other persons, 10(23.2%) indicated that they did so as a result of being encouraged by the HCW only, 9(20.9%) indicated that they were encouraged by HCW then had adequate trust in the person they disclosed to, 4(9.3%) had sufficient trust in the specific person they revealed to, 3(6.9%) gave reasons for disclosure as being encouraged HCWs; feared of severe ailment and necessity of support from networks, while 1(2.3%) had disclosed his HIV positive status because they feared serious illness and needed support from friends and relatives.

The 11(18.3%) respondents who had not disclosed their HIV positive status to anyone else gave the following reasons; 3(27.3%) feared rejection, 4(3.3) feared stigmatization and being perceived as unfaithful, while another 4(3.3%) feared being beaten by spouse and intimate sex partner

Further, the study sought to establish the ways respondents were treated differently by relatives and friends owing to HIV positive health status. Table 4.5 presents the findings.

Table 4.5: Ways Respondents were Treated Differently by Family Members because of HIV Positive Status

Ways they were treated differently by family members because of HIV positive status	No. of responses	Percent
1. I was isolated by family members and friends	4	22.2
2. I was stigmatized	4	22.2
3. Social support was withdrawn by family members/ friends; isolated by family members/friends; stigmatized	8	30
4. I was isolated by family members/friends; stigmatized	1	5.5
5. Social support was withdrawn by family members/ friends; isolated by family members/friends;	1	5.5

Out of the 60 respondents, 18(30%) reported that they were treated contrarily by family members and friends due to their HIV positive health status. Out of the 18 respondents, 8 (30%) stated that social support was withdrawn, isolated and stigmatized by family members/friends due to their HIV positive status. Another 4(22.2%) indicated that they were isolated by family members and friends because of their HIV status. An additional 4(22.2%) stated that they were stigmatized due to their HIV positive status while another 1(5.5%) were isolated and stigmatized by family members/friends and similarly 1(5.5%) indicated that social support was withdrawn and were isolated by family members/ friends. Findings noted that individuals living

with HIV have been stigmatized in one way or the other by significant people around them.

Benefits Gained from Using ARVs.

Respondents were further asked to give their reactions regarding the benefits they have gained from using ARVs. Table 4.6 presents the findings.

Table 4.6: Benefits Gained from Using ARV

Benefit	Frequency (N=50)	Percent
a) Better health	17	34
b) Do not get sick	11	22
c) Looking healthy	11	22
d) Improved immunity	6	12
e) Others	3	6

A majority of the respondents 50(83.3%) reported that they had gained various benefits from using ARVs. Out of the 50(83.3%) respondents, 17(34%) of them indicated they had gained better health as a result of using ARVs, 11(22%) said they no longer get sick because of using ARVs, another 11(22%) indicated that they looked healthier since they started ARVs, 6(12%) reported improved immunity, while another 3(6%) gave other reasons as benefits of using ARVs. From these results, it was apparent that a vast majority of the respondents had benefited from using ARVs.

Knowledge of HIV and ARVs and its Impact to Art Adherence

The study sought to find out the respondents' knowledge of HIV and ARVs and its impact to ART adherence. Table 4.7 presents the individual responses to questions regarding their knowledge of HIV and ARVs.

Table 4.7: ARVs and HIV Knowledge

ARVs and HIV Knowledge	Strong agree	Agree	Disagree	I don't know	Non-Response	P-Value
HIV / AIDS is curable disease	5(8.5%)	17(28.8%)	29(49.2%)	8(13.6%)	1	
ARVs cure HIV	5(8.6%)	16(27.6%)	36(62.1%)	1(1.7%)	2	
Adhering to the prescribed ART is important	43(74.1%)	13(22.4%)	1(1.7%)	1(1.7%)	2	0.000
I expect to be cured from HIV in future	17(28.8%)	26(44.1%)	13(22.0%)	3(5.1%)	1	0.506
Alcohol and drug use does not impair effectiveness of Arv	6(10.2%)	8(13.6%)	30(50.8%)	15(25.4%)	1	
ARVs have no side effects	7(12.1%)	10(17.2%)	38(65.5%)	3(5.2%)	2	
ARVs prevent Opportunistic Infections	34(57.6%)	21(35.6%)	4(6.8%)	0(0.0%)	1	0.000
ARVs improve immunity	46(78.0%)	13(22.0%)	0(0.0%)	0(0.0%)	1	0.005

Regarding ARVs being a treatment, 29(49.2%) respondents disagreed with the proclamation, while 17(28.8%) agreed with the same statement. Additionally, 5(8.5%) respondents strongly agreed that HIV/AIDS was a treatable illness, while 8(13.6%) reported that they did not know. On ARVs, being a cure for HIV more than half of the respondents 36(62.1%) differed with the statement, while 16(27.6%) respondents settled with the statement that ARV cure HIV. Additionally, 5(8.9%) strongly agreed that ARV cure HIV, while 1(1.7%) respondent reported that they did not know if ARVs cure HIV.

Regarding importance of adhering to prescribed ART, a good number of respondents at 43(74.1%) strongly agreed that it was important to adhere to prescribed ART, another 26(22.4%) respondents agreed on the same statement, 1(1.7%) respondent disagreed, while 1(1.7%) respondent reported they did not know if adhering to prescribed ART was important. On expectations to be cured from HIV in future, 26(44.1%) of the respondents expected to be cured from HIV in future, 17(28.8%) respondents strongly agreed with the statement, 3(22.0%) disagreed with the statement while another 15(25.4%) did not know if they will be cured in the future.

On alcohol impairing effectiveness of ARV, 30(50.8%) disagreed with the statement that alcohol and drug use does not impair effectiveness of ARV, another 15(25.4%) indicated that they did not know, 6(10.2%) strongly approved the proclamation, while 8(13.6%) settled per the statement that alcohol and drug use does not impair effectiveness of ARV. From these findings, it is evident that a good number of respondents had knowledge on HIV and ART adherence.

Scheduled Appointments to the Clinic

Figure 4.2 presents the proportion of participants who had missed scheduled appointments to the clinic.

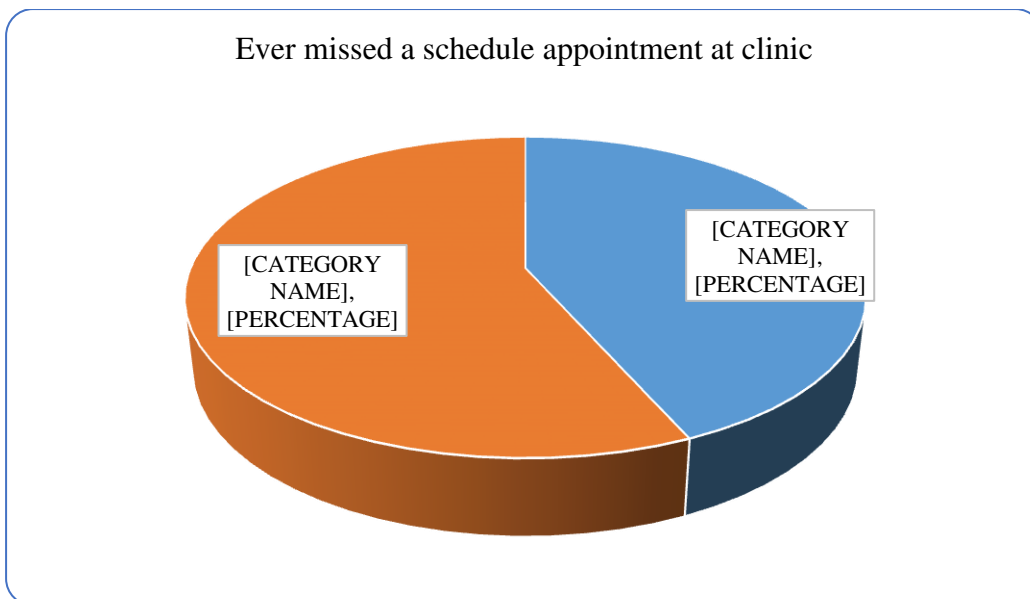


Figure 4.2: Proportion of Respondents who Missed Appointment at the Clinic

Out of 60 respondents, 34(56.6%) reported that they had missed scheduled appointments at the clinic, while 26(43%) indicated that they had never missed scheduled appointments at the clinic. From these findings, it is evident that a great number of respondents had missed scheduled appointments at the clinic with a p-value of 0.005.

Figure 4.3 presents the various reasons reported by respondents for missing scheduled clinic appointments.

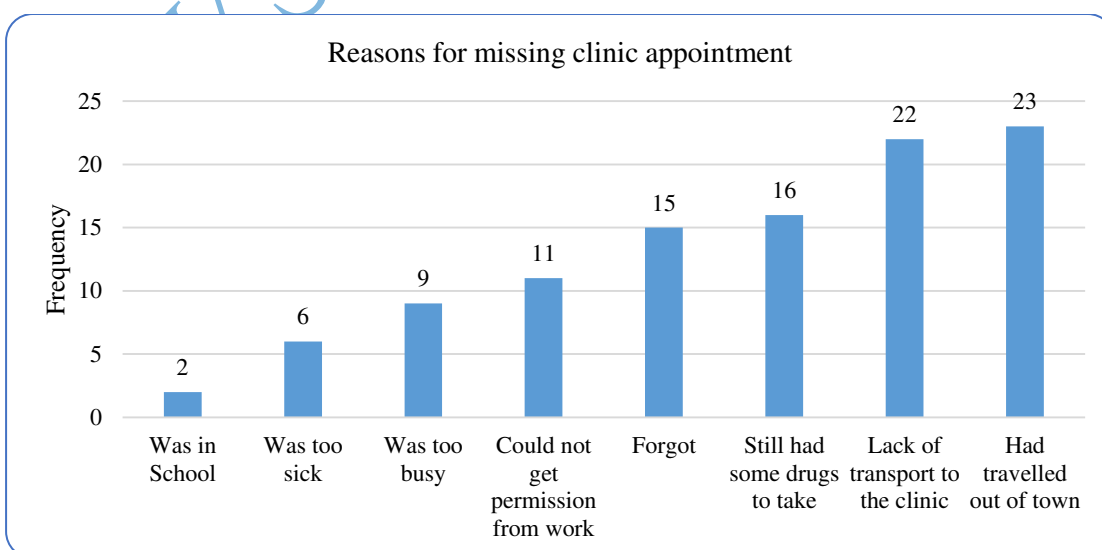


Figure 4 3: Reasons for Missing Clinic Appointment

Those who reported that they had missed scheduled appointment because they had travelled out of town by the time of their appointment date were at 23(36.8%). Additionally, 22(36.6%) reported lacked transport money to the clinic. Another 16(26.6%) indicated that they had some drugs with them to take by the time of the appointment, while 15(25%) reported that they forgot the appointment dates. Additionally, 11(18%) respondents reported they missed scheduled clinics because they could not get permission from work to attend to their health. Notably, 9(15%) respondents reported that they were too busy during the clinic appointment date, while another 6(10%) and 2(3%) respondents' reasons for missing scheduled clinic appointments as being too sick and in school, respectively. From these findings, it is paramount that respondents had missed scheduled clinic appointments.

Further, Table 4.8 presents the proportion of participants who skipped taking ARV medication.

Table 4.8: Ever Skipped taking ARV Medication

Ever skipped taking ARV	Frequency	Percent	P – value
Yes	40	67	0.000
No	20	33	0.003
Total	60	100	0.003

As shown in Table 4.8, 67% (n=40) of the respondents indicated that they have skipped taking ARV medication while 33% (n=20) specified had never skipped taking ARV treatment. Therefore, there are substantial influences of skipping ARV medication with a p- value of 0.003.

The researcher went further to find out respondents' reasons for skipping ARV medication. Figure 4.4 presents the findings.

