DETERMINANTS OF REPRODUCTIVE HEALTH NEEDS AMONG PEOPLE LIVING WITH HIV/AIDS IN MBEYA REGION, TANZANIA

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CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance a dissertation entitled ***Determinants of Reproductive Health needs among people living with HIV/AIDS in Mbeya region, Tanzania*** submitted in Partial Fulfillment of the requirement for the degree of Master of Public Health of the Muhimbili University of Health and Allied Sciences.

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Date: 20/11/2009.

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DEDICATION

This dissertation is dedicated to my brother and his wife, Mr. Bassu L. Kisendi and Mrs Dorothy Kisendi Ntenganija, who sacrificed so much to lay a good foundation in my life and my education. It is for this foundation that I have grown into a person who I am today, doors opening up for higher academic circles. To you Irene, my daughter, I love you.

ABSTRACT

Majority of people living with HIV/AIDS (PLWHA) are of reproductive age. However, little attention has been given to their reproductive health needs. The purpose of this study was to explore the prevalence and determinants of fertility desires and intentions among PLWHA and to determine the prevalence and use of family planning (FP). A cross-sectional survey was conducted in rural and urban areas of Mbeya region in July 2009 at selected Care and Treatment Clinics (CTCs). A total of 372 eligible PLWHA participated. Face-to-face interviews were performed using a standard questionnaire. Data was analyzed using SPSS version 15.0. The prevalence of fertility desire was 43.1%. The median number of children desired was 3.1. Fertility desire was predicted by being single (Adjusted Odds Ratio (AOR): 3.46, 95%CI: 1.51-7.97) and number of children (AOR: 0.44, 95%CI: 0.25-0.76 for those with 3-5 children and AOR: 0.29, 95%CI: 0.09-0.93 for those with 6-8 children). Fertility intention was associated with being divorced or separated (AOR: 2.81, 95%CI: 1.05-7.51) and having own children (AOR; 0.54, 95%CI: 0.27-0.84). About 34.6% of participants reported using FP. Use of FP was associated with being married (AOR, 2.01, 95%CI: 1.01-4.00), urban residence (AOR: 1.64, 95%CI: 1.06-2.51) and being on ART (AOR: 2.37, 95%CI: 1.48-3.79). These findings indicate that a substantial number of PLWHA want to have children. ART is not related to fertility desire and intention but has an influence on use of FP. Low FP prevalence and the need for fewer children indicate a higher demand for FP. Reproductive and Child Health (RCH) integration into care and treatment (CT) services should be promoted especially in rural areas.

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LIST OF ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
ART	Antiretroviral Therapy
ARV	Antiretroviral drugs
CBD	Community Based Distributors
CD4	Clone of Differentiation group 4
CPR	Contraceptive Prevalence Rate
CT	Care and Treatment
CTC	Care and Treatment Centre/Clinic
DHS	Demographic Health Survey
FP	Family Planning
HIV	Human Immunodeficiency Virus
IUD	Intra-uterine Device
MMRP	Mbeya Medical Research Program
MRACP	Mbeya Regional AIDS Control Program
MTCT	Mother to Child Transmission
MUHAS	Muhimbili University of Health and Allied Sciences
NACP	National AIDS Control Program
NBS	National Bureau of Statistics
NCTP	National Care and Treatment Plan
NIMR	National Institute for Medical Research
OCs	Oral Contraceptives

PEPFAR	United States Presidential Fund for AIDS Relief
PI	Principal Investigator
PLWHA	People Living with HIV/AIDS
PMTCT	Prevention of Mother to Child Transmission
RCH	Reproductive and Child Health
SHACP	Southern Highlands AIDS Care Program
SPSS	Statistical Package for Social Sciences
TACAIDS	Tanzania Commission for AIDS
TGPHS	Tanzania German Program to Support Health
TFR	Total Fertility Rate
THMIS	Tanzania HIV and Malaria Indicator Survey
UNAIDS	Joint United Nations Programme on HIV/AIDS
USAID	United States Agency on Foreign Aid
VCT	Voluntary Counseling and Testing

