FACTORS ASSOCIATED WITH ADHERENCE TO ANTIRETROVIRAL THERAPY AMONG ADOLESCENTS AND YOUNG ADULTS ATTENDING CARE AND TREATMENT CLINICS IN TABORA MUNICIPAL COUNCIL-TABORA REGION

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School of Public Health and Social Sciences

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By

Andrew Peter

A Dissertation Submitted in (Partial) Fulfillment of the Requirement for the Degree of Master of Public Health of

Muhimbili University of Health and Allied Sciences
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CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by Muhimbili University of Health and Allied Sciences a dissertation titled; **''Factors associated with adherence to antiretroviral therapy among adolescents and young adults attending care and treatment clinics in Tabora Municipal Council -Tabora Region 2019'',** in (partial) fulfillment of the requirements for the degree of Master of Public health of Muhimbili University of Health and Allied Sciences.

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Prof. Gideon Kwesigabo

(Supervisor)

_____

Date

DECLARATION AND COPYRIGHT

I, **Andrew Peter**, declare that this **dissertation** is my own original work and that it has not been presented and will not be presented to any other university for a similar or any other degree award.

Signature…………………………… **Date** …………………………………

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DEDICATION

To my late mother, Mrs Eva Peter, for laying a strong foundation of what I am achieving in my academic journey.

ABSTRACT

Background: Approximately 63% of adolescents living with HIV receive antiretroviral therapy (ART) in Tanzania. To maximize the clinical benefits of ART and attain a successful treatment outcome, more than 95 % adherence level is necessary. However, sustaining high levels of adherence to ART is a challenge. Underutilized adolescents –youth friendly services, such as youth adherence club, space for sports and games, privacy and confidentiality and continuous adherence counseling as well as harmful cultural practices and socio-demographic factors such as violence and older age (19-24) years, disclosure of HIV status, are some of the known barriers to achieving that high level of adherence among adolescents and young adults living with HIV/AIDS. It is not known as to whether the same barriers operate in Tabora MC.

Objective: This study aimed at determining the factors associated with adherence to ART among adolescents and young adults living with HIV/AIDS in Tabora MC.

Methodology: Analytical cross-sectional study was conducted among HIV-infected adolescents and young adults aged 10-24 years on ART treatment. A questionnaire was used to gather information on demographic characteristics, utilization of adolescents and friendly services, cultural practices and socio-demographic characteristics. Descriptive statistics were used to summarize demographic characteristics. Multivariate logistic regression analysis was used to analyze factors associated with suboptimal adherence to ART while controlling for potential confounders. Odds ratio and 95% confidence intervals were computed.

Results: A total of 358 participants were recruited into the study, 69.8% were in the age group 19-24 years, 81.3% were single and 74.0% were students during the time of the study. Eighty clients (22.3%) reported suboptimal adherence to ART treatment. Suboptimal ART adherence was more likely among clients who had perceived stigma (AOR=1.37, 95%CI: 0.46-4.09), experience violence (AOR=2.69, 95% CI: 1.15-6.30), and older age (19-24 years) (AOR=2.61, 95% CI: 1.15-6.30).

Conclusion: Adherence to ART is still below the recommended adherence level of ≥ 95%. The government and other stakeholders need to come up with effective interventions to alleviate the problem.

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ABBREVIATIONS

AIDS	Acquired immunodeficiency syndrome
ALHIV	Adolescents living with human immunodeficiency virus
ART	Antiretroviral therapy
AYA	Adolescents and young adults
AYFS	Adolescents and youth friendly services
CD 4	Cluster of differentiation type 4
CTC	Care and treatment clinic
HIV	Human immunodeficiency virus
MC	Municipal council
MUHAS	Muhimbili university of health and allied sciences
PLWHIV	People living with HIV/AIDS
WHO	World health organization

DEFINITION OF TERMS

Adherence to ART- It is defined as the ability of a patient to take all medications as prescribed with no missed dose, i.e. the right dosage, the right drugs, right time, and right way, and therefore defined as optimal for the ART when adherence to dosage regimen is ≥ 95%.

Suboptimal adherence-   Patient inability to take medications as prescribed by the health care worker, when a patient score< 95 per cent of medications uptake for a period of one month.

Adolescents and youth friendly services- A dedicated designed HIV/AIDS services for adolescents and youth offered at care and treatment clinic, in order to enhance adherence and retention on ART among adolescents and youth, which includes services such as youth adherence clubs, peer education sessions, space for sports and games, privacy and confidentiality, continuous adherence counseling, sexual and reproductive health services, trained health care workers on adolescents services, and health information appropriate for youth.

Antiretroviral therapy – The use of HIV medicines to treat HIV infections. Patients on ART take a combination of HIV medicines (called an HIV treatment regimen) everyday. ART does not cure HIV but it helps people with HIV to live longer and healthier lives.

Adolescence – Is a transitional stage of physical and psychological development that generally occurs during the period from puberty to legal adulthood, it is usually associated with the teenage years.

Young adult – It is defined as a person ranging in age from their late teens or early twenties to their thirties.

CHAPTER ONE

1.0 BACKGROUND

Adolescence refers to the years (10-19) , is a period of dynamic change, representing the transition from childhood to adulthood, during this stage, rapid changes in physical, emotional, cognitive and social characteristics take place.(1) HIV infections among adolescents is still a global problem, reports shows that, the number of adolescents mortality due to AIDS related illness globally tripled between 2000-2015 (2)In Sub-Saharan Africa, adolescents living with HIV accounts, to 1.5 million which constitute 85% of adolescents living with HIV worldwide.(3)

Adherence to antiretroviral therapy is defined as a patient's ability to follow a treatment plan, take medications at prescribed times and frequencies, and follow restrictions regarding food and other medications (4). Adherence to antiretroviral therapy (ART) is essential components of treatment success, lifetime adherence rate of ≥95% is needed to maximize the benefits of ART, achieving such high rates over a period of time is a challenge(5). A situational survey done in 2018 to different health facilities in sub-Saharan Africa have shown suboptimal-adherence of adolescents to ART has led to treatment complexities among this critical age group(6).

In Tanzania, Human Immunodeficiency Virus (HIV) and Acquired Immunodeficiency Syndrome (AIDS) remain a considerable problem with HIV prevalence of 4.5% (7). Due to the high prevalence of infection, the Tanzanian Government began offering free antiretroviral therapy (ART) in 2004. During the same year, the government began scaling up ART as stated in its five-year national Care and Treatment Plan. The aim was to provide ART for as many HIV-infected patients as possible. However, by 2009, only 34% of persons targeted for ART had initiated ART treatment (1). ART slows disease progression and decreases morbidity and mortality. Suppression of viral replication caused by ART has also been associated with reduced risk of sexual transmission of HIV.

HIV positive adolescents is increasing fast, and mainly is the result from mother to child transmission of HIV and few from exposure to risk behaviors. An estimated 11.2 % of people living with HIV in Tanzania are young people aged 15-24 years (8)

Adolescents and young adults appear to be underserved by current HIV services, especially in poor resource countries. They have significantly worse access to and coverage to ART than any other age group, which lead to suboptimal adherence to ART being common in this age group.(9).

Suboptimal adherence to ART among adolescents have been associated with, medication side effects, low socio-economic status of parents or caregiver, healthcare systems challenges, such as late initiation of ART , patient challenges related to age and sex, knowledge, psychosocial issues, psychiatric illness, substance abuse, and having unstable lives that are not conducive to taking daily medication(10) . In Tanzania, a good number of adolescents and young adults living with HIV/AIDS are not aware of their status; hence they don't know what to do for their health. Parents should start mentoring their children on HIV being chronic disease and why they should take medicine everyday at the age 4-6 years, and during age 7-11 years disclosure should happen as recommended by WHO. Parents and caregivers delays to disclose due to stigma associated with HIV/AIDS, adolescents are told to take medications for other reasons, thus they record suboptimal adherence to ART than any other age groups.(11). Adherence is a dynamic process that changes over time (12) and predictors of adherence both (optimal and suboptimal) vary considerably and therefore no single factor has been consistently associated with adherence (optimal and suboptimal) across all studies (13) this underscores the need to conduct studies to determine potential predictors of adherence (optimal and suboptimal) in different contexts. Therefore, this study was worth to be carried out and it aimed to assess the factors associated with adherence to ART among adolescents and young adults attending care and treatment clinics in Tabora Municipal Council.

1.1 Statement of the problem

Adherence to anti-retroviral therapy (ART) is essential components of treatment success, lifetime adherence rate of ≥95% is needed to maximize the benefits of ART, achieving such high rates over a long period of time is a challenge(5). Reports indicate that adolescents aged 10-19 and younger adults aged 20-24 have poor ART adherence rates both before and after ART initiation when compared with other age groups (6)In Tanzania Studies indicates that suboptimal-adherence rate among adolescents is 30% (14).Globally, adherence rate to ART among adolescents and young adults varied across continents, studies reported adherence rate of 84% for Africa and Asia respectively, North America 53%, Europe 62% and South America 63%(15) In Tabora region, the prevalence of HIV was reported to be 5.1% and it was among the top five regions with higher HIV prevalence in 2017(16). Poor adherence to ART among adolescents and young adults, if left unattended it may result in increasing the risk of viral-drug resistance, limits treatments efficacy leading to disease progression and reduces future therapeutic options as well as increasing the risk of transmission due to unsuppressed viral replication (15). Factors associated with adherence to ART among adolescents and young adults in Tabora Municipal Council were not clearly known, hence this study aimed at examining the factors associated with poor ART adherence among adolescents and young adults attending HIV care and treatment in Tabora MC.