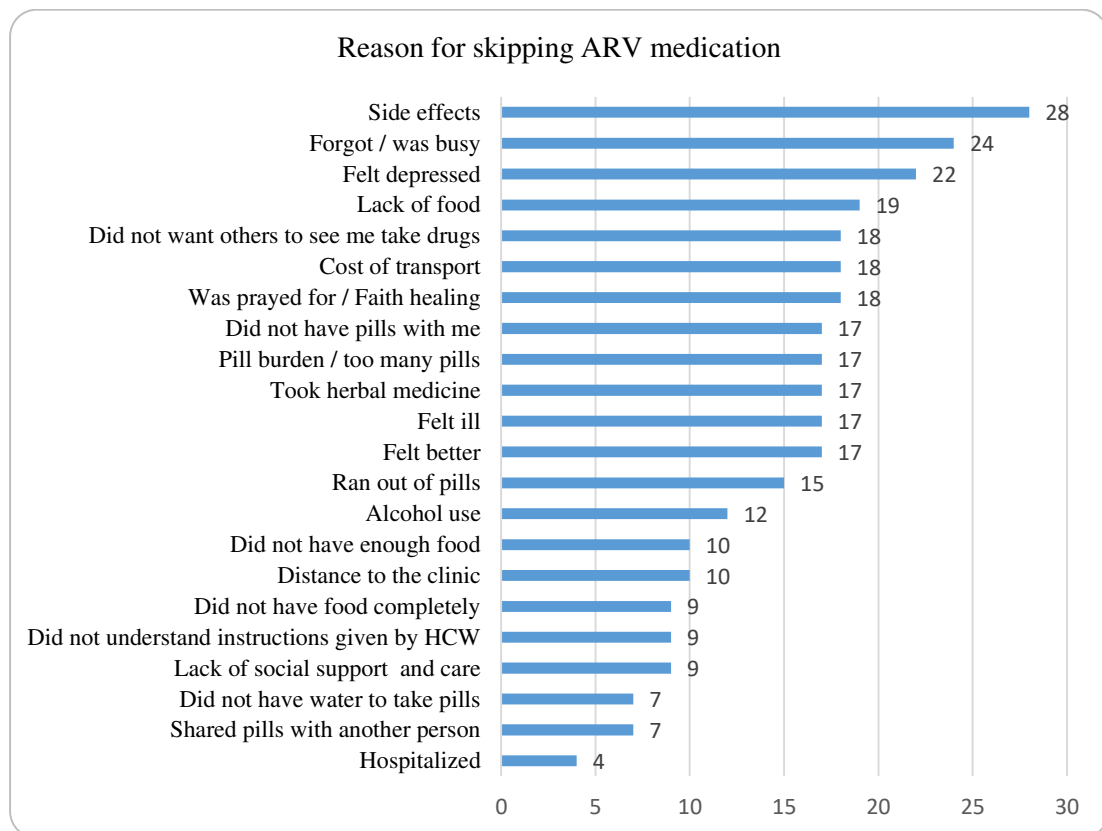


Figure 4. 4: Reasons for Skipping Medication

Respondents gave various reasons on skipping ARV medication. Most respondents at 28(46.6%) reported drug side effects as their major reason of skipping ARV medication followed by reasons such as forgetting appointment dates or being too busy take ARVs at 24 (40%). Another 22(36.6%) respondents reported that they felt depressed and did not take ARVs while another 19(31.6%) cited lack of food as their major reason of skipping ARV medication. Cost of transport to the clinic for drug refill, fear of being seen by people when they take ARVs and being prayed for / faith healing were reasons reported by 18(30%) in the three categories.

A good number of respondents at 17(28%) stated they did not have pills with them by the time of taking ARVs, too many pills, use of herbal medication, feeling ill, and feeling better were various reasons given for skipping ARV medication. Other reasons of skipping ARV medication as reported by respondents included respondents running out of pills at 15(25%), alcohol use at 12(20%), while 10(16.6%) indicated lack of food thus skipped ARV medication. Physical distance to the clinic was reported by 10(16.6%) respondents as reason of skipping ARV medication.

Other reasons of skipping ARV medication as shown in Figure 4.4 were lack of food, lack of understanding of the instructions given by the HCW and lack of social support and care 9(15%). An additional, 7(11.6%) reported lack of water and sharing of pills with another person as their reasons of skipping ARV medication. Respondents being hospitalized and thus skipping ARV medication was at 4(6.6%). From the findings, drug side effects, was the major reason for skipping ARV medication.

Counseling Services at the Clinic, Use of Alternative Medicine and Alcohol Usage

Table 4.9 presents the results of responses on counseling services at the clinic, use of alternative medicine and alcohol usage.

Table 4.9: Counseling, Alternative Drugs and Alcohol Use

Variable	Category	Frequency	Percent
----------	----------	-----------	---------

		(N=60)	
Received Counseling's from HCWs before Initiation of ARVs	No	1	1.8
	Yes	56	98.2
	<i>Non-response</i>	3	
Use of Alternative Medicine (Herbal)	No	41	69.5
	Yes	18	30.5
	<i>Non-reaction</i>	1	
Usage of alternative medicine (Faith Healing)	No	44	77.2
	Yes	13	22.8
	<i>Non-response</i>	3	
Alcohol usage in the last one month	No	37	62.7
	Yes	22	37.3
	<i>Non-reaction</i>	1	

Out of the 60 respondents interviewed a good number, 56(98.2%) reported that they received counselling services from HCWs before initiation of ARVs, while 1(1.8%) reported that they did not receive counselling services from HCWs before ARV initiation. Regarding use of alternative medicine (herbal medicine), 41(69.5%) reported they had not used alternative herbal medicine while 18(30.5%) said they had used alternative herbal medicine. On use of alternative medicine (faith healing) 44(77.2%) respondents had received faith healing while 13(22.8%) had not. Respondents who had not used alcohol in the last month were 37(62.7%) while 22(37.3%) had used alcohol in the last one month. From these findings, it is evident that counselling services were offered at the health centres, a good number of respondents had not used herbal treatment, and notably a good number of respondents had received faith healing while more than half of respondents had not used alcohol in the last month.

Motivating Factors of Using ARVs

Respondent were requested to indicate motivating factors of using ARVs. Figure 4.5 presents the findings.

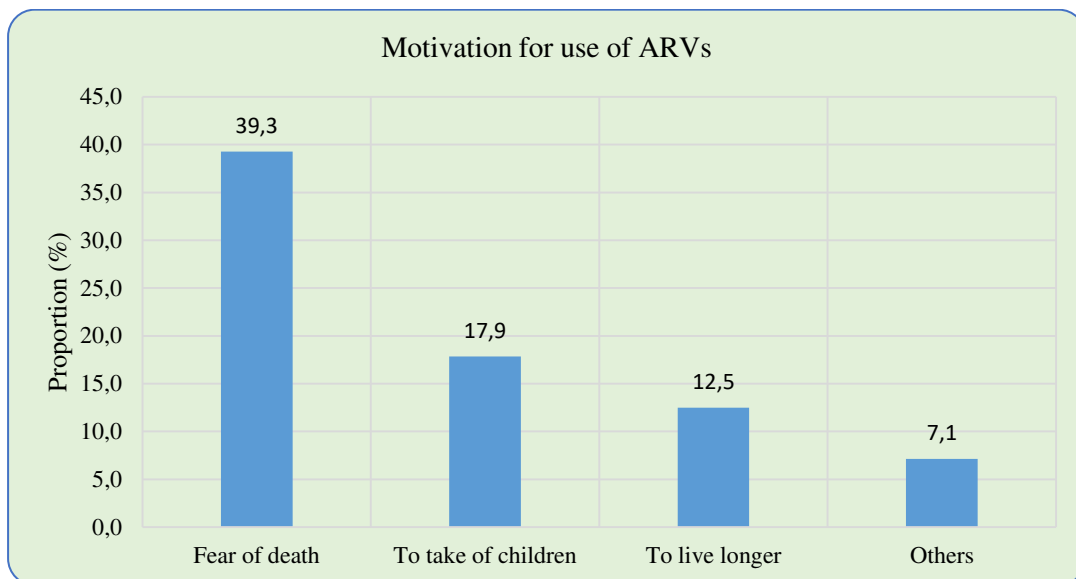


Figure 4.5: Motivation for Use of ARV Medications

Fear of death was rated as the greatest 39.3% motivator of use ARV. The desire to take care of children was at 17.9%, another 12.5% reported their greatest motivation of using ARVs was desire to live longer while 7.1% gave other reasons as their motivation to use ARVs. From the findings, respondents have diverse motivating factors of use of ARVs with fear of death as the greatest motivating factor.

Challenges Faced by Participants when Taking ARVs.

Figure 4.6 presents the results of the main challenges faced by participants when taking ARVs.

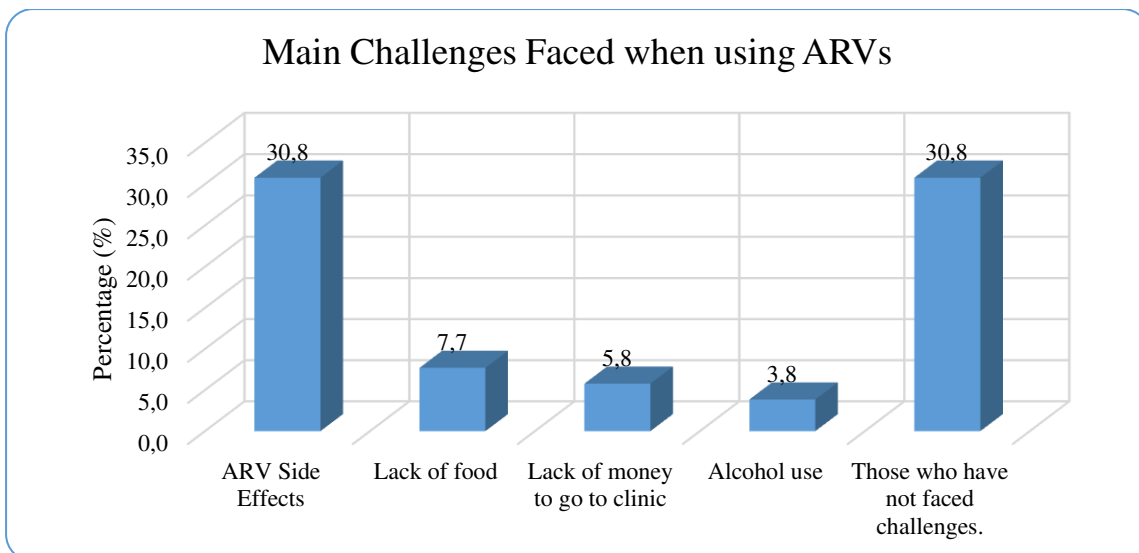


Figure 4.6: Main Challenges in Using ARV Medications

The main challenge as reported by the respondents was ARV side effects at 16(30.8%). Other challenges experienced by respondents when taking ARVs were lack of food at 4(7.7%), lack of transport money to go to clinic at 3(5.8%) and alcohol use 2(3.8%). A good number of respondents at 16(30.8%) stated that they had not experienced any challenges when using ARVs. According to the findings, respondents experience diverse challenges when taking ARVs with drug side effects being the main challenge. Of importance to note, a good number of respondents had not experienced any challenges taking ARVs.

The study further explored the ways respondents used to avoid the challenges they face when taking ARVs. Figure 4.7 presents the results.

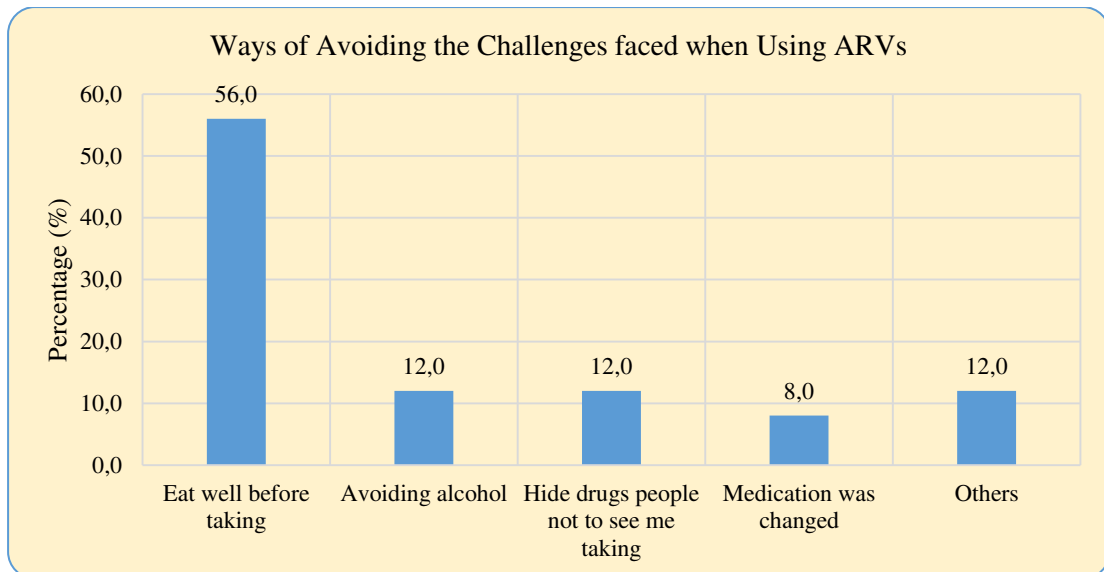


Figure 4.7: Ways of Dealing with Challenges of Taking ARVs

From the findings shown in Figure 4.7, 12(56%) of the respondents stated that they eat well before taking ARVs to avoid facing challenges when using ARVs, 3(12.0%) avoid using alcohol, 3(12.0%) hide drugs to avoid people seeing them take, 2(8.0%) had their medication changed, while another 3(12.0%) gave other ways of avoiding the challenges they face when using ARVs.