DEFINITION OF TERMS

- **Reproductive Health Needs** – varied as they are and as reflected in the different Components of Reproductive Health, Reproductive Health Needs in this study specifically refer to fertility desires and intentions and the choice and use of family planning methods among PLWHA
- **Fertility Desire** – in the context of this study, fertility desire refers to the aspiration to want to bear a child or children among study participants
- **Fertility Intention** – in the context of this study, fertility intention denotes the ideal number of children study participants wanting to bear children would actually prefer to have.
- **Unintended Pregnancy** – Pregnancy obtained without prior intention to having a child at the time of conception as a result of unmet need for family planning, method failure or rape. Includes unwanted (not wanted at all) or untimed (wanted but sometimes later).
- **Unmet Need for Family Planning** - In this study, study participants reporting that they do not (or did not) want any more children or that they want (or wanted) to wait two or more years before having another child but are not using (or did not use) modern contraception were considered to have an unmet need for family planning

CHAPTER ONE

1.1 Background

There were an estimated 33 million people living with HIV/AIDS (PLWHA) in 2007 worldwide where Sub- Saharan Africa remains most heavily affected, accounting for 67% of all PLWHA and for 72% of AIDS deaths in 2007. In Sub- Saharan Africa, majority (61%) of PLWHA are women (NACP, 2008). Globally, the number of children younger than 15 years living with HIV increased from 1.6 million in 2001 to 2.0 million in 2007 with 90% of the infections due to vertical transmission. Without any intervention, the risk of Maternal-to- Child Transmission, (MTCT) is estimated at 15-40% (NACP 2008, UNAIDS 2008. Almost 90% of PLWHA younger than 15 years live in sub-Saharan Africa (UNAIDS, 2008).).

As of December 2007, the estimated number of people living with HIV in Mainland Tanzania was 2.6 million, of whom 500,000 are estimated AIDS cases (NACP, 2007). There is an overall increase in the number of people living with HIV/AIDS and this is attributed to the ongoing number of new infections each year, increased population growth and the beneficial effects of more widely available antiretroviral therapy. Recent data based on household surveys estimated the HIV seroprevalence in adults aged 15-49 years in Tanzania to be 5.8% (THMIS, 2008). HIV prevalence is higher among women than men (7 percent and 5 percent, respectively). Increasing number of PLWHA means increased demand for care and treatment services, including provision of Antiretroviral drugs (ARVs).

The number of PWLHA receiving antiretroviral drugs in low- and middle-income countries reached almost 3 million people by the end of 2007 (UNAIDS 2008). By mid 2008 the government of Tanzania through the National Care and Treatment Plan (NCTP) and in collaboration with development partners has managed to start on Antiretroviral Therapy (ART) a total of 160,000, out of estimated 600,000, eligible patients since the launch of the program in October 2004, and those not eligible yet are closely monitored through Care and Treatment Clinics (CTCs) spread all over the country (NACP, 2008). As of September 2008, there were 418 CTCs providing HIV care and treatment services in the country. ART has been attributed to improved health status and life expectancy of PLWHA making them enjoy life similar to uninfected individuals (Hogg RS et al; 1999, Moore AL et al; 2002) with increased sexual activity and likelihood of becoming pregnant (Wilson TE, 2002).

In Tanzania, the Total Fertility Rate (TFR) is estimated to be 5.7 births per woman, which is considered to be among the highest rates in sub-Saharan Africa. There is a marked variation in fertility between women in rural and urban areas with the former having 3 more births than the latter. There is an overall declining trend in fertility over the decades but little or no decline among women with no education or women living in rural areas (NBS, 2005). Women experience the highest levels of fertility in their early 20s, regardless of urban-rural residence with a substantial proportion of women continuing to bear children in their late reproductive years.

In the general Tanzanian population, fertility desire is about 65% (NBS, 2005). The desire for more children is related to the number of living children women already have. The ideal number of intended children is 5.0 for all women and 5.4 for currently married women. The intention to have children is higher in rural (6 children) than in urban (4 children) areas (DHS, 2004-2005). Limited information exists about fertility desire and intentions among PLWHA in Tanzania. However, one assessment survey conducted by Mpangile et al (2006) has shown a staggering figure of 70% desire for more children among PLWHA. This is slightly higher than that of the general population. Studies conducted elsewhere also suggest that PLWHA desire and continue to have children equally to those without HIV infection (Cooper D et al; 2007).