Conceptual framework illustrates factors associated with ART adherence among adolescents and young adults attending care and treatment clinics.
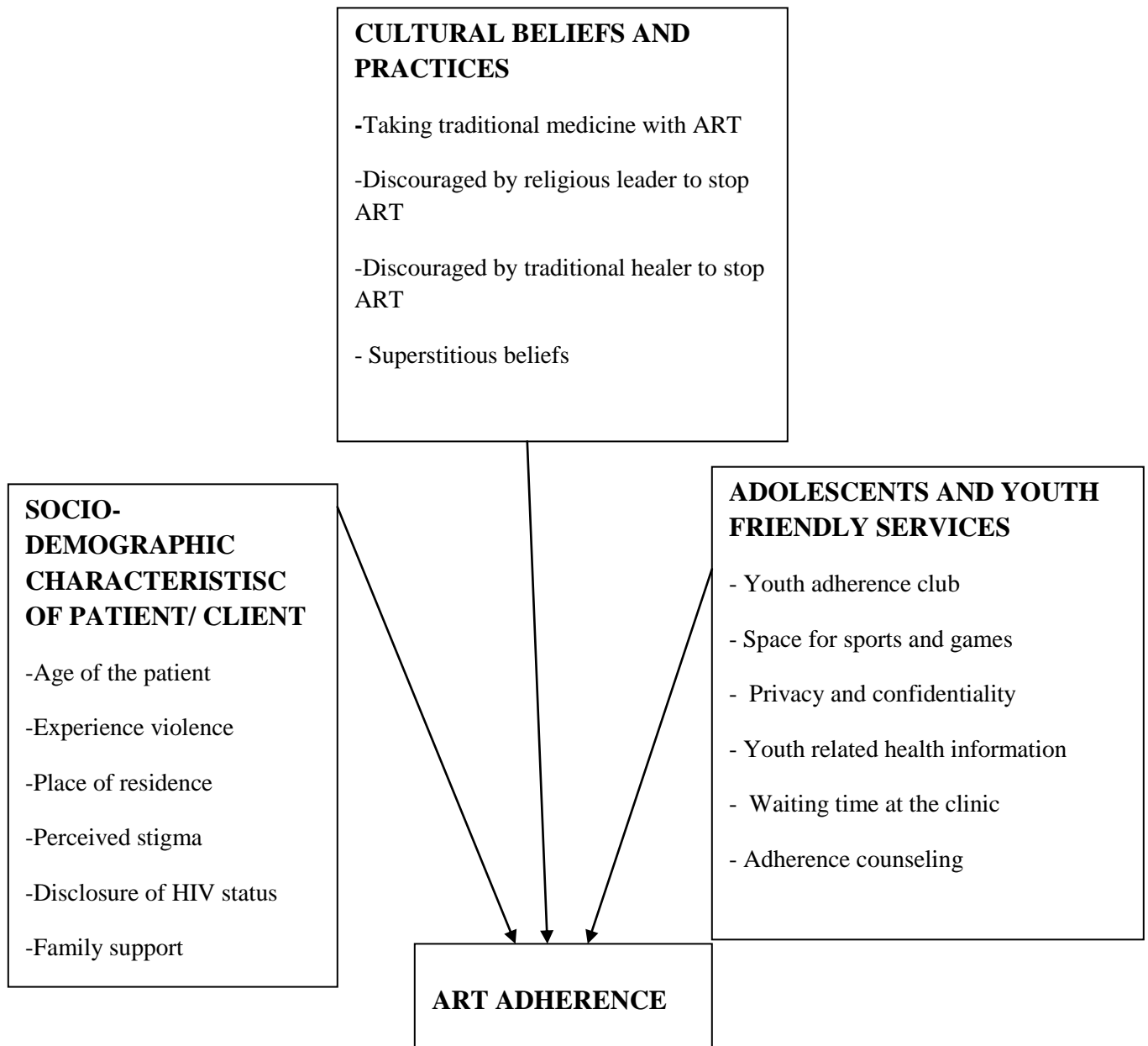
Figure 1: Conceptual Framework

The conceptual framework illustrates multiple factors of ART adherence such as, socio-demographic characteristics of client, adolescents and youth friendly services, and cultural practices and how they facilitate or hinder ART adherence among adolescents CTC attendees. The modified model adapted from socio ecological framework, a theory-based framework for understanding the multifaceted and interactive effects of personal and environmental factors that determine behaviors (17) The conceptual framework demonstrated the aim of this study to understand factors associated with adherence to ART. The study focused on adherence (optimal and suboptimal) as the outcome of interest.

1.3 Rationale of the study

Suboptimal adherence to ART among adolescents and young adults infected with HIV is a problem. HIV prevalence among adolescents is skyrocketing; sub-Saharan Africa is the most affected area having 85% of adolescents living with HIV worldwide. Reports show adolescents aged 10-24 accounts for an estimated 16% of new adult HIV infection worldwide. However, a few studies have investigated the factors associated with suboptimal ART adherence among adolescents in Tanzania, particularly in Tabora region. It is a high time to explore the factors associated with adherence to ART at a time when HIV infections among adolescents is not declining compared to other age groups. Hence, findings of this study provided information on the factors associated with adherence among adolescents and young adults attending care and treatment clinics in Tabora MC in Tabora region.

This study provided vital information for the District AIDS Control Coordinator (DACC), policy makers, donors, sponsors and other relevant development partners who are involved in ART adherence programs particularly to adolescents and young adults.

Also, this study acted as baseline information for other researchers and academicians who would like to learn and conduct the study relating to factors associated with suboptimal adherence to ART among adolescents and young adults. Thus, acted as a point of reference to assist and give relevant information for other researchers and academician who would like to dig deep into the respective area of the study.

1.3 Research Questions

1.3.1 Main Research Question

What are the factors associated with adherence to ART among adolescents and young adults attending care and treatment clinics in Tabora municipal council?

1.3.2 Specific Research Questions

1. What is the adherence level to ART among adolescents and young adults attending CTC in Tabora municipal council?
2. What is the relationship between socio-demographic factors and adherence to ART among adolescents and young adults attending CTC in Tabora municipal council?
3. To what extent does utilization of adolescents and youth friendly services affect adherence to ART among adolescents and young adults attending CTC in Tabora MC?
4. What is the relationship between cultural practices and adherence to ART among adolescents and young adults attending CTC in Tabora MC?

1.4 Objectives

1.4.1 Broad objective

To determine factors associated with adherence to ART among adolescents and young adults attending CTC in Tabora Municipal Council.

1.4.2 Specific objectives

1. To determine adherence level to ART among adolescents and young adults attending CTC in Tabora MC.
2. To determine association between socio-demographic factors and adherence to ART among adolescents and young adults attending CTC in Tabora MC.
3. To examine utilization of adolescents and youth friendly services and adherence to ART among adolescents and young adults attending CTC in Tabora MC
4. To determine association between cultural practices and adherence to ART among adolescents and young adults attending CTC in Tabora MC.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Adherence levels to ART

Adherence to medication becomes a challenge when an individual has a chronic illness such as in the case of HIV and AIDS. Consequently, non-adherence to ART leads to a suboptimal drug level, which may result in therapeutic failure, deterioration of the immune system and/ or emergence of drug-resistant HIV strains, predisposing the patient to opportunistic infections and death, Adherence to antiretroviral therapy (ART), therefore is a principal determinant of virology suppression, adult and children studies on ART adherence have established a direct correlation between risk of virology failure and the proportion on missed doses of ARV drugs (18)

Evidence on the global ART adherence suggests that the levels of adherence to ART among adolescents and young adults varied across continents. A systematic review and meta-analysis of published studies reporting adherence to ART among adolescents and young adults globally has reported that, after reviewing 50 eligible articles reporting data from 53 countries and 10725 patients, the lowest average was scored by North America with 53% adherence, followed by Europe 62% while Africa and Asia scored higher levels of 84% each, this global discrepancy is probably multifactorial reflecting differences between focused and generalized epidemics, access to healthcare and funding.(19). Self-reported measure of adherence with one month recall has been used frequently to describe adherence, A study conducted by Nyongea et al (2015) on determinants of antiretroviral adherence among HIV positive children and teenagers in rural Tanzania using a mixed methods study, reported that of the 116 participants available for quantitative analysis, 70% were found to have high levels of ART adherence at an average rate of 84%.(14)

Furthermore a cross sectional study conducted in Ethiopia, on HIV infected adolescents, reported adolescents adherence rate of 79.1% through a patient self-report measure of ART adherence, factors such as special instructions on ART, marital and living status of the parent,

WHO clinical stage and being on cotrimoxazole prophylactic therapy (CPT)were associated with optimum adherence.(20)

2.2 Socio-demographic factors affecting adherence of adolescents and young adults on ART

In a study on factors influencing poor ART adherence among adolescents done in Tanzania, Uganda and Botswana which interviewed 73 adolescents who attends ART services in different health facilities found that, side effects of the drug, hunger, transport cost and long waiting hours is directly associated with poor ART adherence(21) Another study on factors associated with non-adherence to ART among adolescents living with HIV AIDS attending large health facilities in Malawi, has shown that adolescents are overwhelmed with stigmatization by people outside and within their home, other have engaged in alcohol use, lack of social support and disclosure from parents and health care workers has appeared to impinge adherence of adolescents to ART (22)

A study by Toska et al(2018) in South Africa on multi type violence exposure and adolescents antiretroviral non adherence among CTC attendees defined adherence as taking medication as they are prescribed by health workers, self-report measures were used to assess adherence by assessing number of missed pills and number of missed day and the results was those who experienced violence reported 73.5%non -adherence to ART than participants who did not experience violence25%,(23).

Furthermore, a study conducted in Nepal, on factors influencing adherence to antiretroviral therapy treatment, reported significant association between various socio-demographic factors associated with suboptimal adherence, such as, travelling more than 1 hour, undisclosed HIV status, being female, alcoholism and illiterate.(24)

However, a little is known on the socio-demographic factors which affects ART adherence among adolescents and young adults in Tabora municipal council, hence there is a need to focus on socio-demographic factors so as to establish facts on how it affects adherence to ART

in our setting, as it has been studied in different environments. Therefore, this study generated new information on socio-demographic factors affecting adherence to ART among adolescents and young adults attending care and treatment clinics in Tabora MC.

2.3 Utilization of adolescents and youth friendly services

Utilization of adolescents and youth friendly services such as youth adherence clubs, continuous adherence counseling, shorter waiting time at clinic, privacy and confidentiality, space for sports and games and availability of age appropriate information for youth are worth to be considered as an influence to optimal ART adherence among adolescents and young adults. (25)

For instance, approach to increase adherence among children and adolescents living with HIV in Tanzania, implemented by Elizabeth Glaser Pediatric AIDS Foundation (EGPAF-TANZANIA) has performed an evaluation of patients at selected six CTCs with youth adherence clubs and reported that monthly visit attendance as a proxy for ART adherence, was significantly higher for those who attended youth adherence clubs (91%) compared to those who did not attend youth adherence clubs (82%,P < 0001) (26).This findings were similar to a study done in Malawi ,they reported that, an exposure to teen clubs at clinics was associated with a 3.7 times lower odds of suboptimal adherence to ART services than not being exposed to teen club.(27)

A study conducted in South Africa 2018, revealed that, waiting time at clinic for ART services being less than one hour, was significantly associated with improved adherence to ART among adolescents, compared to adolescents who attended clinics with waiting time of more than one hour (P<.05).(28). Moreover, privacy and confidentiality has been reported in different studies on ART adherence, for example, findings from a study conducted in Zambia 2019 has reported that, youth were reluctant to collect medication from the facility with poor environment for privacy and confidentiality. (29)

However, there is limited information on how adolescents and youth friendly services influence adherence to ART among adolescents and young adults in our setting, few health facilities offers adolescents and youth friendly services in Tanzania , among other reasons for inadequate health facilities with friendly health services, there was no significant evidence to support the fact that, adolescents and youth friendly clinics influence ART adherence as it has been established in other countries. Therefore, findings from this study added evidence on the influence of adolescents and youth friendly clinics on ART adherence among adolescents and young adults in Tanzania.