Psychological Implication of Non-adherence

The study sought to assess the psychological implication of ART non-adherence among HIV positive adults in Kibra, Nairobi County, Kenya. Findings of prevalence of Alcohol use from the AUDIT used, 22(37%) of respondents indicated to have used alcohol in the last one month, while 37(63%) reported they had not used alcohol in the last one month.

Table 4.10 illustrates the results of alcohol risk levels among the participants who were consuming alcohol.

Table 4.10: Alcohol Risk Level Intervention Score

Alcohol Risk Level Intervention Score	Frequency (N=22)	Percent (%)	95% C.I.		p-value
			Lower	Upper	
Alcohol training	4	18.2	4.5	36.4	
Simple advice	7	31.8	13.6	50.0	0.003
Simple advice and brief counselling and monitoring	3	13.6	0.0	27.3	
Referral to a specialist for diagnostic assessment and management	8	36.4	18.2	54.5	0.000

Of those who have used alcohol in the last month, 8(36.4%) required referral to an expert for investigative assessment and management as an intervention, 7(31.8%) required advise on alcohol use, 18.2% (n=4) required alcohol education intervention and 3(13.6%) required simple advice, counselling and continued observing as an intervention. The Mean AUDIT scores was 16.2, Median=14.5, SD=10.7 and ranged from 2-35. The findings are indicative of minimal alcohol use among respondents and preferred method of intervention being referred to an expert for assessment and management.

Prevalence of Non-adherence to ARVs

Figure 4.18 presents the results of prevalence to non-adherence of ARVs.

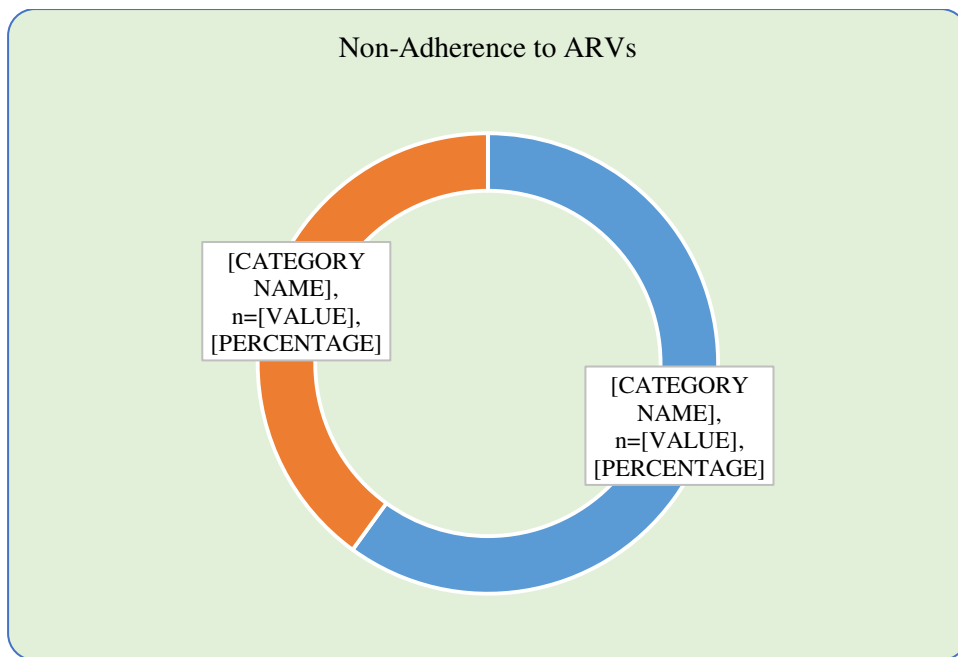


Figure 4.8: Prevalence of ARVs Non-Adherence

Most of the respondents at 3(60%) were adherent to ARVs while 24(40%) were non-adherent to ARVs. The findings indicate that most HIV positive individuals on ARVs are adherent.

Prevalence of Depression among HIV Positive Taking ARVs

Table 4.11 presents the prevalence of depression among respondents in the in the last one month by use of Beck Depression Inventory.

Table 4.11: Prevalence of Depression

Depression Levels	Frequency (N=60)	Percent (%)	95% C.I.		P- Value
			Lower	Upper	
Normal	22	36.7	25.0	48.3	0.000
Mild depression	4	6.7	1.7	13.3	
Borderline clinical depression	3	5.0	0.0	11.7	
Moderate depression	9	15.0	6.7	25.0	
Severe depression	13	21.7	11.7	31.7	
Extreme depression	9	15.0	6.7	25.0	

The mean depression score was 21.3; Median=21.6, SD=16.0 and the scores ranged from 0-49. A total of 22(36.7%) respondents were classified as having normal levels of depression, 4(6.7%) categorized as having mild levels of depression, 3(5.0%) categorized as having borderline / clinical depression levels, 15.0% (n=9) classified as having moderate depression, 13(21.7%) classified as having severe level of depression while 9(15.0%) classified as having extreme level of depression. There was a significant prevalence of depression with a p-value of 0.000.

Socio-demographic Characteristics on Non-adherence

The study sought to determine socio-demographic characteristics of ART non-adherence among HIV positive adults in Kibra, Nairobi County, Kenya. Table 4.12 illustrates outcomes of socio-demographic influences linked with non-adherence to ARVs treatment.

Table 4.12: Socio-demographic Factors Associated with ARV Non-adherence

Variable	Category	Non-Adherence		χ^2	d.f	P-value
		No n(%)	Yes n(%)			
Gender	Male	17(48.6%)	18(51.4%)	4.57	1	0.033
	Female	19(76.0%)	6(24.0%)			
Age	28 Years and Below	10(62.5%)	6(37.5%)	0.64	2	0.727
	29-39 Years	16(64.0%)	9(36.0%)			
	40 Years and above	10(52.6%)	9(47.4%)			
Marital status	Single	10(55.6%)	8(44.4%)	0.73	2	0.696
	Married	17(65.4%)	9(34.6%)			
	Divorced/separate/ Widowed	8(53.3%)	7(46.7%)			
Religion	Christian	26(56.5%)	20(43.5%)	0.46	1	0.499
	Others	3(42.9%)	4(57.1%)			
Education level	Secondary & above	22(71.0%)	9(29.0%)	3.22	1	0.073
	Primary & below	14(48.3%)	15(51.7%)			
Employment status	Employed	22(66.7%)	11(33.3%)	0.21	1	0.644
	Unemployed	11(73.3%)	4(26.7%)			
Income	10,000 and below	23(59.0%)	16(41.0%)	0.13	1	0.720
	10,000 and above	4(66.7%)	2(33.3%)			

From the statistics depicted Table 4.12, there was a statistically significant association concerning gender and non-adherence ($p=0.033$). Males (51.4%) were likely to be non-adherent as compared to their female counterparts (24.0%). No significant differences were established amid non-adherence and other socio-demographic features ($P>0.05$).

Factors Associated with ARVs Non-adherence

Table 4.13 presents the results of frequency, duration, distance, service received, and cost factors related with ARVs non-adherence.

DAYSTAR UNIVERSITY

Table 4.13: Frequency, Duration, Distance, Service Received & Cost Associated with Non-adherence to ARVs

Variable	Category	Non-Adherence		χ^2	d.f	P-value
		No n(%)	Yes n(%)			
Length of ARV Medication	Below 12 Months	4(30.8%)	9(69.2%)	5.91	1	0.015
	12 months and Above	32(68.1%)	15(31.9%)			
Frequency of Taking Medication	Once a day	33(76.7%)	10(23.3%)	17.73	1	<0.001
	Twice a day	3(17.6%)	14(82.4%)			
Distance to CCC	0-10 km	11(68.8%)	5(31.3%)	2.01	2	0.367
	10-50 km	25(59.5%)	17(40.5%)			
	50-100km	0(0.0%)	1(100.0%)			
Mode of Transport to CCC	Walking	10(41.7%)	14(58.3%)	5.58	3	0.134
	Public transport	14(77.8%)	4(22.2%)			
	Motor bike /cycling	5(62.5%)	3(37.5%)			
	Walking and Public transport	4(57.1%)	3(42.9%)			
Money Spend on Transport to CCC	0-20	5(62.5%)	3(37.5%)	2.14	2	0.343
	20-100	20(80.0%)	5(20.0%)			
	100-200	2(50.0%)	2(50.0%)			
Other Expenses to CCC	Food	7(63.6%)	4(36.4%)	4.49	4	0.344
	Treatment of Opportunistic Infections	0(0.0%)	1(100.0%)			
	Food and Treatment of Opportunistic Infections	15(68.2%)	7(31.8%)			
	Food, Hospitalization and Treatment of Opportunistic Infections	14(73.7%)	5(26.3%)			
	Hospitalization and Treatment of Opportunistic Infection	0(0.0%)	1(100.0%)			
	Service received at CCC	Very good	21(51.2%)			
	Good	12(75.0%)	4(25.0%)			
	Average	3(100.0%)	0(0.0%)			
Well Attended by Health Care workers	Yes	35(59.3%)	24(40.7%)	0.68	1	0.410
	Not sure	1(100.0%)	0(0.0%)			

The findings displayed in Table 4.13 show that there was a statistically significant link between length of ARV treatment and non-adherence ($p=0.015$). Participants on ARV medication for less than 12 months were probable non-adherent (69.2%) equated to those on medication on for 12 months and above (31.9%). Statistically significant relationship between frequency of taking ARV medication and non-adherence ($P<0.001$) was noted. Participants who were taking medication twice per a day were non-adherent (82.4%) as likened to those who were taking once per day (23.3%). There was no significant relationship found concerning non-adherence and clinic distance, mode and means of transport, cost, service at the clinic and being well attended to ($p>0.005$).

HIV and ARVs Knowledge Factors and Non-adherence to ARVs Treatment

Table 4.14 presents the outcomes of the relationship between HIV and ARVs knowledge factors and non-adherence to ARVs treatment.

Table 4.14: HIV & ARVs Knowledge Influences Associated with ARVs Non-adherence

Variable	Category	Non-adherence		χ^2	d.f.	P-value
		No n(%)	Yes n(%)			
HIV / AIDS is curable disease	Agree	8(36.4%)	14(63.6%)	7.66	1	0.006
	Disagree	27(73.0%)	10(27.0%)			
ARVs cure HIV	Agree	11(52.4%)	10(47.6%)	0.53	1	0.467
	Disagree	23(62.2%)	14(37.8%)			
Adhering to the prescribed ART is important	Agree	34(60.7%)	22(39.3%)	2.94	1	0.087
	Disagree	0(0.0%)	2(100.0%)			
I expect to be cured from HIV in future	Agree	20(46.5%)	23(53.5%)	10.78	1	0.001
	Disagree	15(93.8%)	1(6.3%)			
Alcohol and drug use does not impair effectiveness of ARV	Agree	10(71.4%)	4(28.6%)	1.12	1	0.291
	Disagree	25(55.6%)	20(44.4%)			
ARVs have no side effects	Agree	8(47.1%)	9(52.9%)	1.33	1	0.250
	Disagree	26(63.4%)	15(36.6%)			
ARVs prevent Opportunistic Infections	Agree	35(63.6%)	20(36.4%)	6.26	1	0.012
	Disagree	0(0.0%)	4(100.0%)			

A statistically significant difference between the knowledge that HIV/AIDS is a curable disease ($p=0.006$) was found. Participants who agreed with this statement were more non-adherent (63.6%) as compared to those who disagreed (27.0%). There was a significant difference between the statement, “I expect to be cured from HIV in future” and non-adherence ($p=0.001$). Participants who agreed with the statement non-adherent (53.5%) paralleled to participants who disagreed with the statement (6.3%). There was statistically significant difference between knowledge that ARVs prevents opportunistic infection and adherence ($p=0.012$). All the participants who disagreed with the statement were non-adherent (100%) compared to participants who approved the statement (36.4%).