In the general Tanzanian population, knowledge of contraception is high both among women and men where 96% and 97% respectively know at least one method of contraception. Individuals use Family Planning (FP) methods either to space childbearing or limit childbearing altogether. The most commonly used methods among currently married women are injectables, pills and withdrawal (NBS, 2005). The use and preference of modern contraceptive methods appears to be determined by socio-demographics, the number of living children, and fear of side effects, husband/partner opposition and lack of knowledge about FP methods. Most of the women who are sterilized are aged 40 or older, while younger women are more likely to use injectables and pills. Current contraceptive use is higher among sexually active unmarried women than among married women and preferences vary across these groups. Married women in urban areas are almost twice as likely to use a family planning method as their rural

counterparts and that women with no children are unlikely to use contraception. In Tanzania, contraceptive use varies significantly by region, from a high of 50 percent in Kilimanjaro to a low of 7 percent in Pemba North. The overall contraceptive prevalence rate is 26% in a distribution of 20% and 6% modern and traditional methods respectively (NBS, 2005). Use of specific methods also varies by region. In Mbeya, women are most likely to rely on withdrawal which has a high failure rate.

HIV epidemic is extremely heterogeneous outside and within Tanzania. There are reports of increasing, decreasing and stabilizing epidemic in some regions in Tanzania (THMIS, 2008). Mbeya region, with an estimated population of 2.3 million, has for many years reported the highest cases of HIV/AIDS ranking first in all regions in the country, although now ranks third after Iringa and Dar es salaam. With a relatively decreasing infection rate, the region is estimated to have about 67,000 PLWHA with over 7,000 on HIV care and treatment.

Decreased mortality and increasing quality of life among PLWHA due to ART availability have been found to affect their fertility desire and intention as well as the rate and pattern of contraceptive use. Fulfilling reproductive needs among PLWHA may facilitate both horizontal and vertical HIV transmission. For planning and intervention development, it's important to describe the magnitude and determinants of reproductive health need (fertility desire, intentions and FP methods use) among PLWHA. This study was set out to examine and describe the desire and intention to have children and contraceptive use among PLWHA and associated factors.

1.2 Statement of the Problem

Over the years, there has been an increasingly growing attention on the health care needs of PLWHA worldwide. This has included, among others, ART and the management of opportunistic infections (OIs). Scaling up of ART is currently underway in Sub-Saharan Africa, including Tanzania. This scale up has led to increased access to ARVs, subsequently increasing survival of PLWHA and improved quality of life.

However, despite the increasing attention to the health care needs of HIV-infected individuals in low resource settings, little attention has been given to their reproductive health needs to keep pace with increasing longevity due to ART. Available data on pregnancy intentions and FP methods among PLWHA are contradictory and inconclusive. Studies in both developed and developing countries have suggested that many HIV-infected women and men continue to desire and bear children despite their knowledge of HIV status. This can partly be explained by the fact that most people infected with HIV are of reproductive age (15-49) and continue to remain sexually active and most pregnancies of PLWHA could therefore be intentional (Santos N et al; 2002). Desire to have children has a significant effect on HIV transmission and on the choice and use of family planning (FP) methods. Individuals with HIV infection and who desire to have children are less likely to use barrier methods of contraception which may in turn contribute to both horizontal and vertical transmission. About 90% of HIV infections in children are due to vertical transmission (NACP, 2008). In developed countries, innovative techniques have been devised to meet the reproductive needs and

choices of PLWHA, ranging from artificial insemination to sperm washing. These options are not available in Sub-Saharan Africa, including Tanzania.

