FACTORS INFLUENCING ADHERENCE TO ANTIRETROVIRAL THERAPY AMONG THE YOUTH ATTENDING RIFT VALLEY PROVINCIAL GENERAL HOSPITAL NAKURU COUNTY, KENYA

MARY ACHIENG JUMA
MDSNKR5803/18

THIS DISSERTATION IS SUBMITTED TO THE FACULTY OF SOCIAL SCIENCES IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER'S DEGREE IN DEVELOPMENT STUDIES FROM ST. PAUL'S UNIVERSITY

SEPTEMBER 2019

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SEPTEMBER 2019

DECLARATION

This dissertation is a product of my own work and is not the result of anything done in collaboration. It has not been previously presented to any other institution. I agree that this dissertation may be available for reference and photocopying, at the discretion of the college.

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This research project has been submitted for examination with our approval as University supervisors.

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DEDICATION

I dedicate this work to my family for the unwavering support they accorded me during my entire study period.

ACKNOWLEDGEMENT

I wish to thank God Almighty for good health and breath without which I could not have written this dissertation. Secondly, to my very able supervisors Dr. Peter Koome and Dr. Florence Gitahi for their systematic guidance and encouragement which has resulted to the production of this work. In a very special way I wish to thank my family for their unconditional support and love they showed me during my study period. . I cannot forget to salute the library team from St. Paul's university led by Mr. Davis Mtaki who aided me get to know how to use Zotero software in my citations. I also wish to thank my fellow classmates particularly Robinson Ateya and Joseph Ngatia whom we shared ideas with, and even spent cold evenings with in the library during the process of writing this project. Finally and most importantly I wish to thank marvel cyber who helped me format my work upon its completion, God bless you.

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ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
ALHIV	Adults living with Human Immunodeficiency Virus
ART	Antiretroviral therapy
ARVS	Antiretroviral drugs
CCC	Comprehensive Care center
HAART	Highly Active Antiretroviral Therapy
HBM	Health Belief Model
HIV	Human Immunodeficiency Virus
NACC	National Aids Control Council
PGH	Provincial General Hospital
PLWHIV	People Living with HIV and AIDS
SPSS	Statistical Package for Social Sciences
UNAIDS	United Nations Programme on HIV/AIDS
UNICEF	United Nations International Children's Education Fund
WHO	World Health Organization

ABSTRACT

HIV and AIDs continues to be a major global public health issue. WHO report indicates that 36.9 million people were living with the virus by the end of 2017. African continent has been the most affected region with more than 25.6 million persons currently living with the virus. The introduction of Antiretroviral therapy has brought some relief as out of the 36.9 million persons globally living with HIV, 21.7% can have access to antiretroviral therapy. Young people aged between 15-24years contribute to an approximately 45% of new HIV infections across the world. In Kenya, 12% of the new infections which adds up to 184,719 were among youth 15-24 years. In Nakuru County, the number of youth who are currently infected is 5,509 and those who are actively registered on treatment at the Rift valley provincial general hospital are 566. The purpose of this study was to find out the factors influencing adherence to ART among the youth 15-24 years attending PGH. This is because despite the Governments' efforts and commitment to provide free ARVS to all public health facilities across the country, people living with HIV and AIDs including the youth still continue dying at an alarming rate as a result of non-adherence to ART. Previous researchers have looked at factors such as culture, stigma and discrimination and religious factors as possible hindrances to adherence to ART. However; little has been done regarding gender preference, peer influence, denial of illness and parental supervision as influencing factors. The study sought to find out the factors which influence have adherence to ART among the youth attending PGH, in Nakuru County. It was based on three objectives which included examining the influence of patient-related factors on adherence to ART, assessing the influence of therapy-related factors on adherence to ART and establishing the influence of contextual factors on adherence to ART among the youth attending PGH, Nakuru County. The study was guided by the health belief model theory. Research design used was descriptive survey design. Data types and sources were both primary and secondary. Target population was the youth aged 15-24years, 10 nurses and 7 mentors. Sample population was 138 youth, 3 nurses and 2 mentors. Sampling techniques used were systematic random sampling and purposive sampling. Data collection tools used were questionnaires and key informant interviews. Data was analyzed both quantitatively and qualitatively. Data entry was subjected to closed ended questions using SPSS. Cross tabulation was used to determine response frequency and percentages. The findings were presented on frequency tables. Significant level was measured through Pearson chi square. Research permit was obtained from NACOSTI, Ministry of Education and PGH medical superintendent. Ethical considerations included confidentiality, anonymity, respect and do not harm principle. The study found out that denial of illness was a major influence to adherence and it was an observation that those who started medication immediately had a low rate of non-adherence. The study also found out that dosage complexity of ARVs and intensity of side effects influenced adherence. Knowledge on HIV and AIDS was also found to be a major influence to adherence. The study recommended that HIV and AIDS be taught in all learning institutions and community levels, support and care be accorded to the youth living with HIV and AIDS, disclosure be encouraged by healthcare centers dealing with HIV patients and alternative measures like injection be considered in order to ease the dosage burden. The study suggested that further research be conducted to find out the effect of dosage, income and age on adherence to ART.

CHAPTER ONE
INTRODUCTION

1.1 Overview of the Chapter

The chapter consisted of the background of the study, problem statement, of the study, research questions, rationale of the study, scope and limitations of the study, assumption of the study and definition of key terms.

1.2 Background of the Study

Since it was discovered, HIV and AIDS has been the main worldwide health epidemic, having led to the death of more over 35 million lives. As of 2017, approximately 940 000 people died worldwide because of HIV. A report by World Health Organization showed that about 36.9 million populace were living with HIV by the end of 2017 with a record of 1.8 million new infections (Desmonde, Tanser, Takassi, 2018). Among them there were 59% adults and 52% children below 15 years living with HIV were on antiretroviral therapy (ART) in 2017.HIV and AIDS has been a global health problem of exceptional extent. The youth aged 15-24years record for an estimate of 45% HIV and AIDS new infections worldwide.

Out of 36.9 million people globally with HIV and AIDS, 21.7 percent are on ART treatment. There are still 41 percent of adults living with HIV and AIDS without access to treatment. This sets the basis of this study in finding out the factors influencing adherence to ART(April, wood, Losina., 2014). A study done by Ryan, (2017) indicate that about 1.1 million people are living with HIV and AIDS in the United States of America (USA) 85 percent diagnosed, 62 percent linked to medical care, 48 percent retained in regular medical care and 49 percent had a fully suppressed viral load.

Despite the USA being the best funder of the global answer to HIV and AIDS, it also has a continuing HIV epidemic. It has recorded around 37,600 new infections a year. Up to 692,790 HIV related deaths have been reported in the USA. This also prompted the creation of the USA's first National HIV/AIDS Strategy in 2010 by former president Obama (Adimora, 2017). This strategy was restructured in 2015 to run until 2020. It is based on four pillars which include; reduction in the number of new acquired HIV infections, rising access to ART and an improvement in the health outcomes for HIV and AIDS patients, reducing HIV and AIDS gaps and health

inequities and achieving a systematic national response to the epidemic. Worldwide updates on HIV and AIDS infection show an increase in HIV dominance and considerable reduction in HIV and AIDS related deaths largely attributed to the effectiveness of ART treatment (Kharsany & Karim, 2016).

More than 25.6 million people are at the moment living with HIV and AIDS in Africa. This adds up to two-thirds of the total global HIV and AIDS infections and over 70 percent of all deaths caused by HIV and AIDS. In 2015, there was 7.1% adult HIV prevalence rate in Eastern and Southern Africa. This sums to about 19 million HIV patients, while Western and Central Africa accounted for about 2.2% which is about 6.5 million HIV patients. In 2017, new HIV and AIDS infections among young people 15-24 years were 590,000 ("Adolescent HIV prevention," 2018). Additionally, there has been an increase in AIDS related deaths among adolescents over the past 10 years while reducing in all other age groups. These can be largely attributed to children infected with HIV and AIDS who are growing into adolescents.

The total HIV prevalence rate in South Africa is about 13.1%. The sum of people living with HIV and AIDS is about 7.52 million as of 2018. An estimated 19.0% of adults aged 15-49 years are HIV positive. A study by UNAIDS show that AIDS related deaths in South Africa has dropped considerably, from 200 000 in 2010 to 110 000 in 2017 (UNAIDS, 2018). However, there were new infections of 270 000 in 2017, including about 77 000 among adolescent girls and young women aged 15–24 years. South Africa has made significant development regarding the response to AIDS. Further, more than 4.5 million people were on antiretroviral therapy by the end of June 2018 which adds to 20% of all people on treatment worldwide.

A study done by Awofala & Ogundele (2018) revealed that approximately 38 percent which is 3.2 million people are currently living with HIV and AIDS which is 2.8 percent adult prevalence in Nigeria. Among these, 34 percent of 15 years and older have access to ARVs.("HIV and AIDS in Tanzania," 2015).

The HIV and AIDS pandemic has also been rampant closer home in Eastern Africa where it is recorded that 1.3 million citizens are living with HIV and AIDS in Uganda with 73 percent on ART treatment. On the other hand about 1.5 million people are living with HIV and AIDS in Tanzania with 68 percent on ARV treatment.

Approximately 1.5 million people in Kenya are living with HIV and AIDS with 75 percent on ARV treatment. National HIV dominance among males and females aged 15-24 years was estimated at 1.34% and 2.61% in 2017 respectively, and overall HIV prevalence was 1.98%, which means 184,718 young adults living with HIV in 2017.This has put a heavy pressure on the Kenyan health care system as money which could have been used for development purposes are directed to care and treatment of the sick.

A research done by Bond, (2018) established that uptake of HIV and AIDS testing and counseling (HTS) by youth in Kenya is considerably lower than that of the adults. Antiretroviral therapy treatment rates are lower among the youth than for any other age group of persons living with HIV which raises a need for targeted adolescent programs. Antiretroviral therapy requires a high level of over 95 percent adherence. Kenya is scaling up ART access programs to the HIV infected youth, however, significant number of youth living with HIV have been seen to have high levels of non-adherence. This can lead to irresistible public health problems.

The adult ART coverage is estimated at 75% while the ART coverage for children is 82% in 2017. Despite the significant progress of decline in HIV epidemic, there are some people with HIV who are not on treatment hence an increased risk of mortality, and continued efforts are needed to ensure everyone who is infected accesses treatment. A report by National Aids Control council in (2018) indicates that, there were 2800 estimated HIV related deaths among the youth 15-24 years.

Out of the overall people living with HIV and AIDS in 2017, 12 percent that is 184,719 were among youth 15-24 years of age. Youth with HIV were more in the high prevalence counties in Kenya. Counties with high burden included; Migori 11,761,Nakuru 5,509 ,Nairobi 24,918, Kakamega 6,986 and Homabay 19,050; these contributed to 55% of youth living with HIV as of 2017. The study also found that there are 26 new infections that occur among the youth between 15-24 years every hour making it the leading cause of deaths in Africa. Also, 7 out of 10 newly infected adolescents in sub-Saharan Africa are girls; the leading cause for 70% of them was found to be engagement with multiple sexual partners without using a condom thus making them highly exposed.

In Nakuru County, the number of youth who are currently infected with HIV and AIDS is 5,509 and those who are actively registered on treatment at the Rift valley provincial general hospital are 566. The youths on active attendance are 46per week where they take medicine every Wednesday. From 2014, there has been a decline in adherence to ART among the youths.

According to Winskell, Miller, Allen, & Obong'o, (2016), although there was a 30% decline in HIV related deaths worldwide between 2005 and 2012, there was a significant rise in adolescents living with HIV and AIDS (ALHIV) rose by 50%.This difference is mainly due to lack of addressing the specific needs of ALHIV and resultant poor clinical results which are due to late identification and poor consistency to antiretroviral therapy.

As of 2017, World Health Organization found that 21.7 percent of people worldwide were receiving Antiretroviral therapy (Charlebois, Das, Porco, & Havlir, 2011).According to ("WHO 17 million people with access to antiretroviral therapy," 2016) improvement was made in the world's affected region that is eastern and southern Africa, where the reach increased from 24% in 2010 to 54% in 2015, reaching a total of 10.3 million people. In South Africa, 3.4 million people have access to treatment, followed by Kenya with nearly 900 000.

As much as the prevalence of HIV and AIDS has declined, there are still many young people dying due to HIV and AIDS. Thus the purpose of this study was to find out the factors that influence adherence to anti-retroviral therapy among the youth attending PGH in Nakuru County.

1.3 Problem Statement

Although HIV and AIDS prevalence rates seem to have stabilized globally, there has been rampant increase in new HIV/AIDS cases especially among the youth in Kenya and also in Nakuru County. Lack of adherence to ART among the youth has the potential to impact outcomes on numerous levels. Poor adherence to antiretroviral therapy (ART) causes little viral suppression, which is a risk to the health improvement of the patient. It also risks the cause of lasting treatment resistance. This has an effect on treatment expenses as well as therapeutic options. Out of the 36.9 million people globally living with HIV, 21.7 percent have access to antiretroviral therapy. About 1.5 million people in Kenya are living with HIV and AIDS with 75

percent on ARV treatment. In Nakuru County, the number of youths who are on ART treatment are 566 at Rift Valley provincial general hospital.

Previous researchers such as Kheswa, J.G (2017) have looked at characteristics such as culture, stigma, discrimination and religious factors that may hinder youths' to adhere to anti-retroviral treatment. However, little has been done regarding gender preference, denial of illness, peer influence and parental style as influencing factors. Previous studies have focused more on the general patients in Kenya neglecting the youthful cohort between 15-24 years yet the youth are the building blocks and demographic assets of any nation, Kenya included. For this reason, there is a strong need to invest in their health and protect them from untimely death.

