

**LEVEL AND DETERMINANTS OF HIV TESTING AMONG
CHILDREN OF PARENTS ENROLLED IN CARE AND
TREATMENT CLINICS IN ROMBO DISTRICT**

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**Masters of Public Health Dissertation
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By

Chispine Julius Kimario, MD

**A Dissertation Submitted in (Partial) Fulfillment of the Requirement for the Degree
of Masters of Public Health of the
Muhimbili University of Health and Allied Sciences**

**Muhimbili University of Health and Allied Sciences
October, 2014**

CERTIFICATION

The undersigned certifies that he has ready and hereby recommends for acceptance by Muhimbili University of Health and Allied Sciences as a dissertation entitled; **“Level and Determinants of HIV Testing among Children of parents enrolled in Care and Treatment Clinics in Rombo District”** in partial fulfillment of the requirements for the degree of Masters of Public Health of the Muhimbili University of Health and Allied Sciences

Dr Elia John Mmbaga

(Supervisor)

Date

DECLARATION AND COPYRIGHT

I, Crispine Julius Kimario, 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.

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DEDICATION

I dedicate this work to my family for their (Careen, Collin, Caroline and Winnie-Frida) love, patience, hardworking and encouragement embraced me throughout the course of this work.

ABSTRACT

Background: According to 2010 WHO Antiretroviral Therapy (ART) guidelines, in Tanzania only 69% of adults and 25% of children aged 0 – 14 in need of treatment are receiving it. In Tanzania, National HIV/AIDS treatment guidelines recommend that at least 20% of people living with HIV on treatment be children. However, since the beginning of the care and treatment program in Tanzania performance across the country has been less than 11%.

Aim: This study assessed level and determinants of HIV testing among children's of parents enrolled into CTCs in Rombo District, Kilimanjaro region of Tanzania.

Methods: A cross sectional study was conducted in HIV care and treatment centers (CTC) in Rombo district. Parents living with HIV/AIDS aged 18 and above who had a child younger than 18 years enrolled in all care and treatment sites in the district were randomly recruited and interviewed using a semi-structured questionnaire. Data were analyzed using statistical software for social scientists.

Results: A total of 280 people living with HIV with mean age of 40 years were recruited and interviewed. The prevalence of reported HIV testing among children of adults enrolled in care and treatment in Rombo district was 86.4% (242). The prevalence of HIV infection among children was reported to be 25.0% (60). Parents aged above 40 years were 74% less likely to have their children tested for HIV as compared to those aged 40 years or less (Adjusted Odds ratio (AOR, 0.26, 95% Confidence interval:0.1-0.71). Moreover, parents with CD4 cells of 200 or below were 88% less likely to test their children as compared to those with CD4 cells above 200 (AOR, 0.22, 95%CI: 0.08-0.16). However, parents with good HIV transmission knowledge were 5 times more likely to report testing of their children as compared to those with poor knowledge (AOR, 5.32, 95%CI: 1.69-16.74).

Conclusion: Level of HIV testing among children of parents enrolled in care and treatment in Rombo district was high, with a quarter of tested children reported to be infected with HIV. Age below 40 years, lower CD4 cells (200 or less), and good HIV transmission knowledge

were significant determinants of child HIV testing. Future intervention should target older age group with more advanced disease should aim at improving knowledge of HIV transmission.

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LIST OF ACRONYMS

AIDS	Acquired Immunodeficiency Syndrome
ART	Antiretroviral therapy
CBVCT	Community based VCT
CIHTC	Client Initiated HIV Testing and Counseling
DNA PCR	Deoxyribonucleic acid Polymerase Chain Reaction
EID	Early infant diagnosis
HIV	Human Immunodeficiency Virus
HTC	HIV testing and counseling
IQR	Interquartile range
MUHAS	Muhimbili University of Health and Allied Sciences
NACP	National AIDS Control Program
PITC	Provider initiated testing and counseling
RCH	Reproductive and Child Health
STI	Sexually Transmitted Infections
SVCT	Standardized VCT
TACAIDS	Tanzania Commission for AIDS
THMIS	Tanzania HIV and Malaria Indicators Surveys
UN	United Nations
USAID	United States Agency for International Development

VCT	Voluntary Counseling and Testing
VVU	Virus vya UKIMWI
WHO	World Health Organization

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

Around 1.2 million people aged 15 and over, or just over 5 percent of the adult population, are living with HIV in Tanzania (UNAIDS 2010). Although this number has recently fallen slightly, the epidemic's severity differs widely from region to region, with some reporting an HIV prevalence of less than 2 percent (Arusha) and others as high as 16 percent in Iringa (TACAIDS, 2008). An estimated 100,000 Tanzanians were newly infected with HIV in 2009 that is around 275 new infections every day. In the same year, 86,000 Tanzanians died from AIDS (UNAIDS, 2010) There are 160,000 children living with HIV and more than 1 million children orphaned by AIDS in Tanzania (UNAIDS (2010) 'UNAIDS report on the global AIDS epidemic'). Grandmothers and other relatives often provide invaluable support to orphans, but they are still more vulnerable to poverty, sexual abuse and poor nutrition than children who live with both their parents (TACAIDS, 2008).

Voluntary counseling and testing services (VCT) were first initiated in 1989 in Tanzania but coverage was very low. By 2001 there were still only 92 public VCT services (reportedly reaching 4 percent of the population) covering the entire country (Garbus, 2004). Since 2003, the number of VCT sites in the country has rapidly increased. VCT services are were available at 2134 sites across the country and according to the 2007-2009 Malaria and AIDS Indicator Survey, more than 80% of people knew where to get an HIV test (TACAIDS, 2008 & WHO/UNAIDS/UNICEF, 2010). The number of people who had been tested in the last twelve months and knew their results rose from an average of 1 in 20 in 2003/2004 to 1 in 5 in 2008. This means that, among the general population in Tanzania, over a third of women and a quarter of men had been tested at least once and knows their results (TACAIDS, 2008)

In 2001, the launched National Policy on HIV/AIDS recognized antiretroviral treatment as a right for all people living with HIV, at a time when no Tanzanians were receiving antiretroviral treatment (WHO/UNAIDS/UNICEF, 2010). It was not until the Ministry of Health developed a Health sector strategy (2003-2008), through that any plans to scale up HIV treatment were outlined by the government. In 2003, the William J Clinton Foundation and a group of Tanzanian experts created a systematic Care and Treatment Plan (2003-2008), which was then adopted by the Tanzanian cabinet. Working closely with its international partners, the Ministry of Health and Social Welfare has established care and treatment services across the country. As of December 2009, about 200,000 people in need of treatment had been enrolled; that is under half of the 440,000 by 2008 envisaged in the care and treatment plan (UNGASS/TACAIDS, 2010). According to the latest WHO guidelines of 2010, only a third of Tanzanians in need of treatment were receiving it.

Of recent, there has been both a Global and National emphasis to accelerate universal access to HIV prevention, treatment, care and support services for People Living with HIV (PLHIV). In order to achieve this goal, access to HIV Testing and Counseling services have expanded through strengthening and scaling up of the existing Client Initiated Testing and Counseling (CITC) as well as introducing other approaches for HIV testing and counseling, including; Provider-Initiated Testing and Counseling (PITC) in the clinical settings and Home Based HIV Testing and Counseling (HBHTC) approach in the community settings. These new approaches are complementing the efforts of voluntary counseling and testing (VCT) services. The end goal is to ensure that more people receive HTC services and know their HIV status

According to NACP, the coverage and utilization of HTC services expanded during during the implementation of Health Sector HIV and AIDS Strategic Plan II 2007-2012 (HSHSP II). By December 2012, PITC had been rolled out to all hospitals and to at least 50% of health centers and 5% of dispensaries while HBTC is being implemented in 10 regions (NACP, 2013).

Results of the THMIS show that, the percentage of women and men aged 15-49 who had ever been tested for HIV and received their test results was 62% and 47% for women and men respectively (THMIS 2011-2012). However, in the 12 months before the survey, 30% of women and 27% of men had been tested and received the results (THMIS 2012). Only 39% females and 25% males aged 15-24 years who had sexual intercourse in the past 12 months were tested for HIV in 2010 (TDHS 2010).

1.2 Statement of Problem

Globally, HIV/AIDS is a major development crisis that affects all sectors and walks of life. Over 2 million children are living with HIV worldwide. Sub-Saharan Africa accounts for 90% of those affected by AIDS (UNAIDS, 2008).

Increased knowledge of HIV status is critical in expanding access to HIV treatment, care and support in a timely manner, and offers opportunity for PLHIVs to receive information and essential supplies to prevent HIV transmission to others. Although HTC has been integrated in other services, there is a need to strengthen referral linkages between the various points of diagnosis (VCT, PITC, PMTCT, EID, TB/HIV, STI, VMMC) with care, treatment and support services (NACP, 2013).

The importance of testing children of HIV positive adults is widely acknowledged and guidelines have been produced for use to encourage this practice in both developed and resource constraints settings. WHO recommends provider initiated testing and counseling (PITC) to children as a priority in health facilities in countries with generalized epidemics (WHO and UNAIDS, 2007). In practice, HIV testing is done mainly when children are in the pediatric wards and during out patients clinic attendance. Traditionally, women are primarily responsible for childcare in many settings in sub-Saharan Africa. However, recent initiatives have recognized the importance of family based approach to provision of HIV care (Myer, Abrahams, & E-Sadr, 2005).

Tanzania National Guidelines for management of HIV and AIDS and patients medical records cards (CTC 2 cards) require HIV infected patients enrolled in care and treatment centers provide HIV status of their family members including children. However, coverage for HIV testing among this group in Tanzania is not known and understanding the level of HIV testing and infection among children of parents enrolled in care and treatment has never been studied in Tanzania.

