

**ADOLESCENT HIV FRIENDLY SERVICES AND ITS INFLUENCE IN
CLINICAL CARE OUTCOMES AMONG ADOLESCENTS LIVING WITH
HIV: A CASE OF MAWENI REGIONAL REFERRAL HOSPITAL IN
KIGOMA REGION**

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REQUIREMENTS FOR THE DEGREE OF MASTER OF MONITORING
AND EVALUATION**

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CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by the Open University of Tanzania a dissertation entitled: “***Adolescent HIV Friendly Services and its Influence in Clinical Care Outcomes among Adolescents Living with HIV at Maweni Regional Referral Hospital in Kigoma Region***” in partial fulfillment of the requirements for the Degree of Master of Monitoring and Evaluation Department of Economics the Open University of Tanzania.

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DECLARATION

I **Julius Samson Nyasongo** do hereby declare that this proposal is my own original work and that has not been submitted for the same or similar to any University for a similar or any other research.

.....

Signature

.....

Date

DEDICATION

This work is dedicated to my beloved parents, Samson Chacha Nyasongo and Maria Chacha Nyasongo as well as my brother Emmanuel Chacha Nyasongo and Sister Mwanaid Chacha Nyasongo who fanatical used their resources to provide the essential foundation for my education.

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ABSTRACT

HIV/AIDS among adolescents have been a major public health challenge globally and becoming worse overtime in low middle-income countries, whereas Tanzania being among. The study aimed to assess adolescent HIV friendly services and its influence in clinical care outcomes among adolescent living with HIV at Maweni Regional Hospital in Kigoma Region. Descriptive quantitative method employed whereas retrospective time series data of adolescents living with HIV were extracted from CTC2 database as yearly cohort groups which were followed for one yearly for the period of five years for the total of ten cohorts since 2006 up to 2018 to collect secondary data for clinical care outcomes and self administered questionnaires filled independently by 34 respondents obtained conveniently for the purpose of primary data collection toward assessing design, implementation, monitoring and evaluation and fisher's formula used to calculate sample size which selected randomly thru systemic sampling method within the system as about 93 were sampled. The results finding has shown adolescent HIV friendly services designing, implementation, monitoring and evaluation and its outcomes in clinical were statistically significant to prevent HIV new transmission and quality of life improvement toward HIV free generation by 2030. The study recommends the results will increase awareness, knowledge and deeply understand of adolescents HIV friendly services for further strengthen and replan, decision making and academia among the healthcare providers, managers and official leaders, policy makers, implementing partners, regional and district stakeholders for HIV free generation by 2030.

Keywords: Adolescent HIV Friendly Services, Influences and Clinical Care Outcomes

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LIST OF ABBREVIATIONS

AA	ART Adherence
ACs	Adolescent Caregivers
ASs	Adolescents Supporters
AIDS	Acquired Immunodeficiency Syndrome
AHFS	Adolescent HIV Friendly Services
THPS	Tanzania Health Promotion Support
ART	Antiretroviral therapy
CATS	Community Adolescent Treatment Supporters
RHAC	Regional HIV/AIDS Coordinator
CLAI	Community Linkage and Adolescent Involvement
CCOs	Clinical Care Outcomes
RHMTMs	Regional Health Management Team Members
RMT	Regional Management Team
CHBS	Community HIV Based Services
CDC	Centers for Disease Control
CTC	Care and Treatment Centre
RSWO	Regional Social Welfare Officer
RACC	Regional AIDS Council Coordinator
MHHS	Maweni Hospital Health Secretary
ADIPI	Assess, Design, Identify, Present and Implement
RHQIF	Regional Health Quality Improvement Focal Person
EIC	Early Infant Circumcision
ε	Error Term

f	Function of
FGD	Focus Group Discussion
H0 μ	Null Hypothesis
H1 μ	Alternative Hypothesis
HIV	Human Immunodeficiency Virus
MHM	Maweni Hospital Matron
HIAs	HIV Infected Adolescents
MHMTMs	Maweni Hospital Management Team Members
MHS	Maweni Hospital Secretary
HS	Health Services
HVL	High Viral Load
HVLS	HIV Viral Load Suppression
ICC	Increased CD4 Count
ICPD	International Conference on Population and Development's Programme of Action
IFRC	International Federation of Red Cross
IPPF	International Professional Practices
IFAD	International Fund for Agricultural Development
MRRH-AHFC	Maweni Regional Referral Hospital - Adolescent HIV Friendly Clinic
LMIC	Low Middle Income Countries
LCBHS	Linkage to Community Based HIV Services
M&E	Monitoring and Evaluation
MOH	Ministry of Health
MMOI	Maweni Medical Officer Incharge

MOHCDGEC	Ministry of Health, Community Development, Gender, Elder and Children
NACP	National AIDS Control Programme
NCS	Nutrition Care and Supporting
NSWP	Network of Sex Work Project
OIs	Opportunistic Infections
OIF	Opportunistic Infections Free
OO	Opted Out
OUT	Open University of Tanzania
SV	Supervisor
PMTCT	Prevention of Mother to Child Transmission
PEPFAR	The U.S President's Emergency Plan for AIDS
PI	Principle investigator
PO- LGA	Prime Minister Office and Local Government Authority
PrEP	Pre exposure Prophylaxis
PSSA	Psychosocial Support Services for Adolescents
TACAIDS	Tanzania Commission for AIDS
TDHS	Tanzania Demographic Health Survey
TPMA	Tanzania Participant Manual for Adolescents
TO	Transferred Out
UNHR	United Nations High Commissioner for Refugees
UNICEF	United National International Children's Emergency
UNAIDS	United Nations Programme on HIV and AIDS
UNFPA	United Nations Population Fund

UNGASS	United Nations General Assembly Special session
RAs	Research Assistants
STI	Sexual Transmission Infection
TAAHC	Transition of adolescent to adult HIV Care
WIT	Working Improvement Team

CHAPTER ONE

INTRODUCTION

1.1 Chapter Overview

1.2 Background of the Study

HIV/AIDS among adolescents have been a major public health challenge globally and becoming worse overtime in low middle income countries (LMIC) despite the global strategies implemented to alleviate the burden and increase uptake of the healthcare services still remained sub-optimal and currently became as global concern (WHO, 2013; UNICEF, 2017).

In Africa, the most affected Eastern and Southern region has shown in 2017 that adolescent girls have infected with HIV about 23% and 17% in boys compared to Western, Central African and Asia which has even lower (UNICEF, 2017) and trends continued, as hundreds of thousands more adolescents will become HIV positive in the future years to come as well as AIDS related death will upsurge (UNICEF, 2018).

Sub-Sahara Africa, about 3.2 million of children aged below 15 years old reported to be HIV positive that increases yearly and indicated that about 1.5 million (85%) adolescent are living with HIV and two to three adolescent girls are more likely to be effected with HIV than boys of the same group and associated with less acceptability, availability and ineffectiveness of biomedical, behavioral and structural interventions (DiClemente and Jackson, 2015; Baeten *et al.*, and Choopanya *et al.*, 2013).

In East Africa, the burden is picking up whereby statistics showing that in Kenya HIV infected adolescents aged 10 to 19 account 130,000, Tanzania 98,000 and Uganda

79,000 respectively and HIV/AIDS was the most leading cause of death among adolescents in the region (UNAIDS, 2017).

Whereas in Tanzania by 2016 estimated 98,000 adolescents between the age of 10 - 19 were living with HIV (female 54,000 and male 44,000) as new infection was 5,500 and 32,000 respectively which contributed about 75% in all countries of adolescent living with HIV globally (PEPFAR (2014) and WHO (2016) Global responds to widespread of HIV transmission whereas the United Nations introduced objective strategies on behavioral, biomedical and structural to combat and cut-down HIV/AIDS HIV epidemic focused at the individual level, modifying individual's HIV associated risk behaviors to prevents transmission where as East African and Tanzania adopted the strategies (Ford *et al.*, 2011, WHO, 2013 and Ralph and Jerrold, 2015).

Tanzania has over 9.9 million of adolescents where contributes a third of the total population and in 2016 estimated that 4.7% were living with HIV and statistic projection in second decade these young people will fuel the future of national development by the year 2025 (NACP, 2014) and responded in collaboration with implementing partners and other stakeholders to address the burden of HIV/AIDS among adolescents (MOH, 2014 and PEPFAR, 2015, (UNAIDS, 2015; UNICEF, 2016, TPMA, 2017).

Tanzania has directed via HOHCDGE that adolescent HIV services must be centralized at all health facilities and focuses on multidisciplinary approaches thru adolescent HIV friendly services (UNAIDS, 2015, TPMA, 2018).

1.3 Statement of the Problem

Tanzania in collaboration with WHO, UNAIDS, UNICEF and other implementing partners' invested more in adolescent HIV friendly services in recent years which succeeded to trim down HIV transmission among adolescents up to 18% (HSHPIV 2017 – 2022).

The UNAIDS (2015) and Avert (2019) reported HIV among adolescents have been increases to 30% in the country, however due to low efforts of the government to scale-up adolescent HIV friendly services, scarce of resources allocated, low involvement of adolescents in designing, low involvement in implementation, monitoring and evaluation as well as inadequate intervention concerned behavioral factors, biological factors and structural factors together with few funds as only 5% of the government budget dedicated to HIV/AIDS services.

Almost two third (63%) of Tanzanians are adolescents and a results of their biological complexity and social interaction escalates them to more HIV new infection whereas needs to premeditates objectively adolescents HIV friendly services design and implementation, monitoring and evaluation to stop more transmission as well as to improve the quality of services delivery for this vulnerable population (HSHPIV 2017 – 2022).

Therefore, this study intends to evaluate adolescent HIV friendly services design, implementation, the monitoring and evaluation and its influence in clinical care outcomes for prevention of HIV transmission and quality of life improvement toward HIV free generation by the year 2030.

1.4 Research Objective

The research objective was used to guide the study to ensure deeply insights as to gain the relevant and useful information regarded the topic (Hughes, 2017).

1.4.1 The General Objective

The general objective of this study was to assess adolescent HIV friendly services and its influences in clinical care outcomes among adolescents living with HIV at Maweni hospital in Kigoma Municipal.

1.4.2 Specific Objectives

- (i) To assess the adolescent HIV friendly services design at Maweni Hospital in Kigoma Municipal.
- (ii) To assess the adolescent HIV friendly services implementation, monitoring and evaluation at Maweni Hospital in Kigoma Municipal.
- (iii) To analyze the influence of clinical care outcomes of adolescents living with HIV at Maweni Hospital in Kigoma Municipal.

1.4.3 Hypothesis of the Study

The hypothesis of the study aimed to answer the assumptions behind the fact of adolescent HIV friendly services design, implementation, monitoring and evaluation, and its influences in clinical care outcomes among adolescents living with HIV for transmission prevention and quality of life improvement toward HIV free generation by 2030.

Hypothesis 1:

H0 μ = Designing of adolescent HIV friendly services does not meet the preference and expectation of Adolescents Living with HIV.

H1 μ = Designing of adolescents HIV friendly services meet preference and expectation Adolescents Living with HIV.

Hypothesis 2:

H0 μ = Implementation, monitoring and evaluation of adolescent HIV friendly services do not involved Adolescents Living with HIV.

H1 μ = Implementation, Monitoring and evaluation of adolescents HIV friendly services involves Adolescents Living with HIV.

Hypothesis 3: H0 μ = Adolescent HIV Friendly Services does not influences clinical care outcomes among Adolescents Living with HIV.

H1 μ = Adolescent HIV Friendly Services influences clinical care outcomes among Adolescents Living with HIV.

1.5 Scopes and Limitation of the Study

The scope of the study involved all adolescents in CTC2 database whereas each individual within cohort was followed consecutively for 5 years with special indicators to track all the variables of interest. However the study was restricted with some of missing data in CTC2 database where was solved by registers and clients files to address the challenge. The study was confined to Maweni CTC due to time constraints to meet the deadlines and financial support, which was solved by proper plan and budget o accomplish the research report on time.

1.6 Why this Study Matters

The evaluation results of the adolescent HIV friendly services matters as the results will contribute a broader knowledge regarding future design, replan, implementation, monitoring and evaluation, and its influence in clinical care outcomes to strengthen adolescent's HIV services among living with HIV for transmission prevention and quality of life improvement toward HIV free generation by 2030.