Despite the Government's efforts and commitment to provide free ART services in all public health facilities across the country, the youth living with HIV and AIDS continue to die at an alarming rate. The number of youths aged between 15-24 years living with HIV and AIDS in Nakuru county currently stands at 5,509 (NACC 2018) and the figures continue rising by the day. Those who are registered on treatment at the Rift valley provincial general hospital are 566. Those who are actively visiting the facility for medicine refill are 46-50 thereabout every Wednesday. Those who are not adhering to the treatment at PGH may have changed the station for refills or died. In addition, this study has not been done in Nakuru County. Thus, this study sought to find out factors which influence adherence to Anti-retroviral therapy among the youth attending Rift Valley PGH in Nakuru County, Kenya.

1.4 Objectives

1.4.1 General Objective

The general objective of this study was to find out the factors that influence adherence to anti-retroviral therapy among the youth attending Rift valley Provincial general hospital, Nakuru County, Kenya.

1.4.2 Specific Objectives

This study was guided by these specific objectives;

i. To examine the influence of patient-related factors on adherence to ART among the youth attending PGH, Nakuru county, Kenya.
ii. To assess the influence of therapy-related factors on adherence to ART among the youth attending PGH, Nakuru county, Kenya.

iii. To establish the influence of contextual factors on adherence to ART among the youth attending PGH, Nakuru county, Kenya.

1.5 Research Questions

i. What is the influence of patient related factors on adherence to ART among the youth attending PGH, Nakuru County?
ii. What is the influence of therapy related factors on adherence to ART among the youth attending PGH, Nakuru County?
iii. What is the influence of contextual factors on adherence to ART among the youth attending PGH, Nakuru County?

1.6 Significance of the Study

Lack of adherence to ART may cause death due to the suppression of the disease. Lack of consistency to ART is extremely varied, and includes complication of the therapy treatment side effects, ill health, lack of proper patient nurse relationship, and incomplete access to ART as a result of barriers such as costs. Findings will provide valuable contributions from both a theoretical and practical view. The study will help in the understanding of the dangers associated with non-adherence to ART. This will be used in developing interventions that will help the youth at PGH Nakuru County. The findings of the data will be shared with the mentors and the ministry of health officials. This will contribute to the decision making as the amendments are made regarding the strategies and campaigns concerning HIV and AIDS.

In addition findings will assist the academicians who will be doing research regarding the same scope of study. It will help them with content and add to the knowledge of the study. The research will be important to organizations such as, National Aids Control Council (NACC), Ministry of Health (MOH) and the government in making policies regarding the HIV and AIDS epidemic.

The study will also help the HIV and AIDS patients and particularly the youth and their mentors to learn about the dangers associated with lack of adherence to ART. It will help in changing of behavior among the youth and also creating more awareness that will go a long way in reducing the mortality and morbidity rate of the young people living with HIV and AIDS.

1.7 Scope and Limitation

1.7.1 Scope

The study was concerned with the youth who are living with HIV and AIDS and are on antiretroviral treatment. It was done in Nakuru County at the Rift valley provincial general hospital. The target population was youths aged between 15-24 years, 7 mentors and 10 nurses. The research was conducted between March and May 2019.

1.7.2 Limitations of the Study

The study had various limitations. One of them is that there could have been other factors which may not have been influencing adherence to ART among the youth at this particular hospital yet may be influencing adherence in other hospitals. The researcher worked closely with the youth mentors and what the respondents were comfortable to disclose. Adequate trust may not have been developed and therefore some information may not have been released. There could have been youths who may not have been willing to share their experiences due to fear of judgment. To overcome this, the researcher accessed the patients through their mentors who are always available at the Comprehensive Care Centre (CCC) every Wednesday and also assured respondents of confidentiality during and after the research. This helped reduce hostility and made it easy for the researcher to get valuable information.

1.7.3. Delimitations of the study

The study had various delimitations. The researcher narrowed to the youth aged between 15-24years who are HIV positive and on antiretroviral treatment at the Rift Valley Provincial General Hospital in Nakuru County. The researcher assumed that this group was a fair representation of other youths of the same age bracket in other hospitals in various Counties across the Country.

1.8 Assumptions of the Study

The study assumed that the researcher would be given permission at PGH to conduct the study. It was also an assumption that the respondents would be available during the research period and also answer the questions truthfully. The study also assumed that the mentors and the nurses at the facility would be of help as this would enhance the completion of the study. These were addressed by the researcher obtaining permission from the medical superintendent in charge of PGH hospital and other authorities concerned such as Nacosti and County director of health early enough.

1.9 Definition of Key Terms

Adherence to medication	Is defined by World Health Organization as the degree to which a person's behavior corresponds with the agreed recommendations from a healthcare provider.
Adolescent	A young person in the process of developing from a child into an adult.
Antiretroviral therapy	Treatment that stops or suppresses a retrovirus. One of the retrovirus is the human immunodeficiency virus that causes AIDS.
Contextual factors	These are factors that are influenced by the surrounding environment.
Influencing	The capacity or power of persons or things to be a compelling force on or produce effects on the actions, behavior, opinions etc., of others.
Mentor	A person who gives younger or less experienced person advice and help over a period of time.
Patient related factors	These are the challenges that come from the patients themselves
Therapy related factors	These are challenges that arise due to the effect of the treatment.
Youth	The United Nations for statistical purposes defines youth as those persons between the ages of 15 and 24 years, without prejudice to other definitions by Member States.

1.10 Summary of the Chapter

Chapter one discussed the background of the study which gave the figures of the HIV and AIDS victims as well as those on treatment. The statement of the problem was that despite the Government's efforts to provide free ARVs and scale up campaigns against dangers related to non-adherence to ART, the youth in Nakuru County still continue dying at an alarming rate. The purpose of the study was to find out the factors influencing adherence to ART among the youth attending the Rift valley provincial general hospital. The significance of the study was that it might help Ministry of health officials and mentors in the understanding of the dangers associated with non-adherence to ART.

The study might also help academicians conducting study in this field with content and new knowledge to apply in their studies. In addition, the study findings might help organizations such as NACC, MOH and the government to be able to draft new policies concerning factors that influence adherence to antiretroviral therapy among the youth. The study might also help People living with HIV (PLWHIV) and more so the youth learn about the dangers associated with lack of adherence to ART, and help in changing the youth's behavior and creating more awareness that will help in reducing mortality and morbidity rate of young people with HIV. The study was done in Nakuru County at Rift valley provincial general hospital. The target population was the youths aged 15-24 years, 7 mentors and 10 nurses. Currently, there are 566 youths who are on ART at PGH. The youth living with HIV and AIDS denied the researcher permission to talk to them due to fear of judgment. This was addressed as the researcher was able to access the patients through their mentors who are always available at the Comprehensive Care Centre (CCC) every Wednesday. It was an assumption that the researcher would be given permission to conduct the study, a challenge which was addressed by seeking permission early enough from the authorities concerned.

CHAPTER TWO
LITERATURE REVIEW

2.1. Introduction

This chapter looked at the theoretical review, empirical review and conceptual framework. These helped shed more light into understanding the factors influencing adherence to anti-retroviral therapy. Theoretical review incorporated a theory which the researcher used in the study and which is relevant to the study. The Health Belief model was used for the study. The chapter further discussed empirical review which entailed the factors that influence adherence to ART which are Patient related factors, Therapy related factors and Contextual factors. The conceptual framework of the study was also discussed. It listed the dependent variables, independent variables and moderating factors.

2.2. Theoretical Review

2.2.1. Health Belief Model

The health belief model (HBM), was developed by social psychologists Hochbaum, Rosenstock and Kegels in the 1950s who worked in the United States Public Health Services. HBM is a mental model that elaborates and also predicts health behavior by putting focus on the attitude of individuals. The model was developed in order to respond to the failure of free tuberculosis (TB) health screening program. Since then, the HBM has been used to explore various health behaviors, including sexual risk behaviors and the transmission of HIV and AIDS (Ritter, 2011). Rosenstock assumed that to be in good health was a main goal to all people.

The theory explains health behaviors with focus on the attitudes and beliefs of individuals. The model explains that people will take up health actions if they feel that a health condition can be avoided. They will also take action if the person believes that by taking a recommended action, he or she will avoid a negative health condition, for example, the youth living with HIV and AIDS will adhere to ART treatment if they believe that it will prevent them from death caused by HIV. They will further take action if the person believes they can use recommended action with confidence.

The health belief model presented is in three constructs which represent the perceived threats and benefits. The first is perceived susceptibility which is ones opinion of chances of getting a condition. For example, lack of adherence to ART could lower the immune system. The second is perceived severity which looks at the seriousness

of a condition such as death due to lack of adherence to ART. The third is perceived benefits which explain that the action which is adherence to ART treatment will suppress HIV and AIDS hence prevent death caused by the infection. Youth will adopt measures that will help them adhere to ART treatment if they feel that proper ART education and campaigns have communicated the risks involved due to lack of adherence. Finally, Self efficacy which portrays ones confidence in using the action, say the youth can confidently adhere to ART treatment because they are aware of the dangers associated with lack of adherence.

The health belief model is a framework that can be applied to understand health behavior and possible reasons for not using the recommended health action (Becker & Rosenstock 1984). As much as the health belief model focuses on the patient, health care providers also need to understand and use it as a tool to help encourage behavior change in patients. The health belief model is a suitable theoretical framework for use to explore the behavior of patient's adherence to antiretroviral treatment. It can also provide useful intervention for health practitioners in their attempts to make informed judgments about measuring the success of patient adherence to ART.

In this study, it can be used to determine why the youth living with HIV and AIDS are still dying despite the campaigns and education done by the government in addition to provision of free antiretroviral drugs. It can also contribute to the academic research on topics related to ART. The model will be relevant to the study as it will help in finding out the reasons that influence youth adherence to ART at PGH Nakuru County.

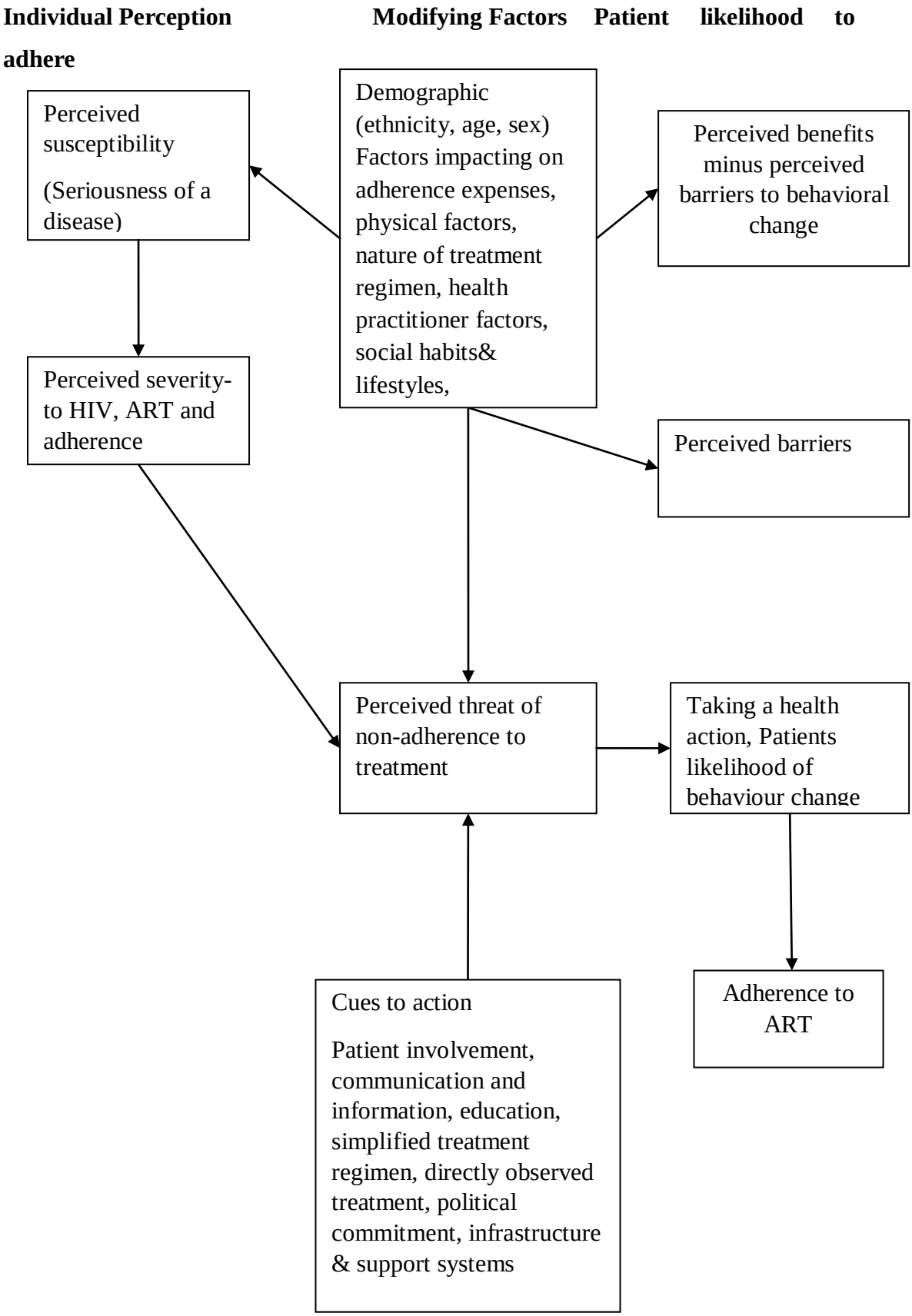


Figure 1.1: Relationship of the key constructs of the health belief model

2.2.2 Constructs of the Health Belief Model

Medical practitioners act as primary medical care providers to people with HIV and AIDS and their attitudes, perceptions and beliefs towards HIV and AIDS are of utmost significance in the effective delivery of health care. One major factor that influences patients' adherence to ART includes the patients' own perceptions of their susceptibility to and severity of progressing to AIDS and the patient's own belief in the treatment. These perceptions influence the patients' behavior to treatment. According to the health belief model, patients' beliefs about their perceived susceptibility do influence a patient's effort to change health behavior. If the patient perceives their health as very important, they will adhere to treatment. This will also assist the patient to understand their susceptibility to resistant strains of HIV and progression to AIDS. This information on a patient's susceptibility should be imparted to the patient. Medical practitioners need to personalize the risk of non-adherence based on a person's characteristic behavior. The implications of lack of adherence to treatment such as treatment failure, immunologic failure, rapid progression to AIDS and death should be made clear to the patient by the medical practitioner. According to the health belief model, the seriousness of a condition influences a patient's effort to adhere to better health behavior. Perceived severity to non-adherence is based to a great extent on the patient's knowledge about HIV and AIDS (Kahissay, Fenta, & Boon, 2017). A patient will adhere to ART if they believe and have knowledge that non-adherence will cause death. According to the health belief model, the patients' belief in the diagnosis and the therapy also does influence adherence. If patients do not believe in the treatment plan, they may not adhere to treatment as prescribed by the medical practitioner. If patients are in denial that they are infected with HIV, they will not find it necessary to take therapy. The health belief model addresses the cues to action that motivate the decision-making processing about executing the target behavior. In this model the cues to action that promote adherence include patient involvement, communication and sharing of information between patient and physician, simplification and individualization of treatment regimens and support strategies that include directly observed therapy, the political commitment, the infrastructure and support systems of the country.