Association between Psychosocial Factors and Non-Adherence

Table 4.15 presents results of association between psychosocial factors and non-adherence to ARVs treatment.

Table 4.15: Psychosocial Factors Associated with ARVs Non-adherence

Variable	Category	Non-adherence		χ^2	d.f.	P-value
		No n(%)	Yes n(%)			
Received Counseling before and after taking ARVs	No	0(0.0%)	1(100.0%)	1.40	1	0.237
	Yes	33(58.9%)	23(41.1%)			
Use of Alternative Medicine (Herbal)	No	19(46.3%)	22(53.7%)	9.38	1	0.002
	Yes	16(88.9%)	2(11.1%)			
Use of Alternative Medicine (Faith Healing)	No	22(50.0%)	22(50.0%)	4.93	1	0.026
	Yes	11(84.6%)	2(15.4%)			
Use of Alcohol and other Drugs	No	20(54.1%)	17(45.9%)	1.14	1	0.285
	Yes	15(68.2%)	7(31.8%)			
Depression Level	Normal	5(22.7%)	17(77.3%)	25.04	5	<0.001
	Mild depression	3(75.0%)	1(25.0%)			
	Borderline clinical depression	2(66.7%)	1(33.3%)			
	Moderate depression	5(55.6%)	4(44.4%)			
	Severe depression	13(100.0%)	0(0.0%)			
Depression	Extreme depression	8(88.9%)	1(11.1%)	15.23	1	<0.001
	No depression	10(34.5%)	19(65.5%)			
Alcohol Use	Depression	26(83.9%)	5(16.1%)	0.97	1	0.325
	No	21(55.3%)	17(44.7%)			
	Yes	15(68.2%)	7(31.8%)			

Independent predictors of non-adherence to ARVs

There were statistically substantial association amongst usage of alternate medicine (Herbal) besides non-adherence to ARVs ($p=0.002$). Participants who did not use alternative medicine (Herbal) were non-adherent (53.7%) as linked to those using alternative medicine (11.1%). Further, there was a statistically noteworthy association amid use of alternative medicine (faith healing) and non-adherence to ARVs

($p=0.026$). Participants who did not use alternative medicine (Faith healing) were more probable to be non-adherent (50.0%) as likened to those not utilizing alternative medicine (15.4%). A substantial association between depression and non-adherence to ARVs ($p<0.001$) was noted. Participants not depressed were probable to be non-adherent (65.5%) as equated to those who were depressed (16.1%).

Table 4.16 further presents results of independent forecasters of non-adherence to ARVs after adjusting factors that were significantly linked with it at the bivariate level ($p<0.05$).

Table 4.16: Independent Predictors of Non-adherence to ARVs

Variable	Category	A.O.R.	95% C.I A.O.R.		P-Value
			Lower	Upper	
Gender	Female	Ref.			0.086
	Male	4.77	0.80	28.36	
Length of ARVs Use	Below 12 Months	Ref.			0.802
	12 Months & above	0.78	0.12	5.26	
Frequency of taking ARVs	Once Per Day	Ref.			0.002
	Twice Per Day	24.79	3.29	186.53	
HIV / AIDS is curable disease	Agree	Ref.			0.669
	Disagree	1.46	0.26	8.16	
Depressed	No	Ref.			0.011
	Yes	0.11	0.02	0.61	

Note: A.O.R.-Adjusted Odds Ratio; C.I.-Confidence Interval; Ref.-Reference Category.

Participants who were taking ARV medication twice per day were 24.8 likely to be non-adherent as associated to those taking once per day (A.O.R.=24.79, 95% C.I 3.29-186.53, $P=0.002$). The odds of non-adherence was 0.11 less among the participants with depression as compared to those without depression (A.O.R.=0.11, 95% C.I 0.02-0.61, $P=0.011$).

Depression and Socio-demographic Aspects

Table 4.17 presents outcomes of link between depression and socio-demographic aspects.

Table 4.17: Socio-demographic Factors Associated with Depression

Variable	Category	Depressed		χ^2	d.f.	P-value
		No n(%)	Yes n(%)			
Gender	Male	21(60.0%)	14(40.0%)	4.58	1	0.032
	Female	8(32.0%)	17(68.0%)			
Age	28 Years and Below	7(43.8%)	9(56.3%)	2.50	2	0.286
	29-39 Years	10(40.0%)	15(60.0%)			
	40 Years and above	12(63.2%)	7(36.8%)			
Marital Status	Single	7(38.9%)	11(61.1%)	0.96	2	0.619
	Married	14(53.8%)	12(46.2%)			
	Divorced/separate/Widowed	7(46.7%)	8(53.3%)			
Religion	Christian	24(52.2%)	22(47.8%)	0.91	1	0.340
	Others	5(71.4%)	2(28.6%)			
Education Level	Secondary and above	17(54.8%)	14(45.2%)	1.09	1	0.297
	Primary and Below	12(41.4%)	17(58.6%)			
Employment Status	Employed	17(51.5%)	16(48.5%)	1.37	1	0.241
	Unemployed	5(33.3%)	10(66.7%)			
Income	10,000 and Below	18(46.2%)	21(53.8%)	0.88	1	0.349
	10,000 and Above	4(66.7%)	2(33.3%)			

The findings in Table 4.1 show that there was statistically substantial association concerning depression and gender ($p=0.032$). Females were probable to be depressed at 68.0% as related to the males at 40.0%.

Summary of Key Findings

1. There were statistically noteworthy association between length in ARV treatment and non-adherence ($P=0.015$). Participants who were taking ARV medication twice per day were 24.8 non-adherent as likened to individuals taking once per day (A.O.R. =24.79, 95% C.I 3.29-186.53, $P=0.002$).

2. There were substantial relationships concerning depression in addition to non-adherence to ARVs ($P < 0.001$). Non-depressed participants were likely to be non-adherent (65.5%) as compared to those who were depressed (16.1%).
3. HIV & ARVs Knowledge factors connected with ARVs non-adherence: There were statistically major difference amid the knowledge that HIV/AIDs is a treatable disease ($P = 0.006$).
4. Certainly not substantial connection established concerning non-adherence and distance to clinic, mode and means of transport, cost, service at the clinic and being well attended to ($P > 0.005$).
5. A statistically significant relationship amid use of unconventional remedy (faith healing) as well as non-adherence to ARVs ($P = 0.026$) was noted. Participants who use alternative medicine (faith healing) were non-adherent (50.0%) equally related to those who were not using alternative medicine (15.4%).
6. There was a statistically significant link between gender and non-adherence ($p = 0.033$). Males (51.4%) were probable to be non-adherent as likened to the female (24.0%). No significant differences were found amid non-adherence and other socio-demographic characteristics ($p > 0.05$).

Summary

The chapter dealt with data analysis, interpretation, and presentation. The data was presented in figures and tables with a brief explanation of the outcomes. Chapter five discusses the key findings and provides the conclusions and recommendations of the study.

CHAPTER FIVE

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

This chapter, discussions of the outcomes from chapter four are provided with scientific evidences from previous studies. To achieve its' goal, the researcher used three objectives which included the following; to explore factors that affect HIV anti-retroviral therapy among HIV positive adults in Kibra; to assess psychological implication of non-adherence among HIV positive adults in Kibra and determine socio-demographic characteristics of non- adherence among HIV positive adults in Kibra.

Discussions of Key Findings

The objectives of this investigation aimed at analyzing elements affecting adherence to HIV anti-retroviral therapy among HIV positive adults in Kibra, Nairobi County. The outcomes of the investigation revealed that majority of respondents were on ARVs over three years. Further dominant parts of the respondents were perceived as having low levels of depression. The study additionally established prevalence of ARVs non-adherence was low among the respondents.

Factors Affecting HIV ART Adherence among HIV Positive Adults

The first objective of the study was to explore factors that affect adherence to HIV anti-retroviral among HIV positive adults in Kibra, Nairobi County, Kenya. Findings highlighted different variables that influence ART adherence. The study found out relationship between length of ARV medication and non-adherence. Participants who were taking ARV medication ones a day 71.7% were more adherent than 28.3% taking ARVs twice a day. Respondents who were non-adherent reported high pill

count, pill burden and medicine fatigue than those who were adherent. Drug fatigue was a major cause reported by respondents who skipped taking ARVs and other medications for treating opportunistic infections. A possible explanation on this is that people on long-term treatment including ARV and especially those who take many pills get tired and or feel burdened of the drugs thus stop taking the medication all together.

Non-adherent respondents cited high pill count and drug burden as a significant factor affecting ART adherence. The findings are in agreement with those of who stated that factors such are low level of education among people living with HIV, depression, stress and other mental illnesses, patient socio economic factors, adverse side effects of the medicines, high pill count, medicine fatigue, poor health facilities, beliefs and perceptions towards HIV and ART, alcohol use among other factors influence ART adherence. Given this scenario, it is noteworthy that the amount of prescription drugs is a factor that can interfere with the regular and correct decision of antiretroviral.

The study also found out that HIV and ARVs knowledge and individual perceptions were significant factors associated with adherence. The findings indicated that respondents with education of HIV and anti-retroviral therapy had near-perfect adherence than those with no knowledge. The outcomes, consequently, resonate well with Patersons (2009) who stated that clients who comprehend HIV ailment and the connection between ART adherence and functional health status reported near-perfect adherence than those with knowledge on HIV and ART. Statistically critical contrast concerning the knowledge indicating HIV is a curable disease ($p=0.006$) was identified. It is well noted and recorded that HIV and AIDS is definitely not a curable infection; nevertheless, ARVs are effective in prolonging life and reduce mortality

rates. It is evident that having knowledge on HIV and efficacy of ART influence adherence levels. Patients who are well informed about HIV and disease progression have a better chance to appreciate ARV treatment and consequently desire better health by use of ARVs.

The investigation found out a relationship amid use of alternative medicine (Faith Healing) and non-adherence to ARVs ($p=0.026$). Respondents who have used alternative medicine (faith healing) were non-adherent 50.0% as equated to those who had not used alternative medicine 15.4%. Noteworthy, respondents with heightened religiosity discontinued ART usage to prove their firm belief in God. This indicated they did not have faith in ARVs drugs. These findings were in agreement with in-depth interviews involving thirty-nine (39) very religious individuals infected with HIV conducted in Uganda, in 2014, accessing the role of faith in treatment decision and surviving with HIV. The results highlighted that sixteen (16) had discontinued ARV use citing religious beliefs (Tumwine & Wagner, 2012).

Those who discontinued ARV therapy reported being instructed to do so by spiritual leaders and prophecies, which were reinforced with Bible sacred writings, which guided them to believe that God and not ARVs had healed them. This was further emphasized by testimonials by "already healed" peers who had halted ART. The findings indicate that religion could have negative outcome on ARVs usage and HIV management (Tumwine & Wagner, 2012).

Additionally, the study found out that participants' attitudes and beliefs towards ART interfered with adherence. Participants with positive attitude and believes in the efficiency of ART were adherent than those with a negative attitude toward the

efficiency of ART. Musembi (2013), in a study at Mbagathi District Hospital in Nairobi, reported similar findings citing that clients with positive attitudes and perceptions towards ART had a near-perfect adherence while those with negative bias toward ART and HIV infection presented with non-adherence. A positive attitude toward the efficiency of ART is a key factor to ART adherence. Possible explanation is that patients with a positive attitude and believes towards ART will adhere better thus improve their health status.

On clinic attendance, 57% of the respondents indicated that they missed scheduled medical appointments due to various factors such as; traveling out of town by the time of their appointment date, lack of transport money to the clinic, forgetting clinic appointment dates, being denied permission from work to attend to their health, being busy or being too sick to attend the appointments and others being busy with school work. These findings conclude that respondents were not keen on visiting the scheduled clinic appointments and would have various reasons. This may prove to some extent, lack of commitment to the treatment, lack of adequate planning strategies, and poor time management. Some of the findings reported coincided with Bangsberg (2010) who posited that clients who are experiencing adverse opportunistic infections might have better chances of drug adherence. However, those who have lost hope due to prolonged illness, and those experiencing denial, extreme anxiety due to HIV infection may not adhere to ART.