Also the results will create awareness and inform the policy makers at national level, implementing partners, regional and district stakeholders as well as local authorities of high interest and power to prioritize more resources to scale-up the adolescent HIV friendly services in public and private health facilities so as to culminate new HIV infections transmission and improve quality of live toward attainment of global target 2030.

Finally, the evaluation of the study will contribute to the academia knowledge, government and non - government stakeholders in terms of theory and methodology for researchers who will pay attention to the current and future situation of the Adolescent HIV Friendly Services.

1.7 Chapter Summary

This chapter explained in detailed the introduction of the adolescent HIV friendly services in global and local context including the statistical trends of the problem and response to combat HIV infection among adolescents. It explained clearly why high transmission of HIV infection among the adolescents and how global interventions

implemented to end HIV epidemic and possible reasons why still persist increases of HIV infection among adolescents in Tanzania and the initiatives introduced to rescue this vulnerable adolescent and youth population.

CHAPTER TWO

LITERATURE REVIEW

2.1 Chapter Overview

This chapter reviewed the theoretical and empirical literature reviews on adolescent HIV friendly services in relation to its design, implementation and clinical care outcomes achieved among adolescent living with HIV that extensively focuses on how different scholars debates about the issues of HIV toward improvement of quality of life.

2.2 The Definitions and Concept of Key Words

2.2.1 Adolescence

This is the stage of growth and development where ranged between 10 - 18 years old wherein an individual undergoes major physical and psychological changes in social interaction and relationship that an individual's life faces over a period of time as being a no longer a child but also not yet an adult. It is the time of opportunity as well as time of sickness that action could be taken during this period to set the stage for healthy adulthood and reduce the likelihood of problems in the years lie ahead (UNICEF, 2011; TAPM, 2017), whereby WHO (1948) defined health as a state of complete physical, mental and social wellbeing and not the merely absence of either diseases or infirmity.

2.2.2 Health Services

According to TPM (2018) defined as the service provided by a health worker to a patient aimed at preventing a health either problem or detecting as well as treating one, that often includes information provision, advice and counseling.

2.2.3 Adolescent Friendly Services

Desiderio (2014) explained that Adolescent Friendly Services (AFS) are services that provided by the healthcare worker(s) which enabling to effectively attraction of adolescents to meet their preferences and expectations with successful retaining the sick one for continuing to care.

2.2.4 Clinical Care

According to Wikipedia (2018) defined clinical care as to maintenance and improve health among adolescents living with HIV via prevention, diagnosis and treatment of a disease or illness as well as injury and other physical and mental impairment.

2.3 Theoretical Review of Adolescent HIV Friendly Services

The theoretical review for this study explained the concepts in the research and proposed relationship between them and discussed relevant theories, hat gave the research direction that came with credibly interpretation as well as thorough explanation and generalized findings.

2.3.1 The Adolescent HIV Friendly Services

According to TPM (2017) and UNICEF (2016) emphasized that AHFS must attract adolescents and continued retaining them whereas display respect, maintain privacy and confidentiality, display positive attitude and enough time and friendly with equitable distribution, accessible, acceptable, appropriate and effective for the purpose of HIV counseling and testing, enrollment to care, adherence counseling to ART, retention to care and treatment toward ADIPI (assess, design, identify, present and implement) to make services more friendly.

The year 2005 to 2012, the HIV related deaths among adolescents increased significantly by 50%, resulted by inadequate knowledge, lack of education and life skills, early sexual debut and unprotected sex, coercion, violence and marriage, poor prioritization of national plans to adolescents, inadequate provision of accessible and acceptable HIV Testing and Care (HTC) and treatment services, commodities and lack of support for adolescents to remain in care, some being trafficking and growing up without parents and some engaged in alcohol and drug abuse that affects adherence to antiretroviral therapy (ART) (UNICEF/UNAIDS, 2013).

2.3.2 Adolescent HIV Friendly Service Design

The adolescent HIV Friendly Services designed as a client centered approach whereas equitable, accessible, acceptable, appropriate and effective remained as a demand for the successful adolescents (UNICEF, 2013; TPMA, 2017) and TPM (2018) explained to consider ADIPI model during the designing and UNICEF (2018) reported to consider integration of all necessary for improving the quality life toward achieving HIV/AIDS free generation.

2.3.3 Implementation, Monitoring and Evaluation of AHFS

Tanzania adopted a combination of HIV prevention approach as rights based, evidence informed and community owned programs that use a mix of biomedical, behavioral and structural interventions to meet priorities and achieve the current HIV prevention (UNAIDS 2010, TGAFS, 2018). Hainsworth et al (2014) reported that adolescents need and required great understand in monitoring and evaluation (M&E) of AHFS as a critical step to assess progress and (IFCR, 2011).

2.3.4 Clinical Care Outcomes of Adolescent Living with HIV

According to Jackson (2015) and TPM (2017) has shown the goals of comprehensive HIV care and treatment services are clinical care outcomes (prevent further spread of HIV, improve the lives of family and community affected by HIV, reduce HIV related illness and death) for quality of life thru enrollment visit, follow-up visits, laboratory monitoring, ART initiation, prophylaxis and treatment failure and 2nd and 3rd line ART initiation toward the retention to care and treatment, adherence to ART, maximum suppression of viral load, reduction of opportunistic infections, reduction of adolescent HIV new infection.

Senderwoitz et al (2002) and Brindis (2007) reported that adolescent HIV friendly Services remained as a critical precursor to HIV testing and counseling, diagnosis, ART adherence and viral suppression, retention in HIV treatment and care, monitoring drugs side effects, laboratory monitoring, treatment failure and when necessary switch to second or third line ART.

Obinna (2019) reported that adolescent HIV patients have bad treatment outcomes as compared to other age groups due to their vulnerability to risk taking behavior, hence advised initiation of effective incentive scheme intervention might enhance the retention in care and adherence to ART.

2.3.4.1 Antiretroviral Viral Therapy (ART) Adherence

Adherence of ART among adolescents living with HIV infection is important to achieve more than 95% compliance for maximum suppression of viral replication in

order to increase CD4 count, opportunistic infections free and prevention of new HIV infection transmission, which ultimately improve the quality of life (Singla, 2019).

2.3.4.2 Viral Load Suppression

According to Merysabel et al (2002) stated that effective uses ART reduce HIV viral load concentration (HVL suppression) and destruction of CD4 counts that improve immune system.

Fokam *et al.*, (2019) commented that to meet the global targets 90-90-90 under the initiative of “Test and Treat” strategy for the purpose of bringing down the HVL need to identify those who require interventions to make follow-up toward meeting the targets and adopt adherence support mechanism among adolescents living with HIV in limited resource setting.

2.3.4.3 Increased CD4 Count

According to U.S Department of Veterans Affairs on CD4 Count cited on May, 2019 reported that the HIV infection progress, the number of these cells declines and CD4 count drops below 200, diagnosed to have AIDS whereby normal range of CD4 is about 500 - 1500 and obvious CD4 cell count increases when the HIV virus is controlled with effective clinical care and treatment during adolescent HIV friendly services.

2.3.5.4 Opportunistic Infections Free

Adolescents living with HIV are more frequently attacked with opportunistic infection and mostly their immunity became weak and less to fight infection, if care and

treatment of ART does not initiated immediately following diagnosis the infection worse but better treatment reduces the amount of HIV in a person body and keep immune system stronger as well as achieving opportunistic infection free which improve the quality of life in future (CDC 24/7, 2019).

2.3.4.5 Retention in Care

Retention in care and treatment among adolescents living with HIV/AIDS remained as crucial for ongoing refills of ART whereas WHO (2013) proposed possible interventions focused on factors that hinder retention into care as to provides free services of charge at point of care, decentralize ART where possible, schedule clients for facility visits and reduces waiting time via appointment system, separate clinical consultation visits, link, integrate and coordinate care and family focused care.

2.2.5.6 Linkage to Community Based HIV Services

Effective engagement of adolescent living with HIV with community based HIV services (CBHSs) or community support groups and community adolescent treatment supporter (CATS) improves adherence, psychosocial well being and linkage as well as retention and insisted that there is urgent to inform further programmatic development, national and international policy, guidelines and services delivery for ALWHIV (Willis et al, 2019).

2.3.4.7 Transition of Adolescent to Adult HIV Care

Hazra (2015 suggested that a successful transition process from paediatric to adults healthcare settings greatly impacts the achievement of ART in adolescents and young

adults henceforth the process of transition as being seems to be complex changes of clinics, models of care and healthcare providers needs careful construction and conduction if not considered high risk of non adherence, emerging of viral resistance and loss to follow-up may become worse.

2.4 Theories of Adolescent HIV Friendly Services

According to Nation et al (2003), Small, Cooney and O'Connor (2009) they explained that the characteristics of effective interventions are theory driven which explain, predict and understand phenomena. Therefore, adolescent HIV friendly services are theory driven whereas an individual behavior sharpened through observing other's behavior, attitude and outcomes of those behaviors (Bandura, 1999).

2.4.1 Social Ecological Model (SEM)

Bronfenbrenner (1977) state that "to understand factors affecting behavior needs provision of guidance for developing successful programs through social environments whereas emphasize multiple levels of influence such as individual, interpersonal, organizational, community and public policy and the idea that behaviors both shape and are shaped by the social environment in which the principles of social ecological models are consistent with social cognitive theory concepts which suggest that creating an environment conducive to change is important to making it easier to adopt healthy behaviors".

Therefore, HIV among adolescents have been shown that social and structural factors are now well accept as determinants of HIV vulnerability that needs improvement and understanding of the transmission whereas social, economic, organizational and

political inequalities required to be implemented as to decrease HIV incidences in multiple level by using the combination prevention packages as underpinned by the SEM (Barai et al., 2013).

Furthermore, Bronfenbrenner (1979) conceptualized interventions (adolescent HIV friendly services that included the promotion of individual reflection, peers and interpersonal group education as well as broader community-based component learned from the individual level that comprises the characteristics of an individual that influence behavior change, the immediate social environment in which the person interacts, such as family, friends, peer, co-workers, religious networks, school, and the neighborhood which has high significant role in viral suppression, ART adherence and retention and the social environment that exerts an influence on the individual but without the individual's direct interaction such local government, village associations, businesses, transportation as well as the broader social, policy, and enabling environment such local, state, national, and global laws; economic and social policies; social and cultural norms".

2.4.2 Social Cognitive Theory (SCT)

Bandura (1989) stated that "human behavior is determined by the interactions between behavior, personal factors, and environmental influences" where explained more readily applied to "counseling interventions for disease prevention and management". Furthermore, Baranowski, Perry and Parcel in 2002 address "psychosocial dynamics influencing health behavior and methods for promoting behavioral change". Whereas Social Cognitive Theory states "human behavior is explained in terms of a triadic,

dynamic, and reciprocal model in which behavior, personal factors (including cognitions), and environmental influences all interact”.

The theory credentials to adolescents living with HIV as reflects the fundamental personal aspects as “the individual's capabilities to symbolize behavior, to anticipate the outcomes of behavior, to learn by observing others, to have confidence in performing a behavior (including overcoming the problems in performing the behavior), to self-determine or self-regulate behavior, and to reflect on and analyze experience” (Bandura, 1997).

Therefore, healthcare providers, health educators as well as behavioral scientists can innovatively develops more interventions, procedures, or techniques that might fuels these underlying cognitive variables, so as to increase the adolescents living with HIV behavioral changes to the aspect of proper uses of ART, HVL monitoring, retention into care and prevention of further transmission following effective uses of theory in proper designing health education programs during CTC and blubs.

2.4.3 Transtheoretical Model (TTM)

Prochaska et al (1992) explained that “for most persons change in behavior occurs gradually with individuals moving through stages of behavior change as pre-contemplation that being unaware that the behavior is problematic, being uninterested, or being unwilling to make a change in the foreseeable future and contemplation as beginning to consider the pros and cons of changing one’s behavior as preparation required to take action to change one’s behaviors in the immediate future and starting

to experiment with small changes toward action as having taken definitive actions to change one's behavior and finally maintenance as having sustained behavior change for at least six months and working to prevent relapse”.

Prochaska, Johnson and Lee in 2009, further clarified that TTM is an “integrative framework for understanding how individuals and populations progress toward adopting and maintaining health behavior change for optimal health” where uses stages of changes to integrate process and principles of across major theories of intervention.

