

**DETERMINANTS OF ADHERENCE AND RETENTION IN CARE OF HIV POSITIVE
ADOLESCENTS IN MURANG'A COUNTY HOSPITAL, KENYA**

PETER KABUGUA NDUNGU

**A Thesis Submitted in Partial Fulfillment of the Requirements for the Conferment of
Degree of Master Science in Public Health of Kenya Methodist University**

OCTOBER 2020

DECLARATION

DECLARATION

This thesis is my original work and has not been presented for award of a degree in any other University.

Signature.....

Date.....

Peter Kabugua Ndungu

PHT-3-0434-1-2017

RECOMMENDATION

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

Signature.....

Date.....

Dr. Makobu Kimani.

Kenya Methodist University

Signature.....

Date.....

Dr. John Mokuu, PhD

Technical University Kenya

COPYRIGHT

©

2020

“All rights reserved. No part of this thesis may be reproduced, stored in any retrieval system or transmitted in any form or by any means, electronically, mechanically, by photocopying or otherwise, without prior written permission of the author or Kenya Methodist University, on behalf”

ACKNOWLEDGEMENT

I would like to express my gratitude to God for seeing me through this study. I thank my loving wife and daughters for their support towards the completion of this research thesis. Special thanks to my supervisor(s) Dr. Makobu Kimani of the Department of Public Health-Kenya Methodist University and Dr. John Mokuu, (PhD) -Technical university of Kenya (TUK) for their tutelage as I endeavored to complete my Masters studies.

ABSTRACT

The burden of HIV amongst teenagers in Kenya is increasing, yet the adolescence period can be a window of maximum prevention, testing, and treatment HIV. The prevalence of HIV among adolescents (10-19 years) was 0.9% in 2018. Adherence to medication and retention in care is important in improving clinical outcomes and quality of care. Disaggregated data particularly for the adolescent age group is a challenge in Murang'a County. The study aimed at determining the factors associated with retention and adherence in care for HIV positive adolescents attending Murang'a HIV Comprehensive Care Center (CCC). A descriptive cross sectional study was carried out at Murang'a County Comprehensive Care Center involving 93 purposively sampled adolescents. 2 key informants were conveniently sampled. Retrospective Retention data of the preceding 12 months (Nov 2018-Nov 2019) was collected from the hospital records. Data was collected using a questionnaire, FGD and key informant guides. Data was analyzed using SPSS, both descriptive and inferential statistical techniques were used i.e chi square and cox to regression analysis, time to event data was used to analyses survival of adolescents in care. Qualitative data was manipulated manually through thematic analysis. In the preceding 12 months, the number of adolescents enrolled in care was 350. 250 (71%) were retained in care and 100 exited in that period. The average period till exit was 3.463 years. Transfer to other facilities, deaths and loss of follow up resulted to exit. The median survival time was 3.00 years. Retention had a significant association with adherence at ($p=0.043$). The results showed that 91(98%) of the respondents were adhering to HIV management. Increasing level of education improved adherence and retention to care. From the FGD, disclosure, family and hospital support system, reduced waiting time, health education and counselling were contributed to good retention and adherence. Stigma, fatigue from medication and peer pressure were cited obstacles. The study recommends development of cost-effective, scalable, and sustainable evidence based strategies to strengthen adolescent retention in care and adherence to ART. HIV data reporting systems on adolescents should be improved more so adolescent specific data should be disaggregated. Continuous strengthening of health education through operation triple zero (OTZ) and counselling is important for improvement and maintenance retention to HIV care. There is need for continuous HIV/AIDS awareness in the community to reduce some of the barriers like stigma and discrimination to HIV care. There is also the need for continuous improvement and adjustment of HIV/AIDS care service to meet the needs of adolescents to maintain good retention and adherence. Further research on challenges facing transition from paediatric to adolescent care is recommended.

TABLE OF CONTENT

DECLARATION	i
COPYRIGHT	ii
ACKNOWLEDGEMENT	iii
ABSTRACT	iv
LIST OF TABLES	viii
LIST OF FIGURES	ix
ABBREVIATIONS AND ACRONYMS	x
CHAPTER ONE	11
INTRODUCTION	11
1.1 Background of the study	11
1.2 Statement of the problem	14
1.3 General Objective	15
1.4 Research Questions	16
1.5 Justification of the study	16
1.6 Limitation of the Study	17
1.7 Delimitation of the study	17
1.8 Significance of the study	17
1.9 Assumptions of the study	18
1.10 Operational terms.....	18
CHAPTER TWO	20
LITERATURE REVIEW	20
2.1 Overview of HIV/AIDS.	20
2.2 HIV/AIDS Management Strategy in Kenya.....	22
2.3. Murang’a County’s Response	24
2.4 Factors influencing retention in care among HIV positive adolescents	25
2.5 Factors influencing adherence to ART among HIV positive adolescents	27
2.6. Knowledge and perception regarding HIV/AIDS among positive adolescents.....	30
2.7 Literature Gap.....	31
2.8 Theoretical framework.....	34
2.9. Conceptual Framework	34

CHAPTER THREE.....	36
RESEARCH METHODOLOGY.....	36
3.1 Introduction	36
3.2 Study area.....	36
3.3 Research design	37
3.4 Target Population.....	37
3.5 Sampling procedure	37
3.6 Sample Size Calculation	38
3.7 Inclusion and Exclusion Criteria for the Adolescents	39
3.8 Inclusion and Exclusion Criteria for the Health Workers	39
3.9 Data Collection	40
3.10 Data Analysis Methods	42
3.11 Ethical Issues	43
CHAPTER FOUR.....	45
RESULTS AND DISCUSSION.....	45
4.1 Introduction	45
4.2 Proportion of HIV positive adolescents retained in care.....	45
4.3. Factors influencing retention among HIV positive adolescents	47
4.4 Kaplan Meier of HIV positive adolescents in care at ART initiation	50
4.5 Factors influencing adherence among HIV positive adolescents.	54
4.6 Knowledge and perceptions regarding HIV/AIDS among positively living adolescents	61
CHAPTER FIVE.....	66
SUMMARY, CONCLUSION AND RECOMMENDATIONS	66
5.1 Introduction:	66
5.2 Summary of the findings	66
5.3 Conclusion.....	68
5.4 Recommendations.....	69
5.5 Areas for further research.....	69
REFERENCES.....	70
APPENDICES	76
Appendix A: <i>Consent form</i>	76
Appendix B: <i>Assent form</i>	77
Appendix C: <i>FGD interviewing guide</i>	78
Appendix D: <i>KII Interviewing Guide</i>	82
Appendix F: <i>NACOSTI Research approvals</i>	92

Appendix G: *Ethical Clearance* 93
Appendix H: *Certificate of Publication*..... 95

LIST OF TABLES

Table 4.1 Proportion of HIV positive adolescents retained in care	46
Table 4.2 Retention in care by adherence	48
Table 4.3 Reason for exit from care	50
Table 4.4 Association between participant characteristics and 12-month retention in HIV care	52
Table 4.5 Factors influencing adherence to HIV management	55
Table 4.6 Knowledge and perceptions among adolescents living HIV/AIDS	62
Table 4.7 Medication adherence importance	64

LIST OF FIGURES

Figure 2.1 Conceptual Framework of Determinants of adherence and retention in care	35
Figure 4.1 Kaplan Meier of HIV positive adolescents at ART initiation	51

ABBREVIATIONS AND ACRONYMS

AIDS	:	Acquired Immunodeficiency Syndrome
ART	:	Antiretroviral therapy
CCC	:	Comprehensive Care Unit
DTG	:	Dolutegravir
FGD	:	Focused group discussion
HIV	:	Human Immunodeficiency Virus
KII	:	Key informant interview
MTCT	:	Mother to Child Transmissions
NASCOP	:	National AIDS and STI Control
NACC	:	National AIDS control council
OTZ	:	Operation triple zero
PHDP	:	Positive health, dignity and prevention
PMTCT	:	Prevention of mother to child transmission
PLWHIV	:	People Living with HIV
SWOT	:	Strength, Weakness, Opportunities, and Threats
UNAIDS	:	United Nations Aids Programme
VCT	:	Voluntary Counseling and Testing
WHO	:	World Health Organization
YKP	:	Young Key Population

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

The acquired immunodeficiency syndrome (AIDS) pandemic has affected millions of the populace globally, shattering millions of lives and families. The disease has no proven cure, however, available treatment medication and care metrics that allow HIV infected individuals to live near normal lives. Low income countries have a big burden of HIV compared to high income countries, due to inequalities in socio cultural aspects, knowledge gap and poor living standards due to low income levels among the populace (Lowenthal et al., 2014). Adolescence is a period where maximum prevention, testing, and treatment of Human Immunodeficiency Virus (HIV) can be achieved in a low resource setting (Luseno et al., 2017).

Despite the inequalities, the United Nations program on HIV/AIDS, reports a decline in morbidity and mortality resultant from HIV and improved quality of life among people living with HIV (PLWHA) due to increased access and availability of antiretroviral therapy (ART). Nonetheless, the number of death among HIV-positive young people is more in Sub-Saharan Africa, transmission of HIV mostly occurs vertically or behaviourally (Izudi et al., 2018). In 2019, the incidence of HIV among person between 10 to 24 years globally was reported to be approximately 460,000 [260,000-680,000]. Adolescents were projected to be 170,000 [53,000-340,000] (United Nations Children's Fund [UNICEF], 2020). Moreover, in 2020 data from the preceding 12 months, 27% adolescent girls and 16% boy in the East and Southern parts of Africa in 2020 were reported to have been tested. Teenagers and youth showed an increased number of people living with HIV. Globally, 25.4 million people living with HIV were estimated to be using antiretroviral therapy (United Nations Programme on HIV/AIDS [UNAIDS], 2020).

In the Kenya Population-based HIV Impact Assessment [KENPHIA], (2018), the burden of HIV among adults was 4.9%. Adolescents (10-19 years) prevalence was 0.9%. In Murang'a county adolescents infected with HIV/AIDS were estimated to be 19, 6738 (National AIDS and STI Control Programme, 2020). According to the Murang'a County HIV & AIDS strategic plan 2014/2015-2018/2019, a total of 32,781 people were living with HIV, of this, 10,256 adults and 1,054 children were on ART in the year 2015 (National AIDS Control Council, 2016). In the NASCOP ACT Dashboard, the total number of patients on ART in May 2020 was 15,814. The viral load suppression among those who were between 10-14 years was 87.2% while 15-19 years was 86.7% (National AIDS Control Council, 2020). The effectiveness of ART highly depends on sustained drug adherence. Good adherence level means optimum viral load suppression among PLWHA (Yu et al., 2018).

As much as the adolescence is a special group due to their unique needs, accurate information on incidence and prevalence is scanty nationwide (Lowenthal et al., 2014). However, this special group of the population is identified in the Kenya AIDS Strategic Framework (KASF) as a priority for HIV response (National AIDS Control Council, 2015). The adolescents live a busy life with constant change in preference, routines and life priorities in addition to the growing need for affirmation in their family and social lives. HIV positive adolescent usually require a closer eye during care to ensure that their lives remain as close to normal as possible (Naswa & Marfatia, 2010).

The Antiretroviral Therapy (ART) routine is tedious to some adolescents, while others find it inconveniencing when people find out, hence inherently causes natural inhibitions to normal adolescent lives. For this segment of every population, consistency in treatment and maintenance in active medication often involves more than a simple time track for medication and hospital

check-ups. It requires a good motivation and additional effort to rise above the various factors that affect adherence. Caregivers burden adolescents with constant reminders about medication, especially because these adolescents must put in conscious effort to evade curiosity from peers for them to stand a chance of a normal teenage and adolescent life (Luseno et al., 2017).

The government of Kenya envisions improving the clinical outcome and ultimately improving the quality of life among persons with HIV. Strategies include the 90:90:90 target to be achieved by the year 2020. This means that, by the end of 2020, 90% of persons in all age group living with HIV (PLWHA) will have known their HIV status, 90% would have been enrolled in care and accessing ART and 90% of those on ART would have achieved viral load suppression (National AIDS Control Council, 2018). Worldwide in 2019, 81% of PLWHA knew their HIV status and 82% were receiving ART. Out of those on ART, 88% were virally suppressed (United Nations Programme on HIV/AIDS, 2020). In Kenya, the rates were low, viral suppression was 71.6% among those who were 15- 64 years, the adolescent group had 61.6% viral suppression rate, lower than the other age groups (National AIDS and STI Control Programme, 2020)

Sustained adherence is reliant on the continuum care from choosing treatment, initiation of medicines and maintenance. Non-adherence is described as interruption or cessation of part or all of medication, including; missing dosages, under dosing, overdosing, and drug holidays. Adherence crucial as it maximizes patient's response to ART thereby leading to viral suppression. Non adherence leads to medication failure, rise in viral load, which leads to development of drug resistance (Laisaar et al., 2013). Adherence in patients is evaluated by medication event monitoring system, pill counting, prescription replenishing, and personal adherence reporting (Jima & Tatiparthi, 2018)

Attainment of satisfactory adherence level is still a challenge in Kenya. Challenges cited include; pill burden, unawareness ART side-effects, disclosure, stigma among others(National AIDS Control Council, 2018) and social support (Kioko & Pertet, 2017). Moreover, apart from the life of being an adolescent, myriads of other factors such as; depression, substance abuse, poverty and lack of food contribute to non-adherence (Micheni et al., 2017)

Retention is intertwined with adherence, and is important also vital for maximum achievement of good clinical outcomes in adolescents with HIV. Retention in care provides for administration of prophylactic drugs for those who are not yet on ART, continuous disease staging, prevention of vertical HIV transmission and swift ART initiation when need be. Those on ART treatments, retention ensures adherence to treatment, monitoring of adverse drug effects and treatment failures. Additionally, the adolescents benefits from access to ancillary services, psychosocial support, and health education that helps them endure the chronic disease (Geng et al., 2010).In the Murang'a County retention is recognized to be low among all age groups although no data is available on it(National AIDS Control Council, 2016). Therefore, the study aimed at determining the proportion of HIV positive adolescents in the preceding 12 months and factors associated with retention in care at Murang'a hospital comprehensive care center (CCC).

1.2 Statement of the problem

The adolescents contribute to over 40% of the HIV incidences globally, and are recognized in the evolution of HIV (Croome et al., 2017). Adherence and retention among the adolescents living with HIV (ALHIV) in Kenya is a challenge. Murang'a county is classified being among the highest in HIV prevalence alongside Kisii, Transzoia, Nyamira, Makueni counties (National AIDS Control Council, 2018). In Murang'a County, by the year 2013, 31,581 people were living with HIV, of which 28,700 were adults and 2,881 were children. Additionally, 7,177 adults and

656 children were accessing ART. By the year 2015 the number of people living with HIV had increased to, 32,781 , of this adults were 10,256 and 1,054 children on ART (National AIDS Control Council, 2016). By the May 2020, total number of patients on ART was 15,814. Reported viral load suppression among children between 10-14 years was 87.2% while those between 15-19 years was 86.7% (National AIDS Control Council, 2020).

Despite the fact that adolescents living with HIV have poorer clinical outcomes, research to establish the proportion of adolescents in care in Murang'a CCC is lacking particularly. Additionally, information on retention and adherence targeting adolescent specifically between the ages of (10 to 19 years) is missing. This group of person are recognized as a special group with unique needs and so prioritizing adolescents in care is key (Lowenthal et al., 2014). There is need to generate evidence-based information that will address retention and adherence gaps among the adolescent in HIV care in Murang'a County. The study aimed at assessing the determinants of adherence and retention among HIV positive adolescents receiving care from Murang'a County Hospital. The information generated may be used by Murang'a County health managers, policy makers at the national level and health practitioners at the comprehensive care center (CCC) to plan and improve care.

1.3 General Objective

1.3.1 General objective

The study purposed to determine the proportion of HIV positive adolescents and assess the factors influencing adherence and retention amongst HIV positive adolescents in care in Murang'a County Hospital.

1.3.2 Specific Objectives

The objectives of the study were:-

- a) To determine the proportion of HIV positive adolescents retained in care attending Murang'a County Hospital comprehensive care center in the preceding 12 months.
- b) To examine factors influencing retention among HIV positive adolescents attending Murang'a Hospital comprehensive care center.
- c) To assess factors influencing adherence among HIV positive adolescents attending Murang'a hospital comprehensive care center.
- d) To establish knowledge and perceptions regarding HIV/AIDS among adolescents attending Murang'a hospital comprehensive care center.