2.4 Cultural beliefs and practices on ART medicines

Eliphas et al (2015) reported that, non-adherence is exacerbated by lack of accurate knowledge about either HIV/AIDS or ARVs, which is fuelled by traditional healers in most African countries, leading to many HIV patients holding false beliefs about having been bewitched. Some patients tend to be led astray by religion, believing that it is only through prayers that they can hope to be cured because the disease is associated with demons (30)

Reda et al (2012) reported their findings of myths, misconception and denial of the existence of HIV status as important markers of poor adherence to ART. Some of parents and caregivers forces adolescents to stop ART medicine when they are being initiated on other medicines or herbs, believing that ART medicine will not work together with other medical or herbal preparations (31)

A study conducted in Moshi Tanzania, reported that, the majority of HIV patients who went to Loliondo healer for curing HIV had reduced their adherence to ART, after receiving treatment from that famous traditional healer, compared to those patients who had never went to seek treatment in Loliondo(32). In Ethiopia, one the major barrier of adherence to ART among people living with HIV is the belief in and practice of Holy water rituals. Many defaulters were reported coming back to ART clinics to resume medicines when they are in stages of dying from HIV related diseases (30)

However, a little is known on the cultural beliefs and practices which affects adherence to ART among adolescents and young adults. There is great variation between societies especially in cultural beliefs and practices, and studies in other setting have shown that, some of the culture beliefs and practices exposes adolescents and young adults to stop taking HIV/AIDS medicines, believing that traditional medicines can cure HIV/AIDS, some literature have revealed that some adolescents and young adults believes that religious prayers can only cure HIV/AIDS. Therefore, it is was worthy to study culture beliefs and practices in our setting and add information and evidence on how culture beliefs and practices affects adherence to ART particularly in Tabora MC.

CHAPTER THREE

3.0 METHODOLOGY

3.1 Study Design

This was a cross-sectional analytical study conducted among HIV-infected adolescents and young adults on ART who were attending CTCs in Tabora municipal council.

3.2 Study Area

The study was conducted in Tabora municipal council. The council is found in Tabora region located in the western part of Tanzania. Tabora municipal council has the population of 226,999 residents of which 10,527 are youth aged 10-24 years. Tabora municipal council residents including adolescents and young adults are involved in various income generating activities including agriculture, livestock keeping and bee keeping according to Tanzania National Census 2012.Tabora municipal council has 25 public health facilities and 7 health facilities offer CTC services, Tabora region is among the regions of Tanzania with a high prevalence of HIV-infected persons, according to Tanzania HIV impact survey 2017; the region has HIV prevalence of 5.1%.

3.3 Study Population

The study population consisted of HIV-infected adolescents and young adults on ART aged 10-24 years during the time of the study attending CTC at Tabora municipal council.

3.4 Inclusion criteria

HIV-infected adolescents and young adults 10-24 years attending CTC in Tabora municipal council.

- Adolescents and young adults aged 10-24 years during time of study
- Initiated on ART for at least six months before the study

3.5 Exclusion criteria

- Adolescents and young adults living with HIV/AIDS but have mental disorders

3.6 Sample size determination

Since this study is analytical cross sectional, the formula for minimum sample estimation was used.

n = $\underline{Z^2 P (1-P)}$

E²

Where;

n= estimated sample size for infinite population

P=proportion of poor ART adherence (30% by Nyogea et al.2015. on determinants of antiretroviral adherence among HIV positive children and teenagers in rural Tanzania)

Z= Critical value for the standard normal distribution for the 95% confidence interval around the mean. =1.96 (at. CI .95%)

E=Margin of error on estimate (set at 5%)

n= $\underline{Z^2 P (1-P)}$

E²

n = 1.96 x 1.96 x 30(100-30)/5x5

n = 3.842x30x70/25

n = 322

n = 322+ 10% of non-respondents

n = 322/0.9

n = 358

Sample size was 358 adolescents on ART attending CTC at Tabora municipal council.

3.7 Sampling Technique

A systematic random sampling method was used to select the participants from the daily appointment list obtained from each clinic. At the time of the study, the two clinics had a total of 751 (N) adolescents and young adults enrolled for ART, therefore a sampling fraction was n/N (358/751= 48%). To obtain the desired sample size, 48% of adolescents and young adults from each of the two clinics were included in the sample. Tabora regional hospital; 401*48%=192, and Maili Tano 350*48%=168. Systematic random sampling was used to select adolescents and young adults from the daily appointment list at each of the two sites. First the number of adolescents and young adults to be recruited daily was determined, depending on the total sample for each site. Since I had three weeks for data collection, the number of participants per site per five days of data collection was; Tabora regional hospital 192/5 days= 38 adolescents and young adults per day; Maili tano; 168/5 days = 34 adolescents and young adults per day.

Depending on the number of adolescents and young adults in the appointment list, the sampling interval, K was calculated using formula N/n (Where N is the total number of adolescents and young adult listed in the appointment list for that day of data collection and n is the sample size for each day). After obtaining the sampling interval-K, I selected using random number table's one number between 1 and k, the number selected was my first adolescent and young adult to be included in the sample for that day and later I included every Kth adolescents and young adult.

If any of the selected adolescents and young adult did not attend the clinic on that day, I increased the sample size for the next day so as to attain the desired total sample size.

3.8 Study Variables

3.8.1 Dependent Variables

ART adherence (greater or equal to 95%, missing one or less doses (Optimal) and less than 95% missing more than one dose (sub-optimal) of the drug regimen uptake, over a period of one month.

3.8.2 Independent Variables

The independent variables were age, sex, level of education of adolescent, occupation of primary caregiver, marital status of adolescent, area of residence, disclosure of HIV status, Viral load, perceived stigma, family support, experience violence, adolescents and youth friendly services (youth adherence clubs, privacy and confidentiality, space for sports and games, availability of health information , continuous adherence counseling and waiting time at clinic), distance from health facility, taking traditional medicines with ART, discouraged by traditional healer to stop ART, discouraged by religious leader to stop ART and superstitious belief.

Table 1: Variables description

Variable	type	Attribute	measurement	Source
Adherence	Dependent	≥ 95% (missing one or less doses) **GOOD** < 95% (missing more than one dose) **POOR**	Self report	Participants
Adolescents and youth friendly services	independent	-Youth adherence club -Sports and games -Adherence counseling -Waiting time at clinic -Privacy and confidentiality -Health information		Participants Questionnaire Interview
Viral load	independent	≥1,000 copies/ml <1,000 copies/ml		CTC2 database
Sex	independent	Female Male		questionnaire
Age	independent			questionnaire
Place of residence	independent	Urban(within Tabora MC) Rural(Outside Tabora MC)		questionnaire
Parent/caregiver marital status	independent	Married Single divorced		questionnaire
Education of parent/caregiver	independent	- standard seven -Not completed standard seven -Secondary level -Diploma -Higher education		questionnaire
Education of adolescent	independent	-Standard seven -Not completed standard seven -secondary level education -Diploma/higher education		questionnaire

3.9 Data collection instruments

A structured questionnaire was used as an instrument of data collection and it comprised of a series of questions that respondents were asked. The questionnaire was prepared in English then translated to Kiswahili language. The back translation (Kiswahili to English) was made to make sure the meaning and content are maintained in the Kiswahili version. Questionnaire was adopted from World health organization and management sciences for health 2011, and from other literatures. Pre-testing of the questionnaire was done and adjusted in order to fit the context of this study.

3.10 Data collection procedures

Data collection was carried out at 2 CTC clinics in Tabora municipal council. Staff and participants were informed about the study and its objectives, Adolescents and young adults from age 13-24 years who agreed to participate consent procedure was adhered to sign younger adolescents between 10-12 years accent procedure followed and parents or caregivers signed on behalf and those who attended without a parent/care giver were excluded.(33).

Research assistants were recruited from Musoma College in Tabora municipal pursuing pharmacy studies. A two-day orientation was carried out before the commencement of actual data collection, topics covered included familiarizing with objective of the study, sampling process, administering questionnaire with an emphasis on research ethics, informed consent and accent procedures. Adolescents and young adults aged 10-24 years attending 2 CTCs were recruited in this study; researcher divided a sample of 358 participants by two, to get 179 participants from each clinic, then probability sampling adopted to get 179 respondents at the clinic. The data was collected for a period of one month from September to October 2019.

3.11 Validity and reliability of the study

For the purpose of achieving validity and reliability, structured interview questionnaire was designed in such a way that it captured relevant information for the research objectives. Validity explains the accuracy and truth of the data in research, while reliability means that if

the research is repeated by the respondents or independent observers with the same methods, they will acquire the same results or data. The research instrument was pre-tested so as to ensure the questions are acceptable, answerable and well understood.

3.12 Data management and analysis

All questionnaires were checked for completeness and clarity. The computer software for SPSS (IBM SPSS version 22) was used to analyze data, while Microsoft excel was used specifically in drawing charts.

Descriptive statistics was used to summarize demographic characteristics, frequencies and percentages were used to summarize categorical data. The chi-square test was used to assess association between a dependent variable and each of the categorical independent variables. Odds ratio and 95% confidence intervals were used to determine the strength of association, moreover multivariate logistic regression analysis was performed to all categorical variables in order to control potential confounders, variables that had a $p<0.2$ in the bivariate analysis were included in the multivariable model. A p-value of less than 0.05 was used as a cut-off point for assessing statistical significance.

3.13 Measures of Adherence

Adherence was defined as taking drugs exactly as they are prescribed and it included taking them at the right time and in the right doses, although there is no gold standard by which to measure adherence to medication. Many studies employ a number of methods, either alone or in combination to measure adherence. The most common include: electronic drug monitoring (EDM) devices, pill counts, Biochemical markers, pharmacy refill records and various self-reporting tools such as Questionnaires and visual analogue. Adherence measurement in this study based on patient recall of their compliance of the prescribed doses in over one month prior to the interview: This measure was derived from the AIDS Clinical Trial Group (ACTG) assessment of adherence to antiretroviral medication and consistency of an inquiry about the number of missed doses over the past 30 days (Self reporting).