This study assessed the level and determinants of parents enrolled at CTCs testing their children for HIV in Rombo District, in Kilimanjaro Tanzania

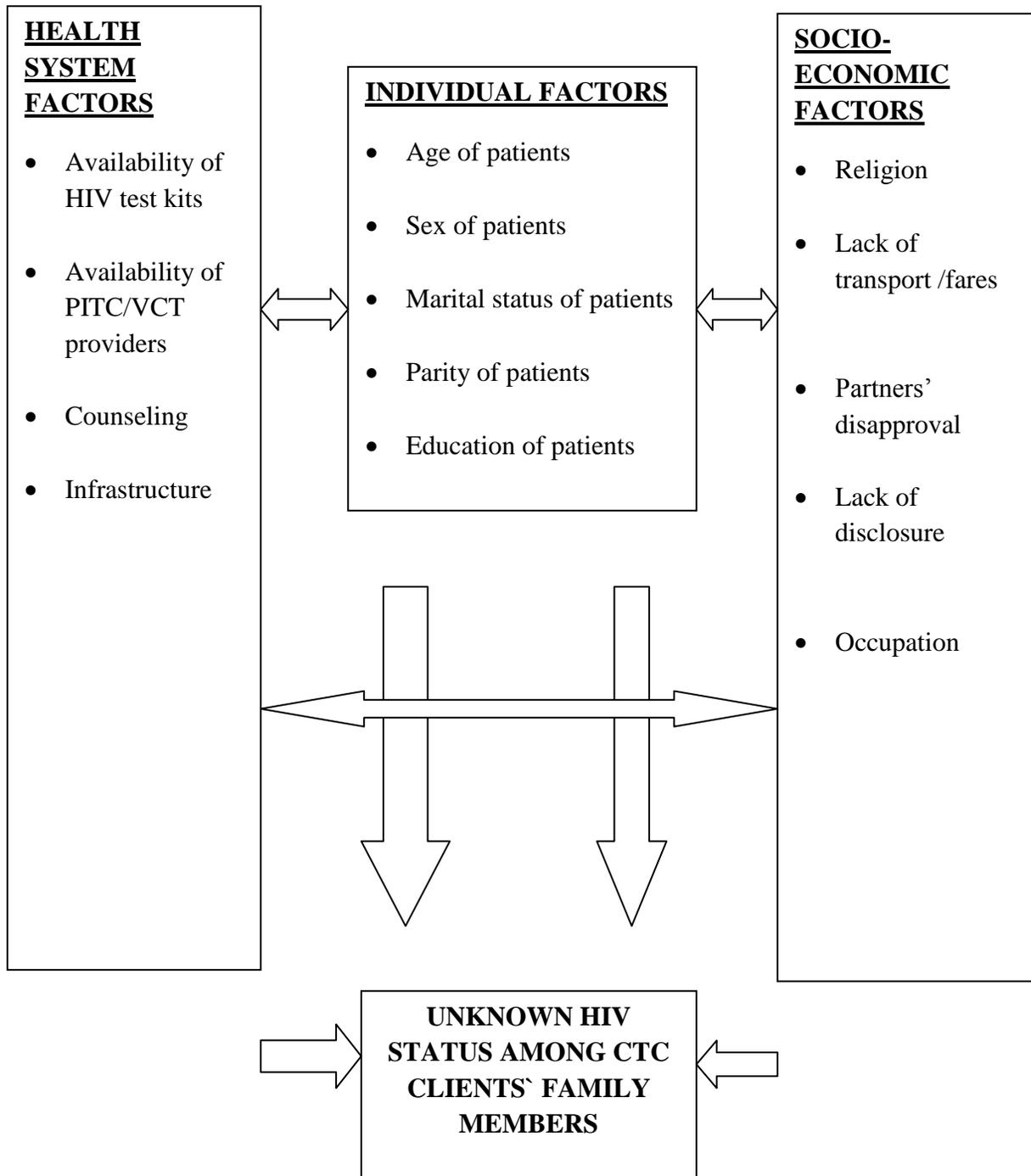
1.3 Conceptual Framework

HIV testing and counseling is a central prevention strategy in national AIDS control plans in most developing countries because it leads individuals to reduce HIV risk behavior (Voluntary HIV-1 Counseling and Testing Efficacy Study Group, 2000) and it is cost-effective relative to other prevention interventions in the developing world (Sweat, et al, 2000). Many developing countries are now able to plan for antiretroviral therapy (ART) implementation and therefore HIV testing and counseling (HTC) has emerged as an important tool linking people to care. Despite the priority assigned to HTC in prevention and treatment access plans, the actual uptake of HTC in most of sub-Saharan Africa remained quite low (Matovu JK et al 2005). The overall low uptake of VCT may be associated with the lack of resources to implement plans fully for rolling out test sites, and the intense stigma associated with HIV that leads to ambivalence toward HIV testing.(Stephen F. et al 2006). Late diagnosis of HIV is associated with increased morbidity, mortality, and health care costs. Despite the availability of HIV testing, persons continue to test late in the course of HIV infection. A review of 41 patients from registry at San Francisco Department of Public Health regarding late diagnosis of HIV showed that thirty-one of the participants were diagnosed with HIV because of symptomatic disease and 50% of the participants were diagnosed with HIV and AIDS concurrently. Half of the subjects had not been tested for HIV prior to diagnosis. Fear was the most frequently cited barrier to testing. Other barriers included being unaware of improved HIV treatment, free or low cost care, and risk for HIV (Schwarz S. et al, 2011)

A number of factors have been studied and associated with testing uptake at Mobile VCT. These including Sex (Male and Female), Age, marital status, , Education, , Income, Had prior HIV test, Aware of VCT centers, Sex partners in last 3 months, No condom use in last 6 months, , Feel at risk for HIV, Treated for STD in last 6 months, Know person with HIV, Know person who died with HIV (Stephen F. et al 2006). Systemic factors like infrastructure, availability of HIV test kits; Availability of PITC/VCT providers are also implicated in HIV testing and counseling uptake. However, none of these factors or others have been thoroughly studied as to what degree they influence decision of HIV infected parents to test their children

for HIV. This study focused on influence of individual factors among parents on HIV testing status of their children. Variable studies included: age, sex, religion, marital status, parity, education, Occupation and knowledge of HIV transmission among parents/respondents enrolled in HIV care and treatment clinics in Rombo district. The figure 1, demonstrates a conceptual framework for the study.

Figure 1: Conceptual Framework about parents enrolled in care and treatment clinics and their children HIV testing status.



1.4 Rationale

Findings from this study are intended to inform HIV/AIDS services providers and programmers on the magnitude of the problem, associated factors and possible strategies to reach these children. Knowledge and identified strategies will add to ongoing initiative to reach children living with HIV, provide care, treatment and support services and hence improving their survival and quality of life.

1.5 . Research questions

- 1.5.1 What is the proportion of HIV patients whose children have been tested for HIV?
- 1.5.2 What is the reported HIV serostatus of children of adults enrolled in to CTC clinics in Rombo district
- 1.5.3 What are the determinants of HIV testing among children's of adults patients enrolled in to CTC in Rombo district

1.6 Research objectives

1.6.1 Broad objective

To assess the level and determinants of HIV testing among children's of parents enrolled in to CTCs in Rombo District, Kilimanjaro region Tanzania.

1.6.2 Specific objectives

1. To establish the proportion of parents enrolled in care and treatment whose children have been tested for HIV
2. To establish the proportion of children with a reported HIV positive test results
3. To establish factors associated with children HIV testing among parents enrolled in care and treatment centers including socio-demographic and clinical characteristics

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 HIV/AIDS situation

Globally, HIV/AIDS is a major development crisis that affects all sectors and walks of life.

By the end of 1999, it was estimated that 33.6 million adults and children were living with HIV/AIDS, and 16.3 million had already died. In the same year there were 5.6 million new infections of which 4 million were in sub-Saharan Africa. Cumulatively, it is estimated that 13.2 million children have been orphaned globally by HIV/AIDS and about 9.4 million are in Africa alone. Currently around 1.2 million people aged 15 and over, or just over 5 percent of the adult population, are living with HIV in Tanzania (UNAIDS, 2010). Over 2 million children are living with HIV worldwide, where Sub-Saharan Africa accounts for 90% of those affected by AIDS (UNAIDS, 2008).

In Tanzania the first cases of HIV/AIDS were reported in 1983 in the Kagera region. By 1985, there were an estimated 140,000 people living with HIV/AIDS (1.3% prevalence); by 1990, this had grown to about 900,000 (7.2% prevalence). In 2009, 1.4 million people were estimated to be living with HIV/AIDS, approximately 12% of them children (UNAIDS 2010). An estimated 6% of adults age 15–49 were infected with HIV. However, this number has been on the decline since it peaked at 8% in 1997. According to finding from a study by Shelton et al. (2005), using evidence drawn from Kenya and Tanzania challenged some widely held assumptions about the effects of HIV and AIDS. The study found that generally the highest prevalence of HIV was amongst the wealthiest households, particularly affecting wealthy women, as opposed to poorer and rural households. Since the study, academics have suggested various reasons for this phenomenon: wealthier people tend to have the resources which lead to greater and more frequent mobility and expose them to wider sexual networks, encouraging multiple and concurrent relationships. They also tend to have greater access to HIV medications that prolong their lives and are more likely to live in urban areas, which have the highest prevalence (UNGAS & TACAIDS, 2010) However, the HIV prevalence gap between

wealthier urban groups and poorer rural communities is slowly closing. Because access to health care and knowledge of HIV and AIDS is typically lower in rural areas, prevention efforts must be increased if new infections are going to be reduced.

The latest HIV/AIDS and Malaria Indicator Survey 2011-12, reported adult HIV prevalence to be 5 percent (THMIS 2011-2012). The survey also showed HIV prevalence to be higher among women than among men (6 percent and 4 percent, respectively). Among both women and men, HIV prevalence generally increases with age. For women, HIV Prevalence increases from 1 percent among that age 15-19 to 10 percent among that age 45-49. For men, HIV prevalence increases from 1 percent among that age 15-19 to a plateau of 7 percent among those ages 30-49. When HIV prevalence estimates among men and women are compared for each age cohort, women have a higher HIV prevalence estimate than men for each age group. The HIV prevalence estimate for age group 15-19 is assumed to represent new infections and therefore serves as a proxy for HIV incidence among young people (THMIS 2011-2012)

2.2.0 HIV/AIDS response and selected interventions

In 1985, the government set up the NACP (National AIDS Control Programme) to coordinate the response and established AIDS coordinators in each district in the country. In order to confront the growing epidemic, the NACP developed a medium term plan for the period 1987-1991 which was then followed by two more medium term plans covering 1992-1996 and 1998-2002. These plans had three main aims: the decentralization of the health sector response, reducing HIV transmission and relieving the social consequences of HIV/AIDS through care and assistance.

However, according to Tanzania's first National Multisectoral Framework (2003-2007) the three medium term plans did not halt the spread of HIV. By the time the second medium term plan came into being HIV prevalence had reached 8 percent (TACAIDS, 2003). It is important to bear in mind that, at this time, Tanzania had no coordinated monitoring and evaluation system, as well as systems for collecting data on HIV prevalence, which varied

widely from region to region. Therefore, frequent delays in reporting as well as general underreporting suggest that the HIV prevalence could have been much higher.

Following the declaration of 'war' on HIV/AIDS by former president Mkapa, a national policy (which had been under development since 1991) was finalized in 2001 (Shelton et al., 2005). The Tanzania Commission for AIDS (TACAIDS) was then established in 2002 to coordinate the multispectral response, bringing together all stakeholders including government, business and civil society to provide strategic guidance to HIV/AIDS programmes, projects and interventions

In 2003, TACAIDS launched the first National Multisectoral Framework (NMSF) 2003-2007, which outlined all areas of focus for stakeholders including cross cutting themes like stigma and discrimination, as well as prevention, care and support and dealing with the socio-economic consequences of HIV and AIDS. Under each broad theme, certain strategic areas were identified (such as school based prevention or blood safety) and goals, challenges, targets and indicators of success were specified (Shelton et al., 2005). Tanzania's second National Strategic Framework (2008-2012) analyses the achievements and challenges faced in the implementation of the first NMSF, as well as identifying new targets and indicators of success.

2.2.1 HIV Counseling and Testing

The rapid expansion of HIV treatment is an important response to the HIV/AIDS epidemic in sub-Saharan countries. However, enrollment of infected individuals in treatment programs continues to be hampered by the low uptake of HIV testing and counseling (HTC). A significant fraction of the most vulnerable households may thus be excluded from the potential benefits stemming from the knowledge of one's HIV status-such as the adoption of strategies to reduce HIV transmission to partners and children-and the benefits associated with antiretroviral treatment-such as increased survival and labor productivity (Buñuel et al., 2006)

Poor accessibility of health facilities, fatalism, HIV-related stigma, and confidentiality are the main barriers to use of HTC services in African countries (Makhlouf et al., 2007).