Therefore, since adolescents are group of individuals with high-risk behaviors aged 10 to 19 years old, the model fits to adolescents living with HIV has significant roles to prepare interventions to take action to changes and maintains future.

Henceforth on deciding on the best intervention approach and theory to guide an intervention starts with to understand the population of interest, combined with identifying the most important and changeable determinants of the selected behavior (Glanz, 2018).

2.5 Empirical Literature Review of Adolescent HIV Friendly Services for ALWHIV

This section covers the empirical review regarding adolescent HIV friendly services, adolescent HIV friendly service design, implementation of adolescent HIV friendly services, monitoring and evaluation of adolescent HIV friendly services and clinical care outcomes for ALWHIV.

2.5.1 Adolescent HIV Friendly Services

Tenner et al (2013) conducted a study on youth friendly clinics, they concluded after the interviews and document review about linkage and engagement in care for adolescent living with HIV which shown critical innovative care provision, three elements of youth friendliness identified as target role for population, physical and social environment of the clinics to create working youth friendly clinics as may help to reduce barrier of care engagement and concluded that integration of clinic design and staff training within the organization of a clinical program become helpful in meeting adolescent specialized needs.

MacPherson *et al.*, (2015) conducted a study on service delivery interventions to improve adolescents' linkage, retention, adherence to ART and HIV care wherein cochrane risk of bias tool and Newcastle Ottawa Scale methodology quality accessed thru randomization controlled trials with aimed to evaluate effectiveness and the results shown that individual and group counseling and education, peer support, direct observed therapy, financial incentives and other interventions might improve adolescent friendliness of clinics despite of identified limited evidence from the study to effect the effectiveness of services delivery to support linkage from HIV diagnosis to ART initiation, retention and adherence on ART as well as advises for further investigation.

2.5.2 Adolescent HIV Friendly Service Design

Goicolea *et al.*, (2017) published an article on global public health about developing and sustaining adolescent friendly services in Ecuador and Peru as a multiple case

study whereby findings has shown that the process of introducing, developing and sustaining AFHS was long term and require a creative team effort and collaboration between donors, public institutions and health providers.

Hayes *et al.*, (2005) conducted a detailed process evaluation at MEMA kwa Vijana - rural Mwanza in Tanzania on the impact of innovative interventions regarded to HIV, other STIs and unwanted pregnancy among adolescents whereby community randomized trial employed for three years. The study concluded that behavior change interventions among adolescents have been widely advocated, but there have been few rigorously designed trials of their effectiveness especially in developing countries whereby design need to be implemented on a very large scale.

2.5.3 Implementation, Monitoring and Evaluation of Adolescent HIV Friendly Services

Mimiaga *et al.*, (2011) conducted a study to objectively assess at what extent CDC recommendations have influenced routine HIV testing among Massachusetts community health Centre personnel, the study found the five frequently barriers to the implementation of routine HIV testing were constraints of providers' time, time required to administer counseling, time require to administer informed consent, lack of fund and need for additional training.

The study concluded that routine HIV testing is not implemented uniformly by the time and need future efforts to increase implementation and address personnel regarding time concerning and staff availability as barrier to routine HIV testing.

Kurth *et al.*, (2015) conducted a study on HIV testing and linkage to services for youth, they concluded that program quality monitoring of HIV-testing, implementation of best HIV-testing practices for young must be a part of the HIV agenda in order to achieve generations with low HIV-infection as well as provision of better care of those living with HIV/AIDS.

2.6 Clinical Care Outcomes of Adolescent Living with HIV

HIV testing services (HTS) has been remained as a fundamental key to detect HIV and provides a pathway to clinical care and treatment and identifying couples and family members who are HIV positive or at risk as well to disclosure of HIV status that promises large scale strategy to reduce community levels infectivity (Burton et al and Donnel *et al.*, 2010 and WHO, 2011).

Bradley *et al.*, (2014) reported that comprehensive continuum of services required to ensure all APLWHIV infection receive the HIV care and treatment to achieve viral suppression to improve their health and reduce HIV transmission, reach prevention and care goals and concluded that public health practice - state and local health departments, community based organizations and health care providers play essential roles in improving outcomes on the HIV care continuum that increase survival among PLWHIV and prevent new HIV infection.

Mavedzenge (2011) conducted a study using CDC data from national HIV surveillance system and medical monitoring project with the purpose of estimating the percentages of PLWHIV infection, diagnosed with HIV infection (86%), linked and

engaged (40%) to HIV medical care, prescribed ART (37%) and Viral suppression (30%) in US and reported that HIV infection if untreated leads to acquired AIDS and premature death. Finally, concluded that the prevalence of viral suppression was significantly lower among persons aged 18 - 24 years (13%), 25 - 34 years (23%), 35 - 44 years (27%) compared with those aged greater or equal to 65 years (37%). This session cited different scholars on how they argued about continuum of HIV services and clinical care outcomes for ALWHIV.

2.7 Conceptual Framework

The conceptual framework was designed from the background of the study and literature review to guide the researcher to evaluate the adolescent HIV friendly services and its influence in clinical care outcomes whereas designing, implementation, monitoring and evaluation were assessed to find out whether statistically was significant in line to the demands of adolescents based on quality and quantity where ultimately its influence in relation to research objectives and hypothesis of the study.

The conceptual framework shows the relationship of variables interactions, connectedness and interrelation toward prevention of HIV between adolescent living with HIV as well as quality of life. Therefore, the framework display the entire road map of the study henceforth help to answer the researched objectives and hypothesis in relation to dependent variable (Adolescent HIV Friendly services), moderating variables (designing, implementation, monitoring and evaluation) and lastly independent variable (clinical care outcomes) as shown below in Figure 2.1.

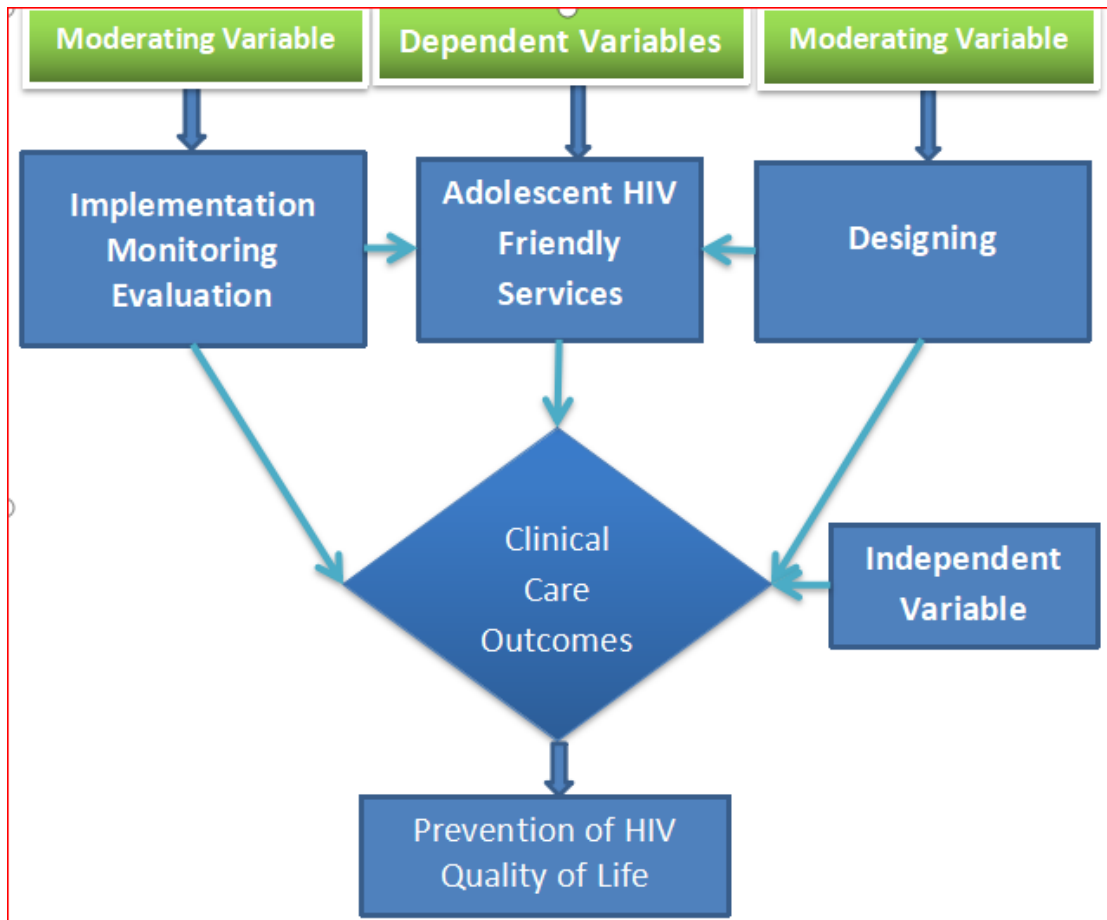


Figure 2.1: Conceptual Framework of the Study

Source: Background and Literature Review of the Study, 2019

The conceptual framework was designed to govern the study that aimed to assess and analyze the specific objectives in relation adolescent HIV friendly services towards prevention of HIV and quality of life.

Adolescent HIV Friendly Services as a dependent variable which depends on moderating variables as designing of services for adolescents living with HIV whereas various factors became as fundamental core for efficient and effective design, implementation, monitoring and evaluation of adolescent HIV friendly services improvement.

Moderating variables as designing whereas shown that separate space, convenient hours for services provision, convenient location with adequate space and enough time to spent with clients during services, privacy and confidentiality with comfortable surroundings as well as peer educators identified deeply to activate services improvement which determined whether meet adolescent preferences and expectation at the point of services deliver which definitely influences independents variables (clinical care outcomes). Also it has been shown in background and literature review of the study that implantation, monitoring and evaluation of adolescent HIV friendly services improves the prevention of HIV and quality of services provided among adolescents.

Independent Variable as clinical care outcomes (adherence to ART, viral load suppression, opportunistic infection free, increase of CD4 count, retention to care, transition to adult HIV care and linkage to community as well as transferred out, opted out as well as lost to follow-up) has shown its results to determine the quality of adolescent HIV friendly services. Therefore, moderating variables shows close interrelation and connectedness between dependent and independent variables that focus the prevention of HIV and quality of life toward adolescent HIV free generation by 2030.

2.8 Research Gap

The literature reviews has shown several studies that have been carried out about adolescent HIV friendly services in relation to ART adherence, retention to care, opportunistic infection, viral load suppression and transition to care for clinical care outcomes which revealed significance of AHFS toward attainment of global target

(Singla (2019), Obinna (2019), Merysabel et al (2002), Fokam et al (2019), CDC 24/7 (2019), Geng et al (2011) and Willis et al (2019) but not evaluation about adolescent HIV friendly services design, implementation in clinical setting towards achieving the desired outcomes.

Most of studies conducted were involved either quantitative or qualitative design and few mixed study as well as few randomized controlled trial and process evaluation, assessment and surveillance about HIV innovative care provision, service delivery interventions to improve adolescents' linkage, retention, adherence to ART and HIV care Tenner *et al.*, (2013), MacPherson et al (2015) and Hayes et al (2005).

Others focused implementation, monitoring and evaluation, surveillance system on viral suppression, CDC recommendations whether were considered during implementation, HIV testing and linkage to services for youth, HIV surveillance and medical monitoring project retrospective cohort analysis to determine retention in care and virology suppression, conducted a clustered randomized, controlled study in 12 HIV treatment hospitals about conditional economic incentives whereby all the study focuses on either one or more clinical care outcomes Zanon et al (2017), Ekwunife *et al.*, (2019) Mimiaga et al (2011), Kurth *et al.*, (2015), Mavedzenge (2011), Obinna (2019), Fokam (2015 -2017), Willis et al (2019).

Furthermore, in Tanzania very few studies have been conducted in relation to designing, implementation and clinical care outcomes before the adolescent HIV friendly services and after to understands whether the intervention delivered the

desired outcomes or not as well as to make a comparison changes for future re-plan and lesson to learn.

Therefore, the evaluation of adolescent HIV friendly services and its clinical care outcomes among adolescent living with HIV at Maweni Hospital in Kigoma will inform the national, zonal, district, non-governmental organization for further strengthening of adolescents' services toward HIV prevention and quality of life improvement as well as free HIV generation.