2.2.3 Modifying Factors

Modifying factors in the health belief model include factors that are modifiable and have some effect on patients' adherence to ART. These include the factors impacting on adherence and the cues to action that can be implemented to promote adherence. The adapted health belief model addresses distance as a probable modifying factor that has some influence to an individual's health behavior change. Some of the probable reasons that may cause difficulties for patients to adhere to treatment include the cost and the need to travel long distances to the clinic. The health belief model addresses migration as one of the factors impacting on the patient's adherence habits. Traveling away from home may lead to a patient missing a dose. Some patients lived far away from the clinics. Social habits and lifestyles such as drug use may be associated with poor adherence to ART. Social demographic factors may affect an individual's perception and consequent health-related behaviors. The theory emphasizes socio-demographic factors, particularly education attainment, as having some indirect effect on health behavior. Lower educational achievement and lower income are each independently associated with lower adherence. Lower income would mean failure to buy food, thus resulting in difficulty to take treatment on an empty stomach. Health practitioners' factors include another set of modifying factor that has been identified as having an impact on a patient's consistency to ART. The procedures patients are usually taken through by the medical practitioners as they receive refills could have some power on their motivation to go back to the same facility for medicine. If the practitioners have insufficient time to assess patients' needs or concerns it might affect ART. Some physicians may also avoid discussing the importance of adherence with their patients because of uncertainty about how to discuss ART adherence with their patients and also lack of personal touch with the issue. The threat of social stigma may prevent people living with HIV from disclosing their HIV status. This may serve as a challenge to ART adherence. Underlying the health belief model is the theory of adherence as a function of perceived benefits minus perceived barriers to adherence. The likelihood of patients adhering to treatment is high if the perceived barriers by the patients are less than the perceived benefits. The way patients perceive HIV and AIDS and the ART, the effect of the modifying factors that impact on adherence and the modifiable cues to action implemented by the physicians would determine the patient's likelihood to behavior

change. If the benefits of adhering are perceived to be more than the barriers, patients would adhere to ART.

The patients' understanding on the effects of not adhering to treatment would contribute to the patients' behavior change. The combined levels of susceptibility and severity of the disease should energize the patient to adhere. In order to improve patients' adherence behavior and to plan on the cues to action, physicians need to understand the underlying concepts of the health belief model.

2.2.4 Summary of the Theoretical Framework

ART is a long-term therapy and patients are expected to go through pill exhaustion. Ordinary evaluation of patients' consistency to the therapy for best cure results is necessary. Adherence to ART is necessary as it has been exposed to lead to reduced mortality rate as a result of HIV and AIDS disease, increased suppression of viral load and hence leads to an enhanced quality of life for HIV infected people. The major fear of non-adherence is the surfacing of drug resistant strains, the use of compound and expensive regimens, and the rapid progression of HIV disease to AIDS. A patient is essential to have an ART consistency rate close to 100% for successful outcomes of ART. Measurement methods include patients' self-report, pill count, electronic monitoring and pharmacy-based approaches and biological markers such as the plasma concentration of antiretroviral drugs. A health belief model has been used to explain the modifying factors that would influence a patient to adhere to treatment. For behavior change to succeed, people must feel threatened by the consequences of non-adherence and believe that adherence to ART will result in an acceptable outcome.

2.3. Empirical Review

2.3.1 Patient Related Factors

Patient related factors are challenges that emerge from the patient themselves. These include indulgence in drugs, age, frequent transit and denial of illness. Drug abuse and addiction is common in HIV and AIDS infected individuals. Despite a growing text on adherence to ART, few studies have looked at the effect of drug use on adherence and viral control. HIV and AIDS has become a continual illness that can be treated with the advancement in medication therapy, as long as the patient can attain adherence with the arranged antiretroviral medication regimen (Roberson, White, &

Fogel, 2009). Some patients living with HIV and AIDS, however, may come from environments loaded with violence, family issues, substance abuse as well as mental illness.

Burdens such as these affect negatively the ability of the patients to adhere to the prescription plan. A research by Lucas G.M.(2011) established that substance abuse unfavorably affects commitment adherence to antiretroviral therapy and long term persistence with care. It causes weakness on the patient. When the patient starts antiretroviral therapy as instructed by their clinicians, increased levels of treatment adherence of up to 95 percent is required in order to achieve long lasting suppression of HIV virus. Consistent drug use has been found to reduce antiretroviral medication adherence. Most patients who drink and smoke while on treatment are reported that the action hinders them from taking their ART as prescribed. According to Yu et al., (2018) use of drugs among patients on ART has stern consequences on their ability to consistently adhere to therapy. This is because it becomes difficult for them to receive any form of social and family support, which is a form of motivation. Substance abuse also causes forgetfulness, exhaustion and confusion which also contribute to non-adherence to ART.

A study done by (Rosen et al., 2013) established that active cocaine use was a powerful interpreter of poor adherence which led to failure of viral suppression. The overall adherence among cocaine users was 27%, compared to 68% of those who did not use cocaine. Consequently, 13% of active cocaine users retained viral suppression, compared to 46% of nonusers. Rosen et al., (2013) found that measures to improve adherence should focus on developing adaptable coping skills, identifying and treating depression. The study further found that the tendency to use drugs to manage stress was associated with both poor adherence and detectable viral load. Older adults have been seen to be at a big risk for non-adherence to ART due to various factors such as difficulty in side effects associated with ARVs, and cost. However, according to a study by Ghidei et al.,(2013) this overview may not apply to much older adults with HIV and AIDS. Increased viral load, immune suppression, drug-resistant viral strains and opportunistic infections are caused due to non-adherence to ART, regardless of age. A study by Hadland et al., (2012) on the relationship between age and adherence on ART, revealed that young people below 29 years of age had poorer adherence to the treatment.

Similarly, the reason may be that young patients are hard to involve in effective medical care. Interestingly, a research done in the United Kingdom among mainstream patients accessing primary care, younger patients were found to be less likely to perceive that the care they received was of high quality.

Non-adherence causes growth of ART resistance to HIV and AIDS and also death. However, the preservation of most favorable ART adherence is challenging. An analysis of 84 studies projected that only 62% of HIV patients achieved best adherence. Despite absolute government funding of the HIV medical service fees in Korea, there are partial data on ART adherence at the state level (Kim, Lee, Park, Bang, & Lee, 2018).Non adherence to ART treatment leads to death. However, many patients suffering from HIV and AIDS infection may be suffering from non-adherence due to movement challenges. One may be working in a different town every month which may contribute to non- adherence of ART treatment. A study by Wasti, Simkhada, Randall, Freeman, & van Teijlingen, (2012) revealed that travelling long distance to ART treatment sites remains one of the major influence to adherence issue. Thus, a resolution to underprivileged and rural people, who may have a challenge travelling for long in order to access ART, is opening ART facilities closer to the patients. This has been found to add to the fear of disclosure, and stigmatization thus causing them to travel to further sites to avoid familiarity.

Direct costs refer to household spending that contributes to seeking treatment, including non-medical expenses such as transport. The indirect costs are the loss of household productive time for PLWHA and caregivers, and the reduction in wage and profit due to failure to work (Dan, 2015).

Patient related characteristics include fear of disclosing illness and taking them in the public due to fear of judgment, the patient may feel depressed, or hopeless having a simultaneous dependence which may cause one to forget to take medication at the particular time (Wasti et al., 2012).Some married people revealed that they did not take medication in particular when their spouses were around, due to fear of disclosure.

Non-acceptance has been proved to be a hindrance to revelation of HIV status as the shock, stigma and fear of negative judgment may compel the PLWHIV to conceal their positive result. A study conducted by Maeri et al., (2016) revealed that

disclosure was an avenue to help in starting the process of acceptance and receiving treatment as well as counseling. It helped them get access to societal support and encouragement to start treatment, clinic visits, and treatment reminders.According to that study, revealing of status could aid quick connection to care, as some PLWHIV often do not start going to the healthcare because they had not disclosed their condition. A study done by Hornschuh, Dietrich, Tshabalala, & Laher, (2017),revealed that those who feared accidental disclosure of their status would refrain from taking their treatment consistently due to fear of judgment. This fear was considered major enough to prevent people from even seeking treatment. The denial of illness extends to couples not disclosing to each other. This hinders taking of medication hence worsens the disease eventually leading to death Audet, McGowan, Wallston, & Kipp, (2013).

Many people tested with HIV and AIDS experience distress after knowing their results (Martinez et al., 2014). Many have a hard time accepting the diagnosis, with others being in denial. Periods of non-acceptance range from weeks to years and have noticeable results for many individuals' mental and physical health, seen which influenced adherence to ART.

According to Horter et al., (2017) lack of acceptance of the HIV results can be noted among those who had not felt unwell before the tests, which was changed by the health practitioner. Receiving HIV-positive result causes confusion since the patient does not identify themselves as being positive because of the notion that HIV infection comes with common symptoms.

Being prepared for the outcome of the results is important to enhance acceptance of one's HIV status. Research conducted by Clum et al., (2013) revealed that participants felt that it was not compulsory to test and this influenced their preparedness for dealing with the result and therefore their likelihood of accepting it. Testing gifts such as t-shirts and snacks also helped to reduce anxiety during this process, as it contributed to the participant’s motivation to test rather than to know their health status, which causes most patients to go into shock on receiving a positive result.

A study done by Flowers, Rindell, Ahmed, Young (2017) reveals that an individuals' positive acceptance of their HIV status and their expectation and Faith for living with courage as a HIV victim was emphasized through community support and encouragement. Patients who may have seen life in other HIV victims, gives them hope that they are not the only ones infected by HIV, and had seen from them the transformative effect of ART, compared to the previous times when many had seen people dying around them due to HIV related illnesses. These experiences helped the individuals to move from denial to acceptance and getting hope for the future.

2.3.3. Therapy Related Factors

Therapy related factors include the effects caused by the medication. These include; dosing challenges, dissatisfaction with healthcare providers and gender preference. ART treatment comes with its fair share of side effects that have also been proved to be influencing adherence among people living with HIV and AIDS. ART side-effects are a challenge to most participants. A study carried out by (Wasti, Randall, Freeman, van 2012) showed that the participants who had experienced severe side-effects reported that it contributed to non-adherence. Further, the study explained that patients complained of vomiting, skin rashes while others had lost sight or had poor vision. Doctors have established that the side-effects of ARVs have caused some patients to stop adhering to ART treatment.

According to Smith, (2013) the dynamics of dosage can be split into three categories. These include the first category where drug levels are not enough to hold back viral reproduction in the malformed strain of the virus. In the second category, drug levels are sufficient to inhibit viral replication in the wild-type strain, but not the mal-formed strain. In the third stage, drug levels are adequately high to inhibit viral reproduction in both strains of the virus.

There are principles which can be employed to enhance adherence to ART among patients (Simoni, Amico, Pearson, & Malow, 2008). These may include designing a calendar schedule that the patient can follow and be consistent with. It is significant to look at the patient's daily routine of dosage including balance of the number of pills, size of the pill, and regularity required to take the pill as well as any issues that affect absorption such as use of acid reducing therapy and food requirements. Clinicians can

also work together with the patient to come up with a prescription option and also a management plan that considers their daily activities.

Clinicians should entrust to effectively communicate to patients and let them know that their first routine is generally the most important option for a simple regimen that gives them successful treatment in the long-term (Adherence Limitations to Treatment Safety and Efficacy Adult and Adolescent ARV, 2015).Establishing good patient-doctor relationship and consistently effective communication helps improve the adherence to ART. Taking of medication can be improved using prescription reminder tools. The healthcare workers can adopt methods such as text messaging to the patients, pill box monitors, pill boxes as well as alarms. Health facilities have a crucial role to take in ART care in remote settings by promoting suitable services and ensuring access to quality and efficacious medicines (Steel, Nwokike, & Joshi, 2016) . Healthcare providers play a role in monitoring ART adherence, patient follow up on refill, management of ART side effects and providing counseling and information to ART patients. A study carried out at Pumwani found out that, where the patient ART care was timely started with intensive adherence and counseling services, it resulted in a significant reduction in poor adherence to the treatment. Similar findings were made by Karanja, (2013) where there was an observation on the healthcare systems by the providers, it was observed that 63% of patients take less than an hour waiting to be attended by a health care provider during appointments, 73% rated said they received good treatment at the center, and 99% said that they trusted the health care providers. The Pumwani study further revealed that 36 percent of patients had treatment assistants who gave them a follow up and these measures contributed to their adherence to ART.