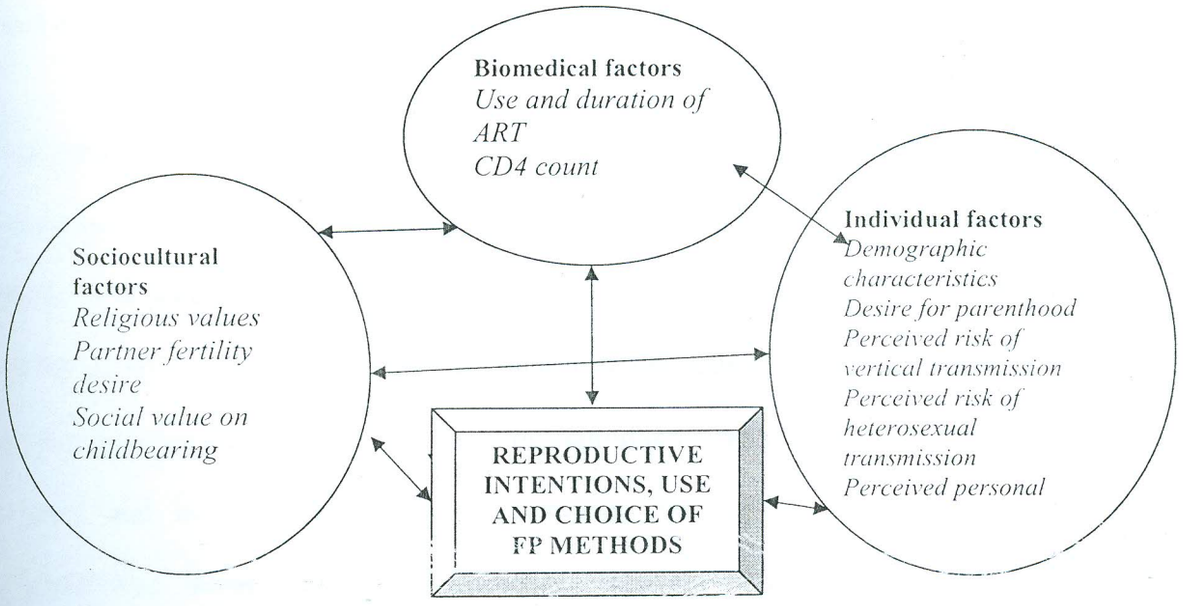
Policy issues, economical, personal, social and cultural perspectives can be relevant explanations for this disparity. HIV-positive men and women report strong pressure from family members, people in their community and health care providers to give up the idea of having children due to perceived risk of perinatal HIV transmission or out of concern for the welfare of children who may be orphaned. Similarly, childbearing in most societies plays a central role in the social identity of both men and women. Regardless of their HIV serostatus, couples are expected to have children. Policies and social stigma have discouraged reproductive needs of PLWHA and it remains a controversy whether they should bear children or not.

The magnitude and determinants of reproductive health needs among PLWHA are not well known in Tanzania. Available data does not provide comprehensive information on determinants of fertility desire and intentions and FP use and choices among PLWHA. It was for this reason that this study was conducted in order to have a better understanding of the magnitude of the reproductive health needs (fertility desire and intention, FP choice and use) among PLWHA important for HIV prevention and impact mitigation.

1.3 Conceptual framework

This study was conducted basing on a problem diagram shown in Figure 1 which depicts reproductive intentions, use and choice of FP methods as main outcome variables. The figure also identifies sociocultural, biomedical and individual factors as key predictor variables. The figure shows that, these factors may act individually or as a group or indirectly through other factors to influence the outcome variables. The outcome and predictor variables from this figure are further enlarged under methodology.

Figure 1: Determinants of Reproductive intentions in PLWHA – a conceptual framework



1.4 Rationale

There is a substantially larger number of PLWHA in sub-Saharan African countries including Tanzania. Majority of PLWHA are of reproductive age and continue to desire

and bear children. Studies have suggested that many HIV-infected women and men continue to desire and bear children despite knowledge of their HIV status. Bearing children and protecting the partner and the baby from HIV infection are all human right issues. In order to understand the balance between reproductive health needs and HIV prevention, information on the fertility desire, intention and FP use among PLWHA was considered of paramount importance.

Description of social, cultural and medical determinants influencing these reproductive health needs is crucial in providing data to inform the development of policies in guiding intervention measures. Therefore, there was need to investigate the magnitude and determinants of fertility desire and intentions and explore the magnitude, choices and determinants of contraceptives use among PLWHA.

This study was set out for the purpose of describing the magnitude of fertility desire and intention to have children and contraceptive use among PLWHA that may ultimately serve as a benchmark for gauging the fertility and FP related counseling and service needs of HIV infected adults. Results may provide additional data necessary for fast tracking the ongoing efforts of integrating reproductive services for PLWHA in AIDS clinics and in voluntary counseling services, and assess factors that influence reproductive needs and intentions. Data obtained may contribute to a better understanding of fertility desire and intentions and demand for contraception needed to promote and protect the rights of women and men living with HIV in making informed decisions about reproduction.