2.9 Summary of the Chapter

This chapter clarifies in detail the literature and empirical review as well as theories regarded adolescent HIV friendly services in global context, Africa, East Africa and Tanzania in relation to designing, implementation, monitoring and evaluation as well as conceptual framework and research gap.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Chapter Overview

This chapter elaborate more about the methodology of the study that employed to assess the designing, implementation, monitoring and evaluation of adolescent HIV friendly services whether meets preferences and expectation and involves them, and analysis of its influence in the clinical care outcomes among adolescents where descriptive quantitative analysis used to describe primary data collected from 34 adolescents living with HIV at their conveniently time qualitatively through self administered questionnaires.

Secondary data as retrospective time series of yearly cohort extracted from CTC2 database which usually used to manage data on HIV/AIDS care and treatment as well as to preform a wide range of analysis and automated printout was whereby 90 units sampled randomly since 2006 up to 2018 conducted at Maweni hospital CTC as being followed individually for consecutively of five years, whereby F - test and Z - testes were used as well as multiple regression modal for all variables to test the probability theory (P-Value of 0.05 as significant) at the level confident interval (1.96% for 95%) at Maweni Hospital in Kigoma Municipal.

3.2 Research Design

The study employed a descriptive study whereby adolescents were conveniently provided self administered questionnaires based their availability and retrospective time series data as a cross sectional study designed to yield adequate data for

description and relationship between variables of the study among the attended adolescents living with HIV at Maweni hospital 2006 up to December, 2018. It was chosen due to the fact of being with large number of adolescents, well supported with ICAP as well as established long time ago as I expected to find out the relevant results.

A cohort data of one year was followed for the period of five year whereas nine cohorts group studied from 2006 to 2018 regarded clinical care outcomes of common characteristics to determine the possible outcomes via multiple regression modal.

3.2.1 Study Area

The study was conducted at Maweni hospital where has Adolescent Care and Treatment Clinic which provides adolescents services living with HIV at Regional such as treatment services, counseling services, psychosocial services, preventive services and laboratory services.

The study area was purposefully due to the fact that the region being with few studies that had been carried out particularly regarded to Adolescent despite of prevalence rate of HIV about 7% compared to other regions and Maweni HIV adolescent clinic has been there for the long time since 2006 as we expects the project still supported by THPS and government.

3.2.2 Study Population

The study population involved adolescents of the age ranged from 15 to 19 years old as this stage age, they considered as matured adolescents and we expected from them

to get relevant information regarded the study to ensure data validity and reliability rather than 10 to 14 years old which regarded as children according to WHO for those attended at Maweni Adolescent CTC whereas quantitative and qualitative methods were used to during sampling and data collection.

3.3 Sampling and Sample Size

Sample size were 34 adolescents were sampled conveniently out of 44 and provided questionnaires that were filled independently under the supervision of research assistants as well as quantitatively sample calculated from 2006 to 2018 until concluded as sample size of 93 out of sample population of 300.

3.3.1 Sampling Methods

The study employed qualitative sampling technique as convenient to ensure representation and validity of the study, whereas simple random sampling was used to sample unit of the study from the CTC 2 database since 2006 to 2018 to for the purposes of biases reduction and validity as well as reliable the results.

3.3.1.1 Convenient Sampling Method

Convenient sampling method was used to select available respondents aged 15 to 19 purposively who attended during normal hours visit per their scheduled at Adolescents CTC –Maweni Hospital to respond on the self administered questionnaires regarding the study to obtain primary data about designing, implementation, monitoring and evaluation of Adolescent HIV Friendly Services. Wherewith self administered questionnaire was filled individually following general instructions that given by the researcher.

3.3.1.2 Systemic Sampling Method

Systemic sampling method was used to select personal information of adolescents living with HIV who their reports were stored in CTC2 database regarded adherence to antiretroviral therapy, CD4 information, viral load information, retention to CTC, opportunistic infection, transition to adult HIV care and linkage to community based HIV services available aged 15 to 19.

Sampling of 93 individual information were selected thru systemic at the interval of 3rd following sorting of new diagnosed positive and current on ART as indicators on specific year aged 15 to 19 years old to extract data, then were followed for five years by compering each year for five years in order to avoid selection biases in the study. The data were then filled to excel spreadsheet that used as a secondary source of information to enter into SPSS version 20 and STATA version 8.

Systemic sampling method was used to sample the required unit from the population for the study whereas randomly number three picked and the population were sampled at the interval of 3rd to attained the total number of 93 respondents within the system.

3.4 Sample Size

Sample size calculation of adolescents living with HIV were obtained by the as follows;

Fisher's formula

$$n = z^2 P(P-1) / \epsilon^2$$

Where

n= Sample size required

P= Expected proportion

z= Level of confidence (1.96% for 95%)

ϵ = Marginal of error

Solution

P= 7%

z= 1.96%

ϵ = 5%

$$n = z^2 P (P - 1) / z^2 = 1.96^2 * 7(7 - 1) / 5^2 = 93$$

This indicated that 93 adolescents were sampled from the CTC 2 database for the study at the interval of 3rd to represent the study population out of 300 adolescents in the database.

3.5 Data Collection Methods and Instruments

The mixed study design involved as cross sectional study whereas qualitative part was used to select the sample conveniently as self administered questionnaires were provided for responses and substantively quantitative information were collected from CTC2 data bases randomly as systemic sampling engaged.

3.5.1 Data Collection Instruments

The quantitative data was gathered via formalized self administered questionnaire whereby respondents filled independently to the questions of interest to adolescent HIV friend services regarded to design, implementation, monitoring and evaluation and clinical care outcomes at their convenient time as well as spread sheet of excel was also used to gather data from CTC 2 data base for computation regarded to clinical care outcomes.

3.5.2 Data Collection Methods

The data collection was used self administered questionnaires and excel spread sheet from documentary data base of CTC on adolescent HIV friendly services in relation to design, implementation and clinical care outcomes as both primary and secondary data.

Documents of adolescents living with HIV reviewed from CTC 2 database which was composed into excel spread sheet of all relevant information regarding ART adherence, HIV viral load suppression, increased CD4 count, opportunistic infections free, retention to care, linkage to community based HIV services and transition of adolescent to adult HIV care and high HIV viral load, high opportunistic, low CD4, lost to follow-up opted out, transferred and death for descriptive statistics analysis.

The data collection process was done successful whereas the authority informed two days before for preparation of respondents' identification and information for their availability confirmation.

3.6 Research Assistant Training

Before pre-test of data collection methods and instruments were carried out for five days to orient the researcher assistants to become familiar with data collection process and instruments whereas four graduates degree holder were employed. The field protocol was actual fieldwork started whereby the research team pre-tested the instruments for better understood and preparedness for methods of data collection for the actual fieldwork.

3.7 Data Process and Analysis

From the fact that the study used mixed research design whereas data were processed as well cleaned before analyzed.

3.7.1 Quantitative Data Analysis

The excel spread sheet was used to record data from CTC2 database which later entered into Statistical Package for Social Sciences (SPSS) version 20 as soft wire of data entry and STATA version 8 was used for data analysis immediately after transformed to STATA soft wire.

The seventh (7) variables were used in regression model equation as Clinical Care Outcomes (CCOs) = $(\beta_0 + \beta_1AA + \beta_2ICD4 + \beta_3OIF + \beta_4RCT + \beta_5TAAHC + \beta_6LFU + \beta_7TO + \varepsilon$

Whereby;

AA= ART adherence

ICd4C= Increased CD4 count

OIF= Opportunistic infections free

RCT= Retention to care and treatment

TAAHC = Transition of adolescent to adult HIV care

LFU= Lost to follow-up

TO= Transferred Out

ε = Error Term

β_0 = Constant

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7$, = Coefficients

Henceforth, the above function can be expressed in the following equation as shown

Therefore, the above regression equation was found out as a modal for adolescent HIV friendly services as a dependent variable influenced by independent variables as whereby multivariate was analyzed by Z and T-test as assumptions and hypothesis were answered.

3.8 Data Validity and Reliability

Validity was checked as the pretest of the data collection methods and instruments tested before actual field to takeover so as to reduce ambiguities and refined questions.

Reliability was conducted regularly at field to checks and insured that inquirers and respondents were sincerely and efficiently informed to fill the information careful in order to keep the survey as much realistic as possible.

3.9 Ethical Issues

The permission was obtained from the Vice Chancellor of the Open University, Kigoma Regional Administrator Secretary and Kigoma Regional Medical Doctor and Maweni hospital director before to begin of the study.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND FINDINGS

4.1 Chapter Overview

This chapter presents the results of evaluation of Adolescent HIV Friendly Services whereby data were analyzed and findings of the study presented in relation to design and care and treatment of adolescent whether meets adolescents preferences and expectation and implementation, monitoring and evaluation whether involved adolescents representatives as well as its clinical care outcomes as the respondents recruited during data collection at Maweni Hospital at Kigoma Municipal in Kigoma region. Also the chapter presents the demographic information of the respondents involved in the study of each specific objective.

4.2 The Demographic Characteristics of the Respondents

All respondents involved in the study were obtained the demographic whereby thirty four (34) adolescents out of forty four (44) recorded and analyzed together with individual information into CTC2 database since 2006 up to 2018, also recorded as about their age, genders, address, education level, duration of illness from the date of diagnosed of being HIV/AIDS positive, time since kept to ART medication and distance from home to the CTC clinic.

4.2.1 Demographic Information of the Respondents

The field data analysis that was collected during self administered questionnaires has shown the demographic information and its percentages distribution based on their age, gender, address, education level, duration of illness from the date of diagnosed as

HIV/AIDS positive, time on antiretroviral therapy (ART) and distance that clients travel access care and treatment services at clinic as the table below showing.

Table 4.1: Percentage Distribution of the Respondents

Respondents' by Region	Sex	Male	Female
	Kigoma	19 (56%)	15 (44%)
	Non Kigoma	0 (0%)	0(0%)
	Total	19(56%)	15(44%)
District/Municipal	Kigoma	19 (56%)	15 (44%)
	Total	19(56%)	15(44%)
Wards	Ward Name		Respondents Percentage Distribution
	Kitongoni		4(12%)
	Mwanga		6(18%)
	Ujenzi		1(3%)
	Mjini Kazikazini		4(12%)
	Buhanda		3(9%)
	Buhanda		1(3%)
	Kagera		2(6%)
	Machijioni		1(3%)
	Kilima Hewa		1(3%)
	Buzebazeza		2(6%)
	Taifa		3(9%)
	Katubuka		1(3%)
	Kipamba		2(6%)
	Mwanga Kusini		1(3%)
	Mji Mwema		1(3%)
	Mwandija		1(3%)
	Total		34(100%)

Source: Maweni Hospital, 2020

Table 4.1 shows that all respondents attending at Maweni hospital CTC, male were 1.3 times more compared to female. Also the analyzed data informs majority about 18% and 12% respectively were from Mwanga, Kitongoni and Mjini Kaskazini wards and others Buhanda, Taifa and Kipamba wards as the medium with the respondents of 9%, 6% as well as the rest with at least 3%.

Table 4.2: Percentages' Relative Types Accompanied the Respondents to Clinic

Respondent Relative Types	Relative Types	Number of Relative	Percentages Distribution
	Parent	2	6%
	Caregiver	8	24%
	Treatment Supporter	3	9%
	Matured Minor	21	62%
	Total	34	100%

Source: Field Data 2020

The table 4.2 has shown from data analysis that about 62% of the adolescent responded to the study were matured followed by caregiver 24% and treatment supporter about 24% as well as 6% as parents. The statistics indicated that most of the respondents attending at Maweni CTC were matured minor adolescent that means have matured.

Table 4.3: Percentage Distribution of Age, Sex and Education of the Respondents

Respondent's Age	Number of Age Distribution	Percentage Distribution
15	7	21%
16	9	27%
17	4	12%
18	3	9%
19	11	32%
Total	34	100%
Adolescents' Education Level	Number of the Respondent	Percentages
None	5	15%
Primary School	13	38%
Secondary School	16	47%
Total	34	100%

Source: Field Data 2020

Table 4.3 indicates that adolescent involved in the study were at age of 15 up to 19 years old whereby the majority were 19 years old, then followed by 16, 15, 17 and 18 years old as the minority. The data analysis has shown that most affected adolescents were the age of 19 years old about 32% and the less affected were 18 years old as 9%. It has concluded that Maweni hospital CTC; majority of Adolescent HIV clients' will definitely transit in few months to come.