This item was categorized into $\geq 95\%$ (missing one or less doses) and $< 95\%$ adherence (missing more than one dose).

3.14 Ethical Considerations

The researcher sought ethical approval from Muhimbili University of Health and Allied sciences (Ethical review board), permission for conducting this research in Tabora Region was obtained from District Executive Office and District medical office. Participant's names and identifiers were not included in the data collection tools in order to maintain confidentiality. Participation in the study was voluntary, written informed consent was administered and those who consented, signed the document. Assent consent form was administered to participants who were less than 18 years of age. Two signed copies were given; one left with the client another with researcher. The study was conducted in a private place where privacy was attained. Objective of the study, risks, confidentiality and its expected benefits was explained to the study subjects.

CHAPTER FOUR

4.0 RESULTS

4.1 Background characteristics

A total of 358 HIV positive adolescents and young adults receiving ART treatment were enrolled in the study with a response rate of 100 %. Their age ranged from 10 to 24 years with mean age of 18.8(SD = 3.04) years. The majority (69.8%) were aged 19 – 24 years. More than half of study participants 245 (68.4%) were female and 265 (74.0 %) of the respondents were students. More than half of the participants 240 (67.6%) were from urban while 118 (32.4%) were from rural areas (see Table 2 for details).

Table 2: Distribution of study participants by background characteristics

Characteristics	Category	Number	Percent
Age (years)	10-18	108	30.2
	19 -24	250	69.8
Sex	Male	113	31.6
	Female	245	68.4
Occupation	Students	265	74
	Peasant	62	17.3
	Private sector employee	4	1.15
	Government employee	4	1.15
	unemployed	23	6.4
Duration on ART	< 1 Year	28	7.8
	1-2 Years	20	5.6
	3-5 Years	14	3.9
	> 5 Years	296	82.7
Level of education	Primary education	131	36.6
	Secondary education	208	58.1
	Higher education	19	5.3
Primary caregiver's occupation	Government employee	69	19.3
	Private sector employee	86	24
	Peasant	116	32.4
	Daily laborer	17	4.7
	Business man/woman	40	19.6
Place of residence	Urban	240	67.6
	Rural	118	32.4

4.2 Level of adherence to Antiretroviral Therapy

Majority of the respondents had positive perception of ART treatment and maintaining adherence; in this study the overall adherence was 77.7%, assessed through a previous month recall of the drug regimen uptake with 95% adherence threshold. An optimal ART adherence was defined as taking 95% or more doses of ART prescribed in a month. Respondents were asked to recall on the number of doses they have missed in a period of one month preceding the study.

4.2.1 Reason for missing two or more ART dose

The main reasons for missing two or more dose of ART reported by study participants from the frequency statistic were, travelling (43.6 %), Being busy with activities (24.0 %) other reasons were lack of money for transport (13.1%) felt sick (11.7 %) and lack of food (7.5 %) as presented in a bar chart below.
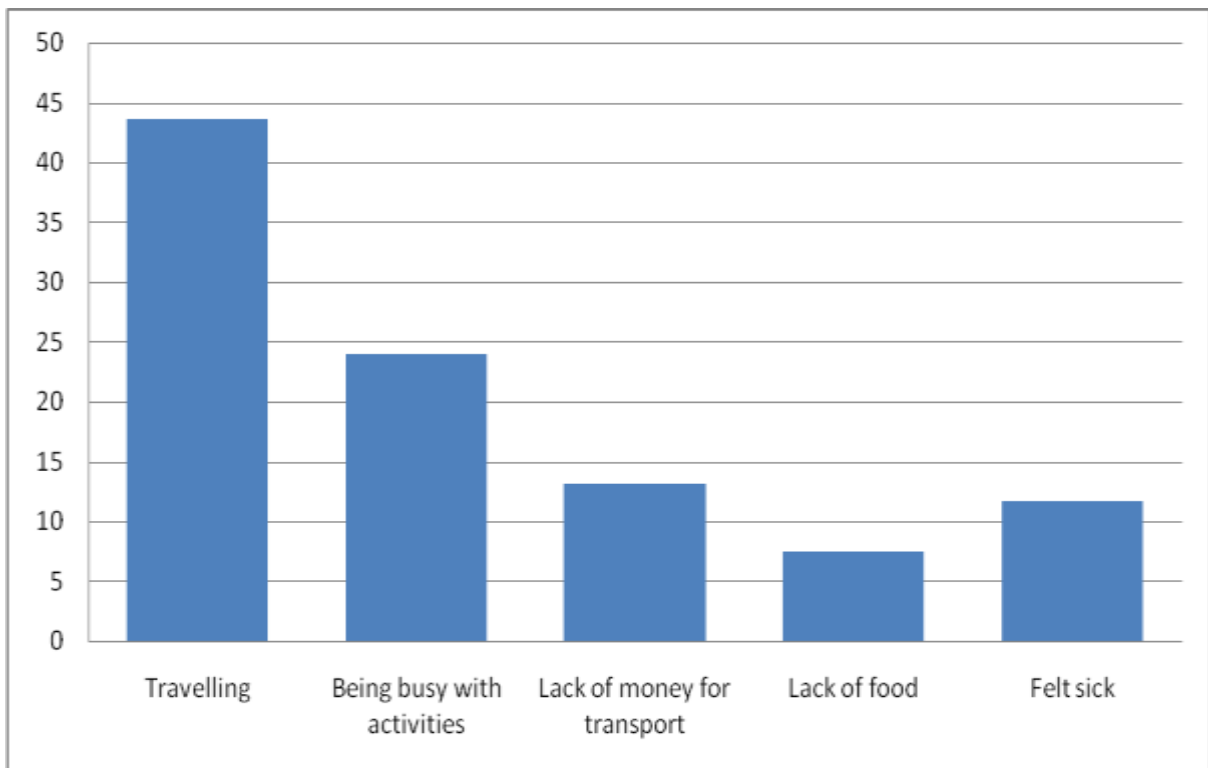
Figure 2: Reasons for missing two or more ART doses

4.3 Socio-demographic factors associated with adherence of ART among adolescents and young adults attending CTCs in Tabora municipal council, 2019

The study assessed socio- demographic factors associated with poor adherence to ART among adolescents and young adults attending care and treatment clinics in Tabora municipal council. The odds of older adolescents and young adults above 18 years was associated with almost twice increased likelihood of suboptimal adherence to ART as compared to those aged 18 years and below, (OR= 1.65,95% CI:0.98-2.78). (Table 3). Moreover, the odds of adolescents and young adults who ever married were three times higher more likely to have poor adherence than never married adolescents and young adults (OR= 3.03, 95%, CI (1.71-5.40) (P<0.001) (Table 3).

Findings from univariate regression analysis of this study reveals that the odds of suboptimal adherence to ART among adolescents and young adults who didn't disclose their status was 5 times significantly higher compared to adolescents and young adults who disclosed their status (OR=5.29, 95% CI:3.08 – 9.11) (Table 4).

In multivariate analysis of this study revealed that the odds of poor adherence to ART among adolescents and young adults, who experienced violence were two times higher compared to adolescents and young adults who didn't report experiencing any form of violence (AOR= 2.69, 95%, CI:1.15-6.30, p= 0.02). There was an association between ART suboptimal adherence and living in rural areas (AOR = 0.37, 95%, CI: 0.15-0.94, p= 0.02).

Table 3: Socio-demographic factors associated with ART adherence among adolescents and young adults attending CTCs in Tabora municipal council, 2019.

Characteristics	Crude OR (95% CI)	P-values	Adjusted OR (95%CI	P-values
Age (years)				
10-18	REF			
19-24	1.65(0.98-2.78)	<.001	2.61(1.15-5.90)	0.02
Education Level				
Primary	REF			
Secondary	0.08(0.01-0.63)	0.02	0.17(0.01-2.54)	0.2
Higher	0.39(0.05-3.04)	0.37	0.30(0.02-4.80)	0.39
Marital status				
Ever married	REF			
Never married	3.03(1.71-5.40)	<.001	10.13(0.86-119.27)	0.07
Residence				
Urban	REF			
Rural	3.74(2.01-6.98)	<.001	0.37(0.15-0.94)	0.02

Table 4: Other factors associated with ART adherence among adolescents and young adults attending CTCs in Tabora municipal council, 2019.

Characteristics	Crude OR (95% CI)	P-values	Adjusted OR (95%CI	P-values
Disclosure				
Yes	REF			
No	5.29(3.08-9.11)	<.001	2.00(0.64-5.09)	0.24
Perceived stigma				
No	REF			
Yes	3.43(2.03-5.80)	<.001	1.37(0.46-4.09)	0.57
Recent viral load				
<1000copies/ml	REF			
>=1000copies/ml	0.23(0.13-0.39)	0.61	1.12(0.50-2.51)	0.78
Family support				
Yes	REF			
No	2.40(1.37-4.20)	<.001	0.43(0.16-1.20)	0.44
Experience violence				
No	REF			
Yes	3.05(1.82-5.13)	<.001	2.69(1.15-6.30)	0.02

4.4 Utilization of adolescents and youth friendly services on affecting adherence to ART among adolescents and young adults attending CTCs in Tabora municipal clinics, 2019

The study assessed utilization of adolescents and youth friendly services on affecting adherence to ART among adolescents and young adults attending care and treatment clinics in Tabora municipal council. Findings from univariate regression analysis of this study reveals that the odds of suboptimal adherence to ART among adolescents who were not active members of youth adherence club at the clinic were three times significantly higher compared to those who were active members of youth adherence club at clinic (OR=3.04, 95% CI: 1.80 – 5.13). Moreover, the odds of suboptimal adherence to ART among adolescents and young adults who attended clinic which didn't have space for sports and games was significantly three times higher compared to those who have space for sports and games at the clinic. (OR= 3.35, 95% CI: 1.60-7.03). (Table5). Furthermore, the odds of suboptimal adherence to ART among adolescents and young adults who were not served with privacy and confidentiality at the clinic, was almost twice as compared to adolescents and young adults who were served with privacy and confidentiality. (OR= 1.65, 95% CI: 0.96-2.85). (Table5).

Furthermore, in the final multivariable model (Table 5) suggested that, the odds of suboptimal adherence to ART among adolescents and young adults who were not receiving continuous ART counseling were significantly three times higher, compared to those received continuous ART adherence (AOR = 3.14, 95%, CI, 1.51-6.55). Suboptimal adherence was also associated with waiting time at clinic, (AOR = 0.40, 95%, CI: 0.16-0.97, p = 0.01) and availability of space for sports and games at clinic, (AOR= 5.82, 95%, CI: 2.04-16.57, p = 0.01).