This study was conducted in Mbeya region for the reason that Mbeya is one of the severely affected areas with HIV/AIDS in Tanzania with a disease prevalence of 7.9% (THMIS, 2008). Despite declining trends of HIV infections and prevalence, Mbeya region remains heavily burdened by the disease due to a long standing high prevalence with PLWHA estimated to be 67,000 and majority of them are of reproductive age. The existing care and treatment infrastructure in Mbeya provided a unique opportunity to integrate research questions. This study was also conducted as part of the requirement for partial fulfillment of the award of Masters of Public Health of the Muhimbili University of Health and Allied Sciences (MUHAS).

1.5 Research questions

1. What is the magnitude of fertility desire and intention among PLWHA in Mbeya region?
2. What are the determinants of fertility desire and intentions of PLWHA in Mbeya region?
3. What is the magnitude and choices of modern contraceptives among PLWHA in Mbeya region?
4. How does antiretroviral therapy use influence fertility desire, intentions and family planning choices among PLWHA?
5. How do reproductive health needs (fertility desires and intentions, choices and contraceptive prevalence) among PLWHA differ from those of the general population?

1.6 Research Objectives

1.6.1 Broad objective

The main objective of this study is to investigate the prevalence and determinants of reproductive health needs (fertility desire and intention, family planning choices and use) among people living with HIV/AIDS in Mbeya region.

1.6.2 Specific objectives

1. To assess the prevalence of fertility desires and intentions among PLWHA in Mbeya region
2. To determine factors associated with fertility desire and intention among PLWHA in Mbeya region.
3. To investigate the prevalence and choices of various FP methods used by PLWHA in Mbeya region
4. To determine factors affecting choice and use of different FP methods by PLWHA in Mbeya region.

CHAPTER TWO

LITERATURE REVIEW

2.1 HIV Epidemic in Tanzania

The first 3 AIDS cases in Tanzania were reported in 1983 in Kagera region. By 1985, HIV/AIDS epidemic was confirmed in the country and in 1986 all regions had reported the existence of AIDS cases. Until December 1997, a cumulative total of 103,185 AIDS cases were reported all over the country (MOH/NACP, 1998). However, the reported cases could be fewer than the existing ones as it was estimated that only 1 out of 4-6 cases are reported. The 2003-04 national Household HIV Indicator survey showed HIV prevalence of about 7.0% among adults aged 15-49 years with infection levels higher in urban areas, educated, higher economic status and in married individuals (NACP, 2008) where Mbeya was first followed by Iringa. Lowest prevalence's were noted in Manyara and Kigoma. The prevalence among Antenatal clinic (ANC) attendees was 9.9% and 4.4% in urban and rural areas, respectively. The HIV epidemic has affected mostly young adults and has and continues to spread predominantly through heterosexual contact. The epidemic was initially concentrated in North-Western Tanzania, but later spread along major roads. However, recent studies have shown a shift of the epidemic from a younger to an older age group and from educated to uneducated individuals (Mmbaga EJ et al; 2007). In rural areas, female gender and married or separated individuals, people with low education, lower age at marriage, alcohol consumption, low condom use, multiple sexual partners for all age groups and casual sex have fueled the spread of HIV (Mmbaga EJ et al; 2007).

Several studies conducted in Tanzania and elsewhere suggest a decline in HIV prevalence and incidence (Kwesigabo G 2000; Msuya SE et al 2007; Kwesigabo G et al 2005; Urassa W et al 2006; Riedner G et al 2006; Wambura et al 2007; Senge P et al 1998 and NACP 2008). However, data from recent studies show an increase in HIV prevalence in rural areas (Mmbaga EJ et al 2008 and NACP 2008). The 2007-08 Malaria and HIV Indicator survey has yielded data showing overall country HIV prevalence of 5.8%, a substantial decrease compared to 2003-04 data with a reversal in top three leading regions where now Iringa is first followed by Dar es salaam and Mbeya in that order. One study investigating on HIV prevalence and trends in sub-Saharan Africa has indicated no decline and large sub regional differences (Asamoah-Odei E et al; 2006).

2.2 Responses to HIV/AIDS Epidemic

As the number of PLWHA increased, national and international responses were put in place. HIV, sex and reproduction are intimately linked and at the core of any response to the HIV epidemic. Responses to HIV epidemic are directed at prevention of new infections, care, treatment and support of infected individuals. In Tanzania, HIV interventions include behavior change communication campaigns, voluntary testing and counseling, prevention of mother-to-child transmission (PMTCT) and provision of Antiretroviral drugs (ARVs). These interventions have been scaled up throughout the country. PMTCT services have been integrated into ANC services and by December 2008 about half of eligible HIV infected mothers received ARV prophylaxis while only about one third of infants received ARV prophylaxis (NACP PMTCT, 2008).