Adolescent' education level has shown HIV positive adolescents were high at the age of 16 found to be largely secondary school students compared 13 primary school and last 5 adolescents that has shown as none education level. The data indicates that more adolescents are taken to school despite of their HIV sero-status which however this leads to quality of life improvement for the future to come ahead.

Table 4.4: Percentages of Adolescents' Duration of Illness Diagnosed to HIV

Duration of Illness	Number of the Respondent	Percentages
<1	2	6%
1-3	3	9%
4-7	8	24%
8-11	4	12%
12-15	8	24%
16-19	9	27%
Total	34	100%

Source: Field Data 2020

The analyzed data results for the above table 4.4 has shown that between the age group of 16-19 years old were most found be with longest duration of illness, the followed by 12-15 and 4-7 duration as well as 1-3 group of age and finally <1 which indicated less adolescent HIV positive.

Table 4.5: Percentages Distribution of Adolescents' Enrollment and Walking Distance to Maweni CTC

Duration of Enrollment	Number of the Respondent	Percentages
1-2	2	2(6%)
3-4	4	4(12%)
5-6	6	6(18%)
7-8	10	10(29%)
9-10	12	12(35%)
Total	34	34(100%)
Walking Distance in Kms	Number of the Respondent	Percentages
<5	7	21
5-10	17	50%
>11	10	29%
Total	34	100%

Source: Field Data 2020

The analyzed data results for the above table 4.5 has shown that between the age group of 9-10 years old were more found to be involved in care and treatment at CTC, the followed by 7-8, 5-6, 3-4 and 1-2. However, the analyzed data results indicated that the majority were started ART therapy while there were children as 9-10 and 7-8 until today as compared to the rest of 5-6, 3-4 and 1-2 whereas that indicated as probably acquires HIV/AIDS thru other roots like sexual intercourse, sharing of sharps and direct contact with the fluid of product of blood. Also indicated that majority of adolescents walk and travel about 5-10 kilometers to access Maweni HIV care and treatment as then followed by 11 kilometers and finally <5 kilometers. However, the field results concluded that yet still adolescents walk and travel long distance to access services at Maweni hospital CTC.

4.3 Adolescent HIV Friendly Services' Care and Treatment at CTC

The study findings have shown that care and treatment involvement, the level of awareness, adequate of services delivery satisfaction, satisfaction of staff availability and interaction, services arrangement, appointment schedule. Also welcome note of receptionist and care providers, the way data retrieved wherever needed, time spent to receive services, counseling services, medical laboratory services, medical care and treatment, dispensing and post medical instruction services, referral system and follow-up as well as linkage system to Community Based Health Services (CBHS).

The study findings have shown that majority of the respondents were satisfied with the services provided at Maweni hospital CTC clinic and very few of them replied no and some did not know. The HIV positive adolescents' response were shown that 100% satisfied with staff availability and appointment schedule and 97% also satisfied with medical care and treatment at HIV clinic, dispensing and post medical instruction services during CTC and follow-up schedule as 94% out of 100% of the respondents were aware with HIV care and treatment provided at CTC as well as were satisfied with services arrangement during care and treatment with the way their information retrieved whenever required.

Other responded that 91% of adolescents satisfied with interaction, time spend and counseling of healthcare providers at access of CTC services whereas 88% satisfied with effective feedback and 85% contented with HIV medical care and treatment and community based HIV services linkage received as well as 82% were satisfied with welcome note of receptionist and care providers with lastly 74% among adolescents living with HIV accepts the referral system within the CTC clinic.

Table 4.6: Evaluation Results of HIV Care and Treatment C among Adolescents

Adolescent HIV Friendly Services Care and Treatment (CTC)	Yes	No	I don't know	Total
Adolescents involves in care and treatment	23(74%)	9(26%)	0(0%)	34(100%)
I'm aware with HIV care and treatment p	32(94%)	2(6%)	0(0%)	34(100%)
I'm adequately satisfied with HIV care and treatment received	33(97%)	0(0%)	1(3%)	34(100%)
I'm satisfied with staff available in HIV care and treatment clinic	34(100%)	0(0%)	0(0%)	34(100%)
I'm satisfied with services arrangement in HIV care and treatment	32(94%)	2(6%)	0(0%)	34(100%)
I'm satisfied with the interactions of healthcare providers	31(91%)	3(9%)	0(0%)	34(100%)
I'm satisfied with appointment schedules of attending CTC	34(100%)	0(0%)	0(0%)	34(100%)
I'm satisfied with welcomes note of receptionists/providers at CTC	28(82%)	6(8%)	0(0%)	34(100%)
I'm satisfied with retrieved records promptly whenever required	32(94%)	1(3%)	1(3%)	34(100%)
I'm satisfied with time spend to receive HIV services at CTC	31(91%)	2(6%)	1(3%)	34(100%)
I'm satisfied with counseling services received at CTC	31(91%)	2(6%)	1(3%)	34(100%)
I'm satisfied with medical laboratory services received at CTC	27(79%)	7(21%)	0(0%)	34(100%)
I'm satisfied with medical care and treatment received at CTC	29(85%)	4(12%)	1(3%)	34(100%)
I'm satisfied with dispensing pharmacy services HIV at CTC	33(97%)	1(3%)	0(0%)	34(100%)
I'm satisfied with post medical instruction provided at CTC	33(97%)	1(3%)	0(0%)	34(100%)
I'm satisfied with follow-up schedule at CTC	33(97%)	1(3%)	0(0%)	34(100%)
I'm satisfied with effective feedback mechanism at CTC	30(88%)	2(6%)	2(6%)	34(100%)
I'm satisfied with referral system within the facility	25(74%)	7(20%)	2(6%)	34(100%)
I'm satisfied with the linkage system to CBHS	29(85%)	3(9%)	2(6%)	34(100%)

Source: Field Data, 2020

The study findings have been shown that majority of the respondents were satisfied with the services provided at Maweni hospital CTC clinic and very few of them replied no and some did not know.

4.4 The Designing of the Adolescent HIV Friendly Services

The respondents were asked to reply on the designing of adolescent HIV friendly services to assess whether the meets adolescents' preferences and expectation through the following variables as separate space, convenient location and hours, adequate space, privacy, confidentiality, comfortable friendly surround, meaningful engagement, trained providers and finally outreach mobile services.

The questionnaires were administered to thirty four (34) respondents and they answered independently whereas showed that majority were recommends to justify their needs based of characteristics and quality except that few recommends that healthcare providers conducts outreach as the table below shown compared to majority who replied no.

Table 4.7: Percentage of Respondents on Design of AHF Services

Percentage Distribution of the Respondents on Adolescents HIV Friendly Services				
Analytical results	Yes	No	I don't Know	Total
Separate space	32 (94%)	1 (3%)	1(3%)	34(100%)
Convenient location	33 (97%)	0(0%)	1(3%)	34(100%)
Convenient hours	34(100%)	0(0%)	0(0%)	34(100%)
Adequate space	33(97%)	1(3%)	0(0%)	34(100%)
Privacy	32(94%)	1(3%)	1(3%)	34(100%)
Confidentiality	33(97%)	1(3%)	0(0%)	34(100%)
Comfortable friendly surround	30(88%)	3(9%)	1(3%)	34(100%)
Meaningful engagement	29(85%)	4(12%)	1(3%)	34(100%)
Trained healthcare	30(88%)	4(12%)	0(0%)	34(100%)
Outreach mobile	8(24%)	26(77%)	0(0%)	34(100%)

Source: Field Data, 2020

The researcher following analysis shown as above that adolescents reported 100% were provided friendly services in convenient hours by healthcare providers at care and treatment clinic with adequate space in convenient location and confidential about 97% whereas followed by 92% as they also responded to received care in privacy environment with adequate separate space. The analyzed data also were shown that services rendered at comfortable friendly with trained healthcare providers around 88% as well as 85% reported to have meaningful engagement and few confirmed to receive HIV services through mobilized outreach.

4.4.1 Logistic Regression of T - Test on Design of AHFS whether Meets Preferences and Expectation of Adolescents

The SPSS version 20 directed to ran whereas the output attained assess hypothesis as adolescent HIV friendly services design whether meets preferences and expectation or not among adolescents living with HIV.

Table 4.8: SPSS Output of T-Test on Preference and Expectation of ALWHIV

Model	Beta in	T	Sig.	Partial Correlation	Collinearity Statistics Tolerance
Separate space	-.033 ^a	-.210	.835	-.038	.996
Convenient location	-.023 ^a	-.146	.885	-.026	.998
Convenient hours					
Adequate space	-.023 ^a	-.146	.885	-.026	.998
Confidentiality	-.023 ^a	-.146	.885	-.026	.998
Comfortable friendly Surround	-.046 ^a	-.210	.835	-.038	.531
Meaningful engagement	-.052 ^a	-.262	.795	-.047	.638
Trained healthcare	.173 ^a	1.059	.298	.187	.912
Outreach mobile	.075 ^a	.471	.641	.084	.981

Source: Field Data SPSS, 2020

The logistic regression as performed through SPSS version 20 to test the hypothesis that adolescent HIV friendly services design meets adolescents preferences and expectation as the theory suggests and P-value found to greater than significant 5% level and therefore accepted.

4.5 The Implementation of Adolescent HIV Friendly Services

The field data collected to assess adolescent HIV friendly services whether involves adolescents living with HIV in its implementation of services such as equitable, accessibility, acceptability, appropriateness and effectiveness. The finding results has shown that most of the majority among the respondents accepted the way of AHF services implemented as most of them were involved as indicated in the table below.

Table 4.9: Percentages' Distribution of the adolescents Involvedness in Implementation of AHF Services

Percentage Distribution of the Respondents on Adolescents HIV Friendly Services				
Variables and Results	Yes	No	I don't Know	Total
Equitability of the Services	33 (97%)	1 (3%)	1(3%)	34(100%)
Accessibility of the Services	31 (91%)	2(6%)	1(3%)	34(100%)
Acceptability of the Services	33(97%)	1(3%)	0(0%)	34(100%)
Appropriateness of the Services	30(88%)	3(9%)	1(3%)	34(100%)
Effectiveness of the Services	30(88%)	3(9%)	1(3%)	34(100%)

Source: Field Data, 2020

The analyzed data in the Table 4.9 has shown that almost the majority responded "Yes" regarding the implementation of adolescent HIV friendly services as involved

them whereas respondents replied that 97% of the services were equitable and acceptable where followed by 91% of respondents who reported that services were accessible and the rest variables appropriate and effectiveness of services delivery were 88% compared minority of respondents about 9% who reported that no appropriate and effectively services delivery among adolescent living with HIV, then followed by accessibility about 2% as well as finally only 3% reported as services were not equitable and acceptable. However, minority about 3% they responded to be unaware either “Yes” or “No”.

4.5.1 Logistic Regression Output for Assumption Test on Implementation

This part was aimed to achieve the assumption whether implementation of adolescent HIV friendly services involves adolescents.

Table 4.10: SPSS Output of Wald-Test on Adolescents involvement in Implementation of Adolescent HIV Friendly Services

Model	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I.for EXP(B)	
							Lower	Upper
Equally_Provided	-17.775	4.019E4	.000	1	1.000	.000	.000	.
Accessible_Time	3.428	1.795	3.647	1	.056	30.823	.914	1.040E3
Acceptable_Services	-21.203	4.019E4	.000	1	1.000	.000	.000	.
Appropriate_Services	1.463	1.784	.673	1	.412	4.320	.131	142.510
Efficiency_Services	1.463	1.784	.673	1	.412	4.320	.131	142.510
Constant	29.195	5.684E4	.000	1	1.000	4.776E12		

The logistic regression performed through SPSS version 20 to test the assumption concerned implementation of adolescent HIV friendly services which revealed to involved adolescents as the theory suggests and P-value found to greater than significant 5% level and therefore accepted.

4.6 Monitoring and Evaluation of Adolescent HIV Friendly Services

The researcher assessed the adolescents to find out establish the results on whether adolescents who are living with HIV if involved in monitoring and evaluation of the services in order to express their needs and expectation so as to reduce the health system burden.

The data collected at Maweni hospital CTC has shown involvement for as adolescents' representative involved in Monitoring and evaluation of M&E plan, adolescents' representative involved in implementation of M&E plan and adolescents' representative involved in monthly monitoring and evaluation or review meeting and adolescents' representative involved during designing and redesigning of M&E activities as well as adolescents' representative involved in quarter monitoring and evaluation or review meeting and finally whether was adolescent representatives involved in decisions making regarding M&E results.