1.4 Research Questions

- a) What is the proportion of HIV positive adolescents retained in care attending Murang'a County Hospital comprehensive care center in the preceding 12 months?
- b) What factors influence retention among HIV positive adolescents attending Murang'a Hospital comprehensive care center.
- c) What factors influence adherence among HIV positive adolescents attending Murang'a hospital comprehensive care center.
- d) What do HIV/AIDS adolescents attending Murang'a hospital comprehensive care center know and perceive about HIV AIDS?

1.5 Justification of the study

The number of adolescents and teenagers dying of HIV related causes is conspicuously increasing despite a notable decrease of these deaths in all other age groups (Geng et al., 2010; United Nations Programme on HIV/AIDS, 2016). The numbers of teenagers including the adolescent populations are noted to be significantly high in Kenya (National AIDS Control Council, 2016). Apparent traumatization and stigmatization among teenagers and adolescents

living with HIV because of the peer pressure and desires of the community is an ongoing concern globally. The quality of life that a teenager or an adolescent living with HIV must cope with is lower than ideal and exposes the individual to other opportunistic diseases and stress factors (Mosha et al., 2018). In a bid to curb these negative effects, the study sought to make it easier for HIV positive adolescents to continue in optimal care and increase quality of life in the future.

1.6 Limitation of the Study

As a result of the sensitivity of the research topic on HIV/AIDS among the participants, data collection may have been affected by desirability bias resulting to incorrect self-reports leading to wrong research conclusions. This desirability bias was reduced by ensuring confidentiality and privacy during data collected. They were also assured of confidentiality of information by use of identifiers and not names. During the focused group discussion, the investigator ensured clarity of wording and prefacing of questions, the role of the participants was also clearly defined.

1.7 Delimitation of the study

The researcher conducted the study within the specified period of the programme due to the set time frame and with the available resources/funds. The study was undertaken at Murang'a County hospital because it is a high volume facility. The key informants used were few as they were the only respondents knowledgeable on the subjected matter of interest.

1.8 Significance of the study

Results from the study could contribute towards comprehending determinants of continuity in care amongst adolescents infected with the human immunodeficiency virus. This will add more knowledge in this field, which will help developing strategies and policies for adherence to active HIV care for adolescents. This would increase quality life due to reduced stress, stigma,

and opportunistic infections thus reducing deaths among adolescents. This study further aimed at equipping family and health workers with valuable information on HIV management in adolescents.

1.9 Assumptions of the study

It was presumed that, participants gave honest answers, which made it possible for the study to have reasonable degree of confidence.

1.10 Operational terms

1.10.1 Retention

In this study, retention was considered as consistent HIV clinic follow up as required by the health care provider (Njuguna et al., 2019). For the purposes of this study, all HIV positive adolescent registered in Muranga CCC were considered regardless of their antiretroviral therapy (ART) status.

1.10.2 Adherence

Adherence refers to taking medication and carrying out lifestyle changes such as dietary changes as recommended by the health care provider aimed at increasing viral suppression for HIV&AIDS patients (Jima & Tatiparthi, 2018) In this study adherence was considered using drugs as instructed by a health practitioner.

1.10.3 Belief

Belief means information that an individual has regarding a particular object, an issue or even another person. This data can be opinions or facts that are positive, negative or may have no evaluative inferences for the target person, object, or issue.

1.10.4 Adolescent.

Adolescent refers to an individual who falls between the age of 10 years and 19 years. Adolescent is a transitional stage from the physical as well as psychological development arising from puberty to legal adulthood (World Health Organization, 2013). The study will adapt to this definition.

CHAPTER TWO

LITERATURE REVIEW

2.1 Overview of HIV/AIDS.

The number of young people globally living with HIV is increasing and has worse clinical outcomes compared to all the other age groups. The increasing number of infections and death among HIV-positive young people is more in Sub-Saharan Africa, and is attributed to behavioral modifications and mother to child transmission of HIV (Izudi et al., 2018). In 2015, every hour, 29 adolescents were estimated to have acquired HIV infection (United Nations Programme on HIV/AIDS, 2015). Currently, the number of HIV/AIDS related mortalities among the adolescent and youths is reported to have risen by 30% but decreasing among in all the other age groups (United Nations Programme on HIV/AIDS, 2020). Besides this, children infected with HIV perinatally and who are transiting into adolescence and youth stage add to the burden of HIV in this particular age group (Reif et al., 2020).

By the year 2019, 25.4 million people living with HIV were projected to be accessing antiretroviral therapy (ART) of which 88% were virally suppressed (United Nations Programme on HIV/AIDS, 2020). In the same year, 460,000 young people between 10 to 24 years were reported to be newly infected with HIV globally. Adolescents were projected to be 170,000 [53,000-340,000](United Nations Children's Fund, 2020). Moreover, in 2020, information from the preceding 12 months in that year showed that 27% adolescent girls and 16% boy in the East and Southern parts of Africa in 2020 had been tested. Worldwide, 25.4 million PLWHA were estimated to be using antiretroviral therapy. Further, 81% of PLWHA knew their HIV status. Of those who knew their status, 82% were accessing treatment. And among people accessing

treatment, 88% were virally suppressed in 2019(United Nations Programme on HIV/AIDS, 2020).

In Kenya, report on the national estimates indicated that approximately 1.5 million people were living with the virus. In that number, children below 15 years were 105,200 while 1,388,200 were above 15 year. . The youth between the age of 15-24 years were 184,700 (12%) (National AIDS Control Council, 2018). According to Kenya Population-based HIV Impact Assessment [KENPHIA], (2018) report, the prevalence of HIV among adults was 4.9%. Adolescents (10-19 years) were 0.9%. In addition, viral suppression prevalence of 71.6% populace of 15- 64 years while adolescent 61.6%. Adolescent rates were lower compared to the youths and adults. It is important to note that adolescents infected with HIV/AIDS nationally were estimated to be 19, 6738 (National AIDS and STI Control Programme, 2020). In Murang'a, by the year 2015, a total of 32,781 people were living with HIV, where, 10,256 were adults and 1,054 were children on ART (National AIDS Control Council, 2016). In the NASCOP ACT Dashboard, the total number of patients on ART in May 2020 was 15,814. Additionally, viral load suppression between 10-14 years was reported to be 87.2%, while 15-19 years was 86.7% (National AIDS Control Council, 2020). Globally, 81% of PLWHA knew their HIV status. Of those who knew their status, 82% were accessing treatment. And among people accessing treatment, 88% were virally suppressed in 2019 (United Nations Programme on HIV/AIDS, 2020). In Kenya, results from KEPHIA reported viral suppression prevalence of 71.6% populace of 15- 64 years while adolescent 61.6%. Adolescent rates were lower compared to the youths and adults.

As much as the adolescence is a special group due to their unique needs, accurate information on incidence and prevalence is scanty in Kenya. Much of the reporting on HIV do not categorically report on adolescent population as defined in the WHO report being ages of 10-19 year

(Lowenthal et al., 2014). However, this special group of the population is identified in the Kenya AIDS Strategic Framework (KASF) as a priority for HIV response (National AIDS Control Council, 2015). Entry and continuity on therapy is recognized to be a challenge especially among the young populace. By the year 2014, 34,800 out of 141,000 adolescents (aged 10-19) diagnosed with HIV were on anti-retroviral therapy; out of this 22,600 had reported viral suppression. Mortality among youths and adolescents resulting from AIDS country wide was estimated to be 9,720 in 2014 (United Nations Programme on HIV/AIDS, 2015).

2.2 HIV/AIDS Management Strategy in Kenya

Kenya has a national policy guiding the response, mitigation, and treatment of HIV. National AIDS and STI Control Program (NAS COP) spearhead government efforts towards mitigation of HIV in the country. The program engages with other stakeholders, the Ministry of Health, Ministry of Education, Red Cross, and NGOs to try to create awareness, distribute Anti-Retroviral drugs and help prevent new infections. Some of the programs target adolescents, which include inclusivity of sex education at the secondary level. The curriculum is designed to disseminate updated information across the country and to adolescents mostly. Therefore, the government hoped to reach the adolescents at an early age before becoming sexually active. In case an adolescent is already sexually active, the program informs them of the best ways to practice safe sex (National AIDS Control Council, 2015).

The Kenya HIV Prevention Revolution Road Map was anticipated to help the nation preclude 1.1 million disease incidences and 761,000 AIDS-related mortalities by 2030. The plan in the road map acknowledges “disparities” caused by the pandemic, and endeavored to implement targeted integrated strategies tailored for different types of affected population and in different geographical areas. To realize that, stigma and discrimination, springing up from the

criminalization of this key populace and deep rooted gender bias needed to be dealt with. Moreover, focused approaches for the adolescent and intense monitoring and reporting systems were recognized to be important. Other approaches would include adequate health financing to support continuity in care by the year 2018 (National AIDS Control Council, 2015).

HIV strategies in Kenya are in line with the Joint United Nations Programme on HIV/AIDS [UNAIDS] goal which endeavors to end the HIV pandemic. The 90:90:90 target set by the program is to be achieved by 2020. It was envisioned that, by the year 2020, 90% people living with HIV will have known their HIV status, 90% will have been enrolled and retained into care and 90% on ART will have attained viral load suppression (United Nations Programme on HIV/AIDS, 2016). Achievement of such targets requires combined effort between the counties and the national government.

According to the World Health Organization dosages, ARV drugs for adolescents include drugs drawn from different classification ; Nucleoside reverse-transcriptase inhibitors (Abacavir (ABC) 300 mg twice daily or 600 mg once daily, Emtricitabine (FTC) 200 mg once daily Lamivudine (3TC) 150 mg twice daily or 300 mg once daily Zidovudine (AZT) 300 mg twice daily), Nucleotide reverse-transcriptase inhibitors (Tenofovir disoproxil fumarate (TDF) 300 mg once daily Tenofovir alafenamide (TAF) 10-25 mg once daily), Non-nucleoside reverse-transcriptase inhibitors (Efavirenz (EFV) 400–600 mg once daily Etravirine (ETV) 200 mg twice daily Nevirapine (NVP) 200 mg once daily for 14 days followed by 200 mg twice daily), Proteases inhibitors (Atazanavir/ritonavir (ATV/r) 300 mg/100 mg once daily Darunavir + ritonavir (DRV/r) 800 mg + 100 mg once daily or 600 mg + 100 mg twice daily Lopinavir/ritonavir (LPV/r) 400 mg/100 mg twice daily) and Integrase strand transfer inhibitors Dolutegravir (DTG) 50 mg once dailyb Raltegravir (RAL) 400 mg twice daily. During prescription, special

considerations are adhered to for adolescents receiving TB therapy, prescription can be changed depending on patients response to medication (World Health Organization, 2018)

Antiretroviral therapy has been demonstrated to be the best effective management for PLWHA. It however relies on the level of patient drug adherence and behavior. The higher the adherence levels to drugs, the higher the viral load suppression (Yu et al., 2018). Anti-retroviral drug resistance is known to result from interrupted therapy; cited to be due to poor follow up and monitoring. In a recent study, transmitted drug resistance was reported to be 9.2%. That meant that the persons had been infected with a type of virus that was resistant to some medications, making treatment options more restricted to starting therapy (Onywera et al., 2017).

2.3. Murang'a County's Response

In response to national County ratings in HIV prevalence, Murang'a County Government devised a strategic plan to be realized by the year 2019. The plan identified Murang'a as a medium prevalence county and established alcoholism, multiple sexual partners, poverty, migrant labor, key populations, low condom use, and early sexual debut as key drivers of new HIV infections. Murang'a is classified to be among the 28 counties with average disease burden in Kenya. National figures in 2013, reported 1,984 new infections among older population and 65 among the paediatric population. Thereafter, the figure escalated to 2,020 among the older persons and 67 in those below 14 years. In 2013, approximately 979 HIV related mortalities were reported in Murang'a County that resulted to the county focusing on ascertaining the total number with existing HIV infection. It aimed to test at least 90% of the populace. It also anticipated enrolling 4,500 people into care each year. Further, the County also envisioned retaining 90% on care and achievement of 90 % viral suppression rate.

A strength, weakness, opportunities and threats analysis (SWOT) revealed that although the county possessed functional psychosocial support groups in the treatment facilities, they were not sustained. Reporting tools presented challenges with the quality of data since the use and demand of data was low at lower levels. Most PLWHIV were aware of HIV prevention measures, yet there were low disclosure rates and poor health seeking behavior among men. Inadequate legislation on discrimination and stigma contributed to the lack of reliable data on stigmatization, and hence, its mitigation. Financial limitations in HIV programming also limited the study.

The strategic plan envisions a HIV free county free of stigma, new infections, and deaths linked to AIDS through four strategic directions. These include reduction in incidences, mortality, stigma, and mobilization of HIV response funds. This study focuses most on the second strategic direction, which aims at improving health outcomes and wellness of PLWHIV. This involves increasing ART and care retention for adolescents and teenagers. The plan proposes anti-stigma campaigns, promoting ART adherence and health seeking behavior, early enrolment, and initiation of ART after HIV diagnosis, and strengthening home-based care.

2.4 Factors influencing retention in care among HIV positive adolescents

The adolescents live a busy life with constant change in preference, routines and life priorities in addition to the growing need for affirmation in their family and social lives. HIV positive adolescent usually require a closer eye during care to ensure that their lives remain as close to normal as possible. Many reasons that that leads to non-retention or non-enrolled have been attributed to diverse factors which also overlaps those that hinder adherence (Naswa & Marfatia, 2010).

Social support provided by family members and friends support to ALWH in retention in care. Family members are tasked with reminding the adolescents when to take medication, clinic visits days and even taking them to care facilities. Further, family members are significant in providing monetary, clothing and food support. Care giver support is also essential in adherence to treatment guidelines among ALWH (Nabunya et al., 2020).

Health facilities offering HIV/AIDS services in Africa are organized in a manner that the settings are not available in all localities. Many patients are forced to travel to distant facilities seeking care. Access to health facilities is known to be a challenge for adolescent, worsened by lack of means for transportation because of poverty (Janssen et al., 2015). Contributions from Maskew et al., (2016), on non-retention in care included long distance travel to the health and cost of transportation . In Uganda, a prospective study on retention in care showed 60 adolescents dropped out of in care due to transfers' accessible health facilities near. The report recommended increase of retention to those far from the facilities through linkage accessible CCCs, it was shown to remove costs associated with transportation and access to care (Izudi et al., 2018)

In a study by Shubber et al., (2016) , alcohol and substance abuse among adolescents was cited to hinder retention. Additionally, rejection from peers and friends, lack of food and fear of judgement from the community was seen to influence retention in care. In the same study, early revelation of HIV status was seen to improve retention. In another study by Mosha et al., (2018), factors such as stigma, presence friends while taking medications and disclosure were reported to hinder retention. Apart from stigma, Hornschuh et al.,(2017), found out that health facility factors like changes or transfers of health practitioner at the care clinic affecting retention of adolescent patients in care.

Mental health has been demonstrated in several studies to influence retention in HIV care. In a systematic study to examine the relationship between mental health and retention, the output revealed a significant association between mental health diagnoses and lower odds of being retained in HIV care (odds ratio [OR] = 0.94; 95% confidence interval [CI] = 0.90–0.99). Health insurance status ($\beta = 0.004$; $Z = 3.47$; $p = 0.001$) significantly altered the association between mental health symptoms and retention in HIV care. The output demonstrated that presence of symptomatic mental condition led to non-retention in HIV care. The report recommended provision of mental health treatment to all HIV patients when in need (Rooks-Peck et al., 2018).

2.5 Factors influencing adherence to ART among HIV positive adolescents

The success of ART became evident after the year 2000, following concerted use drugs from various classes of ARV drugs. ART regimens in 1996 were referred to as “highly active antiretroviral therapy” (HAART) but thereafter referred to as “combined antiretroviral therapy.” Despite the significant reduction in deaths and transmission risk, recent reports indicates that adherence to this medications cannot be replaced by its efficacy or enhanced HAART principles. Consistency in adherence to ART contributes significantly to the success of treatment and decreasing mortality in adolescents and teenagers (Iacob et al., 2017). Some of the benefits observed from adherence include delayed drug resistance and optimal health status for a significant period. Health providers involved in supporting teenagers and adolescents in ART have identified several factors that contribute to an adolescent’s failure to adhere to treatment. Additionally, interrupted continuity in ART causes grave management output (Micheni et al., 2017).