Table 5: Utilization of adolescents and youth friendly services and adherence to ART, among adolescents and young adults attending, care and treatment clinics in Tabora municipal council

Type of service utilized	Crude OR 95% CI	P-Value	AOR 95% CI	P-value
Youth adherence club				
Yes	REF			
No	3.04(1.80-5.13)	<.001	1.10(0.40-3.01)	0.04
Privacy and confidentiality				
Yes	REF			
No	1.65(0.96-2.85)	<.001	1.69(0.73-3.88)	0.22
Waiting time at ART clinic				
Less than 1 hour	REF			
More than 1 hour	0.19(0.11-0.34)	0.84	0.40(0.16-0.97)	0.04
Continuous adherence counseling				
Yes	REF			
No	0.33(0.19-0.57)	<.001	3.14(1.51-6.55)	0.01
Availability of health information				
Yes	REF			
No	1.03(0.63-1.70)	<.001	0.65(0.28-1.29)	0.22
Space for sports and games				
Yes	REF			
No	3.35(1.60-7.03)	<.001	5.82(2.04-16.57)	0.01

4.5 Cultural practices that affect adherence to ART among adolescents and young adults attending care and treatment clinics in Tabora municipal council, 2019

The study examined cultural practices that affect adherence to antiretroviral among adolescents and young adults attending care and treatment clinics in Tabora municipal council.

In univariate regression analysis of this study reveals that the odds of poor adherence to ART among people who took traditional medicine together with ARV for the past one month is six times significantly higher compared to those who had never taken traditional medicine together with ARV (OR= 6.03, 95% CI, (3.48-10.44), (P<0.001).(Table 6). Moreover, the odds of poor ART adherence among adolescents and young adults who were discouraged by traditional healer to stop using ART was two times significantly higher compared to adolescents who were not discouraged by traditional healer to stop ART (OR= 2.94, 95% CI: 1.57-5.50)(P<.001) (Table 6)

Furthermore, the odds of poor adherence to ART among adolescents and young adults who were discouraged by religious leader to stop using ART was three times significantly higher than adolescents and young adults who were not discouraged to stop using ART by religious leaders (OR= 3.04(1.70-5.43) (P<.001) (Table 6). Moreover, the odds of poor ART adherence among adolescents and young adults who believe that a person can be bewitched to acquire HIV (superstition belief) was two times significantly higher compared to adolescents and young adults who didn't believe in superstition. (OR= 2.88, 95% CI: 1.59-5.21) (P<.001) (Table 6)

Table 6: Cultural practices associated with ART adherence among adolescents and young adults attending CTCs in Tabora municipal council, 2019

Characteristics	Crude OR 95% CI	P-Value	AOR 95% CI	P-Value
Currently use traditional medicine with ART				
No	REF			
Yes	6.03(3.48-10.44)	<.001	2.86(1.20-6.80)	0.02
Discouraged by religious leader to stop ART				
No	REF			
Yes	3.04(1.70-5.43)	<.001	0.36(0.04-3.07)	0.35
Superstitious belief				
No	REF			
Yes	0.19(0.11-0.34)	0.84	0.40(0.16-0.97)	0.31
Discouraged by traditional healer to stop ART				
No	REF			
Yes	2.94(1.57-5.50)	<.001	1.26(0.50-3.18)	0.63

CHAPTER FIVE

5.0 DISCUSSION

5.1 Level of adherence to ART

This study aimed at determining factors associated with suboptimal adherence to ART among adolescents and young adults attending CTCs in Tabora Municipal council-Tabora region. In this study the proportion of suboptimal adherence on ART among adolescents and young adults who attended care and treatment clinics was 22.3%, adherence to ART was measured through self-reported (one-month recall) whereby missing more than one dose in a month was reported as suboptimal adherence. Despite the adherence level in this study was less than recommended level of ≥ 95%; the obtained suboptimal adherence result was lower than a study conducted by Nyogea et al (2015) in Morogoro Tanzania which reported suboptimal adherence to ART was 30%.(14).

Suboptimal adherence level in this study was higher than the study done in Ethiopia on adherence to antiretroviral therapy among HIV/AIDS adolescents attending CTC, reported suboptimal level to ART was 20.9% which was slightly higher compared to the findings of our study, whereby the suboptimal adherence level to ART was 22.3%.(20)

Moreover, there are different studies conducted in different parts of the world, which revealed different findings on suboptimal level of adherence to ART among adolescents which adherence was measured through self-reported (one month recall), for example studies conducted in Malawi by Kim et al(2017) reported suboptimal level of adherence to ART among adolescents was 45%(22), also a study conducted in in Kigoma Tanzania by Mbatia et al (2018) reported suboptimal adherence level of 24% compared to 22.3% suboptimal adherence level in our study. (25).

5.2 Socio-demographic factors which affects adherence to ART

The bivariate models of this study revealed that disclosure of HIV status and residence (living in rural) were significantly associated with suboptimal adherence to ART among adolescents and young adults, similar finding obtained in a study done in Malawi reported that, disclosure of HIV status and residence (living in rural) were independently associated with suboptimal adherence among adolescents and young adults. (21).

Perceived stigma may force adolescents and young adults to hide their HIV status even to close member of a family, a study conducted by Madiba et al (2016) has reported that, fear of being stigmatized led to missing appointments for ART refill, taking medication in privacy which led to missed dose and hence affected their adherence to ART, these findings are consistent with our findings, whereby perceived stigma was significantly associated with suboptimal adherence to ART.(34).Moreover this study reported exposure to any form of violence being a factor for suboptimal adherence to ART among adolescents and young adults, this finding is similar with a study conducted by Toska et al (2018) in South Africa, whereby, adolescents who were exposed to violence recorded suboptimal adherence of 73.5% while adolescents who didn't experience violence had 25% of suboptimal adherence.(23), also a study done in central and southern-eastern Malawi revealed that, exposure to violence at home was significantly associated with suboptimal adherence to ART among adolescents.(22).

We found a significant association between age of the adolescents and young adults and ART adherence, in this study older adolescent (19-24 years) recorded suboptimal adherence to ART compared to younger adolescents (10-18 years). This finding is similar to previous studies conducted by Maskwew et al in South Africa and Mbatia et al in Kigoma Tanzania, they found that older adolescents were likely to record suboptimal adherence to ART compared to younger adolescents.(25)(35). High rate of suboptimal adherence level to ART among older adolescents and young adults is influenced by their lower attendance rates to youth clubs and adherence counseling sessions, hence they miss vital information regarding to ART adherence compared to younger ones.

5.3 Utilization of adolescents-youth friendly services

This study assessed relationship between adherence to ART and utilization of adolescents-youth friendly services such as youth adherence clubs, continuous ART adherence, privacy and confidentiality at clinic, waiting time at clinic, space for sports and games and availability of health information. Findings in this study found that, adherence to antiretroviral therapy was suboptimal among adolescents and young adults who perceived lack of privacy and confidentiality at clinic when attended for ART services. This finding is similar to a study conducted by Clair-Sullivan et al (2019) in Zambia, which examined barriers to HIV care and adherence for young people living with HIV, they found that, youth were reluctant to attend or collecting medication from the facility with poor environment for confidentiality, due to this, a high number of missed appointments for ART refill observed.(29)

In this study, availability of age - appropriate health information provided at clinic was significantly associated with better ART adherence. This finding is similar to a study from South Africa conducted by Cluver et al (2018), they found significant association between availability of health information at the clinic with better ART adherence.(28). Results in this study did not find a significant association between waiting time of less or more than one hour at clinic with suboptimal adherence to ART, this is contrary to a study conducted in South Africa, they found a significant association of clinic waiting time of less than hour with adherence to ART, adolescents who waited for less an hour at clinic recorded better ART adherence than those waited for more than one hour (P<.05).(28)

We found a significant association between youth adherence clubs and suboptimal adherence to ART. This finding is similar to previous study conducted by Mackenzie et al in Malawi, they found that, exposure to the teen adherence clubs was associated with a 3.7 times lower odds of suboptimal adherence to ART services than not being exposed to teen club, similar results obtained from an evaluation study conducted in Tanzania by President's emergency plan for AIDS relief 2018, they found monthly visit attendance, as a proxy for ART adherence became significantly higher for those who attended Ariel adherence clubs (91%) than those who did not attend Ariel adherence club (82%, P<.0001).(27)(26).

Friendly health services have appeared to help adolescents and young adults commits to ART treatment compared to standard services; hence it's a high time, to upgrade all facilities which offer standard services to start offering friendly health services in order to reduce the high rate of suboptimal adherence to ART among this age category.

5.4 Cultural practices associated with ART adherence

This study assessed the relationship between adherence to ART and cultural practices. A number of cultural practices have been reported as predictors of suboptimal adherence to ART among adolescents and young adults. For instance several studies done in Nigeria and rural Mozambique have reported that HIV patient used traditional drugs to treat HIV and hence their ART adherence reduced,(36)(37).These findings are consistent with current finding, we found a significant association between use of traditional medicine together with ARV and suboptimal adherence to ART

A study conducted in Namibia on barriers to adherence to antiretroviral treatment, reported that, adolescents who had belief that HIV is a curse disease and can be transmitted through bewitching (superstitious belief) had recorded suboptimal adherence to ART.(30).This finding is similar to current study; suboptimal adherence to ART was recorded by adolescents and young adults who had superstitious belief.

We found a significant association between seeking HIV treatment from traditional healer and suboptimal adherence to ART, this is similar to a study conducted in Moshi ,Tanzania on reduced adherence to antiretroviral therapy among HIV-infected Tanzanians seeking cure from the Loliondo healer, they found ART adherence reduced by patients after receiving traditional medicine from the Loliondo healer compared to those patients who never went to Loliondo healer for HIV treatment (32). Traditional treatment for HIV/AIDS and harmful cultural beliefs should be discouraged by intensifying health education campaign at national, regional and community level; this will reduce the number of patients who visits traditional and religious healers for treatment as well as will improve individuals' understanding on HIV/AIDS issues.

5.5 Study Limitations

- We relied on self-report to collect information on ART adherence, thus creating potential recall bias that may lead to overestimation of adherence level.

- In this study sampling frame were drawn from appointment registers, clients who missed CTC during the day of interview might have sensitive information, due to time constrain we didn't make follow up.