Although several strategies to increase the uptake of HTC among sub-Saharan populations have been suggested (Matovu and Makumbi 2007); their impact on the poorest may be limited. Routine testing in hospitals and other health care facilities, for example, significantly increases uptake and case finding among the attendees of these facilities, (Creek, et al. 2007; Chandisarewa et al., 2007; Bassett, et al., 2007) but cost and convenience issues often limit the use of health care facilities among the lower socioeconomic strata in sub-Saharan countries. HTC uptake is also increased through workplace-based initiatives (Corbett et al., 2000), but such strategies similarly do not reach the poorest members of society who are often unemployed or employed in the informal sector. To overcome these limitations, the home-based provision of HTC services has recently been proposed as a strategy to attain universal HIV testing and counseling in Africa (Bunnell and Cherutich, 2008). Indeed, community-based approaches-like mobile HTC units or home-based HTC provision-have been shown to dramatically increase the uptake of testing services (Mbopi-Kéou, et al., 2007; Were, et al., 2007; Fykesnes and Siziya). However, previous studies have not documented whether the provision of home-based HTC may reduce the socioeconomic gradient in HTC uptake observed in sub-Saharan countries.

In Tanzania, Voluntary counseling and testing (VCT) services were first initiated in 1989 but coverage was very low and by 2001 there were still only 92 public VCT services (reportedly reaching 4 percent of the population) covering the entire country (TACAIDS, 2008). Since 2003, the number of VCT sites in the country has rapidly increased. VCT services are now available at 2134 sites across the country and according to the 2007-2009 Malaria and AIDS Indicator Survey, more than 80% of people know where to get an HIV test (Shelton et al., 2005)

A high profile campaign was launched by the Tanzanian government in 2007 with the aim of testing 4 million Tanzanians within six months. This \$56 million national testing drive was publicly endorsed by the president Kikwete and many other members of Parliament, who were the first to take the test. By the end of the six months, more than 3 million Tanzanians were tested through the campaign (TACAIDS, 2008).

The number of people who have been tested in the last twelve months and know their results rose from an average of 1 in 20 in 2003/2004 to 1 in 5 in 2008. This means that, among the general population in Tanzania, over a third of women and a quarter of men have been tested at least once and know their results (WHO, 2005). (Community based VCT (CBVCT) involves mobile VCT services and community-based support services. CBVCT delivers HIV testing to individuals that are unable or unwilling to access standard clinic based VCT (SVCT), which is often some distance from communities. According to a recent study, access to CBVCT can lead to an increase in the uptake of testing among individuals that have never tested before, suggesting CBVCT should be used in areas where HIV uptake is low (USAID, 2008). The study found that in communities with both CBVCT and SVCT, 39 percent of those who tested were first time testers, compared with 9 percent in communities that could only access SVCT.

Currently in Tanzania, HIV testing and counseling (HTC) is implemented through stand-alone Voluntary Counseling and Testing (VCT), integrated within the health system Provider Initiated Testing and Counseling (PITC), and eMTCT services. The current HIV testing algorithm for the country includes serial testing with DERTERMINE followed by UNIGOLD. For those who are HIV negative, algorithm demands for repeat test after three months. But the available information shows that 90% of those who take the first HIV test will return for re-testing after three months.

National AIDS Control program reported achievements of the HTC program by the end of December 2010 included 2,134 sites were providing VCT services as opposed to 1,035 in 2009 while provider initiated counseling and testing(PITC) was available in all hospitals and 50% of health centers. By end of 2010, the total number of new clients pre-test counseled and tested was 1,009,691 compared to 998,887 reported in 2009(NACP Report 2010)

The challenges in the implementation of HTC services include low utilization of the VCT services especially in rural areas due to long distances; inadequate human resources; limited couple testing; and low disclosure of HIV test results to partners preventing efforts to make informed health decisions such as use of condoms. Programmatic gaps arising as a result of the above challenges include: 27% of men and 37% of women aged 15-49 were tested and received results leading to a gap of 73% for men and 63% for women that needs HTC services. PITC services had not been rolled out in 50% of health centers and in all dispensaries considering that health centers and dispensaries serve over 80% of the country's population.

2.2.2 Prevention of Mother to Child Transmission of HIV (PMTCT)

In Tanzania currently, about 93% of health facilities with RCH services provide PMTCT services (Tanzania PMTCT Report, December 2010- Ministry of Health and Social Welfare) About 98% of pregnant women attend ANC clinic at least once while only about 43% make at least 4 visits to ANC clinic during their pregnancy (Tanzania PMTCT Report, December 2011- Ministry of Health and Social Welfare). About 81% of women attending ANC in a RCH facility providing PMTCT services are tested for HIV-2. The prevalence of HIV among women who attend ANC is 6.9% (Ministry of Health and social welfare, PMTCT annual report 2012).

About 26% of pregnant women male partners test for HIV. About 93% of women who test positive for HIV receive ARV prophylaxis. However when reflected in the total estimated number of HIV infected pregnant women (122,146); the percentage becomes 71% (Tanzania PMTCT Report, December 2011- Ministry of Health and Social Welfare). About 56% of the estimated number of HIV exposed infants in the population receive ARV prophylaxis, while within the PMTCT Program the percentage is 73%

Approximately 50% of births in Tanzania are delivered at home (Tanzania Demographic and Health Survey, 2010). There are still major challenges that exist in the area of early identification and enrolment of infected children into care. About 37% of PMTCT providing

centers provides HIV early infant diagnosis and only about 30% of the HIV exposed infants have access to early infant diagnosis services (Tanzania PMTCT Report, December 2011-Ministry of Health and Social Welfare) .Among pregnant women identified as HIV-infected who receive ARV prophylaxis, about 63% receive combination ARV prophylaxis, 19% are on ARV treatment and 18% on single dose NVP (Tanzania PMTCT Report, December 2011-Ministry of Health and Social Welfare.. The percentage of infants born to HIV infected mothers who becomes HIV infected is 25.7% (Tanzania PMTCT Report, December 2011-Ministry of Health and Social Welfare).

2.2.3 HIV and AIDS Care, Treatment and Support.

In 2001, the newly launched National Policy on HIV/AIDS recognized antiretroviral treatment as a right for all people living with HIV, at a time when no Tanzanians were receiving antiretroviral treatment. It was not until the Ministry of Health developed a Health sector strategy (2003-2008) though that any plans to scale up HIV treatment were outlined by the government. In 2003, the William J Clinton Foundation and a group of Tanzanian experts created a step-by-step Care and Treatment Plan (2003-2008), which was then adopted by the Tanzanian cabinet. The five-year plan proposed the roll out of antiretroviral therapy to 19 health facilities in 3 months and a total of 96 health facilities within one year. In 2003, the Tanzanian government adopted the scheme and the following year pledged to provide antiretroviral drugs free of charge to all people living with HIV by 2008. In 2004, only about 0.5% of those with advanced HIV were receiving treatment.

Working closely with its international partners, the Ministry of Health and Social services has now established care and treatment services across the country. As of December 2009, about 200,000 people in need of treatment had been enrolled; that is under half of the 440,000 by 2008 envisaged in the care and treatment plan (Roura, 2009).According to the latest WHO guidelines (2010), only a third of Tanzanians in need of treatment are receiving it. Continuing treatment, or patient retention, is essential for the success of a treatment regime: yet in

Tanzania only 65 percent of HIV positive adults and children are known to be on ARV drugs a year after beginning therapy (Roura, 2009).

The Government of Tanzania has been successful in improving the quality of life for PLHIV receiving HIV care, treatment and support services. This includes provision of ARVs and laboratory monitoring services for PLHIV and HIV testing services. There have been concerted efforts by the Government of Tanzania (GOT) to scale up care, treatment and support services in an attempt to achieve universal access to ART. ART services have been scaled up to 1,110 health facilities by December 2011 compared to 700 facilities in 2009.

UNAIDS 2012 report shows in 2011, for the first time, a majority (54%) of people eligible for antiretroviral therapy in low- and middle-income countries were receiving it. Latin America (68%), the Caribbean (67%), and Oceania (69%) had the highest coverage. Coverage in sub-Saharan Africa is modestly higher than the global average, with 56% of eligible individuals receiving therapy. Coverage remains low in Eastern Europe and Central Asia (25%) and in the Middle East and North Africa (15%). The number of countries achieving at least 80% treatment coverage increased from 7 in 2009 to 10 in 2011, and the number of countries with coverage less than 20% fell from 28 in 2009 to 10 in 2011. This represents real progress, although the fact that fewer than 1 in 5 people who are eligible for treatment receive it in 10 countries demands urgent attention (UNAIDS Report 2012).

Antiretroviral therapy coverage remains higher for women (68%) than for men (47%) in low- and middle-income countries. The treatment access gap for children also persists, with global coverage much lower for children (28%) than for adults (58%) (UNAIDS Report 2012).

In Tanzania UNAIDS estimated that the number of children between 0 – 14 years in need of ART in 2011 and 2012 was 130,000. This estimated also a low coverage of ART among both adults and children at 69% and 25% respectively.

2.2.4 Early Infant Diagnosis.

Despite of the reported moderate (48%) decline in new HIV infection among children from 2009 to 2012, only a 6.3% decline was reported from 2011 to 2012 with 15, 000 children newly infected in 2012 alone.

A recent eMTCT bottleneck report showed that a major gap is related to Early Infant Diagnosis (EID), only 30% of health facilities in the country provide EID, and only 21% of HIV exposed infants accessed EID.

Among other causes, delays in receiving results of tests undertaken timely have been identified. Referral laboratories' work flows need to be reviewed urgently to ensure efficiency and those results of tests undertaken in the two first months of life are returned to district hospitals promptly for action. While the national target is to provide prophylaxis to 90% of HIV exposed infants by 2017, currently, of those accessing EID, only 57% receive such a MTCT prophylaxis.

One of the national maternal child transmission elimination strategies is reduction (90%) in HIV – related maternal death up to 12 months post-partum and reduction (90%) in HIV attributable deaths among infants and children <5years(Tanzania Elimination of Mother to Child Transmission of HIV plan, 2012-2015). The reduction in HIV related maternal deaths and HIV attributable deaths among infants and children shall be achieved by providing care, treatment & support for HIV positive mothers, Early Infant Diagnosis (EID) and Cotrimoxazole (CPT) for HIV exposed infants (HEI) and Anti-Retroviral therapy (ART) for HIV infected infants and children. Linkages, HIV/MNCH integration, laboratory services, continuum of care and service delivery innovations need to be improved to achieve this (Tanzania Elimination of Mother to Child Transmission of HIV plan, 2012-2015).

2.2.5 Stigma and discrimination

Discrimination leads to an unwillingness to take an HIV test and to disclose results to family, friends or sexual partners. A 2005 USAID study conducted in Dar Es Salaam found that only half of HIV positive respondents had disclosed their status to intimate partners. The average time from receiving results to disclosing them was 2.5 years for men and 4 years for women. Stigma, specifically fear of abandonment, job or property loss and violence were reasons for this delay.