International commitments included the Abuja Declaration and WHO 3 by 5, International Center for AIDS Program (ICAP) and US Presidential Emergency Plan for Aids Relief (PEPFAR); national commitments include Presidential Declaration of HIV/AIDS as a disaster (1999), formation of Tanzania Commission for AIDS (TACAIDS) (2000), development of HIV/AIDS Policy (2001), development of National Multi-sectoral Strategic Framework (2003-2007). The National Multi-sectoral Strategic Framework (2003-2007) resulted in development of Health Strategy on HIV/AIDS (2003-2006) which includes three thematic areas namely Prevention, Care and Treatment, and Cross cutting issues. Based on the care and treatment thematic area of the Health Strategy on HIV/AIDS, the National Care and Treatment Plan (NCTP) was developed and approved in 2003. The effective implementation of the Health Strategy on HIV/AIDS started on October 2004 by initiation of Care and Treatment Clinics.

2.3 Effects of HIV/AIDS on fertility

Studies have suggested that fertility and birth rates among women with HIV infection are lower than the general population and the rate of termination is higher. In an Australian study to measure the fertility and birth rates it was found that the annual general fertility rate was 30 per 10,000 compared with 63 per 10,000 for the female population aged 15-44 years, and the birth rate in women with HIV-1 infection was one-half that of the general female population (Thackway SV et al; 1997). Reduction in pregnancy prevalence in HIV-infected women has been associated with decreased rates of conception and increased rates of pregnancy loss (Gray RH et al; 1998). In sub-

Saharan Africa, however, one study found that HIV-1 infection is associated with lower fertility among women and this association is not explained by the frequency of sexual intercourse, illness, knowledge of HIV status or infection with other sexually transmitted diseases (Ross A et al; 1999). Low gravidity prior to seroconversion in this study was shown to be due to pre-existing sub-fertility accounting for almost 50% of the observed association between HIV infection and lowered incidence of pregnancy, after adjusting for age, lactation, illness, Sexually transmitted Infections (STI) and the frequency of sexual intercourse. This can be explained by the fact that, women with fertility problems are at increased risk of marital instability and, therefore HIV infection, indicating a reciprocal relationship between preexisting low fertility and HIV infection.

In developing and developed countries, the negative impact of HIV on pregnancy is possibly reversed by introduction of ART but this is inconclusive. Prospective studies have found a lower pregnancy rates after HIV diagnosis but not clear whether this is due to biology or behavior. Further more, some cross-sectional analyses found a non-significant association between pregnancy incidence and HIV infection. To date, there is no published study that has found the relationship between pregnancy rate and behavioral change.

2.4 Fertility desires and intentions among PLWHA

According to the DHS 2004-05, the Total Fertility Rate (TFR) is 5.7 births per woman in Tanzania, which is considered to be among the highest rates in sub-Saharan Africa. Rural women, on average, have 3 more births than their urban counterparts. Compared

to previous surveys data show that although fertility has declined overall over the last two decades in Tanzania, there has been little or no decline among women with no education or women living in rural areas. About 65.4% of women in the general population desire for more children (NBS, 2005). The desire to have children among PLWHA has been shown to be about 70% (Mpangile G et al; 2006) which is slightly higher than the general population. These findings are different from findings in Ethiopia where the desire to have children among PLWHA was found to be 40% (Tamene W and Fantahun M, 2006). The ideal number of intended children is 5.0 for all women and 5.4 for currently married women. The intention to have children is higher among rural than urban women (NBS, 2005).

Generally, fertility intentions and reproductive decision-making among PLWHA appear to be influenced by biomedical, individual and sociocultural factors. They include perceived risk of vertical and heterosexual transmission, beliefs about vertical transmission risk reduction strategies; desire for motherhood, personal health-related concerns; stigma; religious values; attitudes of partners and health care providers; and the impact of the mother's health and longevity on the child (Craft SM et al 2007; Tamene W and Fantahun M, 2006; Kirshenbaum SB et al, 2004 and Kline A et al; 1995).