On issues of skipping or not taking ARV medication at all, a high percentage of 67% was noted. Some of the contributing factors were lack of food, depression, cost of transport to the clinic for drug refill, fear of being seen by when taking ARVs, alcohol use, running out of pills, sharing pills with others, lack of water and not understanding

the instructions given by the HCW. In contrast, others indicated a lack of social support and care. A study by Mukumbang and Wyk (2016) confirmed that usage of traditional remedies while on ART was described to be a possible obstacle to ART adherence in Uganda. In the same study, clients declared to be using concoctions and other herbal mixtures organized by traditional faith healers for cleansing the disease or curse off their bodies. Some of the patients in the research went on to report that they were taking the herbal medication. From these findings, it is evident that patients on ARVs experience various factors, which lead them to skip taking ARVs thus affecting adherence levels.

On medication side effects and discomfort, the study findings indicated that participants who encountered ART adverse side effects were not adherent as compared to those who had experienced drug-related side effects and discomfort. This finding resonates with Chesney (2010) who states that clients who encounter adverse drug reactions are likely to discontinue treatment or request for change of treatment regime. Drug side effects described by participants include headaches, nausea, vomiting, diarrhea, which related well with the study by Chesney (2010). It is evident that drug side effects is a contributing factor in ART adherence.

In this investigation, majority of respondents reported they had disclosed their HIV positive status to other people after being encouraged by HCW, fear of serious illness, adequate trust with the individuals they revealed to, and needed support from friends and relatives. The findings are in agreement with Dimattoe (2004) who ascertained that symbiotic relationship between social institutions such as families, friends, health cares, and patients is indeed essential in maintaining drug adherence.

The participants who had social support systems and had revealed their HIV positive status with their support systems were more adherent than those without social support systems. The findings likewise indicated that revelation of HIV status to relatives and friends had positive outcomes in handling issues connected to stigmatization and discrimination allied with HIV positive living and drug adherence.

Additionally, the study found out that non-disclosure of HIV positive status affected adherence. Respondents who had disclosed their HIV positive status were adherent. The findings on non-disclosure of Mukambang and Wyk (2016) who found out that clients who had not revealed their seropositive status, journeyed long distances to obtain secret treatment and avoided taking pills to ensure that family members and employers did not know about their HIV status. Additionally, a study by Karanja (2008) at Pumwani HIV Comprehensive Care Centre in Nairobi County found out that client revelation of HIV positive status was a major barricade to drug adherence. A possible explanation to this is that patients who have disclosed their HIV positive status have higher chances of adhering to treatment than those who have not disclosed. Patients who have disclosed their HIV positive status adhere better to treatment because they have no fear of stigmatization and discrimination of their HIV positive status and uptake of ARVs.

Psychological Implication of Non-adherence among PLWHAs in Kibra.

The second objective was to assess the psychological implication of ART non-adherence among HIV positive adults in Kibra, Nairobi County, Kenya. The study unraveled that, there were significant link concerning the regularity of taking ARV medication and non-adherence ($p < 0.001$). The findings further found out that participants taking medication twice per day and more than one pill were non-

adherent 82.4% paralleled to those taking once a day 23.3%. This finding was in agreement with Chesney (2010), who states that the higher the pill burden, which is the number of pills a client is taking the low the adherence level.

The findings also showed significant association amid depression and non-adherence to ARVs ($p < 0.001$). Participants who were depressed were probable non-adherent 65.5% as likened to those who were not depressed 16.1%. These findings coincide with those of Moosa (2012) who posited that depression was a significant threat aspect that affect ART adherence. Depression among individuals with HIV and other chronic illnesses is attributed with fear of death, hopelessness and helplessness associated with the HIV positive status.

The author notes that both cognitive and vegetative symptoms of depression may present challenges to ART adherence. This was the opposite of the findings of the study. Besides, although, Wanger et al. (2004) stated that ART adherence was low in depressed HIV positive individuals as compared with non-depressed HIV positive persons; the study found out that participants who presented with depression were more adherent than those who were not depressed.

Socio-demographic Characteristics of Non-adherence among PLWHs in Kibra.

The third objective of the study was to determine socio-demographic characteristics of ART non-adherence among HIV positive adults in Kibra, Nairobi County, Kenya. Based on the study findings, respondents' socio-demographic characteristics for instance, sex, age, and education level were highlighted as predictors of adherence. However, there have been inconsistent outcomes about the association of these characteristics with adherence (Ndayanga et al., 2005). The study outcomes

discovered a substantial link between gender and non-adherence ($p=0.033$). It is equally important to highlight that males 51.4% were non-adherent as equated to the female 24.0%. It was noted that most men do not satisfactorily adhere to ART. A possible explanation is that men present themselves culturally as patients who seek minimal healthcare services, which make adherence to treatment and healing practices less than women. Given the culture of masculinity imposed by society, the man assumes the role of strength and virility and ends up repressing their health care needs. Consequently, men omit their weaknesses and vulnerabilities before the maintenance of ART adherence.

Another possible explanation on men and drug adherence is alcohol use. Alcohol consumption among HIV positive adults was a critical factor in male ART adherence. As indicated by the results of this investigation, it was distinguished that numerous men do not adhere well to ARV treatment, which shows that the adherence is, in fact, a problematic care process and reliant on numerous components - social, cultural, financial and clinical. The findings, therefore, are contrary with the outcomes of Wakibi et al. (2011), who discovered that sex, age, marital status, education level, and economic status do not have a weighty link with ART adherence.

Conclusion

The study found out that individuals taking ARVs face diverse difficulties in adhering to the medication. A portion of the difficulties incorporates the quantity of ARV pills and the frequency of taking the pills. Depression, alcohol consumption influenced non-adherence, while active social institutions were a significant factor in ART adherence. The study found out that participants who take two capsules twice per day were non-adherent in comparison with those taking one pill ones per day. For this

situation, the number of tablets and the recurrence of taking the prescription interfered with drug adherence. Social institutions were useful in offering social support to HIV individuals, thus enhancing near-perfect adherence. Individuals who had divulged their health status to friends, relatives, and other support networks presented with near-perfect adherence and were able to overcome stigmatization and discrimination associated with HIV positive status and ARV medication. This study contradicted with several studies on degrees of depression in HIV positive individuals and effect on ARV adherence. A few past studies indicate that depression is predominant among persons living with HIV. Strangely, this study had different findings that depression was not very widespread among the participants. The percentage was relatively minimal compared to previous studies. On the other hand, the study findings collaborated with previous studies citing that ARV side effects and discomfort are a crucial factor in drug adherence.

Individuals who experienced ARV drug adverse reactions had high likelihoods of being non-adherent than individuals had not encountered ARV drug side effects. Of importance to note, psychosocial factors such as patients' economic status, traveling out of town, forgetting to take medication, lack of permission from employers to seek treatment were factors that influenced ART adherence. Importantly, the study found out that education and age of HIV positive individuals do not influence ART adherence. Still, having knowledge of HIV, ARVs, and individuals' perceptions have an impact on ARV adherence. Additionally, the study found out that gender was a substantial factor in ART adherence. An outcome of the study showed that, females were more adherent than their male counterparts.

Recommendations

Based on the outcomes of this study, the following commendations were made:

1. The outcomes noted that participants' knowledge on HIV, ART, and perceptions influence ART adherence. Therefore, there is need to enhance awareness on HIV and ART among communities, the efficacy of ART, and the importance of having positive attitude towards ART. Additionally, health care workers should take more time to psycho-educate HIV positive individuals on HIV disease, the efficacy of ART, the importance of ART adherence, and change of negative perceptions associated with HIV disease and effectiveness of ART.
2. The study found out that social support networks are sufficient for ART adherence. There is a need to encourage support between HIV positive individuals with their families, friends, health care workers, and other social support institutions. Social support networks will go a long way to curb stigmatization and discrimination encountered by persons infected with HIV.
3. Although the study showed minimal interaction amid depression and ART adherence, the health care workers should enhance their assessment of depression among HIV individuals and offer relevant support.
4. The study notes that adverse ART side effects and discomfort were a main cause of non-adherence; therefore, Drug manufacturers, Ministry of Health, and other relevant bodies should develop and provide ARV drugs, which have fewer side effects.
5. Additionally, the study found out that the number of ARV pills affect adherence. Manufacturers and other relevant bodies need to develop a combined single dosage of treatment.

6. Patients' economic status affected drug adherence to some extent, financial support for the patients is relevant to ensure they attend medical clinic appointments and cater for other medical costs not fully covered in the CCC.
7. The study indicated that a majority of those using alcohol is in the range of dependency and need further assessment and treatment. The researcher recommends that healthcare providers be equipped with appropriate skills to assess alcohol use among the clients. Additionally, the government to subsidize the cost of treatment and rehabilitation for alcohol users.
8. The study discovered that women are more adherent than the male. There is a need to support and psycho-educate the male gender on the importance of ART adherence even as relevant bodies find out the reasons behind gender and ART adherence.
9. The findings also indicate that religion and personal beliefs influence ART adherence. There is a need to use a multifactorial mechanism that involves all sectors, including the faith-based organizations and traditional/cultural networks, to sensitize communities of the importance of integrating religion, culture, and personal beliefs with ART treatment.

Recommendations for Further Research

1. A study in a different setting, probably a rural setting to find out if the findings of this study would be replicated.
2. A study to ascertain gender and non-adherence.
3. Further investigations to discover the connection between ART adherence and depression.

4. A study to identify the connection between alcohol consumption and ART adherence.

DAYSTAR UNIVERSITY

REFERENCES

- Achappa, B., Madi, D., Bhaskaran, U., Ramapuram, J. T., Rao, S., & Mahalingam, S. (2013). Adherence to antiretroviral therapy among people living with HIV. *North American Journal of Medical Sciences*, 5(3), 220-223.
- Africa Jesuit AIDS Network. (2005). *AIDS and the Church of Africa*. Nairobi, Kenya: Paulines' Publication Africa.
- American Psychological Association. (2002). *Ethical principles of psychological and code of conduct*. Retrieved from <http://www.apa.org/ethics/code2002.html>
- Bador, T. F., Higgins-Biddle, J. C., Saunders, J. B., & Monteiro, M. G. (2001). *The alcohol use disorders identification test (AUDIT) guidelines for use in primary care*. Washington, DC: World Health Organization.
- Bangsberg, D. R. (2006). Less than 95 per cent adherence to non-nucleoside reverse transcriptase inhibitor therapy can lead to viral suppression. *Clinical Infectious Diseases*, 43(1), 939-941.
- Bangsberg, D. R., Charlebois, E. D., Grant, R. M., Holodniy, M., Deeks, S. G., Perry, & Moss, A. (2003). High levels of adherence do not prevent accumulation of HIV drug resistance mutations. *Journal of Acquired Immune Deficiency Syndromes*, 17(1), 1925-1932.
- Becker, M. H., & Rosenstock, M. (1997). *Health behaviour and health education: Theory research and practice*. San Francisco, CA: Wiley & Sons.
- Beckwith, G., P., Flanigan, C., Del Rio, E., Simmons, J., Wing, C., Carpenter, R., & Bartlett, G. (2005). It is time to implement routine, not risk-based, HIV testing. *Clinical Infectious Diseases*, 40(1), 1037-1040.
- Bensley, R., & Brookns-Fisher, J. (2009). *Community health education methods: A practical guide* (3rd ed.). Sudbury, MA: Jones and Bartlett.
- Bodewes, C. (2005). *Parish transformation in urban slums*. Nairobi, Kenya: Paulines' Publication Africa.
- Bryman, A. (2016). *Social research methods* (5th ed.). Oxford, NY: Oxford University.
- Byakika-Tusiime, J., Oyugi, J. H., Tumwikirize, W. A., Katabira, E. T., Mugenyi, P. N., and Bangsberg, D. R. (2005). Adherence to HIV antiretroviral therapy in HIV+ Ugandan patients purchasing therapy. *International Journal of STD AIDS*, 16(3), 38-41.
- Campa, A., Yang, Z., Lai, S., Xue, L., Phillips, S., Sales, J... and Baum, K. (2005). HIV-related wasting in HIV-infected drug users in the era of highly active antiretroviral therapy. *Clinical Infectious Diseases*, 41(7), 1179-1185.