Lack of knowledge about AIDS is one driver of stigma and discrimination. Four out of ten women and a third of men surveyed in the 2007-2009 HIV and Malaria Indicator Survey reported that they would not buy fresh vegetables from a shopkeeper who has HIV, and half of all women and 40 per cent of men said they would feel it necessary to keep it a secret if a family member was infected with HIV (Roura, 2009). A study in rural Kisesa, which observed the uptake of the national antiretroviral treatment programme in Tanzania, found that ‘fear of stigma’ was a concern for all those interviewed. In particular, the participants did not want their status disclosed or expressed reluctance to identify a ‘treatment buddy’ as required by the programme (Roura, 2009). According to the study, “pervasive stigma remains the most formidable barrier” to taking up free antiretroviral treatment in rural areas (UNAIDS, 2010).

In 2008, the Tanzanian parliament passed the HIV and AIDS Act, protecting the rights of People Living with HIV and AIDS. The Act provides a legal framework for the national response and was created through a process that involved community groups, a network of journalists who recorded experiences of people living with HIV, as well as lawyers and members of the government. The 2008 law makes it illegal to discriminate against someone because of their HIV status or the HIV status of a family member and obliges the government and employers to advocate against stigma and discrimination

CHAPTER THREE

3.0 METHODOLOGY

3.1 Study design

This research was a cross sectional descriptive study designed to collect information that addressed the objectives of the study. The choice of the design was considered appropriate for establishing level and determinants of parents enrolled in HIV care and treatment clinics testing their children for HIV.

3.2 Study area

The study was carried out at health facilities with care and treatment clinics in Rombo district, Kilimanjaro region. Rombo district is among the seven districts of Kilimanjaro Region. Other districts include Moshi Rural, Moshi Urban, Same, Mwanga, Hai and Siha. The District has five divisions, 24wards and 60 registered villages. According to the national 2012 general census, Rombo District Council has a total population of 260,963 people including 124,528 males and 136,435 females.

There are 43 health facilities serve the above population and the neighborhood. Huruma Designated District Hospital (DDH) is one of the health facilities in Rombo district. It's the largest of all acts as the referral center for the other health facilities within the district. It provides ART care and treatment service. Other facilities providing ART services include Ngoyoni Hospital, Keni Health Centre, Kirua Health Centre, Karume Health Center and Tarakea Health Center.

3.3 Study population

The study population was HIV positive parents enrolled in Care and treatment clinics in Rombo district. The sampling frame consisted of parents male or female aged 18 years and above enrolled at care and treatment clinics in Rombo district in Kilimanjaro region.

3.4 Sampling and sample size estimation

$$\text{Sample size, } n = \frac{Z^2 P (1-P)}{\hat{\epsilon}^2}$$

Where:

n = minimum sample size

Z= standard normal deviate value (set at 1.96 which corresponds to 95% confidence interval).

$\hat{\epsilon}$ = margin of error estimated to be 6%

P= estimated proportion of CTC enrolled parents whose children have tested for HIV

Assuming a population proportion of adults whose children HIV testing status is known to be 50% (no study has been done elsewhere) and a margin of error of 6%, estimated sample size was

$$1.96^2 * 0.50(1-0.50) / 0.06^2 = 3.8416 * 2500 / 36 = 9604 / 36 = 268$$

Therefore n= 268.

Adjusted for non-respondents (10%) estimated sample was 296, and 280 participants were interviewed.

3.5 Sampling techniques

3.5.1 Eligibility criteria.

Parents who were 18years old and above and had children less than 18 years old attending HIV care and treatment clinics at the sampled health facilities in Rombo district.

3.5.2 Procedure

In Rombo District there are six health facilities that provide care and treatment services. To attain desired sample size, all 6 health facilities with care and treatment services in Rombo district were included in this study. At each facility, average clinic day attendance was determined and eligible clients sampled randomly by picking every other client eligible during clinic days.

Inclusion criteria:

- HIV positive parents(men or women)aged 18 and above years who had children (one or more) aged 1month to 17years enrolled at Care and treatment clinics.
- Clients consenting to take part in the study

3.6 Recruitment of research assistants

To be able to collect data within the specified period of the study, 6 research assistants were recruited. Preference was made to those with previous research or data collection experiences and or nurse or clinical /medical related training. Three nurse midwives and two clinical officers were recruited and an overall data collection coordinator was also recruited to support the other research assistant as well as tracking progress by site. All research assistants received one day training on the project protocol, ethics and confidentiality and intensively on the data collection tool with practical sessions on how to complete the questionnaire Emphasis on accuracy, completeness and timeliness of the activity were provided. One overall data collection coordinator received additional session on how to verify the data and what to do when there are gaps including consulting the principal investigator. The investigator participated in data collection at different times and facilities to support and build capacity of the research assistant as the continued with the data collection exercise.

3.7 Pretesting of data collection tool /questionnaire

A semi-structured questionnaire was designed to obtain desired information on HIV testing among children of clients enrolled into care and treatment. The questionnaires were developed in English and then translated into Kiswahili, a language familiar to almost everyone in Tanzania. Prior to data collection, the tool was pretested to ensure validity and reliability of the collected information. The aim was to check the extent to which the questions were understood by the interviewee and to identify areas for modifications and corrections. In addition, the exercise familiarized the research assistants on the data collection techniques.

3.8 Data collection techniques

Prior to official data collection, the principal investigator made introductory courtesy visit to Rombo District Medical Officer (DMO), explained the purpose of the study and asked for his permission for the study to be carried at the selected health facilities in the district. The DMO provided permission and introduced the principal investigator to the respective health facilities in-charges.

Quantitative data was captured by using semi-structured questionnaires that was administered by trained research assistants and principal investigator. One questionnaire was administered to one study participant. Principal investigator and research assistant reviewed the questionnaires every end of day for accuracy and completion. Any challenges or questions emerged were discussed and addressed. Data was collected for one month (for four weeks).

3.9 Ethical Considerations

Ethical approval was requested from The Muhimbili University of Health and Allied Sciences Ethical Review Committee. In addition, research permission to conduct the research was requested from Rombo district authorities and granted.

Participation in this study was voluntary and parents who accepted to participate were assured of confidentiality of information provided. An informed consent was signed by each participant.

3.10 Data Management and Analysis

Frequencies were run for all categorical variables to obtain proportion of various categories. Comparison of differences between proportions was done using Chi square test for differences in proportions. All continuous variables were summarized by calculating means and standard deviations and median and interquartile range as deemed appropriate. Differences between means were examined using t-test. To identify independent predictors of child HIV testing, both crude and adjusted Odds Ratios (OR) was estimated using logistic regression model. Crude and adjusted ORs with their corresponding 95% confidence Intervals are presented. All the analyses were two tailed and significance level was set at 5%.

3.11 Research variables

3.11.1 Independent variables

Independent variables in this study included: age, sex, and marital status, level of education, parity, occupation, religion, HIV transmission knowledge, partner disclosure, client initial and current CD4 count and duration of treatment of participants.

3.11.2 Dependent variables

The dependent variable in this study was Child HIV testing status (tested or not tested for HIV)

3.12 Confidentiality

To maintain confidentiality participants' anonymity was guaranteed and participants name did not appear on the questionnaires. Information provided and gathered in this study was treated secretly and the research findings publication will not relate in any way to the respondents. Research assistants adequately trained to maintain confidentiality.

CHAPTER FOUR

4.0 RESULTS

This study involved parents enrolled and attending care and treatment centers in Rombo district. Rombo district has a total of six care and treatment centers (CTCs) distributed in all five administrative divisions with two centers in Mengwe division. The care and treatment centers involved Huruma Designated District Hospital at Mkuu division, Ngoyoni Hospital and Keni Health Centre in Mengwe division, Kirua Health centre in Mashati, division, Karume Health center in Usseri division and Tarakea Health Center in Tarakea division.

4.1 Socio-demographic characteristics of study participants

During the period of data collection, a total of 280 HIV infected parents enrolled in care and treatment centers in Rombo district were interviewed. This was adequate sample size since the calculated sample was 268 while adjusted sample for non-respondents was 296. Among participants, 207(73.93%) were females. When distributed by age groups, age groups 30 – 39 and 40 -49, had the largest number of respondents; 109 (39.07%) and 110(39.43%) respectively while only a few (3) were above 60years (Table 1). The mean age of all respondents was 40(SD= 8) years. Most of the participants were Christians, 270(96.43%) and only 10 (3.57%) were Muslims.

Over two third, 190 (68.10%) of respondents reported to be married, while single parents were, 44 (15.77%), followed by divorced 11 (3.94%).

Among 277 respondents, 259 (93.50%) reported to have ever attained any formal education with only 18 (6.5%) not attained any formal education. Majority of them, 232(89.23%) had primary education, 19(7.31%) secondary education, 8(3.08%) had pre-primary education and only one had a university level education.

In terms of occupation, most of the participants were farmers, 233(83.81) followed by business persons, 29(10.43%) and 5(1.80%) civil servants. Only 29 than 10% were unemployed.

Table 1: Distribution of study participants by socio-demographic characteristics

characteristic (n)	N (%)
Age of respondent (years) (n=280)	
Mean(sd)	40 (8.0)
Age groups	
20 - 29	24(8.6)
30 - 39	109(39.1)
40 - 49	110(39.4)
50 - 59	33(11.8)
60+	3(1.1)
Sex (n=280)	
Female	207 (73.9)
Male	73 (26.1)
Religion(n=280)	
Christian	270 (96.4)
Muslim	10 (3.6)
Marital status (n=279)	
Married	190 (68.1)
Single	44 (15.8)
Widow	22 (7.9)
Cohabiting	12 (4.3)
Divorced	11 (3.9)
Any formal education (277)	
Yes	259 (93.5)
No	18 (6.5)
Education level respondent (n=260)	
Primary school	232 (89.2)
Secondary school	19 (7.3)
Kindergarten	8 (3.1)
College	1 (0.4)
Occupation (n=278)	
Farmer	233 (83.8)
Businessman	29 (10.4)
Self employed	7 (2.5)
Government employee	4(1.8)
Unemployed	2 (0.7)
Others	2 (0.7)

*Note that there is variation of denominator (n) in some variables due to missing data

4.2 Clinical characteristics of study participants

Clinical characteristics assessed in this study included: CD4 count, duration of treatment with ARVs, duration in care and since HIV was diagnosed, number of children and age of their youngest child. Median CD4 count at enrolment was 215 (IQR=122 - 335) while the most recent CD4 count median was 410(IQR=302 - 611) (Table 2). Median duration on ART was 4 years (IQR=3-7). Median number of children by participants was 3 (IQR=2-4) with median age of the youngest children being 8(IQR=4-13) years

Table 2: Distribution of study participants by HIV clinical characteristics

Variable	Median /IQR
Duration since HIV diagnosis(n=278)	
Years Median (IQR) (n=244)	5(3-7)
Duration on care (n*=277)	
Years Median (IQR) (n=241)	5(3-7)
Initial CD4+ count	
Median (IQR)	215 (122 - 335)
Current CD4+ count	
Median (IQR)	410 (302 - 611)
Duration on ART (n*=239)	
Years Median (IQR) (n=211)	4 (3-7)
Number of children	
Median (IQR)	3 (2-4)
Age of last born	
Years Median (IQR) (n*=255)	8(4-13)

***Note variation of n is due to missing data for that variable.**

4.3 Parents who reported to have tested their children for HIV

Of the 280 HIV positive parents enrolled in care and treatment, 242 (86.4%) reported to have tested their children for HIV (Table 3).