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATION

6.1 Conclusion

Adherence to ART among adolescents and young adults who attended care and treatment clinics in Tabora Municipal Council is not satisfactory; our study found that suboptimal level to ART was 22.3 % of the study population. Findings revealed that socio-demographic factors such as older age (19-24 years) disclosure of HIV status, self-perceived stigma, rural residence and experienced any form of violence were associated with suboptimal adherence to ART. More over utilization of adolescents-youth friendly services such as youth adherence clubs, privacy and confidentiality, space for sports and games and availability of health information at clinic and continuous adherence counseling were associated with better ART adherence than those who didn't utilize the mentioned services. Furthermore, use of traditional medicine together with ARV, discouraged by traditional healers to stop ART, superstitious belief and discouraged by religious leaders to stop ART were significantly associated with suboptimal adherence to ART.

6.2 Recommendation

- We recommend HIV programs optimize use of adolescents and youth friendly services such as, youth adherence clubs, space for sports and games, privacy and confidentiality, continuous adherence counseling and provision of health information as the standard of care. To implement this model, services delivery points should adapt HIV service delivery guidelines, to include or elaborate on the guidelines for adolescents and youth friendly services as necessary.

- We recommend strengthening partnerships with non-governmental, community –based organization and government, to address harmful cultural beliefs in the community, as they appeared to be a barrier to optimal adherence to ART among adolescents and young adults who live with HIV/AIDS.

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APPENDICES

Appendix 1a: Questionnaire (English Version)

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

STRUCTURED QUESTIONNAIRE ON FACTORS ASSOCIATED WITH ADHERENCE TO ANTIRETROVIRAL THERAPY AMONG ADOLESCENTS AND YOUNG ADULTS ATTENDING CARE AND TREATMENT CLINICS- TABORA MUNICIPAL COUNCIL

Serial Number ……………………………

Care and treatment clinic number ………….

Site…………………………….

PART A: SOCIO-DEMOGRAPHIC AND CLINICAL INFORMATION

1. Date of birth …… …….

2. Sex

   1. Male   2. Female

3. Level of education

   1. Not attended   2. Primary education 3. Secondary 4. Higher education

4. Occupation of the primary care giver

   1. Employed in public sector 2. Employed in private sector 3. Farmer

   4. Daily laborer   5. Petty businessman/woman

5. Are you currently?

   1. Married   2. Single   3. Divorced   4 Separated

6. Religion

   1. Christian   2. Muslim

7. Place of primary residence

   1. Rural   2. Urban

8. Distance from that residence to health facility is

   1. More than 10 kilometers   2. Below 10 Kilometers

9. Do you get support from your family in your ART treatment?

   1. Yes   2. No

10. Do you perceive to be stigmatized if other people know your HIV status?

   1. Yes   2. No

11. Did you face any form of violence for the past three months?

   1.Yes   2. No

HIV status diagnosis and CD4 cell count/ viral load

12. HIV tested/diagnosed ……………. Date………….

13. Date of ARV initiation ………………….

14. Most recent viral load 1. <1000 copies/ml 2. > 1000 copies/ml

15. Are you worried about other people finding out your HIV status?

   1. Yes   2. No

16. Disclosure of HIV status to anyone

   1. Yes   2. No

Reasons for no disclosure………………………………………………….

17. If yes, to whom have you disclosed your HIV status (circle all that apply)

   1. Parents   2. Relatives/ friends   3. Partners   4. Teachers at school

18. Tick the person (s) living with you in the same house

   1. Parents   2. Children   3. Grandparents 4. Alone 5. Spouse/partner

   6. Relatives/friends

PART TWO: ANTIRETROVIRAL THERAPY ADHERENCE

19. When did you start taking ART medication?

  1. < 1 year   2. 1-2years 3.3-5 years 4 . > 5 years

20. Do you know any negative consequences of poor ART adherence on your health? If yes (tick the corresponding correct answer)

Consequences of poor ART adherence on health	
Increase of viral load	
Overall health decline	
Viral drug resistance	
Increase risk of transmission	
Avoidable death	
Increase of health expenditure	

21. Do you sometimes find it difficult to remember to take your medication?

    1. Yes   2. No

22. When you feel better, do you sometimes take a break from your medication?

    1. Yes   2. No

23. Many patients have troubles in taking their ARV doses as prescribed; did you miss any of ARV doses in the last three days?

    1. Yes   2. No

 If yes, how many doses did you miss? ....

24. Sometimes if you feel worse when you take the medicine, do you stop taking it?

    1. Yes   2. No

25. Have you been late in taking your ARV drugs?

     1. Yes   2. No

    If yes, by how long? _____ (Hours/Minutes)

26. In the past 1 week: Have you missed taking your ARV drugs?

    1. Yes   2. No

If yes, how many doses did you miss? ....

27. Have you missed more than one doseof ARVs in the past 1 month?

    1. Yes 2. No

28. Since you started ART, have you ever missed taking ARVs?

    1. Yes   2. No

29. What was the reasons for forgetting to take two or more ARV medicine in a month.

    1. being busy with activities 2. Lack of money for transport   3. Felt sick

     4.Travel   5. Lack of food

PART THREE: ADOLESCENTS AND YOUTH FRIENDLY SERVICES

30. Is there adolescents and youth adherence club in the clinic?

    1. Yes   2. No

   If NO skip question 31

31. Are you a member of youth adherence club in the clinic?

    1. Yes   2. No

32. Does the facility have space for playing games at the clinic grounds?

    1. Yes 2. No

33. Is there any peer education session in the clinic?

    1. Yes   2. No

34. Do you get health information regarding ART treatment and overall health advice?

    1. Yes   2. No

35. Does the peer sessions reminds you the benefit of taking ARV drugs?

    1. Yes   2. No

36. Do you get food and soft drinks during club day?

    1. Yes 2. No

37. Are you satisfied with privacy and confidentiality when you are served in the clinic?

    1. Yes   2. No

38. Are you satisfied with health provider's services?

      1. Yes   2. No

39. For how long, are you waiting before attended by health provider?

      1. More than one hour2. >Less than one hour

40. Are you receiving continuous adherence counseling on your ART?

    1. Yes   2. No

41. How would you rate your relationship with the staff at the clinic?

      1. Excellent2. Good3. Fair4. Poor

PART FOUR: CULTURAL PRACTICES AND BELIEF THAT AFFECTS ART ADHERENCE

42. Have you ever taken a traditional medicine for treatment of HIV?

    1. Yes 2. No

43. Did you take a traditional medicine together with ARVs for the past one month?

    1. Yes   2. No

44. Do you believe that a person can be bewitched and get HIV?

    1. Yes   2. No

45. For the past two months have you ever gone to traditional healer and discouraged you to stop taking ARV?

    1. Yes   2. No

46. Have you ever gone to religious prayers for healing HIV and discouraged to stop ARV?

    1. Yes   2. No

Appendix 1b: Dodoso la Utafiti (Kiswahili Version)

CHUO KIKUU CHA AFYA NA SAYANSI SHIRIKISHI MUHIMBILI

KITIVO CHA AFYA YA JAMII

DODOSO LA UTAFITI KUHUSU SABABU ZINAZOHUSIANA NA UFUASI HAFIFU WA DAWA ZA KUFUBAZA MAKALI YA VIRUSI VYA UKIMWI (VVU) KWA VIJANA WANAOHUDHURIA KLINIKI- MANISPAA YA TABORA

Kumb.Namba **………………**

Namba ya utambulisho kwenye kitabu cha Matunzo na matibabu kliniki (CTC)................

Kituo……………………..

SEHEMU YA KWANZA: TAARIFA ZA UTAMBULISHO NA UGONJWA

1. Mwaka wa kuzaliwa? …………………

2. Jinsia

   1. Kiume   2. Kike

   2. Kike

3. Kiwango chako cha elimu

   1) Hakusoma   2. Elimu ya msingi   3. Elimu ya sekondari   4. Elimu ya juu

4. Kazi ya mzazi/mlezi anayekusaidia kwenye matibabu yako ya VVU?

   1) Ame ajiriwa na serikali   2. Ameajiriwa na sekta binafsi   3. Mkulima 4. Kibarua

   5) Mfanyabiashara

5. Hali ya ndoa

        1) Umeolewa 2. hujaolewa 3. Talaka 4. Mmetengana 5. Mjane

6. Dini yko

        1) Mkristo 2. Muislamu

7. Sehemu unapoishi

    1) kijijini   2. Mjini

8.Umbali toka sehemu unapoishi hadi hospitali

  1) Zaidi ya kilometa 10   2. Chini ya kilometa 10

9. Je unapata msaada kutoka kwenye familia kuhusu matibabu yako ya VVU?

   1. Ndiyo   2. Hapana

10. Je unahisi kunyanyapaliwa kama watu wengine watajua hali yako ya maambukizi?

   1. Ndiyo   2. Hapana

11. Je umeshawahi kufanyiwa ukatili wa aina yoyote katika miezi mitatu nyuma?

   1. Ndiyo   2. Hapana

Utambuzi na hali ya maambukizi ya VVU, kiwango cha seliza CD4 na idadi ya virusi

12. Kwa maraya kwanza lini ulipimwa na kukutwa na maambukizi ya VUU? (Tarehe)……….

13. Tarahe ya kuanza matibabu ya vvu………………

14. Kiwango cha idadi ya virusi 1. < 1000 copies/ml   2. >1000 copies/ml...................

15. Je una wasiwasi dhidi ya watu wengine kufahamu hali yako ya maambukizi?

   1. Ndiyo   2. Hapana

16.Umeweka wazi hali yako ya maambukizi ya VVU?

   1. Ndiyo   2. Hapana

Ipi ni sababu ya kutoweka wazi hali yako ya maambukizi ya VVU………….

17. Je ni nani umemuambia hali yako ya maambukizi ya VVU, weka alama kwenye jibu

   1. Wazazi 2. Ndugu/marafiki   3. Mke/Mume/Mpenzi

   4. Mwalimu shuleni

18. Unaishi na nani nyumbani? Weka alama kwenye jibu sahihi

   1. Wazazi   2. Watoto 3. Bibi na babu 4. Peke yangu 5. Mwenza wangu

   6. Ndugu/marafiki

SEHEMU YA PILI: UZINGATIAJI WA DAWA (ART adherence)

19**.** Ulianza lini kutumia dawa za kupunguza makali ya VVU?