- Campos, N. L., Guimaraes, C. M. D., & Remien, H. R. (2010). Anxiety and depression symptoms as risk factors for non-adherence to antiretroviral therapy in Brazil. *Journal of AIDS Behavior*, *14*(2), 289-299.
- Casale, M. (2011). *Ageing and society*. Cambridge, UK: Cambridge University. challenge. New Delhi, India: Concept Publishing Company.
- Chandran, E. (2004). *Research methods: A qualitative approach with illustrations from Christian ministries*. Nairobi, Kenya: Daystar University.
- Chattopadhyay, S., Ball, S., Kargupta, A., Talukdar, P., Roy, K., Talukdar, A., & Guha, P. (2017). Cognitive behavioral therapy improves adherence to antiretroviral therapy in HIV-infected patients: A prospective randomized controlled trial from eastern India. *International Journal of HIV-Related Problems*, *16*(2), 89-95.
- Chepkwony, A. (2004). *After attitude towards HIV/AIDS*. Eldoret, Kenya: AMECEA Pastoral Institute.
- Chesney, M. A. (2007). Factors affecting adherence to antiretroviral therapy. *Clinical Infectious Diseases*, *30*(2), 171-176.
- Chesney, M. A. (2009). Factors affecting adherence to antiretroviral therapy regimens. *AIDS Patients Care and Standards*, *34*(1), 377-387.
- Cooper, D., & Schindler, P. (2008). *Business research methods* (8th ed.). New Delhi, India: McGraw-Hill.
- Corey, G. (2009). *Theory and practice of counseling and psychotherapy*. Belmont, CA: Brooks/Cole Cengage Learning.
- Desclaux, A. (2003). Access to antiretroviral drugs and AIDS management in Senegal. *AIDS*, *17*(1), 95-101.
- Ferrantelli, F., Cafaro, A., & Ensoli, B. (2004). Nonstructural HIV proteins as targets for prophylactic or therapeutic vaccines. *Current Opinion Biotechnology*, *15*(6), 543-556.
- Gravetter, F. J., & Forzano, L. A. B. (2012). *Research methods for the behavioral sciences* (4th ed.). Belmont, CA: Wadsworth.
- Joint United Nations Programme on AIDS. (2012). *Global report: UNAIDS report on the global AIDS epidemic*. Geneva, Switzerland: Author.
- Joint United Nations Programme on HIV/AIDS. (2017). *UNAIDS data*. Geneva, Switzerland: Author.
- Karanja, S. (2013). *Factors influencing adherence to antiretroviral therapy among patients living with HIV in Kenya* (Unpublished master's thesis). University of Nairobi, Nairobi, Kenya.

- Kombo, D. K., & Tromp, D. L. (2011). *Proposal and thesis writing: An introduction*. Nairobi, Kenya: Paulines' Publications Africa.
- Kothari, C. R. (2006). *Research methodology: A step-by-step guide for beginners*. London, UK: Sage.
- Krain, A., & Fitz, G. D. (2005). HIV antiretroviral therapy in resource-limited settings: Experiences from Haiti. *Current HIV and AIDS Reports*, 2(1), 98-104.
- Little, S. J., Daar, E. S., D'Aquila, R. T., Keiser, P. H., Connick, E., Whitcomb, J. M., ..., and Richman, D. D. (1999). Reduced antiretroviral drug susceptibility among patients with primary HIV infection. *Journal of the American Medical Association*, 28(2), 1142-1149.
- Machtiger, E. R., & Bangsberg, D. R. (2006). *Adherence to HIV antiretroviral therapy*. Retrieved from <http://hivinsite.ucsf.edu/InSite?page=kb-03-02-09>.
- Míguez-Burbano, M. J., Lewis, J. E., & Malow, R. (2009). Alcohol and race/ethnicity elicit different changes in lipid profiles in HIV-infected individuals receiving highly active antiretroviral therapy. *Journal of the Association of Nurses in AIDS Care*, 20(3), 176-183.
- Ministry of Health, National AIDS and Control Council & National AIDS and STI Control Programme. (2005). *National HIV prevalence in Kenya*. Nairobi, Kenya: Author.
- Ministry of Health, National AIDS and Control Council & National AIDS and STI Control Programme. (2007). *National HIV prevalence in Kenya*. Nairobi, Kenya: Author.
- Ministry of Health, National AIDS and Control Council & National AIDS and STI Control Programme. (2008). *National HIV prevalence in Kenya*. Nairobi, Kenya: Author.
- Ministry of Health, National AIDS and Control Council & National AIDS & STD Control Programme. (2010). *National HIV prevalence in Kenya*. Nairobi, Kenya: Author.
- Ministry of Health, National AIDS and Control Council & National AIDS & STD Control Programme. (2011). *National HIV prevalence in Kenya*. Nairobi, Kenya: Author.
- Ministry of Health, National AIDS and Control Council & National AIDS & STD Control Programme. (2018). *Kenya HIV Estimates Report*. Nairobi, Kenya: Author.
- Ministry of Health. (2014). *National HIV prevalence in Kenya*. Nairobi, Kenya: Author.

- Moraes, R., & Jorge, C (2017). Depression and adherence to antiretroviral treatment in HIV-positive men in São Paulo, the largest city in South America: Social and psychological implications. *Clinics* 72(12), 743-749. doi:10.6061/clinics/2017 (12)05.
- Mugenda, A. G. (2008). *Social science research: Theory and principles*. Nairobi, Kenya: African Centre Technology Studies.
- Mugenda, A. G., & Mugenda, O. M. (2003). *Research methods: Quantitative and qualitative approaches*. Nairobi, Kenya: African Centre Technology Studies.
- Munro, S. (2007). A review of health behaviour theories: how useful are these for developing interventions to promote long-term medication adherence for TB and HIV/AIDS? *BMC Public Health* 7(104). doi: 10.1186/1471-2458-7-104.
- Musembi, M. (2013). *Factors influencing adherence to antiretroviral therapy among sero-positive clients at Mbagathi Hospital Nairobi* (Unpublished master's thesis). University of Nairobi, Nairobi, Kenya.
- Muthiani, S. (2010). *Assessment of factors influencing adherence to antiretroviral therapy at Nyeri Provincial Hospital in Central Kenya* (Unpublished master's thesis). Kenyatta University, Nairobi, Kenya.
- National AIDS and STI Control Program. (2014). *Kenya AIDS indicator survey 2012: Final report*. Nairobi, Kenya: Author.
- National AIDS and STI Control Program. *ART background in Kenya*. Nairobi, Kenya: Author.
- National AIDS and STI Control Programme. (2011) *Guidelines for antiretroviral therapy in Kenya*. Nairobi, Kenya: Author.
- National AIDS Control Council. (2007). *Kenya AIDS indicator survey: Preliminary report*. Nairobi, Kenya: Author.
- National Center for AIDS and STD Control (2009). *National antiretroviral therapy guidelines: National Centre for AIDS & STD Control*. Retrieved from <http://www.who.int/hiv/pub/guidelines/nepal-art.pdf>
- National EMSC Data Analysis Resource Centre. (2010). *Using data to improve care for children*. Salt Lake, Utah: Chipeta Way
- Ndayanga, P., Kwesigabo, G., Mugusi, F., Majigo, M., Almeidi, A., and Munubhi, E. (2005). *Factors associated with ART non-adherence in Dar es Salaam: Findings from a cross-sectional study*. Poster Presentations at the 3rd IAS Conference on HIV Pathogenesis and Treatment.
- Ogbuji, C., & Oke, A. (2010). Quality of life among persons living with HIV infection in Ibadan, Nigeria. *African Journal of Medical Science*, 39(2), 127-135.

- Omom, A. S. (2009). *HIV and AIDS and artisanal fisheries nexus: A case study of Lake Victoria, Kenya* (Unpublished master's thesis). University of Manitoba, Winnipeg, MB.
- Oyore, P. (2005). *Determinants of adherence to anti-retroviral therapy and high risk behavior among HIV infected patients on treatment in Nairobi province, Kenya* (Unpublished master's thesis). Kenyatta University, Nairobi, Kenya.
- Parsons, J. T., Rosof, E. J., & Mustanski, B. (2008). Medication adherence mediates the relationship between adherence self-efficacy and biological assessments of HIV health among those with alcohol use disorders. *Journal of Health Psychology, AIDS Behavior, 12*(1), 95-103.
- Paterson, S., Vogwill, T., Buckling, A., Benmayor, R., Spiers, A. J., Thomson, N. R., ..., and Fenton, A. (2010). Antagonistic coevolution accelerates molecular evolution. *Nature, 464*(7286), 275-278.
- Patersons, N. (2009). Patients' adherence to antiretroviral therapy in Botswana. *Journal of Nursing Scholarship, 41*(2), 149-157.
- Patersons, N. (2010). The patient-provider medication adherence to highly active antiretroviral therapy. *JANAC, 15*(5), 185-197.
- Reda, A. A., & Biadgilign, S. (2012). Determinants of adherence to antiretroviral therapy among HIV-infected patients in Africa. *AIDS Research and Treatment, 2012*(574656), 1-8. doi:10.1155/2012/57465
- Robson, C. (2002). *Real work research: A resource for social scientists and practitioner- researchers* (2nd ed.). Oxford, UK: Blackwell.
- Rosen, S., Fox, M., & Gill, C. (2007). Patient retention in antiretroviral therapy programs in sub-Saharan Africa: A systematic review. *PLoS Med, 4*(10), 1691-1701. doi: 10.1371/journal.pmed.0040298
- Rosof, E. J., Parsons, J. T., & Mustanski, B. (2007). Patient related factors predicting HIV medication adherence among men and women with alcohol problems. *Journal of Health Psychology, 12*(2), 357-370.
- Schneider, M., Chersich, M., Temmerman, M., Degomme, O., & Parry, C. D. (2014). The impact of alcohol on HIV prevention and treatment for South Africans in primary healthcare. *Curations, 37*(1) 8-5.
- Scot-Sheldon, L. A., Kalichma, S. C., Carey, M. P., & Fielder R. L. (2008). Stress management intervention for HIV+ adults: A meta-analysis of randomized controlled trials, 1989-2006. *Health Psychology, 27*(2), 129-139.
- Scott, C. A., Iyer, H. S., McCoy, K., Moyo, C., Long, L., Larson, B. A., & Rosen, S. (2014). Retention in care, resource utilization, and costs for adults receiving antiretroviral therapy in Zambia: A retrospective cohort study. *BMC Public Health, 14*(296), 1-11. doi: 10.1186/1471-2458-14-296.

- Shorter, A., & Onyancha, E. (1998). *Global health challenges essays on AIDS*. London, UK: The Commonwealth Secretariat.
- Sin, N., & Dimatteo, M. R. (2014). Depression treatment enhances adherence to antiretroviral therapy: A meta-analysis. *Ann Behav Med.*, 47(3), 259-269.
- Sundas, B. (2011). *HIV and AIDS in Darjeeling emerging socio-political challenge*. New Delhi, India: Concept Publishing.
- The National Authority for the Campaign Against Alcohol and Alcoholism. (2010). *Alcohol abuse and HIV infection in Nairobi survey*. Retrieved from <http://www.nacada.go.ke/documents-and-resources/category/8-statistics-research-survey-findings>.
- Tumwine, C., & Wagner, G. (2012). Reasons why high religiosity can co-exist with and precipitate discontinuation of anti-retroviral therapy among different HIV clients in Uganda: An exploratory study. *Religions*, 3, 817-832.
- Umande Trust Kibera. (2007). *The right to water and sanitation in Kibera*. Nairobi, Kenya: Author.
- United Nations Programme on HIV/AIDS. (2011). *Nearly 50 per cent of people who are eligible for antiretroviral therapy now have access to lifesaving treatment*. Retrieved from <http://www.unaids.org/en/resources>.
- United Nations Programme on HIV/AIDS. (2014). *90-90-90 Global Initiative: An ambitious treatment target to help end the AIDS epidemic*. Geneva, World Health Organization.
- Vitolins, M. Z., Rand, C. S., Rapp, S. R., Ribisland, P. M., & Sevick, M. A. (2000). Measuring adherence to behavioral and medical interventions. *Controlled Clinical Trials*, 21(5), 188S-94S. doi: 10.1016/s0197-2456(00)00077-5.
- Vogenthaler, N., Craig, H., Sarah, J., Allan, E., Lisa, R., & Carlos, R. (2010). Food insufficiency among HIV-infected crack-cocaine users in Atlanta and Miami. *Public Health Nutrition*, 13(9), 1478-1484.
- Wagner, G. J. (2004). Predictors of antiretroviral adherence as measured by self-report, electronic monitoring, and medication diaries. *AIDS Patient Care and STD*, 16(3), 599-608.
- Wagner, G., Galvan, L. M., Landrine, F., Klein, H., Sticklor, D., & Laurel, A. (2011). Perceived discrimination and mental health symptoms among black men with HIV. *Cultural diversity and ethnic minority psychology*, 17(3), 295-302.
- Wakibi, S. N. (2010). *Prevalence and predictors of non-adherence, the incidence of Treatment failure among patients on free highly active antiretroviral therapy in Nairobi, Kenya* (Unpublished doctoral dissertation). Jomo Kenyatta University of Science & Technology, Nairobi, Kenya.