Table 3: Distribution of parents enrolled in care and treatment by children HIV testing status

Parents testing children for HIV	N(280)	Percent
Tested their children for HIV	242	86.4
Not tested their children for HIV	38	13.6

Every participant who reported to have tested children for HIV, was also asked to report on the number of children she or he had tested for HIV. The reported number of children per parent ranged from one to 7. Majority of parents, 97(40.1%) reported to have tested one child followed by 77(31.8%) who had tested two children while 36(14.9%) tested 3 children (Table 4) These results showed a pool of 506 reported children who benefited from the decision of their parents testing them for HIV.

Table 4: Frequency distribution of parents by number of children tested for HIV

Number of Parents who tested children for HIV	Frequency	Percent	Total Children tested
97	1	40.1	97
77	2	31.8	154
36	3	14.9	108
20	4	8.3	80
8	5	3.3	40
1	6	0.4	6
3	7	1.2	21
242		100	506

4.4 Prevalence of HIV infection among children reported to have been tested for HIV

Of the 242 HIV positive parents enrolled in care and treatment clinics in Rombo districts reported to have tested their children for HIV, 62 (25.6%) parents reported HIV positive results for their results (Table 5). The number of children reported by parents to have been tested positive ranged from one to three while overall, the number of children reported to be tested positive was 71 (Table 6).

Table 5: Distribution of parents enrolled in CTC by reported children HIV test outcome

Variable	N (242)	Percent
Children tested HIV results		
Tested Positive	62	25.6
Tested Negative	180	74.4

Of the total 506 children reported to have been tested for HIV (Table 4), 71 children were found to be HIV positive (Table 6). This translates to 14% reported HIV prevalence among tested children.

Table 6: Frequency distribution of parents who reported HIV positive results for their children

Number of Parents who reported HIV positive results for their children	Frequency	Percent	Total Children tested positive
54	1	87.1	54
7	2	11.3	14
1	3	1.6	3
62		100	71

4.5 Parent's socio-demographic characteristics associated with HIV testing among their children.

The mean age of all respondents was 40 years with standard deviation of 8. The mean age of respondents who had tested their children was 38.4 years with standard deviation 7.6 and those who had not tested their children for HIV was 41.3 years with standard deviation of 9.4. The difference in the mean age was statistically significant ($p < 0.001$), (Table 7.). Mean age of partners was 42.6 (standard deviation =8.36). The mean age of partners who had tested their children for HIV and those who had not tested their children for HIV were 39.7 years (SD=8.1) and 43.5 years (SD=8.4) respectively. The difference in the partners mean age was also statistically significant (p value < 0.001) (table 7)

All 24 (100.0%) adults' clients in the age group 20 – 29 years reported to have their children for HIV compared with 1(33.3%) of the highest age group (60 -69)years. The difference was statistically significant ($p = 0.002$) (Table 7).

More female 182 (87.9%) than male 60 (82.2%) adults enrolled in care and treatment clinics reported to have tested their children but the difference was not statistically significant (p value =. 0.219). Among Christians, 234 (86.7%) had tested their children for HIV and 8(86.7%) of Muslims had tested their children. Testing by religion was not statistically significant (p value =0.546) (table 7).

Table 7: Participants' socio-demographic factors associated with their children HIV testing status

Variable/characteristic	Tested for HIV	Not tested for HIV	P-value[#]
Age of respondent (yrs) (n=279)*			
Mean(sd)	38.4 (7.6)	41.3 (9.4)	<0.001
Age of a partner (n=235)			
Mean (sd)	39.7 (8.1)	43.5 (8.4)	<0.001
Age groups			
			0.002
20 - 29	24 (100.0)	0 (0)	
30 - 39	98 (89.9)	11 (10.1)	
40 - 49	94 (85.4)	16 (14.6)	
50 - 59	24 (72.7)	9 (27.3)	
60+	1 (33.3)	2 (66.7)	
Sex (n=280)			
			0.219
Female	182 (87.9)	25 (12.1)	
Male	60 (82.2)	13 (17.8)	
Religion(n=280)			
			0.546
Christian	234 (86.7)	36 (13.3)	
Muslim	8 (80.0)	2 (20.0)	
Marital status (n=279)			
			0.886
Single	39 (88.6)	67 (11.4)	
Married	175 (86.6)	27 (13.4)	
Widowed	28 (84.9)	5 (15.1)	
Education level respondent (n=242)			
			0.707
Primary education	209 (87.1)	31 (12.9)	
Secondary education	18 (90)	2 (10)	

*Note that the difference in n was due to missing data.

4.6. Parents medical characteristics association with children HIV testing status.

4.6.1 CD4 Count level and CD4 count change.

Of adults who had low CD4 count (below 200 cell/ul), 108(92.3%) had tested their children for HIV while those with initial CD4 Count higher than 200 cells/ul 134(82.2%) had tested their children for HIV. The difference in testing among the two CD4 count levels was statistically significant (p value = 0.015). (Table 8)

Table 8: Association between parental medical characteristics and children HIV testing status

Variable/characteristic	Tested for HIV	Not tested for HIV	P-value[#]
Initial CD4+ count			0.015
<200cells/ul	108 (92.3)	9 (7.7)	
>=200	134 (82.2)	20 (17.8)	
ART duration and testing			0.735
Less than 1 year	37 (86.)	6 (14)	
ART above 1 year to 5 years	97 (89.8)	11 (10.2)	
ART above 5 years	72(86.8)	11 (13.2)	
Change in CD4+ those on ART			0.526
<0cells/ul	21 (84.0)	4 (16.0)	
Above 0cell/ul	190 (88.4)	25 (11.6)	
Change of CD4+ count on care			0.045
<0cells/ul	11 (100)	0(0)	
Above 0cell/ul	19(70.4)	8 (29.6)	
Knowledge on transmission			0.036
(n=276)			
No knowledge	20 (74.1)	7 (25.9)	
Knowledgeable	220(88.3)	29 (11.7)	

[#] the p-value is from Pearson chi-square

A change in CD4 counts among clients who were on ART was not statistically significant(p value =0.526), however, among those who had not started ART a change in CD4 count was significantly associated with children testing for HIV(p value = 0.045).

4.6.2 Parents ART duration and children HIV testing status

Categorizing ART duration into less than one year, 1 – 5 years and above 5years, Children testing rates was almost similar across the groups. A total of 37 (86%) participants had less than one year duration, 97(89.8%) between 1 and 5year and 72 (86.8%) over 5years duration of treatment had tested their children for HIV. The difference in the duration of treatment did not significantly affect child testing ($p=0.735$) (Table 8).

4.7 HIV transmission knowledge and children HIV testing status

Categorizing HIV transmission knowledge in two groups (Not knowledgeable = scored less than 5 of the correct responses) and Knowledgeable (scored above 5 and above of the correct response), 220 (88.4) of clients who were knowledgeable on HIV transmission reported to have tested their children and 20 (74.1%) those who were not knowledgeable reported to have tested their children for HIV.

Knowledge of HIV transmission was found to be statistically significant associated with HIV testing among children (p value =0.036). (Table 9)

4.8 Predictors of HIV testing among children of parents enrolled in care and treatment

Multiple logistic regression to identify independent predictors of child HIV testing indicated that individuals aged >40 years were 74% less like to have their children tested for HIV as compared to those aged \leq 40 years. Likewise, individuals with CD4 cells \leq 200 were 88% less likely to have their children tested. However, having high knowledge of HIV transmission was associated with a five times increased likelihood of child HIV testing (Table 9).

Table 9: Logistic regression of determinants of child HIV testing among parents living with HIV attending CTCs in Rombo District

Variable	Unadjusted logistic regression		Multiple logistic regression	
	Crude Odds ratio (95% Confidence Interval)	p-value	Adjusted Odds ratio (95% Confidence Interval)	p-value\$
Age group				
<=40 years (Ref)	1		1	
>40 years	0.44 (0.21-0.88)	0.021	0.26 (0.1-0.71)	0.008
Sex				
Male (Ref)	1		1	
Female	1.57 (0.76-3.28)	0.222	1.12 (0.42-3.0)	0.814
Initial CD4+ count				
<200 cells/ul (Ref)	1			
>= 200 cells/ul	0.39 (0.17-0.85)	0.018	0.22 (0.08-0.61)	0.003
Duration on ART				
<= 1yr (Ref)	1		1	
Above 1 to 5yrs	1.43 (0.49-4.15)	0.510	1.07 (0.32-3.6)	0.908
Above 5 years	1.06 (0.36-3.1)	0.913	0.95 (0.29-3.14)	0.929
Knowledge on HIV				
No knowledge (Ref)	1		1	
Knowledgeable	2.65 (1.03-6.82)	0.043	5.32 (1.69-16.74)	0.004

\$ Multiple logistic regression p-value when adjusted for age, sex, initial cd4 count and duration on ART and knowledge of HIV transmission.

CHAPTER FIVE

5.0 DISCUSSION

Findings of these studies suggest that even among clients enrolled and attending HIV care and treatment clinics there are potentially a reasonable number of children infected with HIV virus who have not yet been identified. This study was carried at health facilities with care and treatment clinics in Rombo district, Kilimanjaro region to assess the magnitude of HIV testing among children of adults enrolled in the clinics.

5.1 Prevalence of HIV testing among children of parents enrolled at care and treatment clinics in Rombo District

The setup of national HIV/AIDS care and treatment clinics in Tanzania provides a patient card (CTC2) which is basically a patients record file and requires that all clients provide information about HIV testing for their children and other family members. At enrollment in HIV care and treatment clinic patients who have just been identified receive 3 sessions of adherence counseling which also include general counseling messages according to Tanzania National HIV and AIDS management guidelines. Being beneficiaries of HIV services with emphasis of testing their children and family members, one would expect a highest proportion of parents enrolled in care and treatment clinics to have tested their children. In this study prevalence of parents enrolled in care and treatment clinics in Rombo district testing their children for HIV was found to be high (86.4%). These findings are comparable to the general prevalence of HIV testing among adults population

Overall according to the 2011-12 THMIS, sixty-two percent of women and 47 percent of men have ever been tested and received the results of their HIV test. With the ongoing effort to identify HIV infection particularly among children including provider initiated counseling and testing, prevention of mother to child transmission of HIV and HIV early infant diagnosis

among children born from HIV infected mothers one would expect the highest coverage of HIV testing among children of clients enrolled in care and treatment.

A case review study done in UK established that 39% of children of HIV infected mothers attending clinics were untested, meaning only Sixty-one per cent (675 of 1107) of the children were known to have been tested for HIV (Andrew S, et al 2012). In an earlier study of women with HIV infection attending a clinic in south-east England, 51% of their children under 16 years old living in the UK and 91% living abroad were untested.