However, lack of adherence to ART may be due to dissatisfaction with the healthcare providers. In their study, Azia, Mukumbang, & Wyk, (2016) found out that health system related factors that may hinder medication adherence are poor treatment by health workers, lack of proper knowledge on matters treatment by the provider, lack of patient follow up, lack of satisfaction by the services provided, lack of empathy in treating People Living with HIV.(PLWHIV), long queues. Qualitative studies done by (Pérez-Salgado, Compean-Dardón, Staines-Orozco, & Ortiz-Hernández, (2015) have reported that low quality services by the healthcare provider to the patient is one

of the major barriers to adherence, and this has been reported both by patients with HIV and by their healthcare providers. Feyissa, Abebe, Girma, & Woldie, (2012) in their study revealed that people will stay away from the centers without getting tested due to the issue of stigmatization by the healthcare providers too. This comes in when the provider is not empathetic and does not know how to handle the HIV positive patient. Studies have revealed that many of the youth HIV patients in Malawi did not undergo HIV testing despite the promise of free ARV drugs because of the social stigma experienced.

This suggests that fear of stigmatization and discrimination by different people may hinder people living with HIV and AIDS from testing or getting involved in education, preventive measures and adherence to ART treatment services, thus making them vulnerable to HIV and AIDS infection. These further leads to HIV and AIDs patients attitudes on preferring a certain gender to serve them (Saki, Mohammad Khan Kermanshahi, Mohammadi, & Mohraz, 2015). This decision is triggered if they feel that the care provider will not discriminate or look down upon them. Perhaps, friendly support intervention programmes which are culturally appropriate should be developed to overcome the stigmatization and discriminations towards PLWHA in order to promote adherence to medication both at the healthcare facilities and at the community. Stigma has prevented some PLWHA from enjoying the full benefits of free ARVs.

2.3.4. Contextual Factors

Contextual factors include household income, education, parental styles, parental beliefs and peer influence. Economic burdens borne by HIV patients are a hurdle to their ability to get a consistent supply of antiretroviral and take them at the right time (Castro, 2014). Such challenges include lack of transport money to a health center and inadequate financial support to the caregiver at home in terms of eating healthy and general upkeep. Though these costs may seem minimal to health providers, they often render into hard household decisions such as who eats, who will work, or who goes to school. In most developing countries like Kenya, this is a major problem as many people are below the poverty line where there is struggle for people living with HIV. This is because it may be hard to afford basic needs. Education also contributes to adherence of ART treatment among the youth living with HIV and AIDS. Enhancing education among PLHIV not only enhances adherence, but also lowers levels of

stigma (Kim, Gerver, Fidler, & Ward, 2014). When the whole community is educated, they know better how to treat PLHIV. At the same time, those with HIV no longer feel threatened by prospects of hopeless life, but feel empowered to live longer, healthier lives. To this, education decreases the level on ignorance concerning HIV and AIDs as well as ARTs. In normal routines of handing out ARVs, teaching is conducted before they get the medicines, as a way of enhancing adherence.

McKinney argues that providing patients with education on ART outcome and proper usage seems to increase adherence. The influence of parents and their parenting styles has been seen to influence the adherence to ART among the young people. Authoritarian style of parenting exerts lots of control and relatively little warmth. It involves ordering the young people living with HIV and AIDS. According to Shorer et al., (2011) this may range from using curse words due to their condition since they feel disappointed or let down as parents. With this style, there is no social support to the victims. On the other hand, Anderson, (2011) argues that a parent who exerts positive kind of authority to the youth may contribute positively to adherence because there will be constant reminder on treatment and healthcare.

Parents who exert permissive style of parenting involve a lack of demands and expectations. Bahrami, Dolatshahi, Pourshahbaz, & Mohammadkhani, (2018), reveal that children raised by permissive parents tend to grow up without self-discipline. They may be more rowdy in school due to the lack of guidelines at home, and may also be less academically motivated than many of their peers. In this study, permissive parenting contributes negatively to adherence of ART treatment due to minimal support and follows up from the parents. Hence, the youth living with HIV and AIDS may be hesitant in seeking medication (Philips, Sioen, Michels, Sleddens, & De Henauw, 2014),defined uninvolved parenting, as neglectful parenting, and as a style that involves a lack of sensitivity to the child's needs.

These parents make few to totally no demands of their children and they are often unresponsive, unconcerned and neglectful. With this kind of style, Rothrauff, Cooney, & An, (2009) says there may be a possibility that the parents are not informed of their children's HIV status due to the lack of effective communication as well as the environment they have created. This influences negative adherence to ART among the young people. These parents are not able to support their children whereas the patients

are also not confident to confide in their parents due to lack of support. Traditionally, social support from the family was a key thing in the African culture. With the emergence of HIV infection, this culture is of prominence (Idang, 2015). Many youth who are living with HIV and AIDS have been left exposed to very harsh economic realities and under increasing pressure to meet their treatment obligations. All these and other factors require the family to perform its traditional role of assisting its needy members to surmount the emerging challenges. However, this may not be the case especially in a situation where the parents do not offer social support. This may be due to their negative beliefs regarding HIV leading them to neglect the sick because they are a burden.

According to Nyamathi, Ekstrand, Zolt-Gilburne, Ganguly, Sinha, Ramakrishnan, Leake, (2013), most PLWHA experience low psychological quality of life despite being on ART because of stigmatization from family, friends and the community. Social support can also affect PLWHA health negatively especially in cases where interacting with others leads to feelings of stigma and alienation. Family support will be there so long as their own name is not compromised, and so long as the privacy of personal family affairs is respected by the PLWHA.

A study by Kahissay, Fenta, & Boon, (2017) revealed that some parents believe that illnesses are caused by supernatural beliefs. In a study done by Tenenbaum et al., (2012) in a cross cultural study of 139 societies, only two societies did not have the belief that gods or spirits could cause illness, making such a belief a near universal. And 56 percent of those sampled societies thought that gods or spirits were the major causes of illness.

Tiruneh & Wilson, (2016) in their research found that beliefs and norms are among the factors which influence PLWHA adherence to ART. Beliefs about the seriousness of the illness and the belief in medication or treatment also influence adherence. In addition, PLWHA‟s attitude towards the drug, perceptions about the HIV and the perceived benefits of the drug play a very important role in adherence. Greater adherence is observed in PLWHA who believe that HAART is effective, while negative beliefs reduce adherence. In addition, the cultural aspects of the PLWHAs' health beliefs and life goals are also important influential factors in the context of treatment adherence.

In his study Dejman et al., (2015) found that some religions do not believe in medication and treatment. Parents who are in these religious groups may influence the adherence of the ART among youth living with HIV and AIDS. Most times, they will be on the road for religious practices in search of healing. While they may think they are supporting the patient, their health keeps deteriorating and may lead to death. Peer influence on adherence has been noted to be one of the characteristics among the youth living with HIV and AIDS. This is due to the need to maintain a positive self-image. Galea et al., (2018) found that peer pressure and a sense of identity have been as among the influences to adherence to ART treatment. Most of the patients fear that the physical changes arising from drug toxicity might be a public indicator to their peers concerning their health status.

ARVs have side effects such as the facial and buttock wasting due to the abnormal distribution of fat in the body. Such physical changes if noticed or commented on by their peers could lead young people to stop taking their treatment (Nabukeera-Barungi et al., 2015). It is also evident that challenges emerge once young people take on full responsibility for taking their treatment on their own. This is of particular interest as this study is focusing on young people aged 15-24 years who are beginning to assume higher levels of control and responsibilities on taking treatment. Some young people transition to take full control for their own drugs before they are mature enough to fully appreciate the importance of taking drugs (Nichols, Montepiedra et al. 2012).

Lack of adult supervision and support even among adolescents has been shown to compromise adherence (Miller & DiMatteo, 2013).However, very few studies have an in depth literature on this. This gap also impacts on the support needed as it is still unknown what kind of support young people require during and after the transition from mediated to autonomous treatment taking. Although the literature has explored many of the factors which influence adherence to ART treatment among the youth, there is still little understanding about how peer support networks may influence young people's adherence to ART (Xu, Munir, Kanabkaew, & Le Coeur, 2017).

Studies have not implored deeper on what motivates the youth to take their drugs and what they perceive to be structural, cultural and social barriers that hinder them from adhering well to ART. This study therefore sought to find out from young people what support they require in order to improve adherence.

2.4 Conceptual Framework

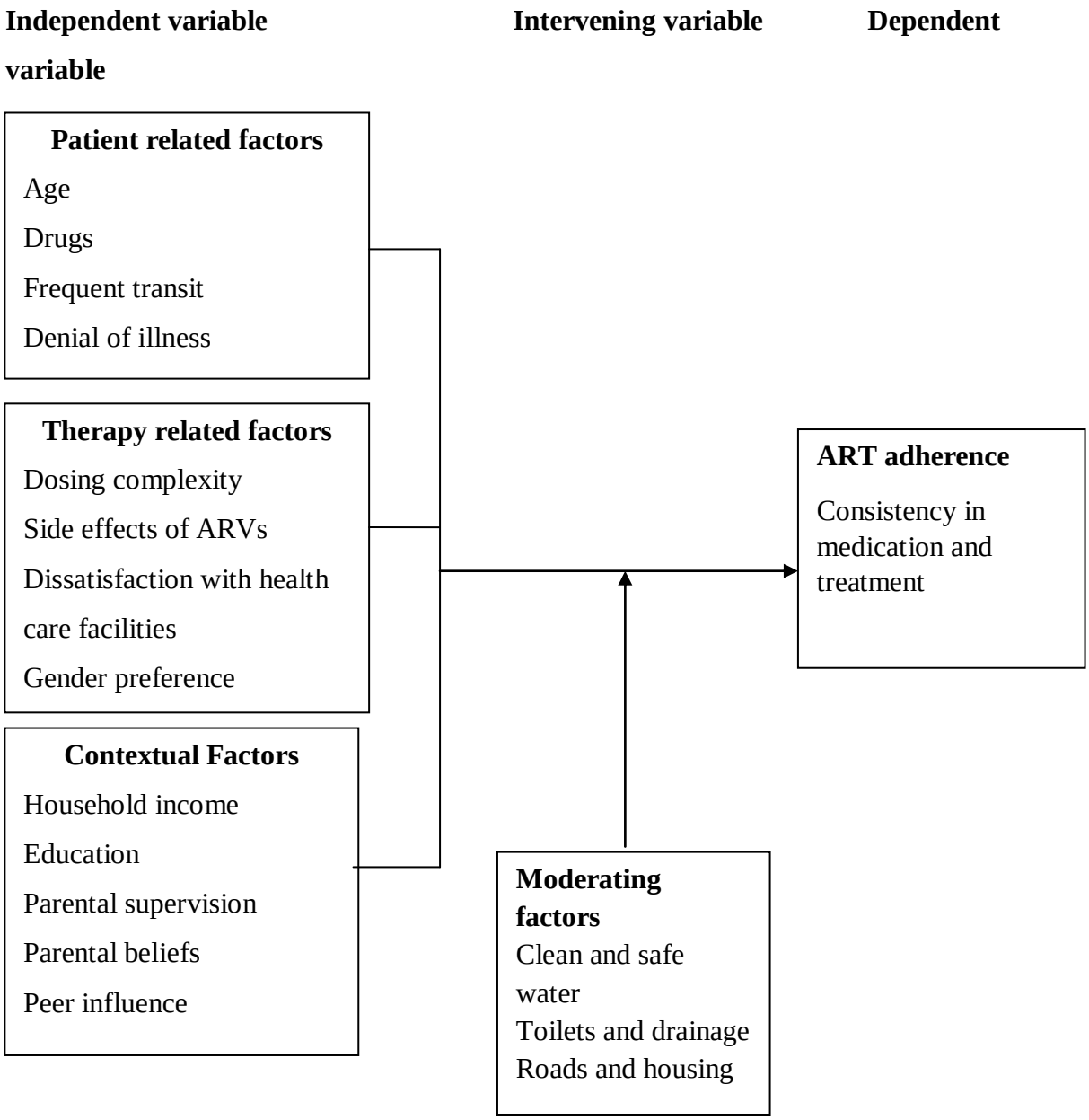


Figure 2.1: Conceptual Framework

According to the conceptual framework presented above, patient related factors are factors that are caused by the patients themselves and hinder their adherence to ART. The study looked at drug use, age, frequent transit and denial of illness. Drug use was measured by asking them if they have abused drugs as they are on ART treatment. Age was measured by analyzing the age and observing the adherence level. Frequent

transit was measured by the number of times they travel to a new location. Denial of illness was measured by time taken to disclose their status.

Therapy related factors are challenges that arise due to the effect of the treatment. The study focused on dosing complexity, side effects of ARVs, dissatisfaction with health care facilities, and gender preference. Dosing complexity was measured by ability to handle the dosage prescribed; Side effects of ARVs were measured by the known challenges that have arisen due to the ARVs. Dissatisfaction of healthcare facilities was measured by the level of satisfaction of healthcare facilities. Gender preference was measured by asking the patients about the preferred gender during healthcare provision.

Contextual factors are those that are influenced by the surrounding environment. The study was based on household income, education, parental styles, parental beliefs and peer influence. Household income and education were measured by the income in the household and the level of education of the people in that household. Parental styles were measured by looking at the different leadership styles and their influence on adherence to ART, parental beliefs was measured by religion and culture of the patient's parents. Peer influence was measured by the decisions the youth make due to influence by friends.