1.Chini ya mwaka 1 2. Mwaka 1-2 3. Miaka 3 hadi 5 4. Zaidi ya miaka 5

20. Je wajua madhara ya kiafya na kimatibabu yatokanayo na uzingatiaji hafifu wa dawa za kufubaza makali ya VVU, (Weka alama ya tiki kwenye jibu sahihi)

Madhara ya ufuasi hafifu wa dawa za VVU	
Kuongezeka kwa idadi ya virusi	
Kudhoofu afya	
Usugu wa virusi kwa dawa	
Kuongezeka kwa hatari ya maambukizi zaidi	
Kutokea kwa vifyo vinavyoweza zuilika	
Kuongezeka kwa gharama ya matibabu	

21. Je, Wakati mwingine huwa unajisikia vigumu kukumbuka kumeza dawa?

    1. Ndiyo   2. Hapana

22. Je, Wakati mwingine ukijisikia vizuri, huwa una pumzika kunywa dawa

    1. Ndiyo   2. Hapana

23. Wagonjwa wengi hupata taabu kumeza dawa za ARV kama walivyo pangiwa na mtoa huduma;   Katika siku tatu zilizo pita ulisha sahau kumeza dawa

    1. Ndiyo   2. Hapana

    Kama ndiyo dozi ngapi ulisahau kunywa? ....

24. Wakati mwingine ukijisikia vibaya sana wakati wakunywa dawa, je una acha kunywa dawa?

    1. Ndiyo   2. Hapana

25. Umesha wahi kuchelewa kumeza dawa?

    1. Ndiyo   2. Hapana

Kama ndiyo nikwamuda gani…………….Masaa/Dakika

26. Katika wiki moja iliyo pita ulisha wahi sahau kumeza dawa?

   1. Ndiyo   2. Hapana

Kama ndiyo, dozi ngapi ulisahau kumeza ……………

27. Je ulisha wahi sahau kumeza dawa Zaidi ya mara moja kwa mwezi ulio pita?

   1. Ndiyo   2. Hapana

28. Tangu uanze kutumia dawa umesha wahi sahau kunywa dawa?

  1. Ndiyo 2. Hapana

29. Sababu zipi zilizo pelekea usahau kunywa dawa zaidi ya mara mbili ndani ya mwezi?

   1. Kuwa bize na shughuli zingine 2. Kukosa pesa ya nauli kwenda kituo cha afya 3. Nilikua naumwa sana 4. Nilisafiri 5. Nilikosa chakula

SEHEMU YA TATU: Huduma rafiki kwaajili ya vijana

30. Kuna klabu ya vijana kuhusu ufuasi wa dawa za VVU hapa kliniki?

  1. Ndiyo   2. Hapana

Kama jibu ni ndiyo, jibu swali namba 31

31. Je wewe ni mwanachama hai wa klabu ya vijana inayouhusu ufuasi wa dawa za VVU hapa kliniki?

  1. Ndiyo   2. Hapana

32. Je kliniki ina nafasi ya kucheza michezo ?

  1. Ndiyo   2. Hapana

33. Je kuna masomo ya elimu rika hutolewa hapa kliniki?

   1. Ndiyo   2. Hapana

34. Je hua unapata taarifa za afya kuhusu matibabu ya VVU hapa klinikii?

   1. Ndiyo 2. Hapana

 35. Je hua mnakumbushwa umuhimu wa ufuasi wa dawa kwenye masomo ya elimu rika?

   1. Ndiyo   2. Hapana

36. Je hua mnapewa chakula na vinywaji laini siku ya klabu ya vijana?

   1. Ndiyo   2. Hapana

37. Je unaridhishwa na usiri wakati unahudumiwa hapa kliniki?

    1. Ndiyo   2. Hapana

38. Je unaridhishwa na watoa huduma za afya hapa kliniki?

    1. Ndiyo   2. Hapana

39. Mda unaotumia kuhudumiwa na mtoa huduma hapa kliniki

    1, Zaidi ya lisaa   2. Chini ya lisaa

40. Je hua unapata ushauri nasihi kila mara kuhusu ufuasi wa dawa za VVU?

    1.Ndiyo   2. Hapana

41. Je unauonaje uhusiano wako na watoa huduma hapa kliniki?

    1. Mzuri sana   2. Mzuri   3. Kawaida   4. Mbaya

SEHEMU YA NNE: MILA NA TAMADUNI

42. Je umeshawahi kutumia dawa za kienyeji kwa ajili ya kutibu VVU?

    1. Ndiyo   2. Hapana

43. Je umeshawahi kutumia dawa za kienyeji pamoja na dawa za VVU kwa ajili ya kujitibu virusi vya ukimwi katika mwezi mmoja uliopita.

    1. Ndiyo   2. Hapana

44. Je unaamini kua mtu anaweza kupata maambukizi ya VVU kwa kurogwa?

    1. Ndiyo   2. Hapana

45.Katika miezi miwili iliyopita umeshawahi kwenda kwa mganga wa kienyeji na kukushauri kuacha kutumia dawa za VVU?

1. Ndiyo   2. Hapana

46. Umeshawahi kwenda kwenye maombi ya kidini kwa ajili ya kuombewa upone VVU?

    1. Ndiyo   2. Hapana

Appendix 2a: Informed Consent (English Version)

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES-DIRECTORATE OF RESEARCH & PUBLICATIONS

ID-NO: ………… /………………./…………….

Consent to participate in this study

Greetings, my name is ………………………………….. From Muhimbili University of Health and Allied Sciences, Dar es Salaam. At the moment, we are carrying out a study on Factors associated with suboptimal adherence to antiretroviral therapy among adolescents and young adults attending care and treatment clinic in Tabora municipal council.

Purpose of the study

This study aims to collect information on Factors associated with suboptimal adherence to antiretroviral therapy among adolescents and young adults attending care and treatment clinics in Tabora municipal council. You are being asked to participate in this study as stake holder and a resident from the study site. We should be grateful if you are willing to participate by answering questions from the study.

What participation involves

If you agree to participate in this study the following will occur

1. You will sit with trained interviewer and you will be required to answer question that have been prepared for the study through interview in order to obtain the intended information to inform policy maker on how to improve care to HIV infected adolescents and young adults on ART

2. No identifying information such as name will be collected from during this interview.

3. You will be interviewed only once for approximately 30 minutes in private setting

Confidentiality

I assure you that all the information collected from you will be kept confidential. Only people working in this research study will have the success to the information. We will ensure that any information included in your report does not identify you as respondent as we will not put your name or other identifying information on the records of the information you provide**.**

Risks

You will be asked questions about factors associated with suboptimal adherence to ART among adolescents and young adults attending care and treatment clinics. Some questions could potentially make you feel uncomfortable. You may refuse to answer any particular question and stop the interview at any time. We do not expect any harm to happen to you because of participation in this study

Rights to withdraw and alternatives

Your participation in this study is completely voluntary. If you choose not to participate in the study or if you decide to stop participating in the study you will not get any harm. You can stop participating in this study at any time, even if you have already given your consent. Refusal to participate or withdraw from the study will not involve penalty or loss of any benefit to which you otherwise entitled.

Benefits

The information you provide is extremely important and valuable. It will help policy maker and health workers at every level to improve care to HIV infected women on ART. There is no direct benefit however; individual benefit it will be obtained through intervention programs which can be conducted in this particular area.

In case of injury

We are not anticipating that any harm will occur as the result of your participation in this study.

Compensation

There will be no compensation of time spent during the interview; however your participation is highly appreciated**.**

Who to contact

If you have any questions about this study, please don't hesitate to contact

Andrew Peter, the principal investigator, MUHAS, P.O.BOX 65001.Dar es salaam. Tel: 0659 262605

Director Research Publication MUHAS, Dr. Bruno Sunguya P.O.BOX 65001.Dar es salaam.

Prof. Gideon Kwesigabo, The supervisor of this study and lecturer at MUHAS P.O.BOX 65001 Dar es salaam (Tel no: 0713443212)

Do you agree to participate and answer questions in this study?

Participant agrees ( )

 Participant disagrees ( )

I _____ have read/understood the contents in this form. My questions have been answered. I agree to participate in this study.

Signature of participant _____

Signature of witness (if participant cannot read) _____

Signature of research assistant _____

Date of signed consent _____

Appendix 2b: Informed Consent (Swahili Version)

**CHUO KIKUU CHA AFYA NA SAYANSI SHIRIKISHI MUHIMBILI-
KURUGENZI YA UTAFITI NA MACHAPISHO**

Namba ya Utambulisho…………./………./………….

Ridhaa ya kushiriki katika utafiti huu

Habari, Jina langu naitwa -------------------- natoka chuo cha Afya na Sayansi shirikishi Muhimbili Dar es salaam, Tunafanya utafiti kuangalia sababu zinazofanya ufuasi hafifu wa dawa za VVU miongoni mwa vijana ambao wanahudhuruia klininki ya matibabu ya VVU katika halmashauri ya manispaa ya Tabora.

Malengo ya utafiti

Utafiti huu unalengo la kukusanya taarifa zitakazoelezea sababu zinazopelekea ufuasi hafifu wa dawa za kupunguza makali ya VVU miongoni wa vijana wanaohudhuria kliniki ya matibabu ya VVU katika halmashauri ya manispaa ya Tabora

Ushiriki una husishanini?

Ukikubali kushiriki katika utafiti huu yafuatayo yata tokea

1. Uta kaa namsaili/mtafiti aliye pewa mafunzo ya jinsi yaku hoji nakujibu maswali ya husuyo ufahamu wako kuhusu sababu za ufuasi hafifu wa dawa za kupunguza makali ya VVU kwa vijana.

2. Hakuna taarifa zozote za utambulisho zitakizo kusanywa wakati wa usahili isipokuwa umri na kiwango cha elimu

3. Utahojiwa mara mojatu kwa takribani dakika 30 kwenye sehemu ya faragha

Usiri

Naku hakikishia kwamba taarifa zote zitakazo kusanywa kutoka kwako zi takuwa ni siri, ni watu wanaofanya kazi katika utafiti huu tu ndio wana weza kuziona taarifa hizi. Tunakuhakikishia ya kwamba taarifa zitakazojumuishwa kwenye ripoti yetu hazitokua zinatoa utambulisho wako kwenye kumbukumbu ya taarifa utakazotupatia

Madhara

Utafiti huu hauna madhara yeyote yanayo tegemewa kutokana na kujumuika kwako katika utafiti huu. Baadhi ya maswali yana weza kuku fanya usijisikie vizuri hivyo unaweza kukataa kujibu swali lolote naunaweza kusimamasha usaili wakati wowote.