In this study the remaining 13.6% adults who had not tested their children for HIV indicates that there is potentially huge pool of children who would benefit from HIV testing. Invariably this poses a risk of identifying them late when they present with illnesses if this group will not be tested and their HIV status identified and appropriate care provided. In another study that assessed a different approach in testing children of HIV infected mothers in UK where a team of pediatrician and counselor was linked to pregnant women infected with HIV at ANC and postnatal, a highest proportion testing of index children and siblings was observed. Seventeen women were diagnosed with HIV prior to their first pregnancy (36%), and 30 were diagnosed in the antenatal setting (64%), (Desmond N, 2012). All infants attending mother and baby clinic with their mothers were tested for HIV (n =52). An additional 40 siblings were identified: eight were still living abroad, five (all aged 18 years) were living away from home and 27 were living with their mother in the UK. One family moved to another region shortly after birth of the new baby. Of the remaining 26 siblings, 25 (96%) had been tested for HIV and all were uninfected. One woman had been lost to follow-up but has since been traced and her child tested negative. Both the UK and the findings of this study are promising and suggest that modified approaches need to be implemented in order to increase testing prevalence of children of people living with HIV/AIDS. Testing could be improved using a family centered approach where all enrolled clients are offered opportunity for counseling and testing of their children as a standard package whenever clients are enrolled if they have children.

5.2 Prevalence of HIV infection among children of adults enrolled in care and treatment that had been tested.

A significant number of children were reported by adults to have been tested for HIV. While a total of 506 were reported to have been tested 71(14.0%) had positive results.

This finding is comparably lower than the reported infection rate among infants by Ministry of Health and Social Welfare in the 2011 PMTCT report. The report shows that the proportion of infants born to HIV infected mothers who becomes HIV infected is 25.7% (Tanzania PMTCT Report, December 2011- Ministry of Health and Social Welfare).

However, both testing and results outcome indicated that HIV prevalence in this special population (children of parents enrolled in care and treatment) is higher than that of the general population in both Kilimanjaro and national HIV prevalence. (THMIS 2011-12).

The high proportion of parents who had not tested their children for HIV in this population (13.6 %) and reported HIV prevalence among children of parents who had tested their children suggest that care and treatment clinics are potential avenues for strategic identification of HIV infection in children. Under normal circumstances, one would have assumed that majority of children whose parents are infected and enrolled in care and treatment clinics would have been tested for HIV considering experience of their parents and regular encounter with service providers at the CTC clinics. This study confirmed not to be the case. A study conducted in 2005, had similar findings and suggested a family based approach to provision of HIV care (Myer, Abrahams, & E-Sadr, 2005). While several strategies are carried on to scale up HIV and AIDS treatment access and coverage along with scale up of HIV testing and counseling, concerted efforts needs to be redirected to this special population. The reported estimated 39,000, new infection per year in 2012 higher than the estimate for 2011 of 31,000 children (UNAIDS, 2013) Findings of this study suggest that HIV infection is rates are higher and action should be taken to strategically identify these children and provide them with appropriate care and treatment. While programmers and governments plan to scale up interventions for ART access and coverage, a further study to examine qualitatively from the demand and supply side of these services to understand as to why not all parents have tested

their children for HIV regardless of the potentials for vertical transmission and perceived experience with services as beneficiaries.

5.3 Determinants of testing among children of HIV /AIDS parents enrolled in care and treatment clinics in Rombo District

Most of the socio-demographic characteristics (sex, education, occupation and religion) studied except age were not associated with HIV testing among children of parents enrolled in care and treatment clinics. However, the mean age among both parents' age and their partners were associated with HIV testing among children. Testing for HIV among children was less among adults aged 40 years and above. While review of literature did not find a study that specifically had assessed association between mean ages of HIV infected parents or their partners enrolled in care and treatment clinics and HIV and testing status of their children, this findings need to further be explored. Considering population dynamics this can be explained by that fact that younger parent are more curious to know HIV status of their children than older parents. It could be also due to the fact that majority of older parents had their children born before most communities were reached with adequate sensitizations programs on importance of early testing of children.

5.3.1 CD4 Count and CD4 count change and Children HIV testing status

HIV/AIDS patients in resource constraint setting are usually monitored by clinical and immunological parameters on regular basis. For quality management of HIV/AIDS patients this clinical parameters need to be regularly monitored and evaluated. In this study, parents' initial and recent CD4 counts were assessed if associated with HIV testing status among children. Higher initial CD4 cells (≥ 200 cells/ul) was associated with lower probability of testing a child for HIV in this population (p value = 0.015).

Although no other studies assessed association of HIV parents clinical or immunological parameters and their children HIV testing status, low CD4 count has been associated with children HIV testing status. This suggest that when parents are sick (< 200 cells/ul) are likely to test their children than when they clinically doing well. Further exploration combining clinical

(functional) and immunological wellbeing of HIV patients is needed are recommended to assess their association with decision to test children for HIV. Since these parameters are also a measure of good quality HIV care, the level of CD4 count seem to offer a motivational drive towards parents making decision to test their children for HIV especially when lower.

5.3.2 Parents ART duration and children HIV testing status

Patients who have initiated treatment tend to be stable and show dramatic improvement overtime. It was anticipated that parents who had started ART would have difference in testing status of their children compared to those who had not started ART. However, evaluation of clinical parameters including treatment duration did not show association with HIV testing among children of adults enrolled in care and treatment clinics.

In another study in UK, found that the mothers of untested children of 18 years old were more likely to be recently diagnosed with HIV infection compared with the overall clinic cohort of women with children. (Andrew S, et al 2012). The reason for this findings were not clear. It may be that this group of women had less time to engage with health services to have their children tested, or had younger children with more recent and asymptomatic vertical infection. The fact treatment duration was not significant suggest that HIV diagnosis duration and duration of ART treatment do not play equal role in testing children for HIV status.

5.3.3 HIV transmission knowledge and children HIV testing status.

Knowledge of HIV transmission was found to be statistically significant associated with HIV testing among children Findings from this study indicate that parents who had high knowledge of HIV and HIV transmission were more likely to have tested their children that those who were not knowledgeable. This is an important component that needs to receive continuous attention in order to maximize the scale up of HIV testing and counseling and universal access to ART to all and in particular children. Knowledge of HIV status helps HIV-negative individuals make specific decisions to reduce risk and increase safe sex practices so that they can remain disease free. For those who are HIV infected, knowledge of their status allows

them to take action to protect their sexual partners, to access treatment, and to plan for the future

The fact that parents with high knowledge of HIV transmission including mother to child transmission of HIV were more likely to test their children than those with no knowledge highlights the importance of addressing knowledge gap particularly during provision of HIV testing counseling and subsequently when routinely offering services.

5.4 Limitation of the study

This study only relied on the participants' responses and there was no verification of the child HIV status in the clients' charts. Potential recall and desirability bias may influence the results. This was a facility based study and finding may not necessarily represent the true picture in the general population. Moreover, this study was cross sectional in nature making it difficult to make /draw causal inference from determinants of children HIV testing identified

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATION

6.1 Conclusion

The level of HIV testing among children of parents enrolled in care and treatment in Rombo district and the HIV prevalence among tested children was high. Age, initial CD4 Count and knowledge of HIV transmission were significant predictors of HIV testing for children of parents enrolled in care and treatment clinics in Rombo district.

6.2 Recommendation

Majority of parents had tested their children for HIV however; the remained proportion of parents who had not tested their children needs a special attention considering the high prevalence of HIV among those who had tested.

1. Family testing approach that will focus on reviewing files of all clients and counseling of parents who have not tested all their children below 18 years to bring them at health facilities for testing is recommended.
2. More sensitization of parents enrolled in care and treatment clinics on importance of testing their children for HIV including provision of HIV transmission and prevention information, and IEC materials at the clinics is recommended
3. More researches including qualitative focused research are recommended to explain why parents enrolled at care and treatment clinics do not test their children

REFERENCES

Abdalelhafiz MA, Adam Elsheikh MA Gasmelseed DE et al (2007). Knowledge and attitude toward HIV voluntary counseling and testing services among pregnant women attending an antenatal clinic in Sudan. *J Med Virol.*:469-73.

Andrew S, Carpenter L, Handyside R, et al (2012). Testing children of mothers with HIV infection: experience in three south-west London HIV clinics. *HIV Medicine* 13,138-140.

Anna Dow, Donahue A, Marie C, et al (2012). They Have Already Thrown Away Their Chicken”: barriers affecting participation by HIV-infected women in care and treatment programs for their infants in Blantyre, Malawi *AIDS Care*2012, 1233_1239.

Bassett I, Giddy J, Nkera J, et al. (2007). Routine voluntary HIV testing in Durban, South Africa: the experience from an outpatient department. *J Acquir Immune Defic Syndr.*46:181-186.

Bunnell R, Cherutich P. (2008). Universal HIV testing and counseling in Africa. *Lancet.* 371:2148-2150.

Bunnell R, Ekwaru J, Solberg P, et al. (2006). Changes in sexual behavior and risk of HIV transmission after antiretroviral therapy and prevention interventions in rural Uganda. *AIDS.* 20:85-92.

Calverton, MD: UBOS and Macro International Inc, Central Statistical Office (Zimbabwe)(2007). Zimbabwe Demographic and Health Survey Report.

Chandisarewa W, Stranix-Chibanda L, Chirapa E, et al. (2007). Routine offer of antenatal HIV testing (opt-out approach) to prevent mother-to-child transmission of HIV in urban Zimbabwe. *Bull World Health organ.* 85:843-850.

Corbett E, Dauya E, Matambo R, et al. (2006). Uptake of workplace HIV counselling and testing: a cluster-randomized trial in Zimbabwe. *PLoS Med.* 3(7):e238.

Creek T, Ntuny R, Seipone K, et al. (2007). Successful introduction of routine opt-out HIV testing in antenatal care in Botswana. *J Acquir Immune Defic Syndr.* 45:102-107.

Central Bureau of Statistics (Kenya) and Macro International Inc(2007). Kenya Demographic and Health Survey Report

Claverton, MD, Malawi National Statistical Office, Zomba, Malawi and Measure DHS(2004): Malawi Demographic and Health Survey Report

Desmond N, Duncan S, Jones R, Koh A L (2012). Testing the children of HIV-positive mothers Int J STD AIDS 2012 23: 224.

Fothergill H, Kingston M, Thng C, Whitfield C, (2011). Are we forgetting the children? Testing the children of HIV-positive parents. International Journal of STD & AIDS Volume 22 March 2011

Fykesnes K, and Siziya S. (2004;). A randomised trial on acceptability of voluntary HIV counseling and testing. *Trop Med Int Health.* 9:566-572.

Jahn A, Floyd S, Crampin A, et al. Population level effect of HIV on adult mortality and early evidence of reversal after introduction of antiretroviral therapy in malawi. *Lancet.* 2008;371:1603-1611.

Larson B, Fox M, Rosen S, et al. (2008). Early effects of antiretroviral therapy on work performance: preliminary results from a cohort study of Kenyan agricultural workers. *AIDS.* 22:421-425.

Makhlouf, Obermeyer C, Osborn M. (2007). The utilization of testing and counseling for HIV: a review of the social and behavioral evidence. *Am J Public Health.* 97:1762-1774

Matovu J, Makumbi F. (2007). Expanding access to voluntary HIV counseling and testing in sub-saharan Africa: alternative approaches for improving uptake, 2001-2007. *Trop Med Int Health.* 12:1315-132

Mbopi-Kéou F, Ongolo-Zogo P, Angwafo F, et al. (2007). High impact of mobile units for mass HIV testing in Africa. *AIDS*. 21:1994-1996.