Intervening variables are those that aid in adherence to ART. HIV infected people may need clean and safe water to take their drugs, clean their sores and also keep bed linen, clothes and other spaces clean when suffering from chronic diarrhea. They need toilets and drainage systems to dispose off their wastes in a hygienic manner to avoid cases of re-infection and contracting opportunistic infections. They need accessible roads to enable them attend clinics for drug refills.

2.5 Summary and Gaps

The survey of adherence to ART treatment and review of available literature revealed that there is a gap on the factors influencing adherence to ART services. The researcher categories included patient related factors, therapy related factors, and contextual factors and their influence on adherence to ART. Intervening variables such as, clean and safe water, toilets and drainage as well as roads and housing have also been discussed. The categories and the health belief model theory discussed looked into the underlying factors influencing adherence to ART among the youth.

They looked into the factors that are pinned to the patient and may influence their adherence to ART. The health belief model states that a patient will adhere to ART if they believe that it will suppress the HIV virus and prevent them from quick death due to the infection. Adherence to ART will be measured by the consistency in medication and reduction in mortality rate.

CHAPTER THREE
METHODOLOGY

3.1 Introduction

The chapter included research design, the study site, target population, sample size determination, sampling techniques, data collection tools, pre-testing, fieldwork, validity and reliability, data analysis methods and ethical considerations.

3.2. Research Design

This research took on a descriptive survey design which involves observing and telling the behavior of a subject without necessarily influencing it in any way (Sutton & Austin, 2015). The descriptive design was used in this study since the researcher does not have control of the variables used, which were; patient related factors, therapy related factors and contextual factors hence they can only be studied as they are without manipulating them.

Descriptive survey design is important in description of statistics, establishment of facts and showing the relationships between variables at a given time. In this study, descriptive survey design involved the respondents answering questions through questionnaires and interviews. The survey is effective since it allows collection of data to a large group of participants within a limited time and also low cost (Ponto, 2015).

3.3 The study Site

The study took place at Rift valley Provincial General Hospital which is located in Nakuru County. The Rift Valley Provincial General Hospital is a Government owned public hospital. It is situated in Nakuru town. It was first set up as a military hospital in 1906. Being the fourth largest government referral hospital, it serves a majority of the central and southern rift valley plus the Districts neighboring it. PGH serves a population of about 3.6 million in South Rift valley plus patients coming as far as western, Nyanza, North Rift valley and Central part of Kenya.

3.5. Sample size Determination

Many quantitative studies make use of samples where the population is large and cannot be used as a whole. For this study Fischer's formula was used to determine a sample size;

$$n = \frac{Z^2 * (p) * (1-p)}{c^2}$$

Where:

n=sample size

Z = Z value (e.g. 1.96 for 95% confidence level)

p = percentage picking a choice, expressed as decimal (0.91 used for sample size needed)

c = confidence interval (0.05)

Hence,

n=2(1.96) x 0.91(1-0.91)/0.05 squared

n=3.8416 x 0.09/0.0025

n=138

3.6. Sampling Techniques

The youth on ART treatment attend the Comprehensive care unit every Wednesday. The youth respondents were sampled using systematic random sampling as this enhanced representativeness. The researcher used the list of clients who attend the facility every Wednesday. The youth respondents were selected using the client list of those who are scheduled to attend that day both male and female. The researcher then used systematic random sampling to pick the respondents according to the order of the lists at an interval of 3. That is, after selecting the first respondent, the researcher skipped 3 names and picked the fourth one. The research went on for 3 Wednesdays sampling 46 youth every Wednesday. The sample was different each Wednesday since different youth go for drug refill every week. This enhanced maximum number of response as possible. The study used purposive sampling to sample the 10 nurses and 7 mentors. Two nurses were selected and sampled according to their position at the center. Three mentors were selected according to their roles at the center. Systematic Random sampling and purposive sampling were efficient for this study to enhance effective participation and information given.

3.7. Data Collection Tools

The instruments for data collection were questionnaires to the youth and key informant interviews to the mentors and nurses. The researcher came up with the questionnaire based on the study's three objectives; the researcher began with a broad span of questions then narrowed them down until each question related to the study's goal in some way. The researcher kept questions short and simple so that the youth could understand and quickly respond to them. Questionnaires were used to collect quantitative data. This is because questionnaires are quick and easy to administer. They enhance collection of data from a large number of people which brings out results that are a representative of the whole population. The questionnaires were both open and closed ended.

The questionnaire sought to find out the factors that influence adherence to ART treatment. The questionnaires were self-administered by the researcher to the mentors who distributed them to the youth. This prevented hostility to the researcher as they were in contact with a familiar person. The researcher waited and collected the responses after they were complete.

Interviews were face to face with the mentors and nurses. The researcher prepared discussion guides for the purposive sample of nurses and mentors. Interviews were important in this study as they would bring in expert knowledge and shade more light on the factors influencing adherence to ART.

3.8. Pre-Testing

The pretest took place in Naivasha district hospital. This is because the facility has the same characteristics with PGH. The researcher applied to the medical superintendent in charge of Naivasha PGH for a chance to do the pretest at the facility. The sample for the respondents was 10% of the sample population. According to Mugenda and Mugenda (2003) a minimum of 10% is recommended as a representative sample of the target population in data instruments pretesting. Therefore, the researcher sampled approximately 14 youth respondents, one nurse and one mentor. The researcher booked an appointment with them and scheduled the day to collect data. These were important to test the reliability of the questionnaires used and the data collection tools. Thereafter, the data collected was analyzed by the researcher to find the significant level as well as test the relevance of the data in showing the relationship between the

dependent and the independent variables. This was done using Statistical Package for Social Sciences (SPSS) software.

3.9. Fieldwork

The data was collected at PGH from the youth who are aged between 15-24 years and on ART treatment. Questionnaires were self-administered and distributed to the respondents who were in attendance during the research period by the mentors who are familiar with the patients. The mentors are also HIV positive therefore it was easy for them to access, convince and seek consent from respondents to participate in the survey. The researcher availed herself every Wednesday for 3 weeks to distribute the questionnaires to the respondents. The self-administered questionnaires were distributed and picked later after they had been filled.

The researcher booked a day for the face to face interviews with the mentors and nurses. The interview was one on one and took approximately 15 minutes. The researcher had a research assistant during the interview who was handling the recorder and taking notes.

3.10 Validity and Reliability

The validity of data collection instruments was enhanced by subjecting the instrument for analysis by university supervisors. The supervisors checked all questions with view to ensuring that they understood what the study intended to focus on. The supervisors also checked all questions with view to ensuring that they captured what the study aimed to measure. They further also checked for clarity of questions.

Crobanch alpha was used to ascertain the reliability of the data instruments. According to Frankel and Wallen, (2000) an alpha value of 0.7 and above indicates acceptable internal consistency. They were then analyzed to test the reliability of the instruments and also the questions used through the results that were given. This helped the researcher know if there is relevance or if there is need for change.

3.11. Data Analysis

The data was analyzed quantitatively and qualitatively. Quantitative data is measured in numbers while qualitative data is in words. Descriptive statistics such as frequencies, percentages, mean and mode were used to assess the profile of the respondents. Inferential statistics were used to show the relationship between study variables. Inferential analysis was conducted by using chi-square. Each objective was

analyzed using cross tabulation against the dependent variable to find out the relationship. Pearson chi-square determined the significance level where 0.05 is the statistically significant level. Therefore, if the objective was statistically significant, it means that the variable is an influence to adherence to ART. Statistical Package for Social Sciences was used for quantitative analysis and then presented using tables. Quantitative data analyzed the closed ended questions.

Qualitative data analyzed the open ended questions as well as the interviews. These responses and discussions were analyzed using themes. Qualitative data helped in getting the narratives of the factors influencing adherence to ART. They were then presented in form of themes.

3.12 Ethical Considerations

The study considered certain ethical issues when collecting data. The researcher did not disclose the identity of the respondents to third parties thus assuring privacy. To further gain credibility in this, it was not a necessity for the respondents to disclose their names. The researcher further assured the respondents that the work is purely for academic studies. Respect for the dignity of the research participants was also prioritized.

The researcher guaranteed the respondents of utmost privacy, anonymity and confidentiality throughout and after the research. The researcher also avoided forcing the respondents for answers if they were not comfortable answering them. They were free to leave the room as well as accept or decline participation willingly. Authority to conduct the research was sought from the Medical superintendent in charge at PGH, St Paul's University, NACOSTI, and ministry of education.

3.13 Summary of the Chapter

The chapter explained in depth the methodology that the study employed. The research used descriptive survey design which involves observing and describing the behavior of something without influencing it in any way. The target populations were 566 youth aged between 15-24 years living with HIV and are on ART treatment at the PGH. It also involved 10 nurses and 7 mentors who work in the unit. The sample population was 138 respondents. The study further used systematic random sampling and purposive sampling in the selection of the respondents. The study used questionnaires for the youths and key informant interviews for the mentors and

nurses. The data analysis was subjected to SPSS and later presented in tables. The significant level was measured through Pearson Chi Square. The study focused on key ethical considerations which included confidentiality, respect, anonymity and the do no harm principle.

CHAPTER FOUR
DATA ANALYSIS AND PRESENTATION

4.1 Introduction

This chapter covered the analysis of the collected data which was carried out using the questionnaires, key informant interviews, and focus group discussions. The results were presented according to the study objectives. The results will be discussed as stated in the study objectives.

4.2 Response Rate

A total of 138 questionnaires were distributed to the sampled youths attending the Rift Valley Provincial General Hospital in Nakuru County. A total of 129 questionnaires were returned having been filled in accordance with the given instructions. It was observed that 8 of these questionnaires were spoilt while 1 was never filled. Therefore, the response rate was 93%. The focus group discussions were done successfully to the mentors and nurses. The focus group discussions were conducted by the researcher one at a time. This was to enhance openness and freedom of expression to the sensitive topics The Focus group discussion had 5 respondents including two nurses and three mentors. The focus group discussion and interviews were recorded through audio. There was also a research assistant who helped in writing the responses. The information was later decoded by the researcher.

4.3 Characteristics of the Respondents

The study determined the distribution of respondents according to various characteristics. These included, age, gender, and marital status.

4.3.1 Age of youth Respondents

The study examined the distribution of sampled respondents according to their age. The results are indicated below.

Table 4.1: Percentage distribution of respondents according to age

Age in years		
	Frequency	**Percent**
15-20	97	75.2
21-24	32	24.8
Total	**129**	**100**

Source: Field 2019

As indicated in the Table 4.1 above, majority of respondents were aged between 15 and 20 years at 75.2 percent, followed by youth aged 21-24 at 24.8 percent. The average age of the respondents was 18.71 years old while the median was 18 years. This was taken to analyze the respondents' characteristics.

4.3.2. Gender of Respondents

Table 4.2: Percentage distribution of respondents according to gender

	Frequency	Percentage
Male	60	46.5
Female	69	53.5
Total	**129**	**100**

Source: Field 2019

Table 4.2 above indicates that the male respondents were 46.5% and female respondents were 53.5%. The percentage difference proportion between the male and female respondents was 7%.

4.3.3. Marital status of Respondents

Table 4.3: Distribution of respondents according to marital status

	Frequency	Percent
Married	5	3.9
Single	121	93.8
Divorced	2	1.6
Total	128	99.2
No response	1	0.8
	129	**100**

Source: Field 2019

As noted from the distribution, most of the respondents are single at 93.8 percent. This is because the study focused on youths between 15-24 years old. This age group has most of the respondents in school. Most of them were not yet married.

4.4. Patient Related Factors as an influence to ART Adherence

The first objective of the study was to examine the influence of patient related factors on adherence to antiretroviral therapy among the youth attending PGH in Nakuru County. The variables used to measure this were; drug use, age, frequent transit and

denial of illness. The study sought the respondents' opinion as regards the extent to which the factors influence adherence to ART. The responses are highlighted below.

4.4.1. Distribution of respondents adherence to ART in relation to Patient Related Factors

Table 4.4: Who the patient lives with in relation to ART adherence

		Those who adhered or not adhered	
		Not adhered	**Adhered**
Who do you live with	Both parents	62.80	37.20
	Father	60	40
	Mother	53.80	46.20
	Guardian	69.60	30.40

Chi square value=1.827; P=0.609

Source: Field data (2019)

Table 4.4 shows the relationship between whom the patient lives with and its influence on adherence to ART. The results show that, adherence rate is not really determined by whom the patient lives with at home. This may be because the youth undergo counseling sessions every time they go for refill. The counseling sessions encourage them on the importance of adhering to ART. Therefore, when the youth is at home they are independent on taking medication and following their medication schedule without interference. The results were not statistically significant and therefore the study concludes that whom the patient lives with does not influence adherence to ART. The study further sought to find out the influence of drugs on ART adherence which is discussed below.

Table 4.5: Influence of drugs on adherence to ART

Characteristics	**Categories**	**Percentage distribution**	
		Not adhered	**Adhered consistently**
Do you use drugs/alcohol	Used drugs	76	24
	Not used drugs	60	40

Chi-square value: 3.694; P=0.158
Source: Field Data (2019)

Table 4.5, illustrates the influence of drug and alcohol use on adherence to ART. As shown above, 76 percent of the youth who admitted to using drugs and alcohol also recorded that they had failed to take the ARVs for some time. On the other hand 60 percent who said that they do not use alcohol and drugs also recorded non adherence to ART. However, the results were not statistically significant which concludes that adherence to ART for the youth at PGH was not majorly influenced by drugs and alcohol but by other factors which we shall look at progressively. Most of the youth who had failed to adhere to ART for some reason stated that they had failed because they had forgotten the timing while others said that there were visitors around so they failed to take drugs in order to avoid many questions. During an interview with one of the mentors, she said that they give counseling to the youth and emphasize that indulgence in alcohol and drugs will prevent suppression of the virus. Therefore, most of the youth did not use drugs despite having few cases. This agrees with Yu et al., (2018) who stated that use of drugs among patients on ART has stern consequences on their ability to consistently adhere to therapy.