The result findings among the respondents has shown that majority were agreed "Yes" as being involved their representatives in monitoring and evaluation whereas mean average value of 72% and 14% of whom replied "No" as well as "I don't Know" as the Table 4.11.

The study findings as shown above revealed that majority of representatives among adolescents attended at CTC clinic as 76% were involved during designing for monitoring and evaluation of M&E plan as well as monthly monitoring and evaluation or review meeting and around 71% were involved in decisions making regarding M&E results and 67% also involved wherever needed for designing and redesigning

of M&E activities as well as finally 64% appeared to be involved in implementation of quarterly M&E plan.

Table 4.11: Percentage of Adolescents Representative Involved in M& E

Monitoring and Evaluation for Adolescents	Yes	No	I don't know	Total
Involved in designing M&E plan	76%	12%	12%	100%
Involved in implementation of M&E plan	64%	21%	15%	100%
Involved in monthly M&E review meeting	76%	9%	15%	100%
Involved in redesigning the M&E activities	76%	15%	9%	100%
Involved in quarter M&E review meeting	67%	18%	15%	100%
Decisions making regarding M&E results	71%	9%	20%	100%

Source: Field Data, 2020

4.6.1 Logistic Regression Output for Assumption Test on M&E

This part was aimed to achieve the assumption whether implementation of adolescent HIV friendly services involves adolescents.

Table 4.12: SPSS Output of F-Test Assumption AHFS against M&E

Model Parameter	B	S.E.	df	Sig.	Exp(B)
Representative_Designing	.373	1.466	1	.799	1.452
Representative_Implementation	-18.246	1.036E4	1	.999	.000
Representative_Monthly	-56.454	2.432E4	1	.998	.000
Representative_Redesigning	-18.637	1.681E4	1	.999	.000
Representative_Quarter	57.603	2.594E4	1	.998	1.039E25
Representative_Decision	37.816	1.758E4	1	.998	2.652E16
Constant	-4.088	1.700	1	.016	.017

Source: Field Data, 2020

The logistic regression was performed through SPSS version 20 whereas F - test the assumption whereas M&E of adolescent friendly services involves, the theory suggests that P-value found to greater than significant 5% level and therefore accepted.

4.7 The Clinical Care Outcomes among Adolescents Living with HIV

The study findings has shown that CTC2 database has total number of 300 adolescents whereas each individual information was stored and available whereby retrospective time series data of one sample population, a cohort of tenth (10) groups were followed for the interval of five years within the system started since 2006 whereby adolescent HIV services established from 2006-2018 as 1st cohort group, 2nd 2006 to 2010, 3rd 2007 to 2011, 4th 2008 to 2012, 5th 2009 to 2013, 6th 2010 to 2014, 7th 2011 to 2015, 8th 2012 to 2016, 9th 2013 to 2017 and finally 10th 2014 to 2018.

The individual within a cohort was followed by using indicator of the newly client diagnosed to be HIV positive and thereafter followed in the following year by using another indicator as currently of clients on ART, that was sorted by year of enrollment to CTC2 database based on indicators mentioned above and the age was used to sort them from the polls of CTC database with their CTC number to avoid override of client information that finally were filtered through Microsoft Excel by comparing both groups of newly clients diagnosed to HIV positive as the baseline and currently on medication whereas was being followed consequentially for the period of five years targeting the desired variables as ART adherence, HIV viral load suppression, increased CD4 count, opportunistic infections free, retention to care, linkage to

community based HIV services and transition of adolescent to adult HIV care whereas high HIV viral load, high opportunistic, low CD4, lost to follow-up, opted out, transferred out and death being values added.

4.7.1 Sex and Age of the Adolescents

The sex and age of the adolescents' information stored into Maweni hospital CTC2 database has shown has shown in the Table 4.13.

Table 4.13: Adolescent by Sex and Sex Distribution

Sex of the Adolescents	Percentage Distribution
Male	14(15%)
Female	79(85%)
Total	93(100%)
Age of the Adolescents	Percentages
15	1(1%)
16	19(20%)
17	7(8%)
18	29(31%)
19	37(40%)
Total	93(100%)

Source: Maweni Hospital CTC2 Database, 2006-2018

The findings has shown that female were more affected with HIV compared to male by the ratio of 1:6, which indicates that female were six more times affect than male. It has shown that 19 years old were more involved in the study about 49% and then 18 years as 31%, 16 as 20 years and 17 being 8% with 15 years as 1%.

4.7.2 The Clinical Care Outcomes Results by Variables

The Table 4.14 has shown the distribution of variables on interest that determine the clinical care outcomes as follows;

Table 4.14: Results of Clinical Care Outcomes

Observations	Percentage Distribution
ART Adherence	
Yes	38(41%)
No	55(59%)
Retention in Care and Treatment	
Yes	59(63%)
No	34(37%)
Increased CD4 Count	
Yes	35(36%)
No	60(64%)
Opportunistic Infection Free	
Yes	48(52%)
No	45(84%)
Linked to Community Based HIV Services	
No	93(100%)
Transitioned to Adult HIV Care and Treatment Clinic	
Yes	14(15%)
No	37(40%)
Not Applicable	42(45%)
Lost to Follow- Up	
Yes	31(33%)
No	63(67%)
Opted Out	
No	93(100%)
Transferred Out	
Yes	7(8%)
No	86(92%)
Death	
Yes	5(5%)
No	88(95%)

Source: Maweni CTC 2 Data Base, 2006-2018

The study findings on clinical care outcome has shown that 41% adhered to ART uses out of 100% which however attributed with 63% of Adolescents retained as well as only 36% found to have increased CD4 Count and opportunistic infection free about 52% for the period of five years. However, there were no adolescents linked to community based HIV services and also findings indicated that 15% of adolescent were transferred to adult CTC while 33% lost to follow-up and no one opted out as well as few about 8% were transferred out and lastly death were 5%.

4.7.3 The Trend of Adolescent Retained Yearly form 2006 to 2018 at CTC

The analyzed results has shown that during cohort group analysis each individual randomized for the study and revealed that for the first year all randomized were available but for the next consecutively years were a tremendous decrease of adolescent from care as shown in the Table 4.15.

Table 4.15: Trends of Cohorts Retention by Year from CTC 2 Data Base

Observations	Percentage Distribution
First Year Cohort Retention among Adolescents	
Yes	93(100%)
Second Year Cohort Retention among Adolescents	
Yes	27(29%)
No	66(71%)
Third Year Cohort Retention among Adolescents	
Yes	9(10%)
No	84(90%)
Fourth Year of Cohort Retention among Adolescents	
Yes	3(3%)
No	90(97%)
Fifth Year of Cohort Retention among Adolescents	
Yes	1(1%)
No	92(99%)
Total Number of the Adolescent Followed	93(100%)

Source: Maweni CTC 2 Database, 2006-2018

4.7.4 Regression Modal Equation for Prediction of Clinical Care Outcomes for Adolescents

The (CCOs = ($\beta_0 + \beta_1AA + \beta_2RCT + \beta_3ICD4C + \beta_4OIF + \beta_5TAAHC + \beta_6TO + \beta_7LFU + \varepsilon$) regression modal equation whereas used to predict the outcomes (ART adherence, retention of care and treatment, increased CD4 count, opportunistic infections free, transition of adolescent to adult HIV care and treatment, lost to follow-up, opted out and transferred out) as influences HIV transmission prevention and quality of life improvement among adolescents living with HIV toward free HIV generation by 2030.

4.7.5 Logistic Regression Output on Clinical Care Outcomes thru STATA Version 8

This part was aimed to achieve the specific objective of the study by observing the influence of clinical care outcomes among adolescents toward transmission of HIV prevention and quality of life for free HIV generation by 2030.

Table 4.16: Stata Output Prediction against Dependent and Independents Variables

Logistic Regression			Number of Observation		
LR chi2 (7)			77.81		
Prob>ch2			0.0000		
Log likelihood			-17.124019		
Pseudo R2			0.6944		
Clinical Care Outcomes	Coef.	Std.Err	Z	P>/z	[95% Conf. Interval]
ART Adherence	1.97897	1.037046	1.91	0.056	-0.5366033 4.011544
ICD4Count	4.275202	1.411109	3.03	0.002	1.50948 7.040925
Opportunistic Infection free	4.275202	1.411109	3.03	0.002	1.50948 7.040925
Retention and Care	3.166136	1.699804	1.86	0.063	-.1654188 6.49769
Transit to Adult CTC	1.260958	1.160255	1.09	0.277	-1.0131 3.535015
Lost to Follow-Up	-3.018565	1.48255	2.04	0.042	.1128209 5.92431
Transferred Out	-3.063553	1.845593	-1.66	0.097	-6.680848 .5537424
Constant	-13.4	4.111717	-3.26	0.001	-21.45882 -5.341185

Source: Field Data - Stata Output, 2020

The logistic regression was performed through STATA version 8 to test whether independent variables (ART adherence, retention of care and treatment, HIV viral load suppression, increased CD4 count, opportunistic infections free, linkage to community based HIV services, transition of adolescent to adult HIV care and treatment, lost to follow-up, opted out, transferred) jointly influenced by the dependent variables (adolescent HIV friendly Services). The Table 4.16 shows the output of the findings.

4.7.6 The Model Justification and Results

Adolescent HIV friendly service as dependent variable whereby independent variables (ART adherence, retention of care and treatment, HIV viral load suppression, increased CD4 count, opportunistic infections free, linkage to community based HIV services, transition of adolescent to adult HIV care and treatment, lost to follow-up, opted out and transferred out) were regressed to predict the outcomes toward prevention of HIV transmission and quality of life improvement as we focus free HIV generation by 2030.

The theory suggests, the estimated model is good as most of the independent variables are significantly associated to predict outcomes toward prevention of HIV transmission and quality of life improvement as we focus free HIV generation by 2030.

The findings of the result has shown that five (5) predictors, out of seven (7) are significant to predict association about the model and henceforth adolescent HIV friendly services valid to prevent HIV transmission and improve the quality of life as we heading free HIV generation by 2030.

4.7.7 The Value of R – Square (R^2)

The R – Square value predicts the overall performance of adolescent HIV friendly services project as the results value of R^2 shown to be 69.44%, which is significant to predict the prevention HIV transmission and improve the quality of life as we heading free HIV generation by 2030. This suggests that project interventions should be strengthened and replans to achieve prevention HIV transmission and improve the quality of life.

Thus the value of R^2 in generally represents the seven (7) independents variables whereas the rest as added values (high HVL, high OIs, low CD4, linked to community HIV based services and death).

The following equation validates the relationship and prediction among the dependent variable and independent variable as therefore jointly significant.

$$\text{CCOs} = -13.4 + 1.97897\text{AA} + 4.27520\text{ICD4C} + 3.16613\text{RCT} + 4.27520\text{OIF} + 1.260958\text{TAAHC} + -3.018565\text{TO} + -3.063553\text{LFU}.$$

4.7.8 ART Adherence

The theory suggests as ART adherence improves, the prevention HIV transmission and quality of life also improve by 1.98 when other variables remaining constant. It also discovered that finding of coefficient value of ART adherence is positive verifies that our theory and P-value found to 0.056, which is significant 5% level and therefore accepted.

4.7.9 Retention into Care and Treatment

The theory suggests that as retention into care and treatment improves, the prevention HIV transmission and quality of life also improve by 3.17 when other variables remaining constant. It also discovered the findings as coefficient value of retention into care and treatment is positive verifies that the theory and P-value found to 0.063 which is significant 5% level and therefore accepted.

4.7.10 Lost to Follow-Up

The theory suggests that as lost to follow-up decreases, the prevention HIV transmission and quality of life also improve by -3.02 when other variables remaining constant. It also discovered the findings as coefficient value of lost to follow-up is negative, verifies that the theory and P-value found to 0.042 which is significant 5% level and therefore rejected.

4.7.11 Transit to Adult CTC

The theory suggests that as transit to adult CTC increases, the prevention HIV transmission and quality of life also improve by 1.26 when other variables remaining constant. It also discovered the findings as coefficient value of lost to follow-up is positive, verifies that the theory and P-value found to 0.28 which is significant 5% level and therefore accepted.