- Wakibi, S. N., Ng'ang'a, Z. W., & Mbugua, G. G. (2011). Factors associated with non-adherence to highly active antiretroviral therapy in Nairobi, Kenya. *AIDS Research and Therapy*, 8(2011), 43-51.
- Wanjohi, N. A. (2009). *Factors that Influence non-adherence to antiretroviral therapy among HIV and AIDS patients in Central Province, Kenya* (Unpublished master's thesis). Kenyatta University, Nairobi, Kenya.
- Wasti, P. S., Simkhada, P., Randall. J., Freeman V. J., & Teijlingen, V. E. (2012). Barriers to end facilitators of antiretroviral therapy adherence in Nepal: A qualitative study. *Journal of health, Population and Nutrition*, 30(4), 410-419.
- World Health Organization. (2003) *Adherence to long term therapies—evidence for action*. Retrieved from http://www.who.int/chp/knowledge/publications/adherence_introduction.pdf
- World Health Organization. (2008). *Towards universal access: Scaling up priority HIV/AIDS intervention in the health sector*. Geneva, Switzerland: Author.
- World Health Organization. (2009). *Towards universal access: Scaling up priority HIV/AIDS intervention in the health sector*. Geneva, Switzerland: Author.
- World Health Organization. (2010). *Scaling up of antiretroviral therapy in Kenya*. Retrieved from https://www.who.int/hiv/pub/advocacy/scaling_up_2006.pdf?ua=1
- World Health Organization. (2011). *Retention in HIV programs: Defining the challenges and identifying solutions*. Geneva, Switzerland: Author.
- World Health Organization. (2012). *HIV/AIDS antiretroviral therapy*. Retrieved from <http://www.who.int/hiv/topics/treatment/en/index.html>
- World Health Organization. (2013). *Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection: Recommendations for a public health approach. HIV/AIDS programme*. Geneva, Switzerland: Author.
- World Health Organization. (2015). *HIV/AIDS: Fact sheet no 360*. Geneva, Switzerland: Author.

APPENDICES

Appendix A: Introductory Letter to the Respondents

Dear Participant,

My name is Susan Kahema and I am a post graduate student at Daystar University pursuing a Master's degree in Counselling Psychology. Currently, I am carrying out a study on: Factors affecting Adherence to HIV Anti – Retroviral Therapy in Kibra, Nairobi County. The findings of this study will go a long way in understanding the factors influencing ART Adherence and importantly to inform on proper mitigation strategies to improve adherence among HIV positive adults in Kibra, Nairobi County. The respondents will be fill a questionnaire while others will be involved in a face to face interview. It is estimated that the interview will take no more than 15 to 20 minutes. Please note that the information you give will be used purposely for this study and will be treated with the utmost confidentiality.

Thank you.

Yours faithfully,

Susan N. Kahema

Appendix B: Consent Form for the Respondents

I hereby consent to participate in the study entitled Factors affecting Adherence to HIV Anti – Retroviral Therapy in Kibra, Nairobi County. I have read and understood the information provided and have had the opportunity to ask questions.

I understand that my participation is voluntary and I will not be coerced in any way to participate in the study. I understand that I am free to withdraw from the study at any time without giving reasons. I understand that if I choose to decline to participate in the study it will not affect the course of my treatment or employment in the Comprehensive Care Centre.

I have been guaranteed the utmost confidentiality in the handling of the information and data about me. I understand that my identity and information will be kept confidential. I agree that data collected and findings may be published or may be provided to other researchers in a form that does not expose my identity in any way.

I also understand that I will not directly benefit from the study but I may be compensated for my time and commitment. Therefore, I voluntarily give my consent to participate in this study.

Participant's signature (or thumb print) _____ Date _____

Interviewer's signature: _____ Date _____

Appendix C: Questionnaire

Study Title: Factors affecting Adherence to HIV Anti – Retroviral Therapy in Kibra, Nairobi County

Instructions

This questionnaire should take between 15 – 20 minutes to complete. Please answer all the questions in the questionnaire. Mark a \checkmark the appropriate answer.

Thank you for being willing to participate in this study.

Enrollment #: _____ Clinic #. _____ Date of Interview

Section A: Demographic information

1. Gender? Female Male
2. Kindly state your age bracket? 18 - 28 29 - 39 40 - 50 Above 51
3. What is your marital status? Single Married Widowed Divorced/separate
4. What is your religion? Christian Muslim Hindu other (specify)

5. What is your level of education?
 - University
 - Middle level / Tertiary college
 - Secondary
 - Primary
 - Never gone to school
6. What is your occupation? _____
 - Employed
 - Unemployed
 - Business
 - Other Specify _____
7. What is your average monthly income?
 - Below 5000
 - Between 5000 -10000
 - Between 10000-20000
 - Above 20000

Section B: Factors affecting Adherence to ART

8. How long have you been on antiretroviral medications?

- 0 – 6 months
 6 – 12 months
 12 months to 3 years
 3 years and above

9. How often do you take drugs in a day?

- Once per day
 Twice per day
 Three times per day

10. How many pills do you take in a day?

- One table per day
 One tablet twice a day
 Two tablets twice a day
 Three tablets twice a day

11. What is the distance from your residence to the HIV comprehensive care centre?

- 0-10 km 10-50 km 50-100 km 100 and above

12. What is your mode of transport to the clinic? Walking Public transport

Motor bike /cycling Driving other (specify) -----

13. On average how much money do you spend on fare to and from the clinic?

- 0-20 20-100 100 – 200 200 and

above

Those driving state amount spent on fuel

14. What other expenses do you incur as a result of being HIV positive?

Food Hospitalization (in patient) Treatment of Opportunistic Infections

Other, Specify-----

15. On a scale of 1 to 5 how would you rate the services you receive at this clinic?

- 1=very good
 2=good
 3=average
 4=poor
 5=very poor

16. Do you feel well attended to by the health care workers? Yes No Not
 sure

17. Do you have privacy during consultation and counseling? Yes No

18. Have you disclosed your status to someone else other than the HCWs? Yes
 No

If yes, who have you disclosed your HIV status to? -----

-

If yes to disclosure, give reasons for disclosing

- Encouraged by health care workers
- Fear of serious illness & thus need of support from friends & family
- Sufficient trust in the individual confided in
- other, specify-----

If no to disclosure, give reasons for not disclosing

- Fear of rejection
- Fear of stigmatization
- Fear of being perceived as unfaithful
- Fear of being beaten by spouse
- Fear of being beaten by intimate sex partner
- other, specify-----

19. Have you ever been treated differently by family members and friends because of your HIV status? Yes No

If your answer is yes, how?

- Social support was withdrawn by family members and friends
- I was isolated by family members and friends
- I was stigmatized
- Others (Specify) -----

20. What benefits have you gained from using ARV drugs? -----

-

21. The questions below will help us determine the knowledge you have about the ARVs in relations to HIV infection. Respond appropriately

Question	Strongly Agree	Agree	Disagree	I don't know
HIV / AIDS is curable disease				
ARVs cure HIV				
Adhering to the prescribed ART is important				
I expect to be cured from HIV in future				
Alcohol and drug use does not impair effectiveness of Arv				

ARVs have no side effects				
ARVs prevent Opportunistic Infections				
ARVs improve immunity				

22. Have you ever missed a schedule appointment at the clinic? 1= Yes 0=No

If yes, what was the reason for missed appointment?

1	Lack of transport to the clinic
2	Forgot
3	Had travelled out of town
4	Could not get permission from work
5	Was too busy
6	Was too sick
7	Still had some drugs to take
8	Other (Specify)

23. Have you ever skipped, missed taking your ARV medication [] Yes []

No

24. Has any of the following ever made you skip/stop taking your ARV medication?

A	Side effects	1=Yes	0=No
B	Felt better	1=Yes	0=No
C	Felt ill	1=Yes	0=No
D	Took herbal medicine	1=Yes	0=No
E	Was prayed for / Faith healing	1=Yes	0=No
F	Cost of transport	1=Yes	0=No
G	Distance to the clinic	1=Yes	0=No
H	Lack of food	1=Yes	0=No
I	Pill burden / too many pills	1=Yes	0=No
J	Lack of social support and care	1=Yes	0=No
K	Hospitalized	1=Yes	0=No
L	Did not understand instructions given by HCW	1=Yes	0=No
M	Shared pills with another person	1=Yes	0=No
N	Alcohol use	1=Yes	0=No
O	Forgot / was busy	1=Yes	0=No
P	Did not want others to see me take drugs	1=Yes	0=No
Q	Felt depressed	1=Yes	0=No
R	Did not have pills with me	1=Yes	0=No
S	Ran out of pills	1=Yes	0=No
T	Did not have water to take pills	1=Yes	0=No
U	Did not have enough food	1=Yes	0=No
V	Did not have food completely	1=Yes	0=No

24. Before initiation and after taking ARVs did you receive counselling sessions from the HCW? Yes No

25. Do you use alternative medicine (herbal or faith healing)?

Herbal Yes No Faith healing Yes No

26. In the last one month have you used alcohol and/ or other drugs? Yes No

27. What is your main motivation for your use of ARV medications? -----

28. What is your main challenge in using of ARV medications? -----

29. What do you think is the best way of dealing with this challenge? -----

Section C: Psychological implication

30. On a scale of 1 to 4; 1 being the lowest and four being the highest, have you felt depressed since you started taking your ARVs. 1 2 3 4

31. In the last one month, have you felt depressed?

0=rarely or none of the time (<1 day)

1=some or a little of the time (1-2 days)

2=occasionally or a moderate amount of the time (3-4 days)

3=most or all of the time (5-7 days)

Beck's Depression Inventory (BDI)

Kindly continue to fill this tool. Circle or tick either 0, 1, 2, or 3 the most appropriate answer. Please answer all the questions. This depression inventory will be self-scored. If you need help in filling this form please do not hesitate to ask from me. The scoring scale is at the end of the questionnaire.

1. 0 I do not feel sad.
1 I feel sad
2 I am sad all the time and I can't snap out of it.
3 I am so sad and unhappy that I can't stand it.

2. 0 I am not particularly discouraged about the future.
1 I feel discouraged about the future.
2 I feel I have nothing to look forward to.
3 I feel the future is hopeless and that things cannot improve.

3. 0 I do not feel like a failure.
1 I feel I have failed more than the average person.
2 As I look back on my life, all I can see is a lot of failures.
3 I feel I am a complete failure as a person.

4. 0 I get as much satisfaction out of things as I used to.
1 I don't enjoy things the way I used to.
2 I don't get real satisfaction out of anything anymore.
3 I am dissatisfied or bored with everything.

5. 0 I don't feel particularly guilty
1 I feel guilty a good part of the time.
2 I feel quite guilty most of the time.
3 I feel guilty all of the time.

6. 0 I don't feel I am being punished.
1 I feel I may be punished.
2 I expect to be punished.
3 I feel I am being punished.

7. 0 I don't feel disappointed in myself.
1 I am disappointed in myself.
2 I am disgusted with myself.
3 I hate myself.

8. 0 I don't feel I am any worse than anybody else.
1 I am critical of myself for my weaknesses or mistakes.
2 I blame myself all the time for my faults.
3 I blame myself for everything bad that happens.

9. 0 I don't have any thoughts of killing myself.
1 I have thoughts of killing myself, but I would not carry them out.
3 I would kill myself if I had the chance.