Our youth come for counseling sessions. We have had cases of those who have indulged in alcohol and drugs due to peer pressure. However, most of the youth got infected since birth, we have been guiding them and assuring them that adherence and lack of indulgence to ART will suppress the viral load. (Interview, Mentor 1, 2019)

Table 4.6: Age as an influence to adherence to ART

		Percentage distribution	
Characteristics	**Categories**	**Have you taken ARVS with or without fail.**	
		Yes	**No**
Age in years	15-20	67	33
	21-24	63	37

Chi-square: 0.171; P=0.049

Source: Field data (2019)

Table 4.6, shows the relationship between age and adherence to ART. The table reveals that 67 percent of youth aged 15-20 years had a high rate of non-adherence to ART. This could be attributed to the fact that the age group are mostly in high school. The youth further revealed that they feared taking medicine while their friends were

watching since they feared the stigma that was associated with it. They revealed that most of them take medicine after schools close since they were free at home. This is in agreement with a study by Hadland et al., (2012) on the relationship between age and adherence on ART, who revealed that young people below 29 years of age had poorer adherence to the treatment. A higher percentage of the youth in this age group were born with the virus. Due to this they were not aware that taking ARVs would be a long-term thing. Therefore, after realizing that they were positive, most of them were disappointed and could sometimes withdraw from undertaking treatment. One of the nurses during an interview said that, most of the patients who are in school have reported stigma cases as one of the reason they have non-adherence.

> There have been cases of stigma in schools from students and also some teaching staff after realizing that the students are HIV positive. This creates fear among the teenagers and most of them avoid taking medicine until the schools close. (Interview Nurse 1, 2019)

The nurses further revealed that they are making plans to go to schools and sensitize on matters stigma and also educate the people on some of the myths associated with HIV and AIDS.

Table 4.7: Frequent transit as an influence to ART adherence

Characteristics	**Categories**	**Have you adhered or not adhered to taking ARVS.**	
		Adhered	**Not adhered**
Do you travel often	Yes	70	30
	No	60	40

Chi-square value-1.042; P=0.030

Source: Field (2019)

Table 4.7, shows the relationship between travelling and adherence to ART. The results show that 70 percent of those who said that they travelled often also did not adhere to ART. 60 percent of those who did not travel recorded non adherence. The results show that, there is a relationship between travelling and adherence to ART. Those who failed to take their medicine regularly said that time passed while they were on the road. This was agreed by the mentors who stated that travel was an influence to adherence.

There was a patient who used to travel by foot for 10km in order to get medication. They lacked funds to take a matatu and hence affected their adherence rate. (Interview, Mentor 4, 2019)

One of the patients said that she works till late and the time scheduled for taking ARVs passed while she was still at work. She would not carry the medicine to work because she did not want her colleagues to know that she was on medication. Others stated that they forgot about the medicine while they were travelling. Some of the respondents also added that they were not financially able to travel to the health center for refills. They also did not prefer the local center near them because of judgment by familiar people. A study by Wasti, Simkhada, Randall, Freeman, & van Teijlingen, (2012) revealed that travelling long distance to ART treatment sites remains one of the major influence to adherence issue. This is in agreement with the findings of the study.

Table 4.8: Distribution of Respondents in relation to denial of status

Characteristics		**Have you adhered or not adhered to taking ARVS.**	
		Not adhered	**Adhered**
Period it took to start ART	**Immediately**	35	65
	After a week	62.50	37.50
	1-6 months	56.50	43.50
	1 year	80.00	20.00

Chi square value 1.693; P=0.038

Source: Field data (2019)

Table 4.8, shows the distribution of respondents according to denial of status. This was measured by the period it took for the patient to start ART. The study found that those who took a longer period of time before starting ART had a high chance of non-adherence at 80 percent. This could be associated with denial of the status after testing. True to this, some of the respondents said that they were in denial and had lost hope of life when they realized they were HIV positive. Therefore they took long to start on medication because they had even contemplated death. Another respondent also shared that they were angry after realizing their status since it was a relative who disclosed to them instead of the parents. This made them be in denial after realizing

that since birth they had been on ARVs while the parents always told them that they were for tuberculosis just to encourage them. However realizing it was a lie brought a setback in their life since they had to change their mindset and accept the situation. The study was statistically significant that denial of status contributed to non-adherence to ART among patients. One of the mentors said that they always take time to counsel the patients who are in denial on the importance of ART.

There have been patients who have been in denial and stopped taking treatment. However we take our time to counsel them on the importance of ART. We encourage them by telling our stories since we are also positive for many years.' (Mentor 2, 2019)

Denial of status may lead to suicidal thoughts among patients due to loss of hope. Non adherence to ART does not suppress the virus and makes it worse which may lead to death. The nurses said there have been cases of patients who did not adhere to the medicine and it lead to death.

Due to non-adherence, there have been patients who have died because the virus made them weak. When the viral load increases, the ARVs may not be effective in the case where the patient is not consistent.' (Interview, Nurse 2, 2019).

The study agrees with Audet, McGowan, Wallston, & Kipp, 2013, who stated that denial of illness hinders taking of medication hence worsens the disease and end up to death. Denial comes with non-disclosure of status where most of the respondents said that they had not disclosed. This is because they feared the stigma from friends and family and being treated in a different way. Some of the respondents who admitted to be dating said that they could not tell their partners immediately about their status since they feared being left after disclosure. Some who had disclosed to their boyfriends or girlfriends admitted that they were treated differently and regretted disclosing. Few got support from their partners.

4.5. Influence of therapy related factors on ART adherence among the youth

The second objective involved analyzing therapy related factors that may influence adherence to ART among the youth. This was measured by variables which included dosing complexity, side effects of ARVs, dissatisfaction with health care facilities and gender preference. The results were analyzed as follows;

4.5.1. Distribution of respondents' adherence to ART in relation to therapy related factors

Table 4.9: Influence of dosage side effects to ART adherence

		Have you adhered or not adhered to taking ARVS.	
		Not adhered	**Adhered**
How severe are the side effects	Not severe	30	70
	Moderate	40	60
	Very severe	80	20
	Not sure	65.70	34.30

Chi-Square value=7.395; P=0.050

Source: Field data (2019)

The table 4.9 above shows the influence dosage has on adherence to ART. When one starts medication, it becomes intense at some point because it is not only about the normal prescription but rather more intense tablets that become a challenge to the youth patients. Despite having many tablets to consume, there are also side effects associated with the dosage. These side effects include; drowsiness, dizziness, fever and weakness. The prescription requires that one has a good healthy diet. The table shows that those who said that the side effects were not severe had a low non adherence rate at 30 percent and high adherence rate recorded at 70 percent. On the other hand those who said that they suffered very severe side effects had a high non adherence rate at 80 percent and 20 percent adherence. On one of the interviews with the mentors, they said that the intensity of the dosage was one of the factors that contributed to non-adherence among the youth. He insisted that those who were born with the virus have a challenge because they were lied to concerning the medication. Some believe they are suffering from other ailments such as tuberculosis. When they grow up to disclosure stage at teenage, they are ready to drop the medication. However, being told they will have to be on ART forever brings about fatigue due to the pill burden.

The youth report to us the cases of challenges on dosage. They say the taste and smell is bad. They get tired due to the large tablets and the side effects they experience such as fever and headache. This causes them fail to take the drugs intentionally. We however encourage them to push on so that the viral load can be suppressed and also prevent other infections. (Interview, Mentor 3, 2019)

Some of the youths who are at school and work may suffer from the side effects such as drowsiness. This may bring negative effects such that they may not be so productive at work and school. The fear of being fired from work or failing exams will cause them to skip the dosage in order to avoid the intense side effects. One of the respondents also asserted that the dosage is heavy and challenging with effects such as headache. They would wish that there was an alternative such as injections to avoid the effects of the pill.

Table 4.10: Dissatisfaction with healthcare providers and its influence on adherence

		Have you adhered or not adhered to taking ARVS.	
		Not adhered	**Adhered**
Dissatisfaction with healthcare providers	Not at all	63.30	36.70
	Moderately	70.60	29.40
	very much	60.00	40.00

Chi square value=0.413; P=0.814
Source: Field data (2019)

The table 4.10 above shows the patients dissatisfaction with healthcare providers and its influence on adherence. The results show that there was high non adherence rate despite the feedback on dissatisfaction with the providers. The results were not statistically significant to the study. This means that the dissatisfaction with the healthcare providers did not influence the patients' adherence rate. This could be because the patients always receive counseling sessions when they arrive at the clinic for refill. The providers also receive guidance on how to handle the patients. This agrees with Steel, Nwokike, & Joshi, (2016) who said that health facilities have a crucial role to play in ART care in remote settings by promoting suitable services and ensuring access to quality and efficacious medicines. This way, they can report any

disappointments that they may have experienced in the hands of the healthcare providers. Therefore, cases of non-adherence were influenced by other personal factors and not dissatisfaction with healthcare providers. This was confirmed by the nurse.

So far there have not been cases of dissatisfaction with the healthcare providers. We give the patient a chance to report any issue of being mishandled. We also talk to nurses on the importance of being human and giving good services from a place of love since this patients are delicate emotionally. Any dissatisfaction would disappoint them and would be contributing to the stigma. (Interview, Nurse 1, 2019)

The respondents said that the only change they would love with the healthcare providers is having younger professionals. The service is good but they feel that having younger people would resonate more with them. They feel that they would understand them and what they go through since they are in the same peer group.

Table 4.11: Gender preference as an influence to ART adherence

		Have you adhered or not adhered to taking ARVS.	
		Not adhered	**Adhered**
Which gender do you prefer serving you	Male	57.90	42.10
	Female	34.60	65.40
	Both	32.10	67.90

Chi square value=4.469; P=0.107
Source: Field data (2019)

The table 4.11 above shows gender preference and its influence on adherence to ART among the youth. Those who said that they preferred male had a high non adherence rate as compared to those who preferred the female. Gender preference comes about when the patient feels that they are getting a better service or are fulfilled from one gender. Those who opted for both genders had a high adherence rate. The results proved that the gender preference did not influence the adherence rate. Just like dissatisfaction with healthcare providers as discussed earlier, the providers receive guidance on how to handle the patients. Serving them well without stigmatizing them is a priority in the clinic. Despite not having these cases at PGH, there are patients

who prefer the clinic due to the good service. They reported to have been stigmatized in other clinics where they were known by the providers. The providers were also not professional and hence the change of clinic to PGH where they felt they were not known. Here, they got quality services and felt that their privacy was provided by both male and female providers.

4.6. Influence of contextual factors on adherence to ART among the youth

The third objective involved looking at the influence of contextual factors on adherence. Contextual factors were measured by household income, education, parental styles, parental beliefs and peer influence.

4.6.1. Distribution of respondents' adherence to ART based on contextual factors

Table 4.12: Parents' knowledge on HIV/AIDS and its influence on adherence

		Have you adhered or not adhered to taking ARVS.	
		Not adhered	**Adhered**
Parents knowledge on HIV and AIDS	Yes	20	80
	No	70	30

Chi square value=7.340; P=0.027

Source: Field data (2019)

The table 4.12 above gives an illustration of parents' knowledge on HIV and AIDS and its influence on adherence to ART. The results depict that where the parents or guardians had knowledge on HIV and AIDS, the patients reported high adherence rate at 80 percent. Those who admitted that their parents/guardians lacked proper knowledge on HIV and AIDS, reported to having a low adherence rate at 30 percent. The study concludes that knowledge on HIV and AIDS is important among the caregivers of the patient as it aids in adherence. When the parents or guardians have knowledge, they will be able to support the youth who has the virus by encouraging them to adhere to the medication. Lack of proper knowledge leads to discrimination and seclusion in the family. Stigmatization starts early in the family and this demoralizes the patients to a point that they develop self-rejection. This comes up when they are fed or hear different myths about HIV and AIDS while watching how they are discriminated by loved ones. One of the mentors stated that they take time to educate the parents and guardians when a patient reports discrimination from family.

Lack of knowledge on HIV and AIDS is one of the challenges to adherence. We have had cases where a patient has reported cases such as discrimination and being laughed at by teachers and some family members. This is all because they have not taken time to learn some truths about HIV and AIDS. (Interview, Mentor 1, 2019)

It is important that each and every person make it intentional to learn more on HIV and AIDS to ensure that the patients are understood and supported. The study agrees with the findings of Kim et al (2014), which states that enhancing education among PLHIV not only enhances adherence, but also lowers stigma levels.

Table 4.13: Percentage distribution of household income and its influence on adherence to ART

		Have you adhered or not adhered to taking ARVS.	
		Yes	**No**
Parent/guardians occupation	Employed	40	60
	Self employed	33	67
	Not employed	64	36

Chi square value=0.830; P=0.036

Source: Field data (2019)

Table 4.13 illustrates the income level of the household where the patient lives and the influence it has on adherence to ART. Household income was measured by the parent/guardians occupation. The results show that, where the parent or guardian was employed and self-employed, the adherence rate was high at 60 percent and 67 percent respectively. Despite the medication being free from the government, people living with HIV and AIDS require to eat a healthy diet in order to sustain good immune to the virus and other diseases. We find that when the parents are employed and self-employed basically, there is some income in the family that can at least be put aside to cater for the expenses of the patient such as diet and travel to the clinic for medication. One of the mentors in our interviews stated that finances were a key factor influencing adherence. This is because some patients really struggled due to lack of transport money others having to walk for 10 kilometers in order to reach the facility.