The success requires at least 95% adherence to ART in order to avert development of drug-resistant HIV genotypes that leads to treatment failure and impedes choices for future therapy

(Chesney, 2003). Adherence concept includes three separate stages; initiation, implementation, and discontinuation. Initiation starts from the time the patient takes the first dose of medicines prescribed ART, discontinuation is when the patient ceases taking the medication and Implementation is the degree to which the patient's actual dosing matches to the prescribed dosing regimen, from start until the last dose (Iacob et al., 2017) Adherence is reliant on the entire process from choosing, medication initiation and maintenance and sustainability in care cascade. Non-adherence may result from missed dose, under dosing, overdosing, and drug breaks. Optimal adherence to ART leads to viral suppression and non-adherence can result to medication failure, rise in viral load, eventually leading to the increase in medication-resistant HIV genotype (Laisaar et al., 2013).

Monitoring adherence behavior among patients can either be through drug event monitoring system, pill counting, prescription refill, and self-adherence reports system (Jima & Tatiparthi, 2018). Like in all other chronic medication, realization of preferred levels of adherence to ART remains a problem globally. Hindrances cited include but not limited to; pill burden, unawareness ART side-effects, disclosure, stigma and psychosocial support among others (Kioko & Pertet, 2017; MacCarthy et al., 2018). Furthermore, being in adolescent stage in Kenya, depression, substance abuse, poverty and lack of food are cited as non-adherence factors in many studies (Micheni et al., 2017)

Stigma and denial among the adolescent living with HIV remains an hindrance to optimum clinical outcome (Iacob et al., 2017). Moreover, the fact that an individual born with HIV survives into adolescent stage, denial contributes to non-adherence. In South Africa adolescents in one of the studies were seen to be angered by the fact that their HIV status was not ceasing yet they were adherent to treatment since childhood (Hornschuh et al., 2017). Social and peer

support from family members is essential in retention too. Peer care and networking is key throughout the continuum of care resulting to adherence to ARVs (Nabunya et al., 2020). According to Kioko and Pertet, (2017), families and social support is key in realizing maximum adherence among young in care.

Complexities from ART regimens contribute highly to non-adherence among the adolescents. The young people undergo unfavorable alterations in eating habits, sleeping patterns and daily life activities. Such changes subject them to frustration and a feeling that taking drugs is a heavy burden (MacCarthy et al., 2018). Furthermore, prolonged medication and non-adherence among highly reported worldwide. For instance, in the same study by MacCarthy et al., (2018a), participants who were perinatally infected with HIV, expressed fatigue in taking drugs. Health providers also reported pill burden associated with ‘drug holidays’ among the youths. The side effects of ARV drugs among patients are frequent and severe, it includes symptoms nausea, vomiting, diarrhea, prolonged fatigue, headaches among other. In Sub Saharan Africa, ART side-effects is cited as the main to adherence alongside lack of social support (Ammon et al., 2018)

Use of support groups in South Africa among young people living with the HIV has been documented to be useful in increasing and reinforcing adherence of patients living with HIV. Moreover, when mobile health was used to test improvement in adherence among HIV positive adolescents, it proved to be effective in increasing adherence among young people. Additionally, the study report indicated that peer to peer support group was thought to create a favorable environment for positive behavior change. This was because the participants reminded each other to take medication, shared how to tackle medication adverse effects and encouraged each other on how to live normally. The output from that study depicted an improvement (6.8%) from

social support, decline in stigma and increased adherence from self-reporting (De-Jager et al., 2018)

2.6. Knowledge and perception regarding HIV/AIDS among positive adolescents.

Adolescent adherence to ART and retention in care has been shown to be dependent on knowledge of HIV/AIDS and perception of individual patients (Iacob et al., 2017). In Kenya, assessment done in selected counties showed that 79% of adults aged between 15-64 years who tested HIV positive had prior knowledge of their status this was based on self-reporting and laboratory diagnosis. Lack of information regarding the treatment cycle and options, side effects to certain drugs, treatment fatigue for those adolescents who have lived with HIV for longer periods, and the difficulty of accepting that HIV care is a lifelong process as teenagers' transition into young adulthood World Health Organizations have been documented to hinder retention and adherence to ARVs (Njuguna et al., 2019). Appropriate knowledge on the process of adherence, its benefits and magnitude of nonadherence consequences is emphasized by (Hornschuh et al., 2017).

Wrong perception either from the patients or health workers hinder access to care (Ankrah et al., 2016) . Good interpersonal relationship is dependent on patients trust and confidence, such kind of relationship would ultimately influence adherence and retention (Croome et al., 2017). According to Chandwani et al. (2011), adherence to ART among adolescents has been noted to be affected by perception factors such as good physical appearance linked to health hence non-adherence. Negative perceptions towards medication hinders adherence, in a study conducted in Malawi, health providers interviewed agreed that good perception was vital for good adherence to ARVs. In the study, one of the health providers said:

“I don’t understand some of these clients, because when we are initiating on treatment we normally give them information so that they should understand why they are taking ARVs every day, but once they get well, most of them they default from treatment thinking that they are cured especially after you tell them that their viral load is undetectable.”
(Health Provider, ART Clerk)

This shows that knowledge on the disease positive perception of the course of treatment is significant in retention and treatment. Rigorous counseling among newly introduced adolescents into care on the pros and con of medication is important. Broad counseling encourages patient comprehension of disease management and may decrease non retention and non-adherence among adolescents in care from ARVs (Chirambo et al., 2019).

2.7 Literature Gap

Studies in the past have identified the growing need for research into factors affecting adherence to HIV treatment plans. For instance, (Adino, 2016) in his doctoral dissertation investigated the factor that impact on adherence to ART in Siaya County, while, Kahema et al., (2018) examined the barriers to usage of antiretroviral in Tanzania. However, research into key populations defined by World Health Organization, (2016) revealed the needs to tailor HIV care specifically to the needs of teenagers and adolescents to improve treatment options. The needs of young key populations (YKP) are unique, and hence their treatment and care. The study focused on change from pediatric care to adult care, the management of HIV related co-morbidities, and uptake of prevention methods required in adulthood.

The youth generally face increased chances of infection with HIV and high mortality due to increased high-risk behavior, high ignorance on their sero-status, high turnover in care, inaccessible medication, and testing facilities, and almost zero adherence to ART as at 2012 (Lall

et al., 2015). The factors established by this research that are of importance to this study are grouped into environmental barriers Adino, (2016) ; socioeconomic status, school attendance, the type of insurance cover owned, unstable housing conditions, support from the family, and stigma) and psycho-social barriers (depression, anxiety, and any other mental disorder; (Kahema et al., 2018). However, the research concentrated on adolescent-specific, geographical, health service, and other factors determining continuity and adherence to care amid adolescents in Murang'a County.

Area-specific studies often reveal certain general factors but certain factors are unique to that environment (Sangeda et al., 2018). A case study in 10 districts in Uganda across 30 healthcare facilities established an encouraging trend in adherence for teenagers in ART (Nabukeera-Barungi et al., 2015). However, most teenagers pointed out that stigma that comes because of disclosure were the main impediment to adherence and retention in ART management A recent a study done within Mombasa, Kenya also identified stigma as the main problem faced by HIV positive teenagers and adolescents (National AIDS Control Council, 2014).

During teenage years, the adolescence pushes one towards conforming to the societal needs. A phase of identity crisis opens the adolescent up to peer pressure and the need to have the society's acceptance in order to feel safe and happy. Stigma works against the need to have society's acceptance hence leading many of the adolescents who live with HIV not to unveil their status or even stick to the treatment. The society's impact in the decision of adolescent to adhere to treatment is significant, hence requiring further study to ascertain its magnitude to young people with the disease. Most teenagers in that study admitted to hiding facts about their status from sexual partners including friends, further skipping pills while in the presence of people who were likely to stigmatize them (Maskew et al., 2016). This study hopes to eliminate

certain issues raised by general reports and concentrate more on area-specific factors that will come up during this study. A study in Gabon revealed that perception that traditional medicine could cure resulted to non-adherence to ART Janssen et al., (2015) Also, poor socioeconomic status of HIV positive teenagers caused a low retention rate in active HIV care as most of them preferred to trek to a nearby clinic rather than pay fare to a healthcare facility with proper medical and counseling services.

Adherence mitigation for adolescents includes a combination of remedies due to the above-identified factors (Adino, 2016; Kahema et al., 2018). An imperative inquiry on aspects influencing retention in adherence to treatment among adolescents and youth from crucial populations is important (Lall et al., 2015). However, to properly administer the remedies, there is need to promote awareness amongst the teenagers and adolescents. The first step of adherence mitigation is to have one get tested, know their status, then seek the necessary measurements in order to treat the disease and adhere to the treatment (Chandwani et al., 2011). Getting the teenagers and adolescents to go to hospital or testing centers is one of the key challenges. In many cases, the adolescents and teenagers are concerned by who will see them enter the Voluntary Counseling and Testing (VCT) centers as it ruins their social reputation. The concern thus discourages the teenagers and adolescents from testing; hence, they continue in careless sexual behavior oblivious of their HIV status. Secondly, the stigmatized individuals seek to live their lives in seclusion hence; they fail to adhere to their treatment schedules unconscious of the consequences. A teenager or adolescent would rather have a good social life than experience the stigmatization that comes along with knowing that one is HIV positive (Nabukeera-Barungi et al., 2015). The psychological challenge thus outweighs the medical concern in many cases and

the result is that many teenagers end up engaging in risky behavior without the necessary protection

2.8 Theoretical framework

The Health Belief Model was used to conceptualize the research because it provided a good framework for studying health behavior among individuals. The model posits that health-related cues for action rely on concurrent existence of adequate motivation in order to priorities significant health issues. In perceived threat construct, an individual feels vulnerable and so susceptible to a serious health problem leading to change of behavior. This is due to the belief that following recommended health behaviors would be useful in decreasing the perceived susceptibility at an affordable cost. Cost of care is a perceived barriers to seeking health and has to be overcome so that an individual can adhere to recommendation (Rosenstock et al., 1988).

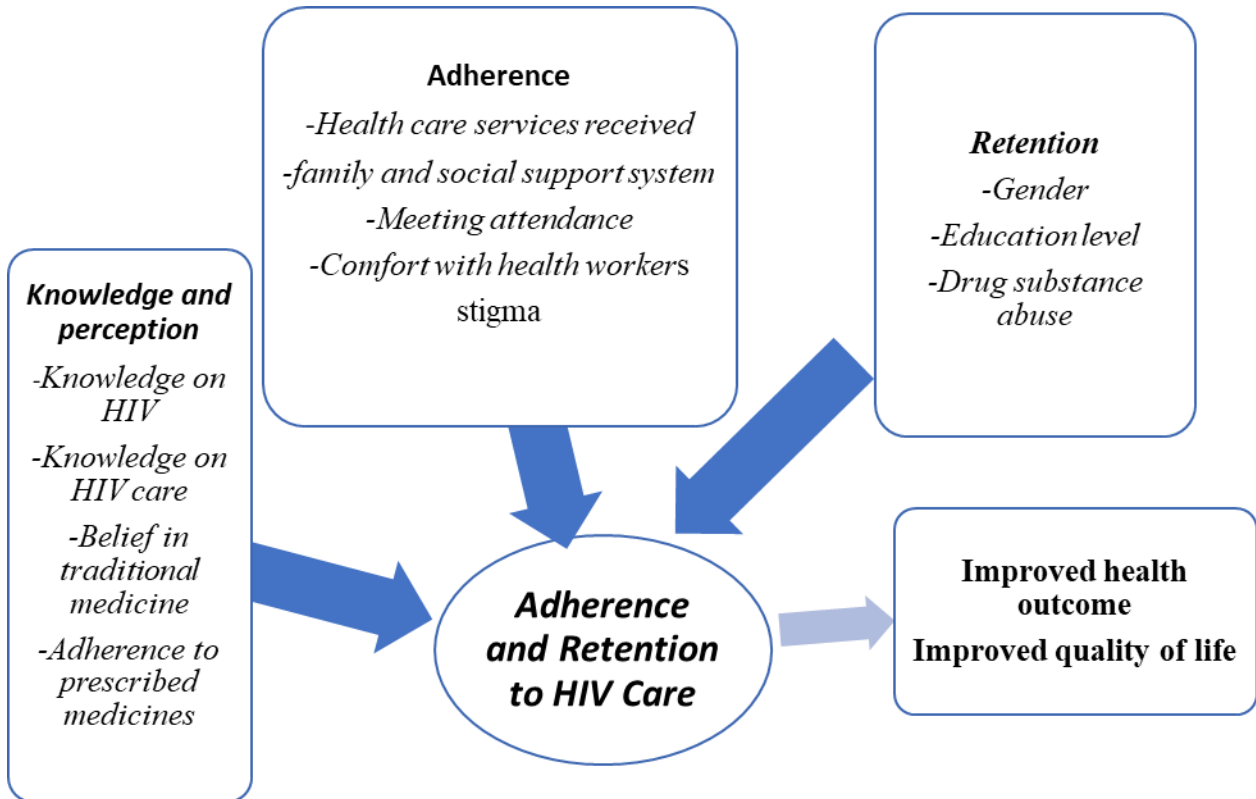
The constructs of this framework informed the data collection tools. The researcher hypothesized perceived susceptibility to adolescents living with HIV/AIDS as a motivating factor to adhere to ART. Perceived severity in the questioner and informant guide was evaluated asking respondents' on consequences of non-adherence. Determination of perceived barriers was the major facet of the interview guide, the researcher probed on various hindrances to adherence and retention in care. Cues to action were construed as elements that motivated the adolescents are retained on treatment. Lastly, self-efficacy was measured by assessing respondents' knowledge on the HIV condition and the capability of self.

2.9. Conceptual Framework

A conceptual framework illustrates clear relationships between the independent and dependent variables in research. It is an posited model showing variables under study its linkages relationships (Regoniel, 2015). In the figure 2.1 below, the relationship between adherences,

retention in care, knowledge, perception is linked to improved clinical outcome. Improvement in this factors, improves the health outcome of HIV positive adolescents in care. The relationship is clearly depicted in Figure 2.1 below.

Figure 2.1 Conceptual Framework of Determinants of adherence and retention in care



CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This section discussed the study design used, target population, sample size determination, data collection instruments, data collection procedures and analysis technique and presentation methods.

3.2 Study area

The research took place at Murang'a county hospital. The comprehensive care center (CCC) is supported and managed by the Department of Health, County government of Murang'a. The hospital is a Level-4 facility located in Murang'a town, about 600 meters from the main Murang'a bus station. The facility has a catchment population of about 1.2M people. The facility provides the following services; Outpatient services, inpatient services, medical outpatient clinic services, surgical outpatient clinic services, special clinics for eyes, ears and dermatology, Antenatal services, Maternity services, surgical services, family planning services, Child welfare Clinic, TB prevention, diagnosis and treatment, laboratory services.

As of November 2019, the CCC had a total of 2300 patients enrolled in care at the facility. Among these clients, 350 were of the age between 10 and 19 years, who were the target population. The CCC offers the following free services; HIV testing, CD4 count testing, Provision of Antiretroviral drugs (ARVs), viral load testing, cervical cancer screening, cryotherapy, creatinine testing, post exposure prophylaxis, tuberculosis treatment, psychosocial counselling, adherence counselling, Positive Health, Dignity, and Prevention (PHDP), prevention mother to child transmission of HIV (PMTCT).

3.3 Research design

A descriptive cross-sectional research design was employed. In this kind of design the researcher collects data in a snap shot. It was considered suitable for the study because the problem of the study sought to assess factors that influence retention and adherence, this approach also helps to predict an outcome in quantitative study. It aids in explanation of facts and perceptions by studying a subset of a population of interest (Creswell, 2003).

3.4 Target Population

The target population was 350 HIV positive adolescents aged between 10 years and 19 years, both male and female, who were registered at Murang'a County CCC, regardless of their home, ethnicity, literacy level or duration living with HIV. Key informants included health workers at the CCC. Participation was purely on voluntary basis.

3.5 Sampling procedure

Purposive sampling procedure was utilized to choose participants from all adolescent attending Murang'a county hospital CCC for care and treatment. A trained research assistant was engaged to recruit and assist in questionnaire administration. The research assistant was stationed at the pharmacy and he liaised with the health care providers who referred HIV positive adolescent for the study at the end of routine services. Once referred, the clients were taken through an overview of the study before going through the eligibility criteria to determine their eligibility for the study. Upon ascertaining their eligibility for the study, we would also confirm from them that they are comfortable and willing to take part in the study. Once a participant would meet the inclusion criteria and consent or assent to the research, she/he would be registered for the study up to the point where the desired sample size was attained. The sampling method employed for

both FGDs and KIIs was convenient sampling based on availability and proximity to the researcher. Participation was based on meeting eligibility and informed consent.