4.7.12 Transferred Out

The theory suggests that as transit to adult CTC performed the clinical care outcome decreases by -3.06355 while other variables remaining constant. It also revealed from

the findings as the coefficient value of transit to adult CTC and verifies that our theory and P-value found to 0.097 which is significant 5% level and therefore accepted.

4.7.13 Increased CD4 Count

The theory suggests that as transit to adult CTC performed the clinical care outcome increases by 4.275202 while other variables remaining constant. It also revealed from the findings as the coefficient value of transit to adult CTC and verifies that our theory and P-value found to 0.002 that is significant 5% level and therefore rejected.

4.8 Decision of the General Based on F and Z- Statistics and P-Value

The researcher has found that T and Z statistics and P - value were used to validate the results.

4.8.1 Null Hypothesis

Designing of adolescent HIV friendly services do not influences clinical care outcomes among Adolescent Living with HIV.

Implementation of adolescent HIV friendly services do not influences clinical care outcomes among Adolescent Living with HIV.

Adolescent HIV Friendly Services do not influences clinical care outcomes among Adolescent Living with HIV.

4.8.2 Alternative Hypothesis

Designing of adolescent HIV friendly services does influences clinical care outcomes among Adolescent Living with HIV.

Implementation, Monitoring and evaluation of adolescent HIV friendly services do influences clinical care outcomes among Adolescent Living with HIV.

Adolescent HIV Friendly Services does influences clinical care outcomes among Adolescent Living with HIV.

4.8.3 Decision Criteria

The decision criteria is that reject null hypothesis when P – value is greater than 5% significance level and Z statistics should be above the 5% significant level.

4.8.4 Results

The results findings has shown that designing, implementation, monitoring and evaluation jointly influences clinical care outcomes among adolescents living with HIV where as null hypothesis, rejected as Z and F-statistics justified that P-value is above the 5% significant level.

The results value of R^2 is 69.44% which is significant level to explain the model that adolescent friendly services associate and influenced by ART adherence, retention of care and treatment, HIV viral load suppression, increased CD4 count, opportunistic infections free, transition of adolescent to adult HIV, lost to follow-up, opted out and transferred out toward prevention of HIV transmission and quality of live improvement as we focus on HIV free generation by 2030 HIV. This suggests that project interventions should be strengthened and replans more clinical care outcomes for more prevention of HIV transmission and quality of life toward HIV free generation by 2030.

CHAPTER FIVE

DISCUSSION OF THE FINDINGS, CONCLUSION AND RECOMMENDATION

5.1 Chapter Overview

This chapter explains in detail the findings of the study, conclusion and recommendation regarding the objectives of the study in relation to the findings, different scholars on the results and researcher's overall opinions.

5.2 Discussion of the Findings

The findings of the results following analysis has shown results regarding the demographic characteristics, designing of adolescent HIV friendly services, monitoring and evaluation as well as clinical care outcomes.

5.2.1 Demographic Characteristics of the Respondents

The study findings has shown that all of the respondents were from Kigoma urban with whereas female were more three times compared to male and Ssewanya et.al and UNICEF, 2018 reported the same finding that adolescent girls were two to three more likely to be effected with HIV than boys of the same group. However this happened due to adolescents' behavior as well as risk behavior that predispose girls to more infection of HIV and this need more interventions to rescue the adolescents as suggested by DiClemente and Jackson, 2015; Baeten et al, Wingoo and Rubtsova et al and Choopanya et.al.2013 as to widespread condom use and increase sexual negotiation skills as well as increase supports diffusion and adaptation and gender issues.

5.2.2 Design of Adolescent HIV Friendly Services

The researcher ought to analyze the designing of adolescent HIV friendly services whether reflect and meet preferences and expectations of adolescents living with HIV. The findings of the results has revealed that majority of the respondents be justified and accepts services provision at Maweni hospital CTC as the national guideline emphasis on adolescents centered approach across the treatment cascade that reflects the preferences and expectations whilst reduces unnecessary burdens on the health system whereas supported by (UNICEF, 2013; TPMA, 2017).

And finally Tenner et al (2013) supported that working youth friendly clinics as may help to reduce barrier of care engagement and concluded that integration of clinic design and staff training within the organization of a clinical program become helpful in meeting adolescent specialized needs. Also the finding has shown that adolescents were respected and provided privacy which IPPF, 2008 and UNTC, 2018 supported the findings as they revealed to respect the right of adolescent as well as WHO (2013 and 2015).

The researcher has said, the design of adolescent HIV friendly services as one umbrella centered improve the services as well as to reduces unnecessary burdens of the health system (TPMA, 2017; UNICEF, 2018), however need more improvement since the minority were not justified with the services. Henceforth, the results findings has shown that designing of adolescent HIV friendly services influences clinical care outcomes among adolescents living with HIV toward HIV prevention and quality of life improvement where as null hypothesis, rejected as F-statistics justified that P-value is above the 5% significant level.

5.2.3 Care and Treatment for Adolescents Living with HIV

The study findings has shown that majority of the respondents were satisfied with the services provided at Maweni hospital CTC clinic as staff availability and appointment schedule, medical care and treatment, dispensing and post medical instruction services and follow-up schedule as and treatment provided as well as were satisfied with services arrangement during care and treatment with the way their information retrieved whenever required. Others were satisfied with interaction, time spend and counseling of healthcare providers at access of CTC services and effective feedback.

Bradley et al (2014) reported that comprehensive continuum of services required to ensure all APLWHIV infection receive the HIV care and treatment to achieve viral suppression to improve their health and reduce HIV transmission as well as improving outcomes that increases survival among adolescent and prevent new HIV infection.

However very few about 15% were not comfortable with the services provided such as HIV medical care and treatment and community based HIV services linkage received as well as welcome note of receptionist and care providers with lastly referral system within the CTC clinic and very few of them replied no and some did not know which indicates that knowledge yet still is need among adolescent.

5.2.4 Involvement of Adolescents in Implementation, Monitoring and Evaluation of AHFS

The finding results has shown that most of the majority among the respondents accepted the way of adolescent HIV friendly services implemented whereas services reported to be equitable and acceptable, accessible and appropriate as well as

effectively as also supported by Hayes et al (2005) and TNHIVG (2019) that implementation must proceed in a systematic way and correct lines toward collection of adequate and dependable information in time regarding financial resources, human resources, infrastructures and execution of scheduled activities at health facility.

However very few 3% to 9% denied the proper implementation of adolescent HIV friendly service compared to majority. The research emphasis on the proper implementation will improve the HIV services and reduce transmission of new infection as also supported by Bradley et al., 2014 that proper implementation will influence effective clinical care outcomes.

Also majority of representatives among adolescents agreed involvement of their peer educators and other adolescents during designing for monitoring and evaluation of M&E plan as well as monthly monitoring and evaluation or review meeting and involved in decisions making regarding M&E results and also involved wherever needed for designing and redesigning of M&E activities as well as finally appeared to be involved in implementation of quarterly M&E plan and Kurth et al (2015) supported that program quality monitoring of HIV-testing and implementation of the best HIV-testing practices for young must be a part of the HIV agenda in order to achieve better care of HIV/AIDS clients.

But minority around 15% to 30% were reported to be involved partially and a researcher has thought monitoring and evaluation must be improved for the future. Again that majority of the respondents were satisfied with the services provided at Maweni hospital CTC clinic as staff availability and appointment schedule, medical

care and treatment, dispensing and post medical instruction services and follow-up schedule as and treatment provided as well as were satisfied with services arrangement during care and treatment with the way their information retrieved whenever required. Others were satisfied with interaction, time spend and counseling of healthcare providers at access of CTC services and effective feedback.

Bradley et al (2014) reported that comprehensive continuum of services required to ensure all APLWHIV infection receive the HIV care and treatment to achieve viral suppression to improve their health and reduce HIV transmission as well as improving outcomes that increases survival among adolescent and prevent new HIV infection.

However very few about 15% were not comfortable with the services provided such as HIV medical care and treatment and community based HIV services linkage received as well as welcome note of receptionist and care providers with lastly referral system within the CTC clinic and very few of them replied no and some did not know which indicates that knowledge yet still is need among adolescent.

Henceforth, the results findings has shown that implementation, monitoring and evaluation influences adolescent friendly services among adolescents living with HIV toward HIV prevention and quality of life improvement where as null hypothesis, rejected as F-statistics justified that P-value is above the 5% significant level.

5.2.5 Adolescents HIV Friendly Services Influence in Clinical Care Outcome

Clinical care outcomes was designed as dependent variable whereas independent variables were ART adherence, retention of care and treatment, HIV viral load

suppression, increased CD4 count, opportunistic infections free, linkage to community based HIV services, transition of adolescent to adult HIV care and treatment, lost to follow-up, opted out and transferred as if was significant to explain the clinical care outcomes or not.

The finding indicate that the Value of R – Square (R^2) is significant level to explain the model that clinical care outcome which influenced by 69.44 which suggests that interventions should be strengthened to achieve quality of clinical care outcomes whereas as remaining about 30.56 and that however happened due to human errors or inadequate of services delivery.

Therefore theory suggests that as ART adherence improves, retention into care and treatment, transit to adult CTC and transferred out the clinical care outcome also improves as well by when other variables remaining constant. Also the findings revealed that the coefficient values are positive verifies that our theory and P-value found to be high which is significant 5% level and therefore accepted the alternative hypothesis.

However, the theory suggests that as low HIV viral load, lost to follow-up, decreases the clinical care outcome and verifies our theory and P-value found to be small which than significant 5% level and therefore accepted the null alternative.

5.3 Conclusion

The study of adolescent HIV friendly services design, implementation, monitoring and evaluation and its clinical care outcomes has been shown to improve HIV

prevention and quality of life among adolescents living with HIV toward attainment of HIV free generation by 2030. The designing of adolescent HIV friendly services has been shown that majority about 86.4% as overall assessment reported to be satisfied and statistically adolescent HIV friendly services design shown to meet adolescents preferences and expectation as the theory suggests that P-value found to greater than significant 5% level and therefore accepted.

The implementation, monitoring and evaluation of adolescent HIV friendly services has been shown that majority about 81.9% as overall assessment reported to be involves and statistically shown to be involves as the theory suggests that P-value found to greater than significant 5% level and therefore accepted.

The theory suggests as ART adherence, retention of care and treatment, HIV viral load suppression, increased CD4 count, opportunistic infections free, transition of adolescent to adult HIV, lost to follow-up, opted out and transferred improves the prevention HIV transmission and quality of life by R^2 of 69.44% and it also discovered that findings of coefficient value of clinical care outcomes are positive verifies that our theory and P-value found be great which are significant 5% level and therefore accepted.

Therefore in conclusion the study has shown that adolescents HIV friendly services design, implementation, monitoring and evaluation and clinical care outcomes have significant improvement of the prevention of HIV transmission and quality of life toward attainment HIV free generation by 2030.

5.4 Recommendation

The study has shown that adolescents HIV friendly services design meets adolescents preferences and expectations toward significant improvement of HIV prevention of new transmission and quality of life among adolescents living with HIV where recommends the results will increase broader knowledge and more understand of healthcare providers, managers and official leaders, policy makers, implementing partners, regional and district stakeholders as well as local authorities of high interest and power toward attainment HIV free generation by 2030.

Also the study has shown that adolescents HIV friendly services implementation, monitoring and evaluation involves adolescents which have significant improvement of HIV prevention of new transmission and quality of life among adolescents living with HIV where also recommends the results will further strengthen and replan by healthcare providers, managers and official leaders, policy makers, implementing partners, regional and district stakeholders as well as local authorities of high interest and power toward attainment HIV free generation by 2030.

Finally, the study has shown that adolescents HIV friendly services influences clinical care outcomes which have significant improvement of HIV prevention of new transmission and quality of life among adolescents living with HIV where recommends the results will increase awareness and decision in prioritizing adolescents services among healthcare providers, managers and official leaders, policy makers, implementing partners, regional and district stakeholders as well as local authorities of high interest and power toward attainment HIV free generation by 2030.

Again, the study have shown that adolescents HIV friendly services results concern designing, implementation, monitoring and evaluation will contribute to the academia knowledge in terms of theory and methodology for researchers who will pay attention to the current and future situation of the Adolescents services toward attainment HIV free generation by 2030.

5.4.1 Recommendation for Further Studies

The study findings has shown that most of the study were conducted more quantitative method design and studied more in urban areas where recommends more study to be designed in qualitative and focus in rural areas.