Mermin J, Were W, Ekwaru J, et al. (2008). Mortality in HIV-infected Ugandan adults receiving antiretroviral treatment and survival of their HIV-uninfected children: a prospective cohort study. *Lancet*. 371:752

Ministry of Health and Social Welfare: Ocean Road Cancer Institute (ORCI) (2011): Annual Activity and Financial Report, 2011.

Ministry of Health and social welfare(2011), PMTCT annual report 2011.

Ministry of Health and social welfare(2012), PMTCT annual report 2012

Matovu JK, Gray RH, Makumbi F, et al. Voluntary HIV counseling and testing acceptance, sexual risk behavior and HIV incidence in Rakai, Uganda. *AIDS*. 2005;19:503–511.

National Bureau of Statics (2012): Tanzania Population and Housing Census 2012

Shelton, J.D., Cassell, M.M., Adetunji J. (2005). is poverty or wealth at the root of HIV? *Lancet*. 366-9491:1057-8.

Schwarz S, Richard TA, Frank H et al. (2011). Identifying barriers to HIV testing: personal and contextual factors associated with late HIV testing. *AIDS Care*. 7:892-900.

Stephen F. Morin, Gertrude Khumalo-Sakutukwa et al 2006. Removing Barriers to Knowing HIV Status Same-Day Mobile HIV Testing in Zimbabwe. (*J Acquir Immune Defic Syndr* 41:218–224

Sweat M, Gregorich S, Sangiwa G, et al. Cost-effectiveness of voluntary HIV-1 counselling and testing in reducing sexual transmission of HIV-1 in Kenya and Tanzania. *Lancet*. 2000;356:113–121.

Roura, (2009). 'Barriers to Sustaining Antiretroviral Treatment in Kisesa, Tanzania: A Follow-Up Study to Understand Attrition from the Antiretroviral Program' AIDS Care STDS 23:3: 203-210

TACAIDS (2003): 'National Multisectoral Strategic Framework on HIV/AIDS (2003-2007)'.

TACAIDS (2009): 'The History, Trends of Prevalence, and Efforts Towards Prevention and Control of HIV and AIDS in the last 25 Years in Tanzania Mainland from 1983-2009 September Prepared by Tanzania Commission for AIDS'. Garbus, (2004) 'HIV/AIDS in Tanzania', Country AIDS Policy Analysis Project, AIDS Policy Research Center, University of San Francisco.

Tanzania Commission for AIDS (TACAIDS), Zanzibar AIDS Commission (ZAC), National Bureau of Statistics (NBS), Office of the Chief Government Statistician (OCGS), and Macro International, Inc. (2008). Tanzania HIV/AIDS and Malaria Indicator Survey 2007-08. Dar es Salaam, Tanzania: TACAIDS, ZAC, NBS, OCGS, and Macro International Inc.

Tanzania Commission for AIDS (TACAIDS) Dar es Salaam, Tanzania, Zanzibar AIDS Commission (ZAC) Zanzibar, National Bureau of Statistics (NBS) Dar es Salaam, Tanzania Office of Chief Government Statistician (OCGS), Zanzibar ICF International Calverton, Maryland USA (2013): Tanzania HIV/AIDS and Malaria Indicator Survey 2011-12

Tanzania National Policy on HIV/AIDS September 2001.

Uganda Bureau of Statistics (UBOS) and Macro International Inc. UBOS and Macro International Inc;(2007): Uganda Demographic and Health Survey (2006)..

UNGASS&TACAIDS (2010): Annual Report for 2010: Tanzania Mainland and Zanzibar.

UNAIDS (2010). 'UNAIDS report on the global AIDS epidemic

UNAIDS (2013). UNAIDS report on HIV estimates with bounds 1990-2012

United Republic of Tanzania HIV/AIDS Care and Treatment Plan: 2003-2008

USAID (2008). 'Tanzania Adopts HIV Law: USAID Assistance Culminates in Law Prohibiting Discrimination Against PLHIV'.

Were W, Mermin J, Wamai N, et al. (2006). Undiagnosed HIV infection and couple HIV discordance among household members of HIV-infected people receiving antiretroviral therapy in Uganda. *J Acquir Immune Defic Syndr.* 43:91-95

WHO/UNAIDS/UNICEF (2010). 'Towards universal access: Scaling up priority HIV/AIDS interventions in the health sector.

WHO (2005). 'Summary country profile for HIV/AIDS treatment scale up Report.

APPENDICES

Appendix I: Informed Consent Form – English Version

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES (MUHAS)

DIRECTORATE OF RESEARCH AND PUBLICATIONS

ID NO _____

Introduction

Consent to participate in the study

Greetings,

My name is..... I am working with this research project to assess “Level **and Determinants of HIV testing among children of parents enrolled in Care and treatment clinics in Rombo district**”.

Purpose of the study

This study has the purpose of collecting information on “Level and Determinants of HIV testing status among children of parents enrolled in Care and treatment clinics in Rombo district” in Kilimanjaro region. You are asked to participate in this study because you have particular knowledge and experiences that may be important to the study.

What Participation Involves

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

- You will be required answer a series of questions that have been prepared to collect information about Level and Determinants of HIV testing among children of parents enrolled in Care and treatment clinics. The interviewer will be recording your responses in the questionnaire.

- I will not collect names or identifiable information from you during this interview.
- The interview will take less than half an hour (30min) and you will be interviewed only once at a private and confidential setting.

Confidentiality

I assure you that all the information collected from you will be strictly confidential. Only people working in this research study will have access to the information. We will be compiling a report, which will contain responses from several participants without any reference to individuals. We will not put your name or other identifying information on the records of the information you provide.

Risks

I will ask questions on the level and determinants of HIV testing among children of parents enrolled in Care and treatment clinics in Rombo district. Some questions may be sensitive and personal, so you might feel uncomfortable at the same time it will take your time. We do not expect any harm to happen to you because of participating in this study.

Rights to Withdraw and Alternatives

Taking part in this study is completely your choice. 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 withdrawal from the study will not involve penalty or loss of any benefits to which you are otherwise entitled.

Benefits

The information you provide will help to improve our understanding of Level and Determinants of HIV testing among children of parents enrolled in Care and treatment clinics in Rombo district. This report will help in finding the appropriate intervention to improve HIV

testing coverage among children in Rombo district as well as across the region and country as a whole.

In Case of Injury

We do not anticipate that any harm will occur to you or your family because of participation in this study.

Whom to contact

If you ever have questions about this study, you should contact the study **Principal Investigator, Dr Chrispine Kimario**, Muhimbili University of Health and Allied Sciences (MUHAS), P.O. Box 65001, Dar es Salaam (Tel. no. 0782 780211). If you ever have questions about your rights as a participant, you may call or contact **Prof. Prof Mainen Moshi**, Chairman of Research and Publications Committee, P. O. Box 65001, Dar es Salaam. Tel: 2150302-6; and Dr Elia John Mmbaga who is the supervisor of this study (0714 213524).

Signature

I _____ have read/understood the contents in this form and 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 II: Informed Consent Form – Swahili Version

**MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES
DIRECTORATE OF RESEARCH AND PUBLICATIONS**

FOMU YA RIDHAA

Namba ya Utambulisho _____

Ridhaa ya Kushiriki katika utafiti huu

Habari,

Jina langu naitwani mshiriki katika utafiti huu unaohusu Kiwango na viashiria vya upimaji wa VVU kwa watoto wazazi waliondikishwa kwenye kliniki za Matunzo na Tiba ya VVU/UKIMWI’ katika wilaya ya Rombo.

Malengo ya Utafiti

Utafiti huu una lengo la kukusanya taarifa ya

Kiwango na viashiria vya upimaji wa VVU kwa watoto wazazi waliondikishwa kwenye kliniki za Matunzo na Tiba ya VVU/UKIMWI’ katika wilaya ya Rombo.

Unaombwa kushiriki katika utafiti huu kwa sababu una uelewa na uzoefu ambao unaweza kuwa muhimu katika utafiti huu.

Ushiriki.

Ukikubali kushiriki katika utafiti huu yafuatayo yatatokea:

Utaombwa kujibu mtiriko kwa maswali yahasuyo

Kiwango na viashiria vya upimaji wa VVU kwa watoto wazazi waliondikishwa kwenye kliniki za Matunzo na Tiba ya VVU/UKIMWI’ katika wilaya ya Rombo.

Msaili atakuwa ananukuu majibu yako katika dodoso.

Hakuna taarifa zozote za utambulisho tutakazokusanya wakati wa usaili isipokuwa umri, kazi/shughuli za kazi, kiwango cha elimu na hali yako ya ndoa. Mahojiano yatachukua muda usiozidi nusu saa (dakika 30) na utahojiwa mara moja tu.

Usiri

Nakuhakikishia kwamba taarifa zote zitakazokusanywa kutoka kwako zitakuwa ni siri. Ni watu wanaofanya kazi katika utafiti huu tu ndio wanaweza kuziona taarifa hizi. Tutajumuisha ripoti ambayo itakuwa na majibu kutoka kwa washiriki kadhaa bila kuweka vitambulisho vyao. Hatutaweka jina lako au taarifa yoyote ya utambulisho kwenye kumbukumbu za taarifa utakazotupa.

Madhara

Hatutegemi madhara yoyote kutokea kwa kushiriki kwako katika utafiti huu

Utaulizwa maswali juu Kiwango na viashiria vya upimaji wa VVU kwa watoto wa wazazi waliondikishwa kwenye kliniki za Matunzo na Tiba ya VVU/UKIMWI” katika wilaya ya Rombo.

Baaadhi ya maswali yanaweza kuwa nyeti na yanayokuhusu wewe binafsi, usiisikie vibaya. Vilevile tutachukua kiasi fulani (kama nusu saa) cha muda wako. Hakuna madhara yoyote yanayotegemewa kwa kutokana na ushiriki wako katika utafiti huu

Haki ya kujitoa katika utafiti

Kushiriki katika utafiti huu ni hiari yako, kama utachagua kutokushiriki au utaamua kusimamisha kushiriki hutapata madhara yoyote. Unaweza kusimamisha kushiriki katika utafiti huu muda wowote hata kama ulisharidhia kushiriki. Kukataa kushiriki au kujitoa katika utafiti huu hakutasababisha upotevu wa huduma yoyote unayotakiwa kupata.

Faida

Endapo utakubali kushiriki katika utafiti huu ,majibu yako yatakuwa na mchango mkubwa katika ripoti ya jumla ya utafiti huu ambayo yanatarajia kuleta ufahamu wa kutosha na mapendekezo ambayo yatasidia kuboresha na kupanua huduma za upimaji kwa watoto wa wanaoishi na na virusi vya UKIMWI wilayani Rombo mkoa Kilimanjaro na nchi nzima.

Watu wa kuwasiliana nao

Kama una maswali kuhusu utafiti huu unaweza kuwasiliana na **mtafiti mkuu wa mradi, Dr Chrispine Kimario**, Chuo Kikuu cha Muhimbili, S.L. P 65001, Dar es Salaam (Simu. no. 0782 780211). Kama utakua na maswali yoyote kuhusu haki zako kama mshiriki unaweza kupiga simu kwa **Prof.Mainen Moshi** , ambaye ni **Mwenyekiti wa kamati ya chuo ya utafiti na machapisho**, S.L.P 65001, Dar es Salaam. Simu namba: 2150302-6 na **Dr. Elia John Mmbaga** ambaye ni msimamizi **wa utafiti huu** (Simu nambari. 0714 213524).