3.6 Sample Size Calculation

The sample size was calculated using Cochran's formula. The prevalence of HIV was 60% and was used as the proportion in the sample size calculation.

Cochran's formula:

$$n = \frac{z^2 \times p(1 - p)}{d^2}$$

n = sample size

e = Desired level of precision (margin error)

p = estimated proportion of the population which has the attribute in question q = 1-p

CI=95%,

z = 1.96,

P= the estimated population proportion to be reached during the research period is 60%, thus P = 0.6, q = 0.4. Therefore, n_s is:

$$n = \frac{1.96^2 \times 0.6(1 - 0.6)}{0.1^2} = 92.2$$

As such, the minimum sample size would be 93 participants. Adding a contingency non-response rate of 10%, the sample size becomes 102. The sample size for focus Group discussion was 24 participants. The key informant interviews sample size was two participants based on convenience sampling method of participants.

3.7 Inclusion and Exclusion Criteria for the Adolescents

3.7.1 Inclusion criteria

- a) HIV infected adolescent of ages between 10 years to 19 years receiving Comprehensive HIV services at Murang'a county CCC.
- b) Those who assented.
- c) Guardian/parent who consented for adolescent less 18 years.

3.7.2 Exclusion criteria

- a) Mentally challenged HIV positive adolescent and Teenagers
- b) Those who failed to assent or consent.

3.8 Inclusion and Exclusion Criteria for the Health Workers

3.8.1 Inclusion Criteria

- a) Permanently employed healthcare workers offering comprehensive HIV services at Murang'a county CCC
- b) Healthcare personnel that were working in the HIV services in Murang'a county CCC for more than 1 year
- c) Those that assented to participate in the research

3.8.2 Exclusion Criteria

- a) Interns employed in HIV services Murang'a County CCC.
- b) Healthcare personnel that had worked in the HIV services in Murang'a county CCC for less than a 1 year.
- c) Those that dissented to participating in the study.

3.9 Data Collection

Quantitative data was captured using questionnaires and retrospective retention data from the attendance registers in the facility. The questionnaires aided in answering questions 2, 3 and 4. The questionnaire was specific to the respondents who adolescents are. Retrospective attendance records in the last 1 year available at the facility and relevant literature helped answering question 1. Qualitative data was collected through Focused Group Discussions and Key Informant interviews using interview guides.

3.9.1 Validity

Validity of a research instrument assesses the extent to which the instrument measures what it is intended to measure (Mohajan, 2017). For content validity, the instrument was measured by focusing the questionnaire on probable factors influence retention in care and adherence. A pre-test of the tool was done at Sabasaba comprehensive care centre in Murang'a County to ensure construct validity; a statistician was also engaged in the review of the tools. Any difficulties identified while administrating the tool was reported back. Research assistants were also trained prior to initiating data collection; it was geared towards improving their competences data collection.

3.9.2 Reliability

Reliability refers to the extent to which the research instruments produces the same results each time it is used in the same setting with the same type of subjects (Mohajan, 2017). In this study, the researcher used Cronbach's alpha to test the reliability of the instrument. Cronbach's alpha is used to measure the internal consistency of a set test item (Chelsea, 2015). A questionnaire is reliable and valid, if both α and β are greater than 0.77 (Taber, 2018). Cronbach's alpha of 0.80 was obtained, confirming that the validated items were appropriate for data collection.

3.9.3 Quantitative Data Collection Procedures

The quantitative data collection procedure involved semi-structured interviews with the HIV positive adolescents registered at the Murang'a County CCC. This data supplemented the data collected from retrospective attendance records at Murang'a CCC regarding adherence recorded for the adolescents who were in active care for a continuous one-year period regardless of the delay between clinical visits. However, the accuracy of the information relied on the assumption that the respondent was privy to information regarding the adherence to treatment by the adolescents in Murang'a County CCC. A comprehensive literature search for the sources identified in this thesis as well as other relevant sources also availed the required information. Therefore, this necessitated a Meta – analytic study on the topic to collaborate secondary information with the raw information obtained from Murang'a County CCC.

Participants who were able to read and write filled in questionnaires tailored to collect data on lifestyle. There were two options in filling the questionnaires: under assistance, or in secrecy. For respondents who wanted to keep their privacy, they would be allowed to fill the questionnaires in secrecy. Assistance was offered to any respondent who wanted to fill the questionnaire but was unable to read or write by the research assistant. The assistant remained impartial, maintaining the privacy of the respondent and only recorded answers according to the wishes of the respondent.

3.9.4 Qualitative Data Collection

Focus Group Discussions (FGDs) and Key informant interviews (KII) was employed to collect qualitative data. FGD targeted adolescents registered at Murang'a CCC and who participated in the study while KII targeted key health care workers working in the CCC. Convenient sampling method was used to identify participants for FGDs and KII from the same sample population

described in sections 3.4 and 3.5 above. All participants in the FGDs met the inclusion criteria described in section 3.7 above, after which convenient sampling was applied. A total of two FGDs groups, each with 12 participants, were conducted. The small sample size of 24 made it possible to conduct and explore the interview questions at length helping in obtaining information that is accurate as much as possible and identifying individual perspectives on the discussed questions.

All interviews were recorded using a digital audio recorder; every recorded session was given an exclusive identifier which was then stored in a computer to ensure confidentiality. Notes were also taken during the interview and were summarized at the end of the each interview session. Where clarity was required, the interviewer probed more to establish in-depth discussion coverage of the issues discussed. Respective interview sessions took 30–45 minutes. The moderators stopped collecting data when they noted that no new information was materializing from the participants. Two KIIs were conducted, one targeting clinician and another one targeting a counselor. These KIIs complemented information obtained through semi-structured questionnaire and FGDs. All interviews were recorded using audio recorders.

3.10 Data Analysis Methods

3.10.1 Quantitative data analysis

Quantitative data was done using SPSS version 24, a cox regression analysis was used to determine time to event i.e. regressing time of loss to follow up with the independent variables as covariates. (This can only be done on retrospective data i.e. the information drawn from the records). A convergent analysis was then used to identify the adolescent-specific factors from this heterogeneous data. Coding was done to consolidate the data which made it easier to present

as well as determine the prevalence. The results detailing the inferences were presented using simple charts, tables, and diagrams.

3.10.2 Qualitative data analysis

Qualitative recordings of interviews were transcribed word for word. This data was organized and grouped according to emerging themes to identify underlying trends. All the data was analyzed manually. Qualitative data has been used to understand fundamental motivations, opinions, and reasons; hence, complemented the findings obtained from the quantitative data analysis. Any outstanding themes that do not generally compliment or contradict the trends identified in the quantitative data were noted. The results were used to explain or contradict the charts, tables, and diagrams obtained from quantitative data analysis.

3.11 Ethical Issues

The research thesis received approvals from Kenya Methodist University scientific ethics review committee, permit from National Commission for science, technology and innovation (NACOSTI). All authorities and permission was sort at Murang'a County CCC. Participants were informed on all processes and the design of the study in a language that they could understand which helped in overcoming issues that cropped up due to illiteracy. The information was used to obtain parental consent for minors and informed consent from informants above 18 years of age. All appropriate ascents were obtained from all participants before enrolling them in the study. All participation was voluntary and could be halted at any point during the study. Participant eligibility criteria were based on proof of registration at the facility, a HIV positive record from the laboratory, and records of active HIV care. All information obtained and recorded excluded personal names of participants to observe anonymity and privacy.

To ensure privacy of patients' records, all treatment records collected at Murang'a County CCC treatment all protocols were observed. No information regarding the private details of the patients were sought nor divulged in case a respondent opts to give the information. All respondents reserved the right to refuse consent to their participation into the study, accepting participation or rescinding their consent to participating after they commence participation. Information regarding adherence to treatment by the teenagers and adolescents was readily available at the Murang'a County CCC but to access it, a county recognition and license was sought so that the CCC can divulge the information.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This section outlines the findings based on each objective of the study. It describes the proportion of HIV positive adolescents retained in care in the preceding 12 months. It further describes factors influencing retention and adherence in care. Lastly, the knowledge and perceptions regarding HIV/AIDS is presented.

4.2 Proportion of HIV positive adolescents retained in care

Retrospection retention data of adolescents enrolled in care in the preceding 12 months (November 2018-November 2019) in Murang'a comprehensive care center was 350. The numbers of female adolescent patients were found to be higher 250 (71.4%), as compared to the male counter parts who were 144 (67.6%). Within that year, 250 patients were retained, while 100 exited from care. Among those who were retained in care, males were the majority (77.4%), while females were 67.6%. Further, female who exited care were 32.4% while males were 22.6%.

Majority, 231 (66%) of the adolescents had high school level of education, 66 (19%) college/University level of education and 46 (13%) had primary level of education. Most of the respondents were Christians at 322 (92%) followed by Muslims at 21 (6%). For the respondents retained in care, majority had 38% of mothers playing the role of care givers, the fathers accounted for 10%, both parents as care givers was 29% , 21% were cared for by other people.

Results on the number of years in care in the clinic showed that 34% had spent less than three in care, those who had been in care for 4 to 6 years were shown 27%, and those who had spent 7-10 years were 22%. Among those retained, the highest retention was (75.5%). Proportion of HIV positive adolescents retained in care is shown in table 4.2 below.

Table 4.1

Proportion of HIV positive adolescents retained in care

		12 months retention in care		Total (n=350)
		Retained (n=250)	Exited (n=100)	
Gender	Male	106 (77.4)	31 (22.6)	137 (39)
	Female	144 (67.6)	69 (32.4)	213 (61)
	Total	250 (71.4)	100 (28.6)	350
Education level	None	5 (71.0)	2 (29.0)	7 (2)
	Primary level	34 (73.9)	12 (26.1)	46 (13)
	Secondary level	160 (69.3)	71 (30.7)	231 (66)
	College/University	51 (77.3)	15 (22.7)	66 (19)
	Total	250 (71.4)	100 (28.6)	350
Care giver	Both parents	57 (56.4)	44 (43.6)	101 (29.0)
	Father	35 (100)	0	35 (10)
	Mother	105(78.9)	28 (21.1)	133(38)
	Adopted	7 (100)	0	7 (2)
	Other	46 (62.2)	28 (37.8)	74 (21)
	Total	250 (71.4)	100 (28.6)	350
Religion	None	3(42.9)	4 (57.1)	7 (2.0)
	Christian	236 (73.3)	86 (26.7)	322 (92.0)
	Muslim	11(52.4)	10 (47.6%)	21(6)
	Total	250 (71.4)	100 (28.6)	350
Number of years in care in the clinic	0 - 3	60 (50.4)	59 (49.0)	119(34)
	4 - 6	71 (75.5)	23 (24.5)	94 (27)
	7 - 10	41 (53.2)	36 (46.8)	77 (22)
	11 - 12	36 (60.0)	24 (40.0)	60 (17)
	Total	250 (71.4)	100 (28.6)	350

4.3. Factors influencing retention among HIV positive adolescents

According to Murang'a county strategic plan, retention in care is expected to meet the 90% target for all age groups (National AIDS Control Council, 2016). Still in Uganda, a study undertaken in 20 health facilities showed that female patients had low retention than males. Retention in this study was 71.4%, this rates was low. The findings agreed with that done in Uganda where recorded low retention compared to adults. Adolescents are recognized as hard to access subset of population with high fall out rate from care. Several health facility factors were cited to lead to low retention such as, deficient data management, poor follow up, inadequate staff and poor health worker and motivation. Interventions to reduce drop out from care among the young people should be a focus in future (Boeke et al., 2018). Many studies have cited that females have better health seeking behavior compared to the male counterparts. On the contrary, female adolescents who exited care in Murang'a were higher than the males. According to a report by Ssali et al. (2014), female adolescents in Uganda had a lower chances being retained in care compared to male adolescents. Health care systems needed to put more efforts to increase linkage to care and retention in care among females.

Research findings also showed a significant association between adherence and retention ($p=0.043$), it further showed that 73% adolescents were retained in care in the preceding 12-month. The findings agree with that of Nabukeera-Barungi et al., (2015) whose study results revealed good ART adherence among adolescents who were newly initiated to therapy. However, those that resided in the countryside had poor adherence to ART and 1-year retention in care. Gender had a high association with retention ($\chi^2=3.897$, $df=1$, $p=0.048$). This finding disagrees with that of Takarinda et al. (2015) that showed males to have high risk of dropout rate

compared to female due to their late presentation for HIV treatment and care. This was also observed during FGD where more females than men attended the discussions

Table 4.2

Retention in care by adherence

		Retained n (%)	Exited n (%)	Total	P-value	Risk Estimate
Sex	Male	106 (77.4)	31 (22.6)	137 (39)	0.048	Odds Ratio for Retention in care (Retained / Exited) For cohort Gender1 = Male For cohort Gender1 = Female
	Female	144 (67.6)	69 (32.4)	213 (61)		
	Total	250 (71)	100 (29)	350		
Adherence	Poor	23 (57.5)	17(42.5)	40(11)	0.043	Odds Ratio for Retention in care (Retained / Exited) For cohort Adherence1 = Poor For cohort Adherence1 = Good
	Good	227(73.2)	83(26.8)	310(89)		
	Total	250 (71.4)	100(28.6)	350		

According to one of the health care providers, some of the reasons contributing to this were that most men did not seek care early as opposed to more female who are tested for HIV.

“...If you look at the records of HIV testing more women are tested than males” (Clinician; KII).

Among the adolescent in HIV care during that period, 310(89%) had good adherence to ART treatment. The retained adolescents in care during the year had a significant association with adherence ($\chi^2=4.293$, $df=1$, $p=0.043$). Those adolescents retained in care were 0.541 times less likely to adhere (95%, 0.302, and 0.969). Health education was reported to be provided through Operation Triple Zero (OTZ). Attendance of meeting in the clinic helped the adolescents in

forum share experiences among each other. One of the male respondents shared his experience by saying;

“There is day I had forgotten my drugs as I was going back to school; I got to school and discovered I didn’t have the drugs as I was going back to school; I came back and they gave me others. In my opinion they are okay; unless you remain silent and do not express yourself” (FGD Respondent; male)

It was also pointed out by the respondents that food and snacks were provided and that enabled them interact with each other during the meetings. Support and understanding from health care providers through organized meetings in the health facility encouraged the adolescents on care to seek help and support had they encountered any challenge. A counsellor at the clinic said;

“We offer them forums where they come and interact with other adolescents and health care workers about issues and challenges, they are facing. These forums have proved effective, for they able to express themselves which have improved their care” (Counsellor; KII)

Table 4.3 indicates that among the reasons that led to the respondents’ exit was transfer out (82%), death was at 16 (16%) with lost to follow up contributing to 2 (2%). The mean time till exit was shown to be 3.463 years. The median survival time (period where half of respondents had reached the event) was 3.00 years. As per the health care provider feedback during the KII, major factors that led to transfer and lost to follow up from CCC are majorly because of proximity to CCC, stigma and feeling good.

“Most of the adolescents who don’t follow the clinic fear that some staff know them, other feel that their health have improved and thus stop coming to the clinic... other come from far and may not be having fare to come to the clinic” (Counsellor; KII)

These findings agreed with that of Maskew et al., (2016) that showed that most of frequently reported barrier to care were distance and cost of itinerant to the hospital. In Gabon, patients in one of the FGD pointed out that the major reason for non-retention was due to delayed initiation of ART and perceived lack of support from the health professionals in the hospital they visited. Such feedback from patients demonstrates the significance of continuous psychotherapy in HIV, effective counselling sessions is known to improve adherence to ART an retention in care (Janssen et al., 2015).

Table 4.3

Reason for exit from care

		Transfer	Lost	Death	Total
Retention in care	Exited	82 (82)	2(2)	16(16)	100

From table 4.3 above, 82 cited transfers as reason of exit from care, 2 were lost in follow up, and 16 died. In a similar study conducted in Zambia, reasons for young patients exit care included; mortality while in care 71 (7%), loss of follow up 164 (16%) and transfer to other facilities 210 (20%) (Mutanga et al., 2019). Similar findings on exit from care was also reported in a study by Boeke et al., (2018), out of the 713 patients in care, 24 patients individually reported that they had transferred to other facilities and 11 had died after six months of monitoring.