10. 0 I don't cry any more than usual.
1 I cry more now than I used to.
2 I cry all the time now.

- 3 I used to be able to cry, but now I can't cry even though I want to.
11. 0 I am no more irritated by things than I ever was.
1 I am slightly more irritated now than usual.
2 I am quite annoyed or irritated a good deal of time
3 I feel irritated all the time
12. 0 I have not lost interest in other people.
1 I am less interested in other people than I used to be.
2 I have lost most of my interest in other people.
3 I have lost all of my interest in other people.
13. 0 I make decisions about as well as I ever could.
1 I put off making decisions more than I used to.
2 I have greater difficulty in making decisions more than I used to.
3 I can't make decisions at all anymore.
14. 0 I don't feel that I look any worse than I used to.
1 I am worried that I am looking old or unattractive.
2 I feel there are permanent changes in my appearance that make me look unattractive
3 I believe that I look ugly.
15. 0 I can work about as well as before.
1 It takes an extra effort to get started at doing something.
2 I have to push myself very hard to do anything.
3 I can't do any work at all.
16. 0 I can sleep as well as usual.
1 I don't sleep as well as I used to.
2 I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
3 I wake up several hours earlier than I used to and cannot get back to sleep.
17. 0 I don't get more tired than usual.
1 I get tired more easily than I used to.
2 I get tired from doing almost anything.
3 I am too tired to do anything.
18. 0 my appetite is no worse than usual.
1 My appetite is not as good as it used to be.
2 My appetite is much worse now.
3 I have no appetite at all anymore.
19. 0 I haven't lost much weight, if any, lately.
1 I have lost more than five pounds.
2 I have lost more than ten pounds.
3 I have lost more than fifteen pounds.

- 20 0 I am no more worried about my health than usual.
 1 I am worried about physical problems like aches, pains, upset stomach, or constipation.
 2 I am very worried about physical problems and it's hard to think of much else.
 3 I am so worried about my physical problems that I cannot think of anything else.
21. 0 I have not noticed any recent change in my interest in sex.
 1 I am less interested in sex than I used to be.
 2 I have almost no interest in sex.
 3 I have lost interest in sex completely.

INTERPRETING THE BECK DEPRESSION INVENTORY

Now that you have completed the questionnaire, add up the score for each of the twenty-one questions by counting the number to the right of each question you marked. The highest possible total for the whole test would be sixty-three. This would mean you circled number three on all twenty-one questions. Since the lowest possible score for each question is zero, the lowest possible score for the test would be zero. This would mean you circles zero on each question. You can evaluate your depression according to the Table below.

Total Score _____	Levels of Depression
1-10 _____	These ups and downs are considered normal
11-16 _____	Mild mood disturbance
17-20 _____	Borderline clinical depression
21-30 _____	Moderate depression
31-40 _____	Severe depression over
40 _____	Extreme depression

Section D: Alcohol Use Disorders Inventory Test (AUDIT)

For those who answered Yes on alcohol use.

Instructions

Kindly answer all questions as honestly as possible. Give a score either 0, 1, 2, 3 or 4 to answer most applicable to you. This is a self-reported tool but if you need help in answering this questions kindly do not hesitate to ask me.

1. How often do you have a drink containing alcohol?

- Never (skip to Questions 9 & 10) (0)
- Monthly or less (1)
- Two to four times a month (2)
- Two to three times per week (3)
- Four or more times a week. (4) **Score:** _____

2. How many drinks containing alcohol do you have on a typical day when you are drinking?

- 1 or 2 (0)
- 3 or 4 (1)
- 5 or 6 (2)
- 7 to 9 (3)
- 10 or more. (4) **Score:** _____

3. How often do you have six or more drinks on one occasion?

- Never (0)
- Monthly or less (1)
- Two to four times a month (2)
- Two to three times per week (3)
- Four or more times a week. (4) **Score:** _____

• *If total score is 0 at this point, skip to Questions 9 & 10.*

4. How often during the last year have you found that you were not able to stop drinking once you had started?

- Never (0)
- Monthly or less (1)
- Two to four times a month (2)
- Two to three times per week (3)
- Four or more times a week. (4) **Score:** _____

5. How often during the last year have you failed to do what was normally expected from you because of drinking?

- Never (0)
- Monthly or less (1)
- Two to four times a month (2)
- Two to three times per week (3)
- Four or more times a week. (4) **Score:** _____

6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?

- Never (0)
- Monthly or less (1)
- Two to four times a month (2)
- Two to three times per week (3)
- Four or more times a week. (4) **Score:** _____

7. How often during the last year have you had a feeling of guilt or remorse after drinking?

- Never (skip to Questions 9 & 10) (0)
- Monthly or less (1)
- Two to four times a month (2)
- Two to three times per week (3)
- Four or more times a week. (4) **Score:** _____

8. How often during the last year have you been unable to remember what happened the night before because you had been drinking?

- Never (0)
- Monthly or less (1)
- Two to four times a month (2)
- Two to three times per week (3)
- Four or more times a week. (4) **Score:** _____

9. Have you or someone else been injured as a result of your drinking?

- No (0)
- Yes, but not in the last year (2)
- Yes, during the last year. (4) **Score:** _____

10. Has a relative or friend, or a doctor or other health worker been concerned about your drinking or suggested you cut down?

- No (0)
- Yes, but not in the last year (2)
- Yes, during the last year. (4) **Score:** _____

Total Score: _____

EVALUATION

Risk Level Intervention Score

I	Alcohol education	0 - 7
II	Simple advice	8 - 15
III	Simple advice plus brief counseling and continued monitoring	16 - 19
IV	Referral to specialist for diagnostic evaluation and treatment	20 - 40

Thank you so much for taking time to complete this questionnaire.

Interviewer's initials _____

DAYSTAR UNIVERSITY

Appendix D: Ethical Clearance

Daystar University Ethics Review Board

Our Ref. DU-ERB/09/04/ 2019 /00276

Date: 09-04-2019

Susan N. Kahema

Dear Susan,

FACTORS AFFECTING ADHERENCE TO HIV ANTI-RETROVIRAL THERAPY IN KIBRA, NAIROBI COUNTY

Reference is made to your request dated 11-03-2019 for ethical approval of your proposal by Daystar University Ethics Review Board.

We are pleased to inform you that ethical review has been done and approval granted. In line with the research projects policy, you will be required to submit a copy of the final research findings to the Board for records.

Before proceeding to the next stage, ensure the following attached comments are addressed to the satisfaction of your supervisor. Note that it's an offence to proceed without addressing the concerns of ERB.

This approval is valid for a year from 09-04-2019

This approval does not exempt you from obtaining a research permit from the National Commission for Science, Technology and Innovation (NACOSTI).

Yours sincerely,



**Mrs. Purity Kiambi,
Secretary, Daystar University Ethics Review Board**



Althi River Campus
P. O. Box 17 - 90145
Daystar University, Kenya
Tel: 045 6622601 (2) (3)
Fax: 045 6622420
Email: admissions@daystar.ac.ke

Nairobi Campus
P. O. Box 44400 - 00100,
Nairobi, Kenya
Tel: 020 2723 002 (3) (4)
Fax: 020 2728338
Email: admissions@daystar.ac.ke

www.daystar.ac.ke

Appendix E: Research Permit



**NATIONAL COMMISSION FOR SCIENCE,
TECHNOLOGY AND INNOVATION**

Telephone:+254-20-2213471,
2241349,3310571,2219420
Fax:+254-20-318245,318249
Email: dg@nacosti.go.ke
Website : www.nacosti.go.ke
When replying please quote

NACOSTI, Upper Kabete
Off Waiyaki Way
P.O. Box 30623-00100
NAIROBI-KENYA

Ref. No. **NACOSTI/P/19/37726/29205**

Date: **30th April, 2019**

Susan N. Kahema
Daystar University,
P.O. Box 44400 – 00100,
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on “*Factors affecting adherence to HIV Anti – Retroviral Therapy in Kibra, Nairobi County*” I am pleased to inform you that you have been authorized to undertake research in **Nairobi County** for the period ending **30th April, 2020**.

You are advised to report to **the County Commissioner and the County Director of Education, Nairobi County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit a **copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

G. Kalerwa

**GODFREY P. KALERWA MSc., MBA, MKIM
FOR: DIRECTOR-GENERAL/CEO**

Copy to:

The County Commissioner
Nairobi County.

**COUNTY COMMISSIONER
NAIROBI COUNTY
P. O. Box 30124-00100, NBI
TEL: 341626**

The County Director of Education
Nairobi County.

Appendix F: Approval Letter from the Ministry of Education



Republic of Kenya
MINISTRY OF EDUCATION
STATE DEPARTMENT OF EARLY LEARNING & BASIC EDUCATION

Telegrams: "SCHOOLING", Nairobi
 Telephone: Nairobi 020 2453699
 Email: rcenairobi@gmail.com
cdenairobi@gmail.com

REGIONAL DIRECTOR OF EDUCATION
 NAIROBI REGION
 NYAYO HOUSE
 P.O. Box 74629 – 00200
 NAIROBI

When replying please quote

Ref: **RCE/NRB/GEN/1/VOL. 1**

DATE: **13th May, 2019**

Susan N. Kahehema
 Daystar University
 P O Box 44400-00100
NAIROBI

RE: RESEARCH AUTHORIZATION

We are in receipt of a letter from the National Commission for Science, Technology and Innovation regarding research authorization in Nairobi County on "**Factors affecting adherence to HIV Anti-Retroviral Therapy in Kibra, Nairobi County**".

This office has no objection and authority is hereby granted for a period ending **30th April, 2020** as indicated in the request letter.

Kindly inform the Sub County Director of Education of the Sub County you intend to visit.


KINOTI KIOGORA
 FOR: REGIONAL DIRECTOR OF EDUCATION
 NAIROBI



C.C

Director General/CEO
 Nation Commission for Science, Technology and Innovation
NAIROBI



Appendix G: Approval Letter from Nairobi City County

NAIROBI CITY COUNTY

Telegram: "PRO-MINHEALTH", Nairobi
 Telephone: Nairobi 217131/313481
 Fax: 217148
 mail: pmonairobi@yahoo.com

COUNTY HEALTH OFFICE
 NAIROBI
 NYAYO HOUSE
 P.O. Box 34349-00100
 NAIROBI

When replying please quote

Ref. No. CMO/NRB/OPR/VOL1-2/2019/119

**COUNTY HEALTH SERVICE**

Susan N. Kahema

Daystar University

P.O BOX 44400-00100

Nairobi

RE: RESEARCH AUTHORIZATION

This is to inform you that the Nairobi City County Operational Technical Working group reviewed the documents on the study titled, “ **Factors affecting adherence to Anti- Retroviral Therapy in Kibra, Nairobi County**”. I am pleased to inform you that you have been authorized to undertake the study in Nairobi County.

The researcher will be required to adhere to the ethical code of conduct for health research in accordance to the Science Technology and Innovation Act, 2013 and the approval procedure and protocol for research for Nairobi County

On completion of the study, you will submit one hard copy and one copy in PDF of the research findings to our operational research technical working group.

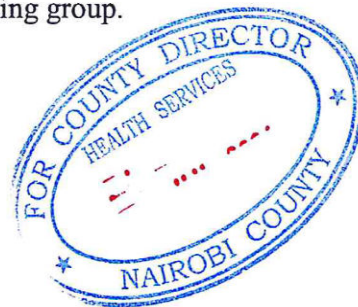
A handwritten signature in blue ink, appearing to read 'R. Muli'.

Raphael Muli

FOR COUNTY DIRECTOR OF MEDICAL SERVICES

CC: All Sub County SCMOH's

ALL Medical Superintendents



Appendix H: Plagiarism Report

Susan Kahema thesis - 3-6-2020

ORIGINALITY REPORT

8%	4%	3%	7%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to Mount Kenya University Student Paper	1%
2	Submitted to Higher Education Commission Pakistan Student Paper	<1%
3	Submitted to International Health Sciences University Student Paper	<1%
4	Submitted to Kampala International University Student Paper	<1%
5	Ivo N. Azia, Ferdinand C. Mukumbang, Brian Van Wyk. "Barriers to adherence to antiretroviral treatment in a regional hospital in Vredenburg, Western Cape, South Africa", Southern African Journal of HIV Medicine, 2016 Publication	<1%
6	Submitted to Kenyatta University Student Paper	<1%
7	www.tandfonline.com Internet Source	<1%