Sahihi

Mimi _____ nimesoma/nimeielewa hii fomu, maswali yangu yamejibiwa. Nakubali kushiriki katika utafiti huu.

Sahihi ya mshiriki_____

Sahihi ya shahidi (kama hawezi kusoma na kuandika)_____

Sahihi ya mtafiti mwandamizi_____

Tarehe ya makubaliano_____

Appendix III: Questionnaire – English Version

Level and Determinants of HIV testing among children of parents enrolled in Care and treatment clinics in Rombo district.

Note to research assistant:

- **Before you start interviewing, administer the following screening questions: does the participant have child/children? 1. Yes ---; 2. No__**
- **What is the age of your youngest child _____ (months, years).**
- **Proceed with those whose child/children are between one month and 1years.**

Date of interview ____ ____ ____

Respondents ID # _____

Name of interviewer: _____

Instruction: Please fill in the empty blanks or circle the right answer

1. How old are you? _____

2. Sex (Male _____Female _____)(tick appropriately. Do not ask)

3. What is you religion?

a) Muslim

b) Christianity

c) Other, specify _____

4. What is your current marital status?
 - a) Single
 - b) Married
 - c) Divorced/separated
 - d) Widowed
 - e) Cohabiting

5. Marriage type
 - a) Religious
 - b) Civil
 - c) Customary
 - d) Cohabiting
 - e) Other, specify _____

6. Have you ever attended school?
 - a) Yes
 - b) No (Go to question 7)

7. What is your highest level of education?
 - a) Preprimary education (nursery)
 - b) Primary education
 - c) Secondary education
 - d) College/University education

8. What is your current occupation?

- a) Civil servant
- b) Self employed
- c) Farmer
- d) Business person
- e) Unemployed
- f) Other, specify _____

9. How old is your husband/wife or intimate partner? _____

10. What is his/her occupation?

- a) Civil servant
- b) Self employed
- c) Farmer
- d) Business person
- e) Unemployed
- f) Other, specify _____

11. Has your husband/wife/intimate partner ever attended school?

- a) Yes
- b) No (Go to question 13)

12. . What is the highest level of education of your husband/intimate partner?

- a) Pre primary

- b) Incomplete primary school
- c) Completed primary school
- d) Incomplete secondary school education
- e) Secondary education and above

HIV Related information

13. . How long since you found HIV infected. (In __years, __months, __weeks, ___days)

14. How long since you were enrolled to care and treatment program?(__years, __months, weeks, ___days)

15. What was your CD4 count test result at enrollment? _____

16. What is your current /latest CD4 Count Test result? _____

17. Have you started antiretroviral treatment already?

- i. Yes (if yes proceed with question number 18)
- ii. No (if No proceed to number 19)

18. How long have you been on antiretroviral treatment? __years, __months __weeks, _days

19. (i) How many children do you have? _____(ii) How old is your youngest child? (___years _____months

20. Have you ever disclosed /shared your HIV status with any one?

- i. Yes (if yes proceed with question 22)
- ii. No _____

21. Whom did you share /disclose your status? (tick as appropriate)

- i. Partner
- ii. Parents
- iii. Children
- iv. Friend

22. Do you know how can HIV be transmitted?

- a. Through sexual intercourse
- b. From HIV infected mother to the child (vertical)
- c. Direct contact with infected the blood (transfusion, injection needles)
- d. Others(explain)
- e. Don't Know

23. Do you know whether HIV be transmitted from mother to child?

- i. Yes
- ii. NO
- iii. Don't know

24. Is there a chance that your children (below 18 years) can have HIV INFECTION?

- i. Yes
- ii. NO
- iii. Don't know

25. When can a child acquire HIV from her mother?

- i. In Utero
- ii. During labor
- iii. During breastfeeding

26. Have your children/child tested for HIV?(tick appropriate answer)

- i. Yes
- ii. No (if no, proceed to question 29)

27. How many of your children have been tested for HIV? _____

28. How many of your children are HIV test results reported as

- i. Negative _____
- ii. Positive _____
- iii. Not tested _____

29. At what age were your children tested for HIV (____years(____months) (____weeks)

30. What is the HIV status of your youngest child

- i. Positive
- ii. Negative
- iii. Unknown

31. Do service provider provide counseling about testing your children

- i. Yes
- ii. No

32. Are any of your HIV positive children enrolled on care and treatment clinics

- i. Yes
- ii. No

33. How many of your children enrolled in care and treatment clinics have started ART?.....

Appendix IV: Questionnaire – Kiswahili Version

Kiwango na viashiria vya upimaji wa VVU kwa watoto wazazi waliondikishwa kwenye kliniki za Matunzo na Tiba ya VVU/UKIMWI' katika wilaya ya Rombo.

Angalizo kwa mdodosaji:

- **Kabla ya mahojiano, uliza kama mshiriki ana mtoto/watoto?**

- 1. ndiyo**

- 2. Hapa (achana naye)**

- **Mtoto wako mdogo kuliko wote ana umri gani _____ (miezi au miaka- jaza).**
- **Endelea na mahojiano kwa wale wenye watoto wenye umri wa mwezi mmoja na chini ya miaka 18.**

Tarehe ya mahojiano _____ (siku/mwezi/mwaka)

Namba ya utambulisho ya mshiriki _____

Jina la mdodosaji _____

Maelekezo: Tafadhali jaza sehemu iliyo wazi au zungushia jibu lililo sahihi.

1. Una mri gani? (mika_____)
2. Jinsia (mme __ mke_____)(weka alama ya vema panapostahili. Usiulize)
3. Dini
 - 1) Muislamu
 - 2) Mkristo
 - 3) Nyinginezo, taja_____

4. Hali yako ya ndoa ya sasa ni ipi kati ya zifuatazo?

- a) Sijaolewa/sijaoa
- b) Nimeolewa/nimeoa
- c) Tumetengana .
- d) Mjane
- e) Naishi na mwenz

5. Aina ya ndoa

- 1) Kidini
- 2) Kiserikali
- 3) Kimila
- 4) Naishi na mwenz
- 5) Aina nyingine, itaje_____

6. Je, Umeshawahi kupata elimu ya shule?

- 1) Ndio
- 2) Hapana (nenda swali la 8)

7. Una kiwango gani cha juu cha elimu?

- a) Elimu ya awali
- b) Elimu ya msingi
- c) Elimu ya sekondari
- d) Elimu ya chuo /Chuo kikuu

8. Unafanya kazi gani kwa sasa?

- a) Mtumishi wa serikali
- b) Nimejiajiri
- c) Mkulima
- d) Mfanyabiashara
- e) Sina ajira yoyote
- f) Ajira nyingine, itaje_____

9. Mume/mke/mwenzi wako ana miaka mingapi? _____

10. Mume/mke/mwezi wako anafanya kazi gani?

- a) Mtumishi wa serikali
- b) Amijijiri
- c) Mkulima
- d) Mfanyabiashara
- e) Hana ajira
- f) Kazi nyingine, itaje_____

11. Mume/mwenza wako amepata elimu ya shule?

- 1) Ndio
- 2) Hapana (nenda swali la 13)

12. Mume/mwezi ana kiwango gani cha elimu?

- a) Elimu ya awali
- b) Hajamaliza elimu ya msingi
- c) Amemaliza elimu ya msingi
- d) Hakumaliza elimu ya sekondari
- e) Amemaliza elimu ya sekondari

Habari zinahusiana na VVU /UKIMWI

13. Ni mda mrefu kiasi gani tangu emegundulika kuwa una maambukizi ya VVU/UKIMWI? _____-(mwaka _____(miezi) _____----(siku)

14. Ni mda gani tangu umeandikishwa kwenye kliniki ya tiba na matunzo? _____(mwak) _____(mwezi) _____(siku)

15. Kipimo chako cha kinga ya mwili(CD4) wakati unaandikishwa kliniki lilikuwaje? _____

16. Kipimo chako cha kinga ya mwili(CD4) cha sasa /hivi karibuni kikoje? _____

17. Umeshaanza kutumia dawa kutpunguza makali ya UKIMWI (ARVs)

- 1. Ndio
- 2. Hapana (endelea na swali la 19)

18. Kuna mda gani tangu umeanza kutumia ARVs? _____miaka _____miezi _____siku.

19. (i) Unao watoto wa ngapi?____(ii) Mwanao mdogo ana umri gani? (____miaka; ____miezi)

20. Uliwahi kumshirikisha mwenzako haliko ya maambukizi ya VVU?

1. Ndio____
2. Hapana____(endelea swali namba 22)

21. Nani uliyemshirikisha

- i. Mwenzi(mme au mke)
- ii. Wazazi
- iii. Watoto
- iv. Rafiki
- v. Mwingine (taja) _____

22. Unafahamu VVU vinaambukizwaje?

- a. Kwa njia kujamiana (ngono)
- b. Maambukizi toka kwa mama mwenye maambukizo kwenda kwa mtoto.
- c. Mgusano wa moja kwa moja na damu ya mgonjwa mwenye maaambukizi (mfano kuongezewa damu, sindano, nk)
- d. Nyinginezo. Zitaje.....
- e. Sifahamu

23. Je VVU vinaweza kuambukizwa kutoka kwa mama kwenda kwa mototo?

- i. Ndio
- ii. Hapana
- iii. Sifahamu

24. Je, upo uwezakano kwamba wanao/mwanao aweza kuwa na maambukizi ya VVU?

- i. Ndio
- ii. Hapana
- iii. Sifahamu

25. Wakati gani mtoto anaweza kupata maambukizi ya VVU kutoka kwa mama?

- i. Akiwa tumboni
- ii. Wakati wa kuzaliwa
- iii. Wakati wakunyonyeshwa

26. Umewahi kumpima mwanao wa mdogo VVU?

1. Ndio___
2. Hapana (kama hapana endelea swali la 29)

27. Watoto wangapi kati ya watoto wako wamepimwa virusi vya UKIMWI(VVU)?_____

28. Kati ya waliopimwa wangapi wamegundilika kuwa na virusi vya UKIMWI

1. Chanya (Kuwa na virusi vya UKIMWI)_____
2. Hasi (Hawana Virusi vya UKIMWI)_____
3. Hawajipimwa _____

29. Mwanao mdogo alipimwa VVU akiwa na umri gani? (miaka _____
miezi_____ wiki_____)

30. Majibu ya kipimo cha VVU kwa mwanao mdogo yakoje

1. Hasi
2. Chanya

31. Je watoa huduma katika kliniki hii hukupa ushauri nasaha kuhusu wanao kupimwa VVU?

1. Ndio
2. Hapana

32. Una mtoto aliyeandikishwa kwenye kliniki ya tiba na matunzo kwa wanaoishi na virus vya UKIMWI?

1. Ndio
2. Hapana

33. . Wanao wangapi wanaoishi na virusi vya UKIMWI walioandikishwa kwenye kliniki ya tiba na matunzo wanatumia dawa za ARV? _____