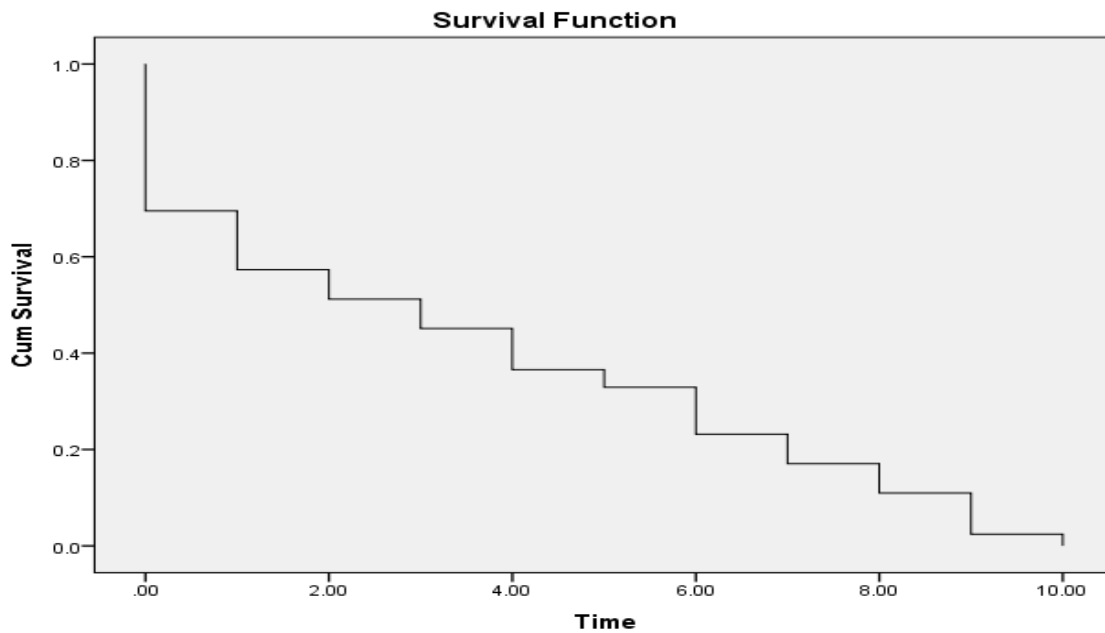
4.4 Kaplan Meier of HIV positive adolescents in care at ART initiation

The study evaluated the likelihood of HIV survival throughout the follow up period from when the adolescent is initiated on ART. The horizontal axis denotes period in years, while the vertical axis illustrates the likelihood of survival. At zero, when ART is initiated, the chance of living is 1.0, implying 100% of respondents retention. Subsequently, in two years, the likelihood of

survival is estimated to be 0.6 or 60% while the median survival is probably three years. The survival curvature drops sharply toward zero at 1 year suggesting poor survival (retention). This sharp drop at 1 year could highly be associated with failure of adolescent at first accepting their status and thus they are bitter and not ready to start ART. This changes when they are counselled and they accept their status, this combined with HIV/AIDS knowledge that helps in retention afterwards.

Figure 4.1

Kaplan Meier of HIV positive adolescents at ART initiation



Mean				Median			
Estimate	Std. Error	95% Confidence Interval		Estimate	Std. Error	95% Confidence Interval	
		Lower Bound	Upper Bound			Lower Bound	Upper Bound
3.463	.368	2.743	4.184	3.000	.795	1.441	4.559

Table 4.4

Association between participant characteristics and 12-month retention in HIV care

<i>Covariates</i>	<i>Retention</i>	
	<i>N=93 Sample size (%)</i>	<i>N=93 Adjusted odds ratio (95% CI)</i>
Education Level		
Less than high school	14(15%)	Reference
Completed high school or higher	79(85%)	0.953 (0.58, 1.56)
Insurance cover status		
Any insurance	65 (70.0%)	Reference
No insurance/self-pay	28 (30.0%)	0.966 (0.59, 1.58)
Living with someone in the past 3 months		
No	29 (31.7%)	Reference
Yes	64 (68.3%)	1.013 (0.54, 1.92)
Were afraid that nothing would help		
Not at all	46 (49.7%)	Reference
Somewhat/great deal	47 (50.3%)	0.648 (0.52, 0.88)
Felt it could create problems with your family members		
Not at all	53 (57.2%)	Reference
Somewhat/great deal	40 (42.8%)	1.192 (0.63, 2.27)
Drug substance abuse		
Never or past	81 (87.1%)	Reference
Current	12 (12.9%)	0.656 (0.26, 1.62)
Sexual risk behaviors		
Never or past	61 (66.1%)	Reference
Current	32 (33.9%)	0.722 (0.48, 1.09)
Mentally unhealthy weeks		
Less than two mentally unhealthy weeks	58 (62.5%)	Reference
Two or more mentally unhealthy weeks	35 (37.5%)	1.763 (1.28, 2.46)

The Table 4.4 shows 79(85%) with the lowest secondary school education while 14(15%) had less than high school education. Among them 65 (70%) had some kind medical insurance, 64 (68.3%) had resided with somebody in the previous 3 months. In considering barriers to seeking care, 47 (50.3%) assumed that nonentity would relief them from HIV/AIDS status. This was significantly associated with being less likely to be retained in care (AOR = 0.76; 95% CI = 0.52, 0.88). Other 40 (42.8%) assumed infection with HIV/AIDS could lead to drawbacks with family families.

Over 81 (87%) did not abuse substance and 32 (33.9%) were then indulging in dangerous sexual behavior. Additionally, 35 (37.5%) reported more than two weeks of mentally unhealthiness in a month. This factor was associated with being more likely to continue in therapy (AOR = 1.763; 95% CI = 1.28, 2.46). The findings agree with (Shubber et al., 2016) where alcohol and substance abuse were cited as major hindrance to retention in care by adults and adolescents. Health care provider through KII reported good retention in adolescents who had high level of education and no history of drug abuse.

“Adolescents who are educated take their drugs well and follow their clinic as instructed, also most of those adolescents who don’t take alcohol or any other forms of drugs they follow their clinic very well” (Clinician KII)

Rejection, lack of food and fear of judgement from peer and friends were also reported to affect adolescent regularity in taking to ART and their continuity in care. Early disclosure was reported to contribute to improved retention. This finding are consistent with that of Mosha et al., (2018), that revealed stigma, being seen by friends and disclosure issues were some of the barriers to retention. Further, it also agrees with Okoboi et al., (2016) who found that suboptimal adherence

majorly hindered by humiliation. Facility related barriers: Changes/transfers of health service providers were reported to be one of the challenges affecting retention of adolescents in care.

“The transfers/changes of the doctors; let’s say you were relating well and then a doctor is changed, you see that is an issue.” (FGD Respondent; female)

4.5 Factors influencing adherence among HIV positive adolescents.

Among the respondents, majority of them were females at 52 (55.9). 91 (98%) and were adhering to HIV management. Female at 50 (54.9%) had high adherence than male at 41(45.1%). These findings did not agree other studies done previously which depicted male with good adherence compared to females (Ssali et al., 2014; Takarinda et al., 2015). The proportion of the respondents increased with increase in education level. As shown in table 4.5 below, a higher proportion of the respondents had secondary education at 61 (65.7%), followed by College/University at 18 (19.0%), Primary education and none had 14 (15.2%). Religion distribution was at 86(92.4%) Christians respondents, 5 (5.7%) Muslims and 2(1.9%) belonged to neither

The distribution of education level by adherence was at 100% adherence in all education levels except college/University that had 2(10.5%) of the respondents who were not adhering to medication prescription. Education levels and adherence to medication has a significant relationship ($p=0.034$). A higher proportion of the respondents had mother as the caregivers at 35 (38.1%) followed by both parents and father caregivers at 27 (29.5%) and 9 (9.5%) respectively. The finding agrees with Kioko & Pertet, (2017) who found significance of family relations and caregiver contribution in respondents regular intake of medication. As much as responsibility is shifted when children reach adolescent, caregiver and family support structures in adherence to medication is believed to be protective factors

Table 4.5

Factors influencing adherence to HIV management

		Take drugs as prescribed			P Value
		No (n=2)	Yes (n=91)	Total (n=93)	
Sex	Male	0	41 (45.1)	41 (44.1)	0.199
	Female	2 (100.0)	50 (54.9)	52 (55.9)	
	Total	2 (2)	91 (98)	93	
Education level	None	0	2 (1.9)	2 (1.9)	0.034
	Primary level	0	12 (13.6)	12(13.3)	
	Secondary level	0	61 (67.0)	61 (65.7)	
	College/University	2 (100.0)	16 (17.5)	18 (19.0)	
Care giver	Total	2 (2)	91 (98)	93	0.104
	Both parents	0	27(29.7)	27(29.0)	
	Father	0	9 (9.9)	9 (9.7)	
	Mother	0	35 (38.5)	35 (37.6)	
	Adopted	0	2 (2.2)	2 (2.2)	
	Other	2(100.0)	18 (19.8)	20 (21.5)	
Religion	Total	2 (2)	91 (98)	93	0.919
	None	0	2(1.9)	2(1.9)	
	Christian	2(100.0)	84(92.2)	86(92.4)	
	Muslim	0	5(5.8)	5(5.7)	
Time it takes you to get to the health facility	Total	2 (2)	91 (98)	93	0.078
	30 Minutes	0	29(32.3)	29(31.6)	
	60 Minutes	0	37(40.6)	37(39.8)	
	More than 60 minutes	2(100.0)	25(27.1)	27(28.6)	
Health care service you receive at this hospital	Total	2 (2)	91 (98)	93	0.009
	Good	7 (8.2)	79(91.8)	86(93)	
	Poor	3(37.5)	4(62.5)	7(7)	
Given a chance to state your issue and ask any	Total	10(10.5)	83(89.5)	93	0.036
	No	3(50.0)	3(50.0)	6 (6)	
	Yes	7(7.5)	80(92.5)	87 (94)	
Total		10(10.5)	83(89.5)	93	

Takes drugs a prescribed					
		No (n=2)	Yes (n=91)	Total (n=93)	P Value
Respected at the hospital	No	3 (37.5)	4 (62.5)	7 (8)	0.023
	Yes	7 (8.2)	79 (91.8)	86 (92)	
	Total	10 (10.5)	83(89.5)	93	
Comfortable with the health workers	No	3(37.5)	4(62.5)	7 (8)	0.001
	Yes	5(6.2)	81 (94.8)	86 (92)	
	Total	8(9.0)	85 (91.0)	93	
Satisfied with the support receive	No	1 (14.3)	6(85.7)	7(7)	0.765
	Yes	9 (10.6)	77(89.4)	86(93)	
	Total	10 (10.9)	83 (89.1)	93	
Attend any support groups	No	1 (14.3)	6(85.7)	7(7)	0.635
	Yes	9(10.2)	77(89.8)	86(93)	
	Total	10 (10.9)	83 (89.1)	93	
Frequency attend the meetings	Every time	2 (3.4)	57(96.6)	59 (63)	0.002
	Once in a while	8(25.0)	24(75.0)	32 (34)	
	Never	1(50.0)	1 (50.0)	2 (2)	
	Total	11 (11.8)	82(88.2)	93	
Reasons for not attending support groups	Busy	0	2 (100.0)	2 (15)	0.567
	Very far off	2 (28.6)	5 (71.4)	7 (54)	
	Bad timing	0	2 (100.0)	2(15)	
	Other	0	2 (100.0)	2(15)	
	Total	2(15.4)	11(84.6)	13	

Further, health care worker reported that all adolescent with good adherence to HIV management had good family support. One of the key informant stated;

“Adolescents with good social support do follow their clinic and take their pills well”

(Counsellor; KII)

The findings also showed 27 (68.4%) took more than hour to get to the health facility (in time), 86(92%) indicated that they received good health care service and 7(7%) poor health care service. Perceived quality of care offered at the facility and adherence to medication had a significant relationship at chi square $p=0.009$. These respondents were 5.127 more likely to adhere to medication at C.I. 95% (1.414, 8.587). The results of this study were supported by findings from Nabukeera-Barungi et al., (2015) where adherence facilitators included good health care and short waiting time.

Many participants 87 (94%) showed that they had a chance to state their issue and ask concerns if any. This was associated with adherence to medication and had significant relationship at chi square $p=0.036$. Those respondents were also 4.127 times likely to follow up medication instructions C.I. 95% (2.213, 5.278). Many respondents 86 (92%) also agreed to be respected at the hospital they attended. Respect at the hospital and adherence to medication had a significant relationship chi-square relationship at $p=0.023$. The respondents who indicated that they were respected at the hospital were 6.675 times likely to adhere to medication at C.I. 95% (1.343, 4.768). Further, the patients who were comfortable with the health workers and take medication as prescribed were 81 (94.8) with 5 (6.2) being comfortable with the health workers but did not take medication as prescribed. Being comfortable with the health workers and adherence to medication had a significant chi-square relationship at $p=0.001$. The respondents who indicated that they were comfortable with the health professionals were 2.675 times likely to adhere to medication at C.I. 95% (1.197, 3.876). The finding agrees with other studies done, it showed that proximity of health facility, the quality of health care services offered, chance to ask questions and feeling comfortable with health worker increased chances of adherence to HIV management (Adino, 2016). A female adolescent in the FGD also corroborated with this by responding;

“It is difficult to follow the clinic if one doesn’t have fare to go to the clinic....., we are allowed to ask questions when we have issues that make it easier for us to follow clinic. The waiting time is short as all the services are offered in the same facility and health care workers are every respectful” (FGD Respondent, Female)

4.5.1 Disclosure

With regard to disclosure influencing adherence, 83(89.1%) of the respondents indicated that they attend support groups with 77(89.8%) of them taking medication as prescribed. Among the 91 (98%) of the respondents who attend support group meetings. 59 (63%) indicated that they attend every time with 32 (34%) attending Once in a while all of them indicated that the support groups were helpful. Frequency of attending meetings and adherence to medication has a significant relationship chi square $p=0.002$. The finding agrees with Adino, (2016) where the support groups was shown to contribute highly in continuity of HIV management. The finding also agrees with MacCarthy et al. (2018) that demonstrated that presences of guardians at each clinic encounter and taking part in group meeting facilitated by health professional enhanced adherence. Additionally, unreliable family support due continuous change of guardianship was seen to hinder adherence to medications.

Some of the reasons the respondents indicated for not attending support groups were (15%) busy, 7 (54%) and 2(15%) very far off and bad timing. One respondent reported fatigue of taking drugs but, feeling of helplessness and not having any other alternative made them continue. The finding agrees with that of Nabukeera-Barungi et al., (2015) which cited fatigue as a barrier adherence to HIV management. One respondent stated:

“Sometimes you feel that you don’t want to take the drugs, you are just tired then you feel you have no other option, you just continue” (FGD Respondent, female)

Another one added that:

“Sometimes the drugs are too many and big through for those of us who started when young...” (FGD Respondent, male)

“Friends: let us say you are supposed to take drugs at 6 and you are with friends at times, because you don’t want them to know, you will wait until later” (FGD Respondent; male)

Number of drugs: one respondent reported that too many drugs contributed to non-adherence.

“Sometimes you find you are with your friends in town, you don’t go home and you sleep in the same room with your friends, sometimes you wake up and you don’t take drugs and you continue with life; I once did that for 6 months but I came here and was told my viral load is okay. Sometimes you find yourself not taking them and you continue with life.” (FGD Respondent; female)

“Sometimes you can be stressed; you might want to go to Nairobi and you have to keep carrying the drugs as you go and you are going for about a month, they make noise in the vehicle so you tell yourself I do not have to carry these drugs so you leave them.” (FGD Respondent; male)

4.5.2 Motivators

Support and understanding from health service providers in the health facility encouraged the adolescents on care to seek help and support should they engage any challenges. The finding agrees with Abwao, (2017) who found that health facility and providers contributed significantly in continuity of HIV management. Support from the facility can be done through different platforms, such as creation of WhatsApp groups for peers. Such platforms foster continuous

communication and motion, leading to adherence in care. Additionally, it agrees with results by Nabukeera-Barungi et al., (2015) that confirmed that availability of counselling therapists and supportive health providers' influences adolescents' adherence to ART.

“There is a day I had forgotten my drugs as I was going back to school; I got to school and discovered I do not have drugs; I came back here, and they gave me others. In my opinion they are okay; unless you remain silent and do not express yourself.” (FGD Respondent; female)

Reduced waiting time in the facility at different service delivery points was a motivator. Many other studies such as that of Maskew et al., (2016) confirm the same, results showed that long queues to waiting at the clinic acted as barrier to adherence. To motivate the adolescents, Mosha et al., (2018) agreed that, handling of adolescents in care could either encourage or deter continuity in care. Support from the health facility visited by the adolescents was shared by one of the respondents where he stated that;

“Sometimes you have been sent to the lab; they make sure you don't queue, you go direct.” (FGD Respondent, male).