There is a young boy who always walks for 10km from their home to reach the facility. The caregivers do not have a stable income to support him. Despite us giving him some money to use in the next facility visit, there is a challenge in adherence because back home he may not get a healthy diet to sustain the dosage effects.' (Interview, Mentor 2, 2019)

To emphasize on this issue, the nurses also stated that the issue of finances was being evaluated on how they can assist the caregivers who do not have an income. Since most of the youth were not working yet, they are to start a program that gives the caregivers a business mentorship program and go further in supporting them to start a small business of their choice after training. This will help them sustain themselves as well as sustain the diet of the patient therefore enhancing adherence to ART.

Table 4.14: Parental style as an influence to ART adherence

		Have you adhered or not adhered to taking ARVS.	
		Not adhered	**Adhered**
How is your relationship with your parent/guardian	Harsh	90	10
	Strict	65	35
	Supportive	40	60

Chi square value=6.211; P=0.036
Source: Field data (2019)

Table 4.14 illustrates the style of parenting and its influence on adherence to ART among the patients. The patients who stated that their parents were harsh, had a high non- adherence rate at 90 percent and 10 percent adhered. This could be because, being harsh came off as stigma. They could feel rejected by the family or discriminated. Due to this they did not find any reason to adhere to medicine. Some of the patients said that they failed to take ARVs intentionally due to loss of hope since no one supported them. They reached a point where they contemplated suicide. However, the counseling they get from the mentors kept them going.

The ones who said that their parents were strict had a slightly high adherence rate at 35 percent. Strictness could come off in a good way at some point but it is negative. Maybe the caregivers thought being strict and giving orders was the way to ensure that the youth adhere to ART. One of the respondents said that their caregivers were strict such that they stated boundaries of the friends they should have. The parents

could be lacking knowledge on HIV and AIDS and that's why they do not support the patients as required.

However, the youth who said that they got support from the parents had a high adherence rate at 60 percent. Supportive caregivers have a lot to offer from emotional, financial, and physical support. The people living with HIV and AIDS need all round support. This is because they are battling a lot and supportive family is the best thing they can find. Having support avoids the self-rejection that they may have due to the stigma from the society. This gives them hope of living and knowing adherence to ART is a good thing for viral suppression which is necessary for healthy living.

Where a patient is not supported by the family, we try to intervene by speaking to them on the importance of support and how they can support them in the journey. Most of the time it's because they lack proper knowledge on HIV and AIDS and we take them through education on the same. Parental support and family support is a great influence to adherence.' (Interview, Nurse 1, 2019).

Table 4.15: Distribution of respondents' peer influence on adherence to ART

		Have you adhered or not adhered to taking ARVS.	
		Not adhered	**Adhered**
How many of your peers know you are on ART	Few	71.80	28.20
	None	80.00	20.00
	Majority	40.00	60.00

Chi square value=6.764; P=0.026
Source: Field data (2019)

The table 4.15 above shows the influence of peer pressure to ART adherence among the youth. We find that where the youth had disclosed to their peers about their status, there was high adherence rate at 60 percent. Where the youth had not disclosed to the peers the non-adherence rate was high at 80 percent. The study reveals that disclosure aids in adherence of ART among the patients. Among the respondents who said that they had failed to take medication, a good number of them said that they feared that their friends would know that they are HIV positive. Therefore, they had to miss taking them when their friends were around and it was time for medication. They did

not want questions arising on the kind of medication they were taking. Some of the respondents had fears of stigma, discrimination and seclusion from their peers if they knew that they had HIV and AIDS. Some of the instances that made them not adhere to medication were during school trips since their friends were around, when their peers visited home, and when they have to attend a party with friends. Some of the respondents also indulged in alcohol despite knowing that it is harmful to their health. The reason for this was because they could not say no to a friends' outing or party invitation. This would help avoid suspiciousness and many questions. One of the mentors emphasized that fear of stigma was preventing the youth from disclosing.

Its true peers influence adherence to ART among the patients. Some of them cannot take medicine in public when the friends are around. You find that friends influence each other to certain activities such as clubbing and fun road trips. The patient submits to the pressure since they cannot disclose their status to their friends. (Interview, Mentor 3, 2019)

Table 4.16: Parental beliefs as an influence to ART adherence

		Have you adhered or not adhered to taking ARVS.	
		Not adhered	**Adhered**
Has your parent ever advised to stop ART	Yes	80	20
	No	10	90

Chi square value=8.367; p=0.000

Source: Field data (2019)

Table 4.16 illustrates the influence of parental beliefs to ART adherence. Parental beliefs may include religious and cultural beliefs that the parents may deem as possible healers of HIV and AIDS. The illustration shows that, where the parents advised the patients to stop the treatment in order to seek other types of healing, there was recorded high non adherence rate at 80 percent. Some of the respondents who had experienced this said that they were told to seek religious healing from their church. Thereafter, they stopped taking medicine since they believed they are healed. Others were advised to seek traditional doctors where they were given a prescription of traditional medicine. However, after the facility followed up on these patients, the

parents were advised and educated more on ART adherence in order for the patients to continue with medication. One of the nurses told us that this was a problem that they were trying to shed light on to the patients.

Yes personal beliefs have affected patient's adherence to ART. One of the patients stopped coming for refill for several months. We decided to follow up and he said that he was healed by a religious leader. We had to sit and advise them that they had to continue taking their medication in order to suppress the virus.' (Interview, Nurse 1, 2019). The research agrees with Tiruneh & Wilson, (2016) who in their research found that beliefs and norms are among the factors which influence PLWHA adherence to ART.

CHAPTER FIVE
SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1 Introduction

This chapter summarized the study findings, gave the conclusions derived from the study, and finally came up with some recommendations based on these findings, which are relevant for policy makers and further research. The objectives of the study was to: examine the influence of patient-related factors on adherence to ART among the youth attending PGH, to assess the influence of therapy-related factors on adherence to ART and to establish the influence of contextual factors on adherence to ART among the youth attending PGH in Nakuru county, Kenya.

5.2. Summary of findings

This section has shown a summary of major study findings in line with the objectives of the study. In order to establish relationship between adherence to ART and various independent variables on the study, cross tabulation and chi-square tests were done.

5.2.1. Patient Related Factors as an influence to ART adherence

One of the factors influencing adherence to ART is patient related factors. The study looked at drug use among patients, age of patient, frequent transit, and denial of illness as the measurements of patient related factors.

The study found out that drug use influenced and led to non-adherence among the youth living with HIV. Those who reported to have used drugs and alcohol also said that their main reason for not taking drugs was forgetfulness due to the effects of alcohol and drug use. However, the results of drug users in PGH was not significant to the study which gives us a summary that most youth at PGH know the effects drug use have on suppression of the virus and therefore avoided the indulgence.

The study also found out that the health of those who indulged in alcohol and drugs while on ART deteriorated and some even died. This as told by the nurses is because health deterioration weakens the immune system which opens up the body to infections. Getting back to ART adherence at this level makes it hard to suppress the virus. This has led to the majority of patients who indulge in drugs having a negative result.

According to the study findings, age was an influence to ART adherence among the youth at PGH. Age comes up as a factor because this age group is in the adolescence stage. This stage is coupled with a lot of peer pressure. The study found out that the youth between the ages of 15-20 years had high non adherence rate than those aged between 21-24 years. This is because of the influence of peers in their lives. The youth between 15-20 years were mostly in school. They reported that they couldn't take medication in the presence of their schoolmates due to fear of stigmatization. They also did not want to trigger a lot of questions regarding why they had not disclosed their status to their friends. In one of the interviews, the mentors mentioned that the students had reported stigmatization from school after disclosing their status. This influenced non-adherence to ART. However, the health care took initiative to train and educate the teachers and students on HIV and the myths associated with it.

Frequent transit involved patients who showed high rate of non-adherence due to travelling. Most of the respondents who admitted to travel often also had a high non-adherence rate to ART. The study established that most patients opted to travel to PGH instead of going to their local health center because of fear of stigmatization. Others travelled much for work purpose and came home late. This did not go well since the timeline scheduled for taking ARVs is often passed creating non-adherence. They also could not disclose to their bosses due to the fear of being fired out of job.

Travelling was a hindrance for some who had no other option. They had to travel in order to get ARVs since their home area did not have a center. Most of the time, they did not have an income and lacked money for fare to the health care center. This hindered their adherence to treatment.

Denial of illness was measured by the time it took for the patient to start ART. It was an observation that those who started immediately had a low rate of non-adherence. On the other hand, those who took up to one year had a high rate of non-adherence at 80%. This could be influenced by denial of status after testing.

The patients expressed feeling disappointed and almost giving up after them being diagnosed with HIV virus. The denial made them take time before starting medication. The denial of status led to others contemplating suicide. They feared what could happen if their family and friends knew that they were positive. They had to be

taken through numerous counseling sessions by the mentors for them to accept themselves and adhere to ART.

5.2.2. Therapy Related Factors as an influence to ART adherence

The other factor influencing adherence was therapy related factors. This study looked at factors such as, dosing complexity, side effects of ARVs, dissatisfaction with healthcare providers and gender preference.

The study found out that dosing complexity affected adherence to ART among the patients. The dosage has side effects such as drowsiness, fever, dizziness and weakness. The intensity of the side effects makes the patient skip the medication. For example, the study observed that the respondents who were students failed to take their drugs in order to avoid the dosage effects that would affect their concentration in class. The respondents who were working failed to take their medication because they would be unproductive at work and therefore, feared being laid off from their only source of income. The dosing complexity was also a challenge and an influence to adherence. Some youths stated that the large drugs and the amount they had to take put them off. Others wished that there could be an alternative option like injection which they thought would be easier to handle.

The study observed that dissatisfaction with healthcare providers did not influence adherence to ART among the youth at PGH. This is because there are systems and structures that have been put in place to ensure there's a cordial relationship between the patients and the healthcare providers. The health center has an open policy for the patients to report any cases of dissatisfaction. The study observed that the young patients preferred to be served by younger providers as they felt they could relate more personally but it's not because of any dissatisfaction.

The study observed that gender preference on healthcare providers was not an influence to ART adherence among the patients at PGH

5.2.3. Contextual Factors as an influence to ART adherence

The study found out that education on HIV influenced adherence to ART. This was measured by parent's knowledge on HIV. It was observed that the respondents who said that their parents or guardians were knowledgeable on HIV and AIDS had a high adherence rate than the ones who did not have knowledge. This is associated with

lack of discrimination. A family that is knowledgeable on HIV and AIDS will be able to nurture, understand and support the patient.

The study observed that household income was an influence to ART adherence. It was measured by the occupation of the parent or guardian. In a family where income was stable, patients reported high adherence rate. Income is an important factor because the patients need to travel for refills at the clinic and also maintain a healthy meal which is costly. Eating healthy helps the patients sustain the dosage which may weaken the body.

Parental support was measured by getting to understand the relationship with the parent/guardian. The study observed that parents who were harsh and strict made the patients develop non-adherence. This is because it came out as stigma and the patients did not feel supported. On the other hand, the study observed that patients who reported to have supportive parents had a high adherence rate. Support encourages the patients to live and also take the medicine consistently.

The study observed that peer pressure was an influence to adherence. This came about since the patients had not disclosed their status. Therefore, their peers influence them to engage in activities such as drinking and travelling for fun. During these activities, they fail to adhere to their medication since they did not want their friends to know that they are HIV positive.

The study observed those parental beliefs such as cultural and religious, influenced adherence to ART. Youth who had been influenced to seek religious healers or traditional medicine also recorded a high non adherence rate.

5.3. Conclusions

5.3.1. Patient Related Factors as an influence to ART adherence among the youth attending PGH

The study concluded that;

- Drug use did not affect ART adherence of the patients at PGH. This is because they undergo frequent counseling that teaches them on the importance of adhering to ART and not indulging in alcohol. This concludes the reason why drugs were found not to influence adherence among patients at PGH since most of them did not indulge.

- Age was a factor that influenced adherence to ART. The adolescents had a hard time adhering due to peer pressure. For example, when influenced to go out on a trip, they could not say that they have a schedule for taking medicine; they bowed to the pressure and ended up not taking medicine. Also, the presence of the public was a hindrance to adherence since they reported that they were not able to take medicine while in a public place.

- More education and awareness is needed out in the public concerning HIV and AIDS as well as education on stopping stigma. This will help the patients as they will have an easy time disclosing about their status without fear. Disclosure will aid in adherence since they will not fear stigmatization.

- Frequent transit was an influence to ART adherence. Some patients couldn't access the care center due to travel and lack of money to maneuver. The study also concluded that the patients who had to travel for work purposes had a hard time adhering to ART due to time management challenges. It's also a conclusion that while travelling; time for taking medicine may pass due to the fear of taking them while in public.

- Denial of status was one of the influences to ART adherence among the young patients. Denial of status led to non-disclosure since they do not want their friends to learn and know their status. The study found that non-disclosure was carried into the relationships. The patients revealed that they did not want to disclose because they did not want to be dumped by their boyfriends and girlfriends. This was dangerous since it contributes to spread of HIV and AIDS. Also lack of disclosure will lead to non-adherence which will hinder suppression on the virus in the body. This further leads to health deterioration of the patient which may lead to death

5.3.2. Therapy Related Factors as an influence to ART adherence among the youth attending PGH

The study concluded that;

- Dosing complexity was a major influence to adherence among the young patients at PGH. It affected their performance in school and productivity at work due to the intense side effects.

- Good services from the health care providers encouraged adherence. It's true that dissatisfaction may promote non-adherence to ART among the patients.
- Gender preference was not a major influence to adherence. This is because both male and female gender provided good services and did not feel threatened by any gender.