Finally the study recommends further scaling-up adolescents HIV friendly services in rural areas whereas adolescents HIV services yet still few in health centers and dispensaries.

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SV – Supervisor, PI – Principle investigator and RAs – Research assistant

Appendix 2: Estimated Budget

S /no	Items	Unit cost	Number of Unit	Days	Total
	Orientation training				
1	Research Assistance				
	transport Allowance	40,000	2	4	320,000
2	Refreshment	10,000	2	4	40,000
3	Venue	20,000	1	4	80,000
4	Stationery	20,000	1	1	20,000
	Sub total				460,000
	Data collection				
1	RA Transport Allowance	20,000	6	6	720,000
2	Lunch Box	15,000	6	6	540,000
3	Stationery	100,000	1	1	100,000
	Sub total				1,360,000
	Data entry				
1	Data entry clerk	40,000	2	3	240,000
2	Data clearing	40,000	1	3	120,000
	Sub total				360,000
	Data analysis				
1	Statistician	50,000	1	3	150,000
	Sub total				450,000
	Report writing				
1	Stationery	100,000	1	1	100,000
2	Binding document	50,000	3	1	150,000
	Sub total				250,000
	Other support material				
1	Airtime	50,000	1	1	50,000
2	Touch	10,000	6	1	60,000
3	Fuels	1,800	20	10	470,000
	Sub total				580,000
	GRAND TOTAL				3,460,000

Appendix 3: Ethical clearance English version

Informed Consent Form

Interviewee No.....

Consent to Participate in a Study

My name is **Julius Samson Nyasongo** I am Postgraduate student at Open University
of Tanzania.

I am here to conduct a study titled *Adolescent HIV Friendly Services Evaluation and its Clinical Care Outcomes among Adolescents Living with HIV*

Purpose of the Study:

This study is for partial fulfillment of the requirement of Master of Art in Monitoring and Evaluation of the Open University Tanzania.

The finding of this study will support MOHCDGEC, policy makers, development partners, regional, districts and implementing partners as well as other stakeholders to strengthen Adolescent HIV Friendly Services toward achievement of HIV generation.

Kindly collaborate through giving the correct information in attain the desired the objective.

What Participation Involves:

If you agree to take part in the study, you will be interviewed to answer and explain details as per interview guide used.

This will take between 30 and 45 minutes to be completed.

Confidentiality:

I assure you that, whatever information received will be kept strictly **CONFIDENTIAL** and will be used only for research purposes. Your name will not

be written in this report. All information collected from the study will be coded to the computers.

Risks:

We do not expect any harm as a result of your participation in this study. There may be some questions that you are not willing to answer; do not hesitate to tell the interviewer your feeling on those questions.

However, you may need to refer the researcher to somebody for more clarifications and supporting data.

You may reject to answer any particular question and also you may end the interview session at any time you wish but is better to participate until the end of session for robust information.

Right to Withdraw:

It is voluntary to take part in this study. You can withdraw your participation at any time, even if you accepted at the beginning.

Refusal to participate in this study has no penalty.

Benefits:

The information you provide will lead to acquire information on AHFS design, implementation and clinical care outcomes for future improvement at Maweni Adolescent CTC in Kigoma.

Hence will provide evidence based for the lesson to learn toward scaling up the adolescent services within the region and Tanzania as whole.

Who to Contact:

If you have any question about the study, do not hesitate to contact the researcher,

Julius Samson Nyasongo.

Open University of Tanzania,

P. o. Box 32606

Dar es Salaam.

Cell Phone: +255 712 205 626/+255754226294

You may also contact

The supervisor,

Dr. Hamidu A. Shungu,

Open University of Tanzania,

P. O. Box 32606,

Dar es Salaam.

Cell Phone: +255 758 557 040

Do you agree to participate in the study?

I have read the contents in the consent form and understand.

I agree

I do not agree

Signature of participant.....

Signature of interviewer..... Date.....

Appendix 4: Map Showing Location of Kigoma Regional in Tanzania



Appendix 5: General Introduction Guide for Data Collection

Dear respondents, this evaluation aims at finding out how the AHFS designed, monitored, evaluated and its influences in clinical care outcomes at Maweni Regional Referral Hospital Adolescent HIV Clinic for the period of eight years from 2010 to 2018. Specifically the study findings will assist in further and future improvement of adolescent HIV friendly services.

You're sincere and honest responses to the questions contained in this interview guides/questionnaire are crucial ingredients for the success of this study. Please respond to the questions in accordance with the instructions given under each part of during the discussion, interview and questionnaire filling.

Whereas the findings will also assist the authority to set new strategies, formulate regulations and policy to improve AHFS performance and the information will be helping for future studies in the field.

Kindly be assured that your responses will be used exclusively for the purpose of this study only and you will not be revealed at all in the report of the study.

Your participation in the study is highly appreciated.

Nyasongo Samson Julius

Mob. +255712205626

nyasongo11@gmail.com

A Masters of Art in M&E - Open University of Tanzania

The information that you provided is very valuable.

Appendix 6: Questionnaire for Adolescents' Parents, Caregivers, Treatment Supporters and Matured Adolescents for the Evaluation of AHFS

PART A: General Information

1. 1. Name of Region: _____ District Name: _____

1.2. Ward Name: _____ Village Name: _____

1.3. Relative Type: a) Parents b) Caregiver c) Treatment Supporter d) Matured Adolescent

2. Age

Tick the Appropriate Age	
10-14 years	
15-18 years	
19 years	

3. Gender

Tick the Appropriate Gender	
Male	
Female	

4. Education Level of Relative Support/ Adolescent

Tick the Appropriate Level of Education	
None	
Primary School	
Secondary School	
Certificate	
Diploma	
Degree	
Master	

5. Duration of Illness Since Diagnosed of HIV positive

Tick the Appropriate Duration in Year	
Less than 1yrs	
1-3yrs	
4-7yrs	
8-11yrs	
12-15yrs	
16-19yrs	

6. Duration of Enrollment at CTC in Years

Tick the Appropriate Duration of Services	
1-2 years	
3-4years	
5- 6 years	
8-10 years	
11 and above	

7. Distance from Home to the Maweni Regional Referral Hospital Adolescents Care and Treatment Clinic

Tick the Appropriate Traveling Distance to Care and Treatment Centre	
Less than 5km	
5-10km	
Above 11	
8-10 years	
11 and above	

Section A: The Designed Adolescent HIV Friendly Services

8(a).The following statements describe the designing of Adolescent HIV Friendly Services. Please tick the appropriate response in each statement to show your response in three options 1(Yes), 2(No), 3(I don't know).

Adolescent HIV Friendly Services Meet the following	Yes	No	I don't know
Does adolescent HIV friendly services influences clinical care outcomes			
Has separate space for HIV and AIDS services			
Has convenient location for HIV and AIDS services			
Has convenient hours for HIV and AIDS services			
Has adequate space for HIV and AIDS services			
Has privacy for HIV and AIDS services			
Has confidentiality for HIV and AIDS services			
Has comfortable friendly surround for HIV and AIDS services			
Has meaningful engagement of adolescents during design			
Has trained healthcare providers for HIV and AIDS services			
Has designed to provides outreach mobile HIV services			

Section B: Implementation of Adolescent HIV Friendly Services

9(a) The following statements describe the levels of agreements for implementation of Adolescent HIV Friendly Services focuses on quality of adolescent HIV friendly services, quality of clinical care and treatment and monitoring and evaluation for adolescents for adolescents living with HIV and AIDS. Please **TICK** the appropriate

response in each statement to show your response in three options 1(Yes), 2(No), 3(I don't know).


Adolescent HIV Friendly Services Meet the following Quality	Yes	No	I don't know
The services are equally provided			
Services are accessible at all the time			
Services provided are acceptable			
Services provided are appropriate			
Services provided are efficiency			
Adolescent HIV Friendly Services Care and Treatment (CTC)	Yes	No	I don't know
Adolescents involves in care and treatment program at CTC			
I'm aware with HIV care and treatment provided at CTC			
I'm adequately satisfied with HIV care and treatment received			
I'm satisfied with staff available in HIV care and treatment clinic			
I'm satisfied with services arrangement in HIV care and treatment			
I'm satisfied with the interactions of healthcare providers			
I'm satisfied with appointment schedules of attending CTC			
I'm satisfied with welcomes note of receptionists/providers at CTC			
I'm satisfied with retrieved records promptly whenever required			
I'm satisfied with time spend to receive HIV services at			

CTC			
I'm satisfied with counselling services received at CTC			
I'm satisfied with medical laboratory services received at CTC			
I'm satisfied with medical care and treatment received at CTC			
I'm satisfied with dispensing pharmacy services HIV at CTC			
I'm satisfied with medical post instruction provided at CTC			
I'm satisfied with follow-up schedule at CTC			
I'm satisfied with effective feedback mechanism at CTC			
I'm satisfied with referral system within the facility			
I'm satisfied with the linkage system to CBHS			
Monitoring and Evaluation for Adolescents	Yes	No	I don't know
Are adolescents' representative involved in designing M&E plan			
Are adolescents' representative involved in implementation of M&E plan			
Are adolescents' representative involved in monthly monitoring and evaluation review meeting			
Are adolescents' representative involved in redesigning the M&E activities			
Are adolescents' representative involved in quarter monitoring and evaluation review meeting			
Are adolescent representatives involved in decisions making regarding M&E results			

Appendix 7: Research Clearance Letter

THE OPEN UNIVERSITY OF TANZANIA
DIRECTORATE OF POSTGRADUATE STUDIES

P.O. Box 23409
Dar es Salaam, Tanzania
<http://www.openuniversity.ac.tz>



Tel: 255-22-2668992/2668445
ext.2101
Fax: 255-22-2668759
E-mail: dpgs@out.ac.tz

Our Ref: PG2017995351 **6th December 2019**

Regional Administrative Secretary (RAS),
Kigoma Region,
P. O. Box 125,
KIGOMA.

RE: RESEARCH CLEARANCE

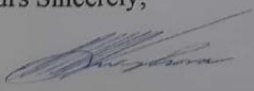
The Open University of Tanzania was established by an Act of Parliament No. 17 of 1992, which became operational on the 1st March 1993 by public notice No.55 in the official Gazette. The Act was however replaced by the Open University of Tanzania Charter of 2005, which became operational on 1st January 2007. In line with the Charter, the Open University of Tanzania mission is to generate and apply knowledge through research.

To facilitate and to simplify research process therefore, the act empowers the Vice Chancellor of the Open University of Tanzania to issue research clearance, on behalf of the Government of Tanzania and Tanzania Commission for Science and Technology, to both its staff and students who are doing research in Tanzania. With this brief background, the purpose of this letter is to introduce to you **Mr. NYASONGO, Julius Samson Reg No: PG2017995351** pursuing **Master of Arts in Monitoring and Evaluation (MAME)**.

We hereby grant this clearance to conduct a research titled ***"Adolescent HIV Friendly Services and its Influence in Clinical Care Outcomes among Adolescent Living with HIV/AIDS At Maweni Regional Referral Hospital"***. He will collect his data at your area from 10th December 2019 to 15th January 2020.

In case you need any further information, kindly do not hesitate to contact the Deputy Vice Chancellor (Academic) of the Open University of Tanzania, P.O.Box 23409, Dar es Salaam. Tel: 022-2-2668820. We lastly thank you in advance for your assumed cooperation and facilitation of this research academic activity.

Yours Sincerely,



Prof. Hossea Rwegoshora
For: **VICE CHANCELLOR**
THE OPEN UNIVERSITY OF TANZANIA

Appendix 8: Plagiarism Report

Adolescent HIV Friendly Services and its influence in Clinical Care Outcomes Among Adolescents Living with HIV A Case of Maweni Regional Referral Hospital in Kigoma Region

ORIGINALITY REPORT

18%	13%	6%	12%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to University Der Es Salaam Student Paper	5%
2	Submitted to Eiffel Corporation Student Paper	1%
3	www.science.gov Internet Source	1%
4	apps.who.int Internet Source	<1%
5	www.cdc.gov Internet Source	<1%
6	jiasociety.org Internet Source	<1%
7	Siyan Yi, Chanrith Ngin, Khuondyla Pal, Vohith Khol et al. "Transition into adult care: factors associated with level of preparedness among adolescents living with HIV in Cambodia", AIDS Research and Therapy, 2017	<1%