One of the clinician corroborated with what the adolescent had shared about the health facility by adding that;

“Having the comprehensive services was as a result of high number of patients with viral load and after a meeting there was an agreement that the patient has to pass through all the service delivery points (SDPs); so going through all the SDPs ensured that if one SP misses something from the client, the other one will not miss; so that has helped us to achieve what we have right now” (Clinician KII).

Working with schools through the school matrons where they are informed of the students in care by the parents would facilitate the adolescent clients to adhere to clinic visits and be allowed to take their drugs at the prescribed times. In Uganda, a study by MacCarthy et al., (2018) showed that school attendance resulted to lack of privacy for the adolescents taking medication and this was seen as a barrier to medication adherence. On the contrary from the study done, health workers interviewed reported that the facility I worked with schools. To confirm this, a counsellor stated that;

“We are doing now; we make sure we send the parent or social worker or peer educator to go talk to the matron and tell them about the status of that pupil or student...we ensure that the parent talks to the matron so that the student can continue taking the drugs or go to the clinic because of if the matron knows even know coming to the clinic or borrowing permission will be easier and they will improve their adherence and retention.”

(Counsellor, KII)

4.6 Knowledge and perceptions regarding HIV/AIDS among positively living adolescents

The adolescents who knew how their HIV medications should be taken were 86 (92%) and among them 78 (90.7%) of them took medication as prescribed. The respondents who had knowledge on what action to take on missed medications were 87 (94%), while, 6 (100.0%) of the respondents were not knowledgeable. Further, 88 (95%) could comprehend how the HIV medications work in the body with 79 (90.0%) of them taking medication as prescribed while 4 (80.0%) of the respondents who did not comprehend how the HIV medications work in the body took medication as prescribed. 1(20.0%) of the respondents who did not comprehend how the HIV medications work in the body did not take medication as prescribed.

Table 4.6

Knowledge and perceptions among adolescents living HIV/AIDS

		Take medication as prescribed			P Vaue
		No (n=10)	Yes (n=83)	Total (n=93)	
Know how medications should be taken	No	2 (25.0)	5 (75.0)	7 (8)	0.163
	Yes	8 (9.3)	78 (90.7)	86 (92)	
Total		10 (10.5)	83 (89.5)	93	
Knowledge on what to do if one misses a dose	No	0	6 (100.0)	6 (6)	0.388
	Yes	10 (11.1)	77 (88.9)	87 (94)	
Total		10 (10.5)	83 (89.5)	93	
Comprehend how the HIV medications work in the body	No	1 (20.0)	4 (80.0)	5 (5)	0.476
	Yes	9 (10.0)	79 (90.0)	88 (95)	
Total		10 (10.5)	83 (89.5)	93	
Know how HIV medications react to alcohol	No	0	22 (100.0)	22(24)	0.047
	Yes	10 (14.1)	61 (85.9)	71(76)	
Total		10 (10.5)	83 (89.5)	93	
Time taken to treat HIV	Not curable, treatment is lifelong	10(11.5)	74 (88.5)	84 (91)	0.562
	ARV's cures HIV	0	7 (100.0)	7 (7)	
	Treatment is lifelong and ARV's suppress HIV	0	2 (100.0)	2 (2)	
	Total	10 (10.5)	83 (89.5)	93	
Adherence to medication	No	0	22 (100.0)	22 (24)	0.039
	Yes	10 (14.1)	61 (85.9)	71 (76)	
Total		10 (10.7)	83 (89.3)	93	
Experienced any discrimination at home, school, church, or other social place	No	9 (11.0)	74 (89.0)	83 (89)	0.848
	Yes	1 (9.1)	9 (90.9)	10 (11)	
Total		10 (10.8)	83 (89.2)	93	

Majority, 71 (76%) knew how HIV medications reacted to alcohol with 61 (85.9%) of them taking medication as prescribed. Other 22(24%) of the interviewees did not have the knowledge on how HIV medications reacted to alcohol. There was a significant relationship between knowing how HIV medications reacted to alcohol and taking medication as prescribed at $p=0.047$. The respondents with knowledge on how HIV medications reacted to alcohol were 1.164 likely to take medication as prescribed C.I. 95% (1.064, 1.274). The finding agreed with that of Shubber et al., (2016)) which showed that alcohol and substance abuse misuse were commonly reported as barriers to adherence by adults and adolescents

Further, 84 (91%) of the interviewees knew that HIV was not curable and treatment was lifelong, only a few 7 (7%) believed that ARV's cured HIV. Adherence to medication was reported among 71 (76%) of the respondents. A statistically significant relationship between adherence to medication and ingestion of drugs as prescribed was established $p= 0.039$. The respondents who were adherent to medication were 2.641 likely to take medication as prescribed C.I. 95% (1.064, 1.274).

A higher proportion of respondents indicated that adherence is importance to keeping viral load low, reduces drugs resistance and maintain one healthy and improves quality of life at 46 (49%). Those who indicated that it only keeps the viral load low were 18 (19%). Further, 11 (10.8%) of the respondents indicated that they had experienced discrimination at home, school, church, or another social place. Further, (50%) indicated that discrimination happened at a foreign Embassy and School in equal proportion, respectively. 1 (50%) stated that the reason for discrimination was fight and HIV status in equal proportion, respectively. 1 (50%) did Not feel bad while the other victim felt wronged about discrimination.

Table 4.7

Medication adherence importance

	Take medication as prescribed		
	No (n=11)		Total(n=93)
	1 (5.3)	17 (94.7)	18 (19)
	Adherence importance	Keeps viral load low	2 (2)
keeps one healthy and Improves quality of life	0	Reduces chances of resistance to drugs	7 (7)
Keeps viral load low, keeps one healthy and Improves quality of life	7 (14.6)	39 (85.4)	46 (49)
Keeps viral load low, keeps one healthy and Improves quality of life	0	2 (100.0)	2 (2)
Keeps viral load low and Improves quality of life	1 (25.0)	2 (75.0)	3 (4)
Keeps viral load low and Keeps one healthy	1 (16.7)	5 (83.3)	6(6)
Keeps viral load low and reduces drugs resistance	1 (25.0)	2 (75.0)	3 (4)
Reduces chances of resistance to drugs and Keeps one healthy	0	2 (100.0)	2 (2)
Keeps viral load low, reduces drugs resistance and Keeps one healthy	0	4 (100.0)	4 (4)
Total	11 (11.2)	82 (88.8)	93

One respondent reported fatigue of taking drugs as a factor to non-adherence, however, feeling of helplessness and not having any other alternative made them continue.

“Sometimes you feel that you don’t want to take the drugs, you are just tired then you feel you have no other option, you just continue” (FGD Respondent, female)

Similar to these findings, experiences shared by the adolescents in Soweto, South Africa showed that the number of pills and the feeling that it is a burden hindered adherence. The respondents stated that they felt fatigued or bored of taking ARVs every day. Others felt that the drugs was too much work, were big in size and had awful taste and that it was better if it was in syrup form (Hornschuh et al., 2017).

Support was also provided through treatment, the supporters were reported to be either parents who would support them and ensure they adhere to medication and clinic visits. For clients who persistency missed clinic visits, home visits were conducted by selected facility staff to identify challenges that the clients could be facing and how they can be supported.

“They have treatment supporters; the parents, they support them a lot they come with them to the clinic; they learn together that’s another thing that keeps them coming to the clinic... We are also doing home visits to make find out if there is a problem or if there are challenges, they are facing at home to know who the treatment supporter is wherever we can help.” (Counsellor, KII)

Use of support groups in South Africa among young people living with the HIV has been documented to be useful in increasing and reinforcing adherence of patients living with HIV. Moreover, when mobile health, such as reminder sms and WhatsApp groups was used to test improvement in adherence among HIV positive adolescents, it proved to be effective in increasing adherence among young people. Additionally, the study report indicated that peer to peer support group was thought to create a favorable environment for positive behavior change. The output from the study depicted an improvement in medication adherence by (6.8%) from social support, decline in stigma and increased adherence from self-reporting (de Jager et al., 2018).

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction:

This part summarizes the study findings per objective; it also gives the conclusion and recommendations arising from results and presented. Lastly, the study proposes areas for further research.

5.2 Summary of the findings

The study purposed to assess the determinants of adherence and retention in care amongst HIV positive adolescents in Murang'a County Hospital. Specifically the study focused on determining the proportion of adolescents living with the disease and retained in treatment; factors related to retention in care; factors linked with adherence to HIV management; and knowledge and perceptions regarding HIV/AIDS among positively living adolescents attending Murang'a hospital comprehensive care center.

5.2.1 Proportion of HIV positive adolescents retained in care

The results depicted that adherence to ART and 1-year retention in care to be good among the adolescents. The respondents retained in care for 12-month cohort were 210 (71.4%) out of 350 enrolled adolescents in Muranga county hospital CCC. There was high retention of females as opposed to males. Among the retained adolescents, Majority had secondary education and the least had having no education. A high proportion of the adolescents had mother as their caregiver and the least were adopted. Christians were the majority and the least professing no religion. Adolescents who been in care for 0 to 3 years were the majority with them who were on care for 11 to 12years being least

5.2.2 Factors influencing retention among HIV positive adolescents

Adolescents retained in care distributed by sex had a high proportion of female at 144(58%). Gender had a significant relationship with retention status in management at $\chi^2=3.897$, $df=1$, $p=0.048$. There was sharp drop at 1 year due to failure of adolescents to accept their status and were bitter and not ready to start ART. This trend was noted to change after they would receive health education through operation triple zero (OTZ) and counselling. Most of the exit from care was due to out migration, death and lack of monitoring. Majority of the adolescents had completed high school or higher. The finding showed most adolescents retained in care had some form of insurance cover. The retained adolescents reported to reside with a person in the previous 3 months. On drug substance abuse most of the adolescents retained by adherence had no history of drug abuse. The results also showed that most adolescents with good retention to care by adherence had no history of sexual risk behaviors. Early disclosure and retention of same health care providers was found to contribute to improved retention in care by adherence. The study showed that rejection, lack of food, fear, humiliation and discernment were major hindrances to retention in care.

5.2.3 Factors influencing adherence among HIV positive adolescents

The results analyzed showed that 91(98%) of the respondents were adhering to HIV management. Female gender was the majority. Most of the adhering adolescents in care had secondary education. The study also showed most adolescents adhering to care had mother as their caregiver. Most of the adhering adolescents were Christian. On time taken to get to the health facility majority were taking about 1 hour. The results also showed that health care services received at the hospital, reduced waiting time, comprehensive services, chance to express them, respect at the hospital, comfortable with the health care worker, availability of support and attending support group had positive effects on adherence to HIV management.

Adherence to HIV care among the adolescent in Murang'a county hospital CCC was found to be negatively affected by fatigue, feeling good, and stigma and peer pressure.

5.2.4 Knowledge and perception among adolescents living with HIV/AIDS

Majority of the respondents knew how to take drug. They also knew action to take in the event of missed medication. Further, most knew how the drugs worked and effects when taken with alcohol. Those who knew how they react to alcohol were more likely to adhere to HIV care. Respondents with good knowledge and perception about HIV/AIDS were found to adhere well to HIV care.

5.3 Conclusion

The proportion of HIV positive adolescents in the preceding 12 months was 350. Exit from care was a result of transfer other facilities, loss of follow up and death. The study findings infer that retention to care among the adolescents in HIV care at Murang'a County CCC is below the targeted 90% retention level as it was at 71.8%. Retention in the first one year among the adolescent was challenging due to lack of acceptance of HIV and bitterness.

Female gender is associated with good retention as opposed to male gender. Health education and counselling, disclosure and friendly health care services played a big role in retention to care. Stigma, peer pressure and discrimination continue to be the main barriers to retention.

Adherence among female gender was good but affected by fatigue from prolonged medication. . Disclosure, family support, understanding health service provider, reduced waiting time and adolescent friendly service acted as motivator to adherence. Lastly, respondents with good knowledge and perception about HIV/AIDS had good retention and adherence to HIV management. It was also noted that with increasing level of education, the more improved the adherence and retention to care.

5.4 Recommendations

Based on the study findings, the following are the recommendations:

- a) The county needs to improve on HIV data reporting system at the CCC, disaggregated by age to capture adolescent between 10-19 years is key.
- b) To improve retention, the hospital needs to implement interventions e.g. use of mobile health to prevent stigma and discrimination, and continuously reinforce social support for adolescents to increase retention in care.
- c) The health workers need to continuously strengthen health education through OTZ and counselling especially for newly diagnosed adolescents to improve and maintain retention and adherence to HIV care. The county health department should also set aside funds to facilitate continuous creation awareness HIV/AIDS in the community to reduce some of the barriers like stigma and discrimination to HIV care. This would ensure that HIV positive adolescents are accepted within the community with subsequent improved retention and adherence in care hence improved health outcomes.
- d) The county hospital needs to ensure continuous improvement and adjustment of HIV/AIDS care for example services at the CCC should be under one roof to reduce high staff turnover , this will ensure that adolescents needs are met and would act as motivators thus improving adherence to HIV care.
- e) The county needs to urgently develop cost-effective, scalable, and sustainable evidence based strategies to ensure adolescent retention in care and adherence to ART

5.5 Areas for further research

Research on challenges facing transition from paediatric to adolescent care at Murang'a County Hospital is recommended.

REFERENCES

- Abwao, P. (2017). *Improving HIV care for teens in Kenya with virtual friendships*. <https://www.path.org/articles/improving-hiv-care-for-teens-in-kenya-with-virtual-friendships/>
- Adino, D. (2016). *Factors Affecting Adherence to Antiretroviral Therapy in Siaya County, Western Kenya*. University of Nairobi. Kenya.
- Ammon, N., Mason, S., & Corkery, J. M. (2018). Factors impacting antiretroviral therapy adherence among human immunodeficiency virus–positive adolescents in Sub-Saharan Africa: A systematic review. *Public Health*, 157(12), 20–31. <https://doi.org/10.1016/j.puhe.2017.12.010>
- Ankrah, D. N., Koster, E. S., Mantel-Teeuwisse, A. K., Arhinful, D. K., Agyepong, I. A., & Lartey, M. (2016). Facilitators and barriers to antiretroviral therapy adherence among adolescents in Ghana. *Patient Preference and Adherence*, 10, (5) 329–337. <https://doi.org/10.2147/PPA.S96691>
- Boeke, C. E., Nabitaka, V., Rowan, A., Guerra, K., Kabbale, A., Asire, B., Magongo, E., Nawaggi, P., Mulema, V., Mirembe, B., Bigira, V., Musoke, A., & Katureebe, C. (2018). Assessing linkage to and retention in care among HIV patients in Uganda and identifying opportunities for health systems strengthening: A descriptive study. *BMC Infectious Diseases*, 18(1), 138. <https://doi.org/10.1186/s12879-018-3042-8>
- Chandwani, S., Abramowitz, S., Koenig, L. J., Barnes, W., & D'Angelo, L. (2011). A Multimodal Behavioral Intervention to Impact Adherence and Risk Behavior among Perinatally and Behaviorally HIV-Infected Youth: Description, Delivery, and Receptivity of Adolescent Impact. *AIDS Education and Prevention*, 23(3), 222–235. <https://doi.org/10.1521/aeap.2011.23.3.222>
- Chelsea, G. (2015, November 16). *Using and Interpreting Cronbach's Alpha*. University of Virginia Library. <https://data.library.virginia.edu/using-and-interpreting-cronbachs-alpha/>
- Chesney, M. (2003). Adherence to HAART regimens. *AIDS Patient Care and STDs*, 17(4), 169–177. <https://doi.org/10.1089/108729103321619773>
- Chirambo, L., Valeta, M., Banda Kamanga, T. M., & Nyondo-Mipando, A. L. (2019). Factors influencing adherence to antiretroviral treatment among adults accessing care from private health facilities in Malawi. *BMC Public Health*, 19(1), 1382. <https://doi.org/10.1186/s12889-019-7768-z>
- Creswell, J. W. (2003). *A Framework for Design Research Design: Qualitative, Quantitative, and Mixed Method Approaches*. <http://sandbox.informatics.iupui.edu/~kmacdorm/courses/ResearchDesign/Presentations/Creswell1Framework.pdf>