5.3.3. Contextual Factors as an influence to ART adherence among the youth attending PGH

The study concluded that;

- Parent's knowledge on HIV and AIDS is important in aiding adherence to ART among patients. This is because when people are well educated, it reduces stigma and helps the patients adhere to the medication.
- Household income was an influence to ART adherence. Income was a necessity in maintaining adherence due to the need for healthy diet that helps maintain a healthy body due to the effects of the dosage.
- Parental supervision affected the influence of adherence to ART among the patients. It was a conclusion that supportive parents/guardians influences and encourages adherence.
- Peer pressure influences adherence. Lack of disclosure to the peers made it hard for the patients to take their medication on time. It was also a conclusion that cultural and religious beliefs influence adherence to ART among the patients.

5.4. Recommendations

The study suggested several recommendations which if implemented could help in encouraging adherence to ART among the young people who attend PGH in Nakuru County. The study recommends the following;

- HIV and AIDS education should be taken seriously. The ministry of health should ensure that institutions of learning and also the community understand what HIV and AIDS entails. This will help in curbing stigma to the people living with HIV and AIDS from the public. The youth living with HIV and AIDS need support and good care from the family and friends as well as the people they

interact with daily. When the community at large is educated, they will educate others and the stigma issue will stop. In turn, adherence to ART among the patients will increase. This will further promote suppression of the HIV virus among the patients.

- Health care centers dealing with HIV and AIDS patients encourage disclosure. This is among the family and friends of the patients. Disclosure has been found to encourage adherence to ART among the youth who attend PGH in Nakuru County. Disclosure brings confidence in adherence to medicine since the patient does not worry of what people may say. Disclosure will also help discordant couples lead a healthy relationship. Early disclosure by parents or guardians to the children born with HIV and AIDS is encouraged. Making them aware of their status early encourages adherence to ART.

- That the government and the health sector consider research that would help in reducing the dosage or seeking alternative options such as injections.

5.5 Suggestions for Further Studies

The researcher suggests that;

- A study be done specifically to find out the effect of the dosage on adherence to ART among patients. This is because despite dosage influencing the youth adherence to ART, it is not clear to what extent it is a barrier to adherence. A Study on dosage would help bring out the characteristics of the dosage effects on the patients.

- A study be done to establish the effect of income on adherence to ART among patients because lack of enough income has been proved to influence adherence. A study on this variable would help in establishing how deep it affects adherence.

- Further research is needed to detail the influence of age on ART adherence among the people living with HIV and AIDS because it will help in getting the details of why there is disparity in adherence for different age groups.

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Appendix I: Consent Letter for Respondents

Dear Respondent,

My name is Mary A. Juma, a student from St. Paul's University taking masters in development studies. Presently, I am conducting a study entitled Factors influencing adherence to antiretroviral therapy among the youth attending PGH, Nakuru".

In regard, I am asking you for your precious time, and effort to answer all the questions in the questionnaire that are important and helpful for the completion of this study. Rest assured that all data gathered from you will be kept in the highest level of confidentiality and anonymity.

This exercise is voluntary and you are free not to fill the questionnaires if you don't feel like. By signing this letter, you are committing that you participated in this exercise without being forced. Thank you very much for your cooperation.

Respectfully Yours,

Mary A. Juma.

Signature---------- Date----------

Appendix II: Questionnaire

Dear Respondent,

My Name is Mary A. Juma. I am a student at St. Paul's University undertaking a Master's degree in Development Studies. I am conducting a research study as part of the requirements of the course. This research questionnaire is an integral part of this study and it focuses on the factors influencing adherence to ART among the youth in PGH Nakuru County. I am kindly requesting that you assist me in by responding to this questionnaire. Please note that the information you give will be treated with confidentiality and anonymity. You are requested to fill the questionnaire according to the guidelines provided. Kindly, tick against the correct answer and give your views where necessary.

Do not indicate your name.

	QUESTIONS		**RESPONSE**	**CODES (Tick where appropriate)**
		SECTION A. BACKGROUND		
1	What is your age?		----------years	
2	Please indicate your gender		Male ---------- Female----------	1 2
3	What is your marital status?		Married---------- Single---------- Divorced/separated---------- Widow/widower----------	1 2 3 4
4	Who do you currently live with?		Both parents---------- Father only---------- Mother only---------- Guardian/other relatives----------	1 2 3 4

		SECTION B: PATIENT RELATED FACTORS		
5	Do you use drugs like alcohol?		Yes---------- No ----------	1 2
6	If yes, how frequently?		Daily---------- Weekly---------- Rarely----------	1 2 3
7	Do you often travel away from home?		Yes---------- No ----------	1 2
8	If yes, how often do you travel?		Daily---------- Weekly---------- Rarely---------- Other (specify)----------	1 2 3 4
9	Have you ever failed to take your medicine?		Yes---------- No----------	
10	If yes above, for how long?		One day---------- One week---------- One month---------- Other/specify----------	1 2 3 4
11	What would you say was the reason for failing to take medicine?		---------- ---------- ---------- ----------	
12	How long did it take for you to start ART Treatment after being advised that you needed to start treatment?		---------- ---------- ---------- ----------	

13	How long did it take you to disclose your status?		---------- ---------- ---------- ---------- ----------	
		SECTION C: THERAPY RELATED FACTORS		
14	How severe are the side effects of the dosage?		Not severe---------- Moderately severe---------- Very severe---------- Not sure----------	1 2 3 4
15	How has dissatisfaction with health care providers affected your consistency with ART Treatment?		Not at all---------- Moderately---------- Very much----------	1 2 3
16	Which gender are you comfortable with serving you at the health facility?		Male---------- Female ----------	1 2
		SECTION D:CONTEXTUAL FACTORS		
17	What is the level of education of your parent or guardian?		Primary---------- Secondary---------- College---------- University----------	1 2 3 4
18	What is the occupation of your parent/guardian?		Formally employed---------- Self employed---------- Not employed---------- Other(specify)_____	1 2 3 4
19	How would you describe your parent/guardians relationship with you?		Harsh---------- Strict---------- Supportive----------	1 2 3

			Not sure----------	4
20	How supportive are your parents in your ART treatment?		Supportive---------- Very supportive---------- Not supportive---------- Other/specify----------	1 2 3 4
21	How many of your friends/peers know that you are on ART?		Few---------- None---------- Majority---------- All----------	1 2 3 4
22	Do your friends/peers who know that you are on ART support you?		Yes---------- No----------	1 2
23	Has your parent/guardian ever advised you to stop ART and try other treatment options like traditional or Faith healing?		Yes---------- No----------	1 2
24		If yes above, kindly state why_____		

Appendix III: Interview Schedule

Dear Respondent,

My Name is Mary A. Juma. I am a student at St. Paul's University undertaking a Master's degree in Development Studies. I am conducting a research study as part of the requirements of the course. This interview schedule is an integral part of this study and it focuses on the factors influencing adherence to ART among the youth in PGH Nakuru County. I am kindly requesting that you assist me in by responding to this interview schedule. Please note that the information you give will be treated with confidentiality and anonymity. You are requested to respond to the questions according to the guidelines provided. Kindly, tick against the correct answer. **Do not indicate your name.**

Interviews with the mentors and nurses

1. In your opinion, what are the factors causing non-adherence to ART among the youth living with HIV and AIDS?
2. Do you think drug abuse influences adherence?
3. In your opinion does age of the patient affect adherence to ART?
4. What are the effects of stigma on adherence to ART?
5. What are the effects of social support (family, peers) on adherence to ART?
6. Do you think the side effects of the dosage affect adherence to ART?
7. What are the effects of cultural beliefs and practices on adherence to ART?
8. Do you think the income level of the patients contributes to adherence to ART?
9. What are the strategies that are being put in place to enhance adherence to ART?

Appendix IV: University Authorization Letter

ST. PAUL'S UNIVERSITY

Private Bag 00217 LIMURU, KENYA
Email: postgraduatestudies@spu.ac.ke
Website: www.spu.ac.ke

Tel Office: +254 (0) 20-2020505/10
Mobile: +254 (0) 728-669000
(0) 728-062420
(0) 736-424440

BOARD OF POSTGRADUATE STUDIES

7/3/2019

National Commission for Science, Technology and Innovation
Off Waiyaki Way, Upper Kabete
P.O Box 30623, 00100
Nairobi, KENYA.

Dear Sir/Madam,

RE: JUMA MARY ACHIENG - MDSNKR580318

This is to confirm that the above named is a final year student of St. Paul's University registered for Master of Development Studies.

The final year consists of a major research work leading to a dissertation comprising 20,000 words. The student's selected topic is:

Factors Influencing Adherence to Anti-retroviral Therapy Among the Youth attending Rift Valley Provincial General Hospital, Nakuru County Kenya.

The research will take place in Nakuru County from March 2019 to May 2019.

Kindly grant the student the required permit.

Yours Faithfully,

Dr. Sammy Githuku
Director, Postgraduate Studies

Appendix V: NACOSTI Authorization Letter



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/19/56752/28771**

Date: **11th April 2019**

Mary Achieng Juma
St. Paul's University
P.O. Private Bag - 00217
LIMURU.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"factors influencing adherence to antiretroviral therapy among the youth attending Rift Valley Provincial General Hospital Nakuru County Kenya."*** I am pleased to inform you that you have been authorized to undertake research in **Nakuru County** for the period ending **10th April, 2020.**

You are advised to report to **the County Commissioner and the County Director of Education, Nakuru 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.

BONIFACE WANYAMA
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Nakuru County.

The County Director of Education
Nakuru County.

National Commission for Science, Technology and Innovation is ISO9001: 2008 Certified

Appendix VI: NACOSTI Research Permit

THIS IS TO CERTIFY THAT:
MS. MARY ACHIENG JUMA
of ST PAULS UNIVERSITY, 0-20100 Nakuru,has been permitted to conduct research in *Nakuru County*

on the topic: *FACTORS INFLUENCING ADHERENCE TO ANTIRETROVIRAL THERAPY AMONG THE YOUTH ATTENDING RIFT VALLEY PROVINCIAL GENERAL HOSPITAL NAKURU COUNTY KENYA*

for the period ending:
10th April,2020

Permit No : NACOSTI/P/19/56752/28771
Date Of Issue : 11th April,2019
Fee Recieved :Ksh 1000



.....
Applicant's Signature

.....
Director General
National Commission for Science, Technology & Innovation

THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013

The Grant of Research Licenses is guided by the Science, Technology and Innovation (Research Licensing) Regulations, 2014.

CONDITIONS

1. **The License is valid for the proposed research, location and specified period.**
2. **The License and any rights thereunder are non-transferable.**
3. **The Licensee shall inform the County Governor before commencement of the research.**
4. **Excavation, filming and collection of specimens are subject to further necessary clearance from relevant Government Agencies.**
5. **The License does not give authority to transfer research materials.**
6. **NACOSTI may monitor and evaluate the licensed research project.**
7. **The Licensee shall submit one hard copy and upload a soft copy of their final report within one year of completion of the research.**
8. **NACOSTI reserves the right to modify the conditions of the License including cancellation without prior notice.**

National Commission for Science, Technology and innovation
P.O. Box 30623 - 00100, Nairobi, Kenya
TEL: 020 400 7000, 0713 788787, 0735 404245
Email: dg@nacosti.go.ke, registry@nacosti.go.ke
Website: www.nacosti.go.ke

REPUBLIC OF KENYA

National Commission for Science, Technology and Innovation

RESEARCH LICENSE

Serial No.A 23971

CONDITIONS: see back page

Appendix VII: Authorization letter from the County Commissioner

THE PRESIDENCY
MINISTRY OF INTERIOR AND
CO-ORDINATION OF NATIONAL GOVERNMENT

Telegram: "DISTRICTER" Nakuru
Telephone: Nakuru 051-2212515
When replying please quote

COUNTY COMMISSIONER
NAKURU COUNTY
P.O. BOX 81
NAKURU.

Ref No. CC. SR . EDU/12/1/2 VOL.IV/71 18th April, 2019

TO WHOM IT MAY CONCERN

RE:- RESEARCH AUTHORIZATION – MARY ACHIENG JUMA

The above named student from St Paul's University has been authorized to carry out research on **"factors influencing adherence to antiretroviral therapy among the youth attending"** Rift Valley Provincial General Hospital in Nakuru County for a period ending 10th April, 2020.

Please accord her all the necessary support to facilitate the success of her research.

MARY W. MWANGI
FOR: COUNTY COMMISSIONER
NAKURU COUNTY

Appendix VIII: Authorization letter from the Ministry of Education

MINISTRY OF EDUCATION

STATE DEPARTMENT OF EARLY LEARNING OF BASIC EDUCATION

Telegrams: "EDUCATION",
Telephone: 051-2216917
When replying please quote
Email:cdenakurucounty@gmail.com
Ref.CDE/NKU/GEN/4/1/21/VOL.VIX/56

COUNTY DIRECTOR OF EDUCATION
NAKURU COUNTY
P. O. BOX 259,
NAKURU.

17TH April, 2019

TO WHOM IT MAY CONCERN

RE: RESEARCH AUTHORIZATION –MARY ACHIENG JUMA
PERMIT NO. NACOSTI/P/19/56752/28771

Reference is made to letter NACOSTI/P/19/56752/28771 dated 11th April, 2019.

Authority is hereby granted to the above named to carry out research on ***"Factors influencing adherence to antiretroviral therapy among the youth attending Rift Valley Provincial General Hospital"*** in Nakuru County - Kenya for a period ending ***10th April, 2020.***

Kindly accord her the necessary assistance.

For COUNTY DIRECTOR OF EDUCATION
NAKURU COUNTY

AKOKO OKAYO
FOR: COUNTY DIRECTOR OF EDUCATION
NAKURU COUNTY

Copy to:

- St. Paul University
  Private Bag – 00217
  LIMURU

Appendix IX: Map of Nakuru PGH