Haki yakujitoa na mbadala wowote

Ushiriki wako katika utafiti huu ni wahiari. Kamautachagua kutoshiriki au utaamua kusimamisha ushiriki wako hauta pata madhara yeyote.Unaweza kusimamisha ushiriki katika muda wowote hatakama ulisharidhia kushiriki.Kukataa kushiriki au kujitoa katika utafiti hakukufanyi upoteze stahiliyeyote unayo takiwakupata**.**

Faida

Taarifa utakayo tupatia nimuhimu sana na yenye thamani kwa kuwa itasaidia kuongeza uelewa wetu kuhusuu ufahamu, juu ya sababu zianzopelekea ufuasi hafifu wa dawa zinzopunguza makali ya VVU miongoni mwa vijana wanaohudhuria kliniki ya VVU. Pia taarifa utakayotupatia itasaadia kuandaa mpango na mikakati ya kuboresha huduma zinazo tolewa kwa vijana wanao tumia dawa za kupunguza makalli ya VVU.

Endapo utaumia

Hatutegemei madhara yeyote kutokea kwa kushiriki kwako katika utafiti huu

Fidia ya muda

Hakutakuwa na fidia ya muda uliotumika wakati wa kufanya mahijiano au majadiliano katika utafiti huu, ijapokuwa ushiriki wako katiaka utafiti huu utashukuriwa na kutathiminiwa.
Watu wa kuwasiliana nao

Kama unamaswali katika utafiti huu usisite kuwasiliana

ANDREW PETER, Mtafiti mkuu, Chuo Kikuu Cha Afya Muhimbili, S.L.P 65001, Dar es salaam (Simu no. 0659 262605)

Mkurugenziwa Tafiti na Machapisho,ChuoKikuu Cha Afya Muhimbili, Dr. Bruno Sunguya S.L.P 65001, Dar es salaam.

Prof. Gideon Kwesigabo, Msimamizi muelekezi wautafiti pia Muhadhiri Chuo Kikuu cha tiba na sayansi (Simu no. 0713443212)

Unakubali kushiriki na kujibu maswali yatafiti hii

Mshiriki amekubali ( )

Mshirika amekataa ( )

Mimi_____ _____nimesoma nimeilewa hii fomu, maswali yangu yamejibiwa.Na kubali kushiriki katiaka utafiti huu.

Sahihi ya Mshiriki _____

Sahihi ya shahidi (kama hawezi kusoma na kuandika) _____

Sahihi ya mtafiti msaidizi _____

Appendix 2c: Assent Form (English Version)

ID NO………

Consent to participate in a study about Factors associated with suboptimal adherence to antiretroviral therapy among adolescents and youth attending care and treatment clinics in Tabora MC.

To the Adolescents and Youth

Foreword Greetings!

I'm Andrew Peter, from Muhimbili University of Health and Allied Sciences, pursuing Master of Public Health, conducting a study aiming at assessing factors associated with suboptimal adherence to antiretroviral therapy among adolescents and youth attending care and treatment clinics in Tabora MC.

Purpose of the Study

The study has the aim of determining factors associated with suboptimal adherence to antiretroviral therapy among adolescents and youth attending care and treatment clinics in Tabora MC.

How to participate

If you agree to this study, the researcher will give you an interview questions to complete some of the questions related to the study.

Risks

We do not expect you to be subjected to any harm or discomfort during the course of participation in this study.

Confidentiality

We would like to ensure you that all the information that you will provide will remain confidential and will be used for research purpose only. No one will be allowed to see or go through your answers except the principle investigator only.

Rights to withdrawal and Alternatives

Participation in the study is completely voluntary. Refusal to participate or withdrawal from the study will not involve any drawback or loss of any benefit to which to which you are otherwise entitled. You can stop participating in this study at any time even if you have already given consent.

Benefits

There are no direct benefits for participating in the study. The information which will be acquired from this study will help us to use in establishing interventions for fighting against suboptimal adherence to ART among adolescents and youth who are enrolled in care and treatment clinics.

Who to Contact

If you have any questions about this study you should contact the Principal Investigator,

Mr Andrew Peter, P.O.BOX 65001 Dar es salaam, mobile: 0659 262605 email; angoloiwe@gmail.com. If you have any question about your rights as a participant you may contact Prof Gideon Kwesigabo , P.O.BOX 65001 Dar es salaam.Tel 0713443212

Consent Do you agree? YES/NO

I have read and understood the explanation of the study.

I agree to participate in this study.

Signature of the youth…………………..

Date of signed consent………………….

Appendix 2d: Assents Form (Swahili Version)

Namba ya Fomu…………..

Idhini ya kushiriki katika utafiti kuhusu sababu zinazopelekea ufuasi hafifu wa dawa za kufubaza makali ya virusi vya ukimwi kwa vijana wanaohudhuria kliniki ya matibabu halamshauri ya manispaa ya Tabora.

Kwa Vijana

Utagulizi Habari ! Jina langu ni Andrew Peter. kutoka chuo kikuu cha Afya na Sayansi Shirikishi Muhimbili kada ya Afya ya jamii. Ninafanya utafiti kuangalia sababu zinazopelekea ufuasi hafifu wa dawa za kufubaza makali ya virusi vya ukimwi kwa vijana wanaohudhuria kliniki ya matibabu halmshauri ya manispaa ya Tabora.

Malengo ya Utafiti

Utafiti huu unaangalia kuhusu kuangalia sababu zinazopelekea ufuasi hafifu wa dawa za kufubaza makali ya virusi vya ukimwi kwa vijana wanaohudhuria kliniki ya matibabu halamshauri ya manispaa ya Tabora. Majibu yatakayopatikana yatasaidia kwenye kubuni miradi itakayosaidia kupambana na ufuasi hafifu wa dawa za kufubaza makali ya VVU kwa vijana wanaohudhuria kliniki ya matibabu ya VVU.

Jinsi ya kushiri

Ukikubali kushiriki katika utafiti huu, utapatiwa dodoso lenye maswali yanayohusiana na tafiti na kupaswa kuyajibu.

Madhara

Hatutegemei utafiti huu kusababisha madhara yoyote kwako.

Utunzaji wa Siri

Tunapenda kukuhakikishia kwamba, maelekezo yote utakayoyatoa yatakuwa siri na yatatumika kwa utafiti tu.Hakuna mtu yoyote atakaye ruhusiwa kusoma majibu yako isipokuwa mtafiti mkuu.

Haki ya Kushiriki na mengineyo

Kushiriki kwenye tafiti hii ni hiari, Kukataa au kujitoa kwenye kushiriki katika tafiti hii hakutasababisha kupoteza faida yeyote ambayo ni haki yako. Unaweza kuacha kushiriki wakati wowote ule katika tafiti hii hata kama tayari umeshatoa idhini ya kushiriki.

Faida za Kushiriki

Hautapata faida za moja kwa moja kwa kushiriki, isipokuwa majibu ya utafiti huu yatasaidia kwenye mapambano dhidi ya ufuasi hafifu wa dawa za kufubaza makali ya virusi vya ukimwi kwa vijana wanaohudhuria kliniki ya matibabu halamshauri ya manispaa ya Tabora.

Mawasiliano

Kama unamaswali juu ya utafiti hii unaweza kuwasiliana na Mtafiti Mkuu Andrew Peter, S.L.P 65001 Dar es salaam, simu 0569 262605,barua pepe angoloiwe@gmail.com. Kama una swali juu ya haki zako kama mshiriki unaweza kuwasiliana na Prof Gideon Kwesigabo,S.L.P 65001 Dar es salaam,simu 0713 443212.

Kukubali unakubali? NDIYO/HAPANA

Nimesoma na kuelewa madhumuni ya utafiti huu na nimekubali kushiriki katika utafiti huu.

Sahii ya Kijana……………….

Tarehe…………………………

Appendix 3a: Approval of ethical clearance

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES
OFFICE OF THE DIRECTOR OF POSTGRADUATE STUDIES

P.O. Box 65001
DAR ES SALAAM
TANZANIA
Web: www.muhas.ac.tz

Tel G/Line: +255-22-2150302/6 Ext. 1015
Direct Line: +255-22-2151378
Telefax: +255-22-2150465
E-mail: dpgs@muhas.ac.tz

Ref. No. DA.287/298/01A/

21st August, 2019

Mr. Andrew Peter
Master Public Heath
MUHAS.

RE: **APPROVAL OF ETHICAL CLEARANCE FOR A STUDY TITLED: "FACTORS ASSOCIATED WITH SUBOPTIMAL ADHERENCE TO ANTIRETROVIRAL THERAPY AMONG ADOLESCENT AND YOUNG ADULTS ATTENDING CARE AND TREATMENT CLINICS IN TABORA MUNICIPAL COUNCIL"**

Reference is made to the above heading.

I am pleased to inform you that, the Chairman has, on behalf of the Senate, approved ethical clearance for the above-mentioned study. Hence you may proceed with the planned study.

The ethical clearance is valid for one year only, from **20th August, 2019 to 19th August, 2020.** In case you do not complete data analysis and dissertation report writing by **19th August, 2020,** you will have to apply for renewal of ethical clearance prior to the expiry date.

Dr. Emmanuel Balandya
Ag: DIRECTOR OF POSTGRADUATE STUDIES

cc: Director of Research and Publications
cc: Dean, School of Public Health and Social Sciences, **MUHAS**

Appendix 3b: Introduction Letter

OFISI YA RAIS

TAWALA ZA MIKOA NA SERIKALI ZA MITAA

HALMASHAURI YA MANISPAA YA TABORA

(Barua zote zitumwe Kwa Mkurugenzi wa Manispaa)

MKOA WA TABORA
SIMU: 026-4315/2606088
FAX: 026-2604835

MKURUGENZI WA MANISPAA
S. L. P. 174
TABORA – TANZANIA

Kumb. Na. TMC/A/ 82

Tarehe. 30/08/2019

Kwa;
Waganga Wafawidhi,
Kituo cha Afya Maili Tano,
Zahanati zote zinazotoa huduma za CTC,
HALMASHAURI YA MANISPAA YA TABORA.

YAH: KUMTAMBULISHA NDG.ANDREW PETER MWANAFUNZI KUTOKA CHUO KIKUU CHA MUHIMBILI

Husika na somo tajwa hapo juu,

Mkurugenzi wa Manispaa ya Tabora ameridhia kumruhusu mtajwa hapo juu kutembelea vituo vyote kutolea huduma za afya vilivyoko katika Halmashauri ya Manispaa ya Tabora kufanya utafiti unaohusu ufuasi wa dawa za ARV kwa watu wanaoishi na maambukizi ya VVU.

Kwa barua hii naomba umpokee na kumpa ushirikiano wa hali na mali katika kipindi chote atakachokuwepo katika kituo chako.

Nakutakia utekelezaji mwema.

Dr. Baraka Msumi
**MGANGA MKUU WA MANISPAA
TABORA**

Nakala:
Andrew Peter

MGANGA MKUU
MANISPAA YA TABORA
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TABORA