- Croome, N., Ahluwalia, M., Hughes, L. D., & Abas, M. (2017). Patient-reported barriers and facilitators to antiretroviral adherence in sub-Saharan Africa. *AIDS (London, England)*, 31(7), 995–1007. <https://doi.org/10.1097/QAD.0000000000001416>
- de Jager, G. A., Crowley, T., & Esterhuizen, T. M. (2018). Patient satisfaction and treatment adherence of stable human immunodeficiency virus-positive patients in antiretroviral adherence clubs and clinics. *African Journal of Primary Health Care & Family Medicine*, 10(1) 1759. <https://doi.org/10.4102/phcfm.v10i1.1759>
- Geng, E. H., Nash, D., Kambugu, A., Zhang, Y., Braitstein, P., Christopoulos, K. A., Muyindike, W., Bwana, M. B., Yiannoutsos, C. T., Petersen, M. L., & Martin, J. N. (2010). Retention in Care Among HIV-Infected Patients in Resource-Limited Settings: Emerging Insights and New Directions. *Current HIV/AIDS Reports*, 7(4), 234–244. <https://doi.org/10.1007/s11904-010-0061-5>
- Hornschuh, S., Dietrich, J. J., Tshabalala, C., & Laher, F. (2017). Antiretroviral Treatment Adherence: Knowledge and Experiences among Adolescents and Young Adults in Soweto, South Africa. *AIDS Research and Treatment*, 2017(5192516), 1–8. <https://doi.org/10.1155/2017/5192516>
- Iacob, S. A., Iacob, D. G., & Jugulete, G. (2017). Improving the Adherence to Antiretroviral Therapy, a Difficult but Essential Task for a Successful HIV Treatment—Clinical Points of View and Practical Considerations. *Frontiers in Pharmacology*, 8(12)831-838. <https://doi.org/10.3389/fphar.2017.00831>
- Izudi, J., Mugenyi, J., Mugabekazi, M., Muwanika, B., Tumukunde Spector, V., Katawera, A., & Kekitiinwa, A. (2018). Retention of HIV-Positive Adolescents in Care: A Quality Improvement Intervention in Mid-Western Uganda. *BioMed Research International*, 2018(1524016), 1–8. <https://doi.org/10.1155/2018/1524016>
- Janssen, S., Wieten, R. W., Stolp, S., Cremers, A. L., Rossatanga, E. G., Klipstein-Grobusch, K., Belard, S., & Grobusch, M. P. (2015). Factors Associated with Retention to Care in an HIV Clinic in Gabon, Central Africa. *PLOS ONE*, 10(10), e0140746. <https://doi.org/10.1371/journal.pone.0140746>
- Jima, F., & Tatiparthi, R. (2018). Prevalence of nonadherence and its associated factors affecting on HIV adults follow-up at antiretroviral therapy clinic in Batu Hospital, Eastern Ethiopia. *Indian Journal of Sexually Transmitted Diseases and AIDS*, 39(2), 91–97. https://doi.org/10.4103/ijstd.IJSTD_37_17
- Kahema, S. E., Maseke, R. M., Emidi, B., Nimrod, G. S., & Charles Kajeguka, D. (2018). Factors Influencing Adherence to Antiretroviral Therapy among HIV Infected Patients in Nyamagana-Mwanza, Northern Tanzania: A Cross Sectional Study. *International Archives of Medical Microbiology*, 1(1), 1–8. <https://doi.org/10.23937/iamm-2017/1710002>
- Kioko, M., & Pertet, A. (2017). Factors contributing to antiretroviral drug adherence among adults living with HIV or AIDS in a Kenyan rural community. *African Journal of*

- Laisaar, K. T., Uusküla, A., Sharma, A., DeHovitz, J. A., & Amico, K. R. (2013). Developing an adherence support intervention for patients on antiretroviral therapy in the context of the recent IDU-driven HIV/AIDS epidemic in Estonia. *AIDS Care*, 25(7), 863–873. <https://doi.org/10.1080/09540121.2013.764393>
- Lall, P., Lim, S. H., Khairuddin, N., & Kamarulzaman, A. (2015). Review: An urgent need for research on factors impacting adherence to and retention in care among HIV-positive youth and adolescents from key populations. *Journal of the International AIDS Society*, 18(2). 19393- 19397. <https://doi.org/10.7448/IAS.18.2.19393>
- Lowenthal, E. D., Bakeera-Kitaka, S., Marukutira, T., Chapman, J., Goldrath, K., & Ferrand, R. A. (2014). Perinatally acquired HIV infection in adolescents from sub-Saharan Africa: A review of emerging challenges. *The Lancet Infectious Diseases*, 14(7), 627–639. [https://doi.org/10.1016/S1473-3099\(13\)70363-3](https://doi.org/10.1016/S1473-3099(13)70363-3)
- Luseno, W. K., Iritani, B., Zietz, S., Maman, S., Mbai, I. I., Otieno, F., Ongili, B., & Hallfors, D. D. (2017). Experiences along the HIV Care Continuum: Perspectives of Kenyan Adolescents and Caregivers. *African Journal of AIDS Research*, 16(3), 241–250. <https://doi.org/10.2989/16085906.2017.1365089>
- MacCarthy, S., Saya, U., Samba, C., Birungi, J., Okoboi, S., & Linnemayr, S. (2018). “How am I going to live?”: Exploring barriers to ART adherence among adolescents and young adults living with HIV in Uganda. *BMC Public Health*, 18(1), 1–14. <https://doi.org/10.1186/s12889-018-6048-7>
- Maskew, M., Fox, M. P., Evans, D., Govindasamy, D., Jamieson, L., Maletse, G., Mongwenyana, C., & Technau, K. (2016). Insights into Adherence among a Cohort of Adolescents Aged 12–20 Years in South Africa: Reported Barriers to Antiretroviral Treatment. *AIDS Research and Treatment*, 2016(4161738), 1–12. <https://doi.org/10.1155/2016/4161738>
- Micheni, M., Kombo, B. K., Secor, A., Simoni, J. M., Operario, D., van der Elst, E. M., Mugo, P., Kanungi, J., Sanders, E. J., & Graham, S. M. (2017). Health Provider Views on Improving Antiretroviral Therapy Adherence Among Men Who Have Sex with Men in Coastal Kenya. *AIDS Patient Care and STDs*, 31(3), 113–121. <https://doi.org/10.1089/apc.2016.0213>
- Mohajan, H. (2017). Two Criteria for Good Measurements in Research: Validity and Reliability. *Annals of Spiru Harat Universit*, 17(4), 59–82. <https://doi.org/10.26458/1746>
- Mosha, I. H., Nsanzugwanko, N. W., Ezekiel, M. J., & Metta, E. (2018). Factors Influencing Retention of HIV/AIDS Care and Treatment among Adolescents Living with HIV in Mkuranga District Tanzania. *BAOJ HIV*, 4(2), 1–10. doi: 10.7448/IAS.18.2.19393
- Mutanga, J. N., Mutembo, S., Ezeamama, A. E., Song, X., Fubisha, R. C., Mutesu-Kapembwa, K., Sialondwe, D., Simuchembu, B., Chinyonga, J., Thuma, P. E., & Whalen, C. C.

- (2019). Long-term survival outcomes of HIV infected children receiving antiretroviral therapy: An observational study from Zambia (2003–2015). *BMC Public Health*, 19(1), 2–12. <https://doi.org/10.1186/s12889-019-6444-7>
- Nabukeera-Barungi, N., Elyanu, P., Asire, B., Katureebe, C., Lukabwe, I., Namusoke, E., Musinguzi, J., Atuyambe, L., & Tumwesigye, N. (2015). Adherence to antiretroviral therapy and retention in care for adolescents living with HIV from 10 districts in Uganda. *BMC Infectious Diseases*, 15(1), 520. <https://doi.org/10.1186/s12879-015-1265-5>
- Nabunya, P., Bahar, O. S., Chen, B., Dvalishvili, D., Damulira, C., & Ssewamala, F. M. (2020). The role of family factors in antiretroviral therapy (ART) adherence self-efficacy among HIV-infected adolescents in southern Uganda. *BMC Public Health*, 20(3), 34–49. <https://doi.org/10.1186/s12889-020-8361-1>
- Naswa, S., & Marfatia, Y. S. (2010). Adolescent HIV/AIDS: Issues and challenges. *Indian Journal of Sexually Transmitted Diseases and AIDS*, 31(1), 1–10. <https://doi.org/10.4103/2589-0557.68993>
- National AIDS Control Council. (2018). *Kenya HIV Estimates*. <https://www.google.com/search?q=kenya+hiv+estimates+2020&oq=kenya+hiv+estimates&aqs=chrome..69i57j0l2.9743j0j1&sourceid=chrome&ie=UTF-8>
- National AIDS and STI Control Programme. (2020). *Preliminary KENPHIA 2018 Report*.
- National AIDS Control Council. (2014). *THE NATIONAL HIV AND AIDS STIGMA AND DISCRIMINATION INDEX*. https://www.ke.undp.org/content/kenya/en/home/library/democratic_governance/national-hiv-aids-stigma-and-discrimination--index.html
- National AIDS Control Council. (2015). *Kenya AIDS Strategic Framework (KASF)*. <https://nacc.or.ke/kenya-aids-strategic-framework-kasf/>
- National AIDS Control Council. (2016). *Muranga County HIV & AIDS Strategic Plan*. <https://nacc.or.ke/mdocs-posts/muranga-county-hiv-aids-strategic-plan/>
- National AIDS Control Council. (2020). *Dashboard*. <https://viralload.nascop.org/current>
- Njuguna, I., Beima-Sofie, K., Mburu, C., Mugo, C., Black, D. A., Neary, J., Itindi, J., Onyango, A., Slyker, J., Oyiengo, L., John-Stewart, G., & Wamalwa, D. (2019). Managing the transition from paediatric to adult care for HIV, Kenya. *Bulletin of the World Health Organization*, 97(12), 837–845. <https://doi.org/10.2471/BLT.19.232702>
- Okoboi, S., Ekwaru, P. J., Campbell, J. D., Egessa, A., King, R., Bakanda, C., Muramuzi, E., Kaharuza, F., Malamba, S., & Moore, D. M. (2016). No differences in clinical outcomes with the addition of viral load testing to CD4 cell count monitoring among HIV infected participants receiving ART in rural Uganda: Long-term results from the Home Based AIDS Care Project. *BMC Public Health*, 16(101)1789-1798. <https://doi.org/10.1186/s12889-016-2781-y>

- Regoniel, P. (2015). Conceptual Framework: A Step-by-Step Guide on How to Make One. *Research-Based Educational Articles*. <https://simplyeducate.me/2015/01/05/conceptual-framework-guide/>
- Reif, L. K., Abrams, E. J., Arpadi, S., Elul, B., McNairy, M. L., Fitzgerald, D. W., & Kuhn, L. (2020). Interventions to Improve Antiretroviral Therapy Adherence Among Adolescents and Youth in Low- and Middle-Income Countries: A Systematic Review 2015–2019. *AIDS and Behavior*, 24(10), 2797–2810. <https://doi.org/10.1007/s10461-020-02822-4>
- Rooks-Peck, C. R., Adegbite, A. H., Wichser, M. E., Ramshaw, R., Mullins, M. M., Higa, D., & Sipe, T. A. (2018). Mental Health and Retention in HIV Care: A Systematic Review and Meta-Analysis. *Health Psychology: Official Journal of the Division of Health Psychology, American Psychological Association*, 37(6), 574–585. <https://doi.org/10.1037/hea0000606>
- Rosenstock, I. M., Strecher, V. J., & Becker, M. H. (1988). Social Learning Theory and the Health Belief Model. *Health Education Quarterly*, 15(2), 175–183. <https://doi.org/10.1177/109019818801500203>
- Sangeda, R. Z., Mosha, F., Aboud, S., Kamuhabwa, A., Chalamilla, G., Vercauteren, J., Wijngaerden, E. V., Lyamuya, E. F., & Vandamme, A.-M. (2018, August 21). *Predictors of non-adherence to antiretroviral therapy at an urban HIV care and treatment center in Tanzania*. Drug, Healthcare and Patient Safety; Dove Press. <https://doi.org/10.2147/DHPS.S143178>
- Shubber, Z., Mills, E. J., Nachega, J. B., Vreeman, R., Freitas, M., Bock, P., Nsanzimana, S., Penazzato, M., Appolo, T., Doherty, M., & Ford, N. (2016). Patient-Reported Barriers to Adherence to Antiretroviral Therapy: A Systematic Review and Meta-Analysis. *PLOS Medicine*, 13(11), e1002183. <https://doi.org/10.1371/journal.pmed.1002183>
- Ssali, L., Kalibala, S., Birungi, J., Egessa, A., Wangisi, J., Okullu, J., Bakanda, C., Okoboi, S., & Obare, F. (2014). *Retention of adolescents living with HIV in care, treatment, and support programs in Uganda*. Population Council. <https://doi.org/10.31899/hiv9.1006>
- Takarinda, K. C., Harries, A. D., Shiraishi, R. W., Mutasa-Apollo, T., Abdul-Quader, A., & Mugurungi, O. (2015). Gender-related differences in outcomes and attrition on antiretroviral treatment among an HIV-infected patient cohort in Zimbabwe: 2007–2010. *International Journal of Infectious Diseases*, 30(5), 98–105. <https://doi.org/10.1016/j.ijid.2014.11.009>
- United Nations Children’s Fund. (2020). *Adolescent HIV prevention*. UNICEF DATA. <https://data.unicef.org/topic/hivaids/adolescents-young-people/>
- United Nations Programme on HIV/AIDS. (2015). *Ending the AIDS epidemic for adolescents, with adolescents* (p. 32). https://www.unaids.org/sites/default/files/media_asset/ending-AIDS-epidemic-adolescents_en.pdf

- United Nations Programme on HIV/AIDS. (2016). *GLOBAL AIDS UPDATE*.
https://www.unaids.org/sites/default/files/media_asset/global-AIDS-update-2016_en.pdf
- United Nations Programme on HIV/AIDS. (2020). *Global HIV & AIDS statistics*.
<https://www.unaids.org/en/resources/fact-sheet>
- World Health Organization. (2013). *Adolescent development*. WHO; World Health Organization.
http://www.who.int/maternal_child_adolescent/topics/adolescence/development/en/
- World Health Organization. (2016). *Consolidated Guidelines on HIV Prevention, Diagnosis, Treatment and Care for Key Populations*. World Health Organization.
<http://proxy.library.carleton.ca/loginurl=https://www.deslibris.ca/ID/10063272>
- World Health Organization. (2018). *HIV/AIDS* [Global Health Observatory (GHO) data]. World Health Organization; World Health Organization. <http://www.who.int/gho/hiv/en/>
- Yu, Y., Luo, D., Chen, X., Huang, Z., Wang, M., & Xiao, S. (2018). Medication adherence to antiretroviral therapy among newly treated people living with HIV. *BMC Public Health*, *18*(1), 825. <https://doi.org/10.1186/s12889-018-5731-z>

APPENDICES

Appendix A: Consent form

I (Name of the participant) agree the study has been explained to me. I have understood all that has been read and my questions have been answered satisfactorily.

I agree to take part in this research. I understand that enrolment is completely voluntary, and I can withdraw at any time. I understand that withdrawal will not affect the quality of care given to me in any way.

Name

Date

Signature/thumb print

For research staff

I have explained the nature and purpose of this study to and that I have followed all the study specific procedures and standard operating procedures for obtaining obtained consent.

Name of staff

Signature

Date

Appendix B: Assent form

I (Name of the Guardian) have had the research explained to me. I have understood all that has been read and my questions have been answered satisfactorily.

I have agreed my child to take part in this research. I understand that enrolment is completely voluntary and that my child can withdraw at any time. I understand that withdrawal will not affect the quality of care given to child in any way.

Name

Date

Signature/thumb print

For research staff

I have explained the nature and purpose of this study to and that I have followed all the study specific procedures and standard operating procedures for obtaining obtained consent.

Name of staff

Signature

Date

Appendix C: FGD interviewing guide

Adherence and Retention to HV care for HIV Positive Adolescents	
Focus Group identification	
Name/Initials of facilitator	
Date of Focused Group	
Start time	
Stop time	

Note to facilitators: To maximize on the use of this tool it is vital to read through and prepare all the needed equipment (i.e. markers, index cards, flipcharts etc.) before starting the focus group discussion. Facilitating the focus group well will give results that important for the overall success of this project.

Introduction and Description of the Research/Project

Hello and thank you for taking your time to take part in this discussion. My name is..... , and I am this group’s facilitator. [Introduce colleagues, note-takers, etc.].

The intent of such a discussion group is to get inputs, thoughts and opinions regarding the topic. Today, we are looking at the Factors that determine Retention and adherence to HV care for HIV Positive Adolescents. We will mainly concentrate on factors influencing adherence to HIV management. We will seek your input regarding how such factors can be used in order to improve adherence. The discussion will take roughly one and a half hours.

Interview Guide

(**Note to facilitators:** assure participants of confidentiality; make sure that what is being shared will

LEAD QUESTIONS	SECONDARY QUESTIONS AND PROBES
How much do you know about HIV?	<p>Probe:</p> <p>What is HIV to you? What is the difference between you and a HIV negative person? Why attend HIV clinic? Ask questions to find out adolescents' knowledge about HIV before moving on to adherence and retention.</p>
What challenges are the adolescents faced with regard to adhering and retention in HIV management?	<p>Probe:</p> <p>Maybe start with question: Is adhering to HIV management easy for you or not?</p> <p>Why?</p>
What do you think causes the adolescents to remain in HIV management?	<p>Probe:</p> <p>Be sure to discuss in context of following clinic and adhering to treatment and counselling given; and factors that cause adolescents to adhere to HIV management.</p>

<p>What kind of information do you think the adolescents should have to enable them to adhere to HIV management?</p>	<p>Probe: Find about knowledge on HIV management, duration and adjustments needed</p>
<p>How do you think you are being treated (handled) by the health care worker?</p>	<p>Probe: privacy, confidentiality, respect, being listened to, time spent with patient, waiting time, integration with other services). What is the quality of care provided by health care workers?</p>
<p>Does this treatment affect your decision regarding adherence to HIV care?</p>	<p>Probe: Opinions and preferences of treatment, stigma, quality of services, counseling.</p>
<p>What support is available for you in the community to adhere to HIV management?</p>	<p>Probe: Find out about support system in the community that can help adolescent to adhere to HIV management, like family and friends. (Probe about discrimination, stigma). Probe differences in perceived availability of social support versus social networks? Any negative social support? Any stress exacerbation?</p>

This is the end of the focus group discussion. I appreciate you for sharing your thoughts with us. You are at liberty to make any inquiry, or would you like to add anything before the session ends?

If you have more views on any of the discussed issues, please call Peter Kabugua Ndungu, the research lead investigator at +254723391382.

All interviews should be recorded using audio recorders to be transcribed later. Make the process as interactive as possible. All factors identified in this study will be grouped into teenage-specific, informational, geographical, or other determinants of adherence and retention in HIV care. Any outstanding factors introduced during the FGD will also be noted.

Appendix D: KII Interviewing Guide

Adherence and Retention to HV care for HIV Positive Adolescents	
Key Informant identification	
Name/Initials of facilitator	
Date of Interview	
Start time	
Stop time	

Note to facilitators: To maximize on the use of this tool it is vital to read through and prepare all the needed equipment (i.e. markers, index cards, flipcharts etc.) before starting the focus group discussion. Facilitating the focus group well will give results that important for the overall success of this project.

Introduction and Description of the Research/Project

Hello and thank you for taking your time to take part in this discussion. My name is....., and I am this group’s facilitator. [Introduce colleagues, note-takers, etc.].

The intent of such a discussion group is to get inputs, thoughts and opinions regarding the topic. Today, we are looking at the Factors that determine Retention and adherence to HV care for HIV Positive Adolescents. We will mainly concentrate on factors influencing adherence to HIV management. We will seek your input regarding how such factors can be used to improve adherence with regard to your professional practice and experience in care of HIV. The discussion will last approximately one hour.

Interview Guide

(**Note to facilitators:** assure participants of confidentiality; make sure that what is being shared will not leave the room)

LEAD QUESTIONS	SECONDARY QUESTIONS AND
What are some of the reasons why adolescent attending clinic are retained In HIV management?	Probe: Probe on reasons that make adolescents drop out/default on treatment and clinic follow up
What are some of the reasons that you think contribute to adherence and retention of HIV positive adolescents attending here	Probe: Check for the reasons that make adolescents keep on coming for follow up and taking their ARTS
What are the reasons adolescents give for missing their pills and missing their Clinic follows up?	Probe: Probe on the reasons that adolescents give to health care workers on missing their clinics and missing their pills/ARVs
What can be done to improve on adherence and retention to HIV care of adolescents at Muranga County Hospital?	Probe: For health care services, human resource, training

This is the end of the interview. I appreciate you for sharing your thoughts with us. Do you have any queries, or would like to add anything before we end?

If you have more opinions regarding any of the issues discussed, please call Peter Kabugua Ndungu, the research lead investigator at +254723391382.

All interviews should be recorded using audio recorders to be transcribed later. Make the process as interactive as possible. All factors identified in this study will be grouped into teenage-specific, informational, geographical, or other determinants influencing adherence and retention in HIV care. Any outstanding factors introduced during the KII will also be noted.

Appendix E: Questionnaire

To be administered to adolescents

1) Sociodemographic information

- a) Gender Male Female
- b) Education level None primary Secondary college/university
- c) Who takes care of you both parents father mother adopted other
specify....
- d) Religion None Christian Muslim others specify.....
- e) Length of time taken to get to the health facility (in time) 30mins 1hr
more than 1hr
- f) How many years have been in care in this clinic.....?

2) Health care

- a. What do you think of the service you receive at this hospital? Good Bad
Not sure
- b. Are you given a chance to state your issue and ask any Yes No

- c. Are you respected at the hospital? Yes No
- d. Are you comfortable with the health workers here? Yes No
- e. Do you often have private sessions during consultations and counselling Yes
 No
- f. What is your insurance cover status?
- Any insurance No insurance/self-pay
- g. How is the social setting of the hospital Good Bad Not sure
- h. How long did you spend at the clinic when you last went for a review?
- i. Approximately how many hours or minutes did you have to wait in the hospital before being attended? ...

3) Assessment of adherence and non-adherence

- a. Do you take your medication as prescribed? Yes No

- b. If no, why?

- It is inconvenient Bad timing
- I'm ashamed I'm not sick
- I forget
- I don't have to take them

Others

c. Are there times you miss your appointment in the clinic Yes No

d. If yes, why

Lack of transport Stigma Forgetting

Lack of family support Peer pressure

Other specify.....

e. Which lifestyle changes have you implemented at home as recommended by your doctor?

Balanced diet

Exercis

e

Safe sex

Avoid smoking, alcohol, and other drugs

Others.....

4) Support system

- a. Have you disclosed your HIV status Yes No
- b. If yes to Who School Parents Friends Family members Other
specify
- c. If no why not disclosed
- d. Have you been living with someone in the past 3 months?
 Yes No
- e. Does your family support you in HIV management Yes No
- i. How often do your family remind me you take your pills Sometime
Most times Always Never
- f. Are you satisfied with the support you receive from your
 Yes No
- g. Do you attend any support groups Yes No
- h. Were you afraid that nothing would help?
Not at all somewhat/ great deal
- i. Do you feel being under care will create problems with the family members?
Not at all somewhat/ great deal
- j. If yes, how often do you attend the meetings?
Every time Once in a while

Rarely

Ever

k. Are these meetings helpful? Yes No

j) If yes, how have they helped you?

k) What causes you not to attend support group meetings?

I'm busy

I live very far off

Bad timing

it is uncomfortable

Other reason

5) Patients knowledge on HIV/AIDS

You know how your HIV medications should be taken Yes No

You have knowledge on what to do if you miss a dose of your HIV medications Yes No

You comprehend how the HIV medications work in the body Yes No

You know how your HIV medications react to alcohol and Yes No

Have you ever been involved in drug substance abuse?

Never or past Current

Have ever been involved in sexual risk behavior?

Never or past Current

Have you ever undergone mentally unhealthy weeks?

Less than two mentally unhealthy weeks two or more mentally unhealthy weeks

How long does it take to treat HIV Is not curable, treatment is lifelong

ARV's cures HIV I don't know

What is the importance of adherence?

Keeps viral load low Reduces chances of resistance to drugs

Keeps one healthy Improves quality of life

Others specify

6) Perception about HIV/AIDS and stigma

Have you experienced any discrimination at home, school, church, or other social place?

Yes No



b) Where did it occur?

c) What caused the discrimination?

d) How did you feel about it?


e) What was your response?

Appendix F: NACOSTI Research approvals

 
REPUBLIC OF KENYA NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

Ref No: 234770 Date of Issue: 21/August/2019


RESEARCH LICENSE




This is to Certify that Mr. Peter Ndungu of Kenya Methodist University, has been licensed to conduct research in Muranga on the topic: DETERMINANTS OF ADHERENCE AND RETENTION IN CARE OF HIV POSITIVE ADOLESCENTS IN MURANG'A COUNTY HOSPITAL, KENYA, for the period ending : 21/August/2020.

License No: NACOSTI/P/19/69

234770
Applicant Identification Number

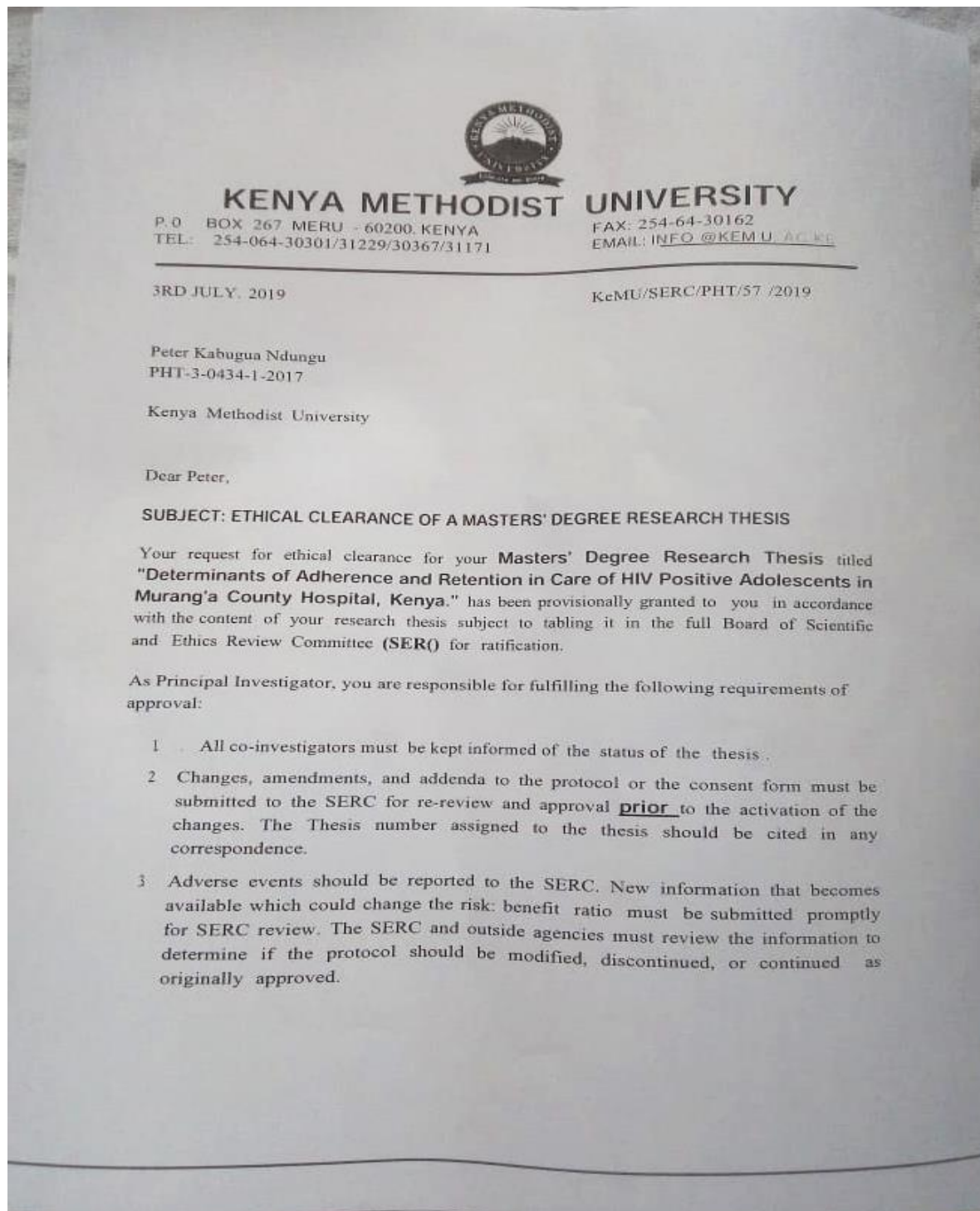

Director General
NATIONAL COMMISSION FOR
SCIENCE, TECHNOLOGY &
INNOVATION

Verification QR Code



NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

Appendix G: Ethical Clearance



- 4 Only approved consent forms are to be used in the enrollment of participants. All consent forms signed by subjects and/or witnesses should be retained on file. The SERC may conduct audits of all study records, and consent documentation may be part of such audits.
- 5 SERC regulations require review of an approved study not less than once per 12-month period. **Therefore, a continuing review application must be submitted to the SERC in order to continue the study beyond the approved period.** Failure to submit a continuing review application in a timely fashion will result in termination of the study, at which point new participants may not be enrolled and currently enrolled participants must be taken off the study.

Please note that any substantial changes on the scope of your research will require an approval.

Thank You,



Appendix H: Certificate of Publication

Vol. - 6 | No. - 7 | July, 2020 30-Jul-2020

Article ID: 1366

CERTIFICATE OF PUBLICATION

is hereby awarded to

Peter K. Ndungu, Makobu Kimani, John Mokuia Mose

for publication of article entitled

Influence of Caregiver and Peer Support in Adherence to Antiretroviral Therapy amongst HIV Positive Adolescents Attending Murang'a County Hospital.

in double blind peer reviewed and open access
International Journal For Research In Health Sciences And Nursing (ISSN: 2208-2670)



**GREEN
PUBLICATION**



Virender Singh

Chairman, Board of Trustees
GREEN PUBLICATION
<https://gnpublication.org>

Influence of Caregiver and Peer Support in Adherence to Antiretroviral Therapy amongst HIV Positive Adolescents Attending Murang'a County Hospital.

Peter K. Ndungu¹, Makobu Kimani¹, and John Mokuia Mose²

¹Kenya Methodist University

²Technical University of Kenya (TUK)

*Correspondence email: peternov30@yahoo.com

Abstract

Introduction: The number of youth and adolescent infected with the Human Immunodeficiency Virus is increasing globally. In 2019 alone, an estimated 460,000 young persons between 10 to 24 years globally were reported to be newly infected with HIV. Antiretroviral therapy is an effective approach to management for adolescents living with HIV. Maximum suppression of the virus improves the quality of life and health outcome. In May 2020, Murang'a County reported viral load suppression in ages between 10-14 years of 87.2% while 15-19 years was 86.7%. However, viral suppression requires optimal drug adherence and behavior change that is influenced by approaches such as care givers and peer support. Optimum caregiver and peer support in sub-Saharan Africa is thought to hinder adolescent adherence to ART. The study aimed at assessing the influence of caregiver and peer support in adherence to antiretroviral therapy amongst HIV positive adolescents attending Murang'a county hospital. **Methodology:** A cross sectional study was carried out at Murang'a County Comprehensive Care Center among 93 purposively sampled adolescents and selected key informants. Data was collected using semi-structured questioners and key informant guides. Quantitative data was analyzed using SPSS; both descriptive and inferential statistical techniques were used. Qualitative data was manipulated manually through thematic analysis. **Results:** From the study, females (56%) and (44%) males took ART as prescribed. Many (65.7%) had secondary education whilst 19% had reached college/university level. Majority were Christians (92.4%) while Muslims were (5.7%). Mothers (37.6 %), fathers (9.7%), and both parents for (29%) took care of them. Respondents who did not attend support groups at Murang'a CCC cited distance (54%), being busy (15%) and bad timing (15%) as challenges. However, adolescents visiting Murang'a CCC received parent and school support. They ensured that their children took medication and visited clinic as required. Frequency of support group attendance was found to be statistically significant to adherence ($p=0.002$). **Conclusion:** Reinforcement of care giver support frameworks and promotion of peer support among ALWHIV is fundamental in fostering ART adherence among adolescents in Murang'a County. Availability of mHealth platforms such as WhatsApp is an opportunity to scaling up peer support among adolescents who experience challenges with distance and competing priorities.

Keywords: *Adherence, Accessibility, Drugs, Family, Influence, Medication, Teens, Support.*

Introduction