Findings of available studies regarding predictors of reproductive determinant intentions in PLWHA provide suggestive but inconclusive results. It has been suggested that pregnancy intentions of women and men living with HIV are similar to those of uninfected, though HIV status may be linked to reduced desire for children for some.

Fertility desire and intention for childbearing is said to be a powerful predictor of pregnancy outcome. In a longitudinal study among Malawian women conducted by Chanza et al on 'Pregnancy Intention, Contraceptive Intention, Contraceptive Use and Unintended Pregnancies before and after Notification of Positive HIV', participants who reported intention and desire to become pregnant were three times more likely to become pregnant after 12 months follow-up than those who reported no intention and desire for pregnancy (Chanza, 2006). These findings indicate a strong association between intention to become pregnant and pregnancy incidence. In this study, the desire to become pregnant decreased from 33% before HIV positive test results were known to 14%, 12 months after, indicating that HIV status has a powerful influence on decision making whether to have children or not. Symptomatic women (CD4<200) are less likely to want to become pregnant in a similar way as are those women who feel well (CD4 >200) who also reduce their desire for pregnancy significantly once their positive status is known (Chanza, 2006) showing that the health status of the woman has no influence on fertility desires.

Health care providers have been at the forefront at discouraging HIV infected women from having children with an emphasis on control of the epidemic while sidelining the autonomy of people living with HIV/AIDS in relation to reproductive decisions (Oliveira LA and França JI, 2003). In an exploratory study on 'fertility preferences and Family Planning experiences among ART clients in Kenya', counseling messages included, in preference order, the use of condoms, don't get pregnant, how to meet reproductive goal and Prevention of Mother to Child Transmission (PMTCT) (Sarna A,

2006). The frequently cited message by health providers that PLWHA shouldn't get pregnant undermines the basic reproductive needs and rights of these individuals, who are of reproductive age and may not have children at the time of diagnosis. In a study on pregnancy decisions among women with HIV in the US, women with a procreative inclination were more likely to choose to become pregnant which outweighed social support and personal health concerns who also represented a 13% of respondents reporting non condom use because of religious influence (Craft SM et al; 2007).

The desire for motherhood is so strong among sexually active HIV infected individuals and is partly influenced by the sociocultural environment or a personal drive. In a study by Mpangile G et al (2006) on sexual and child-bearing needs of people on ART in Tanzania, about half (46%) of respondents said they were not using condoms because they wanted to conceive. In one of the Focus Group Discussions (FGDs) in this study, one woman was quoted as saying, *"I have always wanted a child, I don't have one and feel I must have one of my own"*, to underline the deeply ingrained influence of socially constructed identity attached to childbearing and parenthood. Social pressures to have children are more pronounced in rural than in urban areas. In rural areas, cultural values are attached on fertility and a significant social status is assigned to people with children (Dyer SJ et al; 2002). It appears that cultural and psychosocial factors exert a more important influence on decisions about pregnancy than the possibility of perinatal transmission and acceleration of the disease process in the mother. In many cases, the 50% risk of having an uninfected infant makes conception and continuation of the pregnancy an acceptable risk (Sunderland A, 2000). Conception and childbearing has a

positive impact on the quality of life and restores the sense of "normalcy" in HIV infected individuals (Sunderam S et al; 2008).

In a study to 'explore HIV-positive women's desires, intentions and decision-making in attaining motherhood' in India, Kanniappan S et al (2008) found that the main factors distinguishing women who wanted to have a child and those who did not were their levels of anxiety about the future and available family support. Women who indicated that they did not have family support and were stigmatized by the family were reluctant to opt for a pregnancy as they were not sure of the future, including child care in event of parental death. In contrast, those women who decided to have a child did so based on family support, especially when family members offered to take care of the child in the future. In this study, it was found that awareness and access to PMTCT and ART was one of the key factors guiding the final decision on child bearing, similar findings as in Rutenberg N et al (2006) who, based on small number of studies and inference from trends, reported that PMTCT and ARV availability is associated with increased fertility desires. The authors of this study conclude that their findings highlight the need for further research on issues faced by women living with HIV/AIDS (WLHA) in fulfilling their fertility desires and intentions and for programmes that both enable WLHA to exercise informed choice in meeting their fertility desires and sensitize healthcare providers about these needs.

2.5 Balancing reproductive rights and HIV transmission

As more than 80% of all women living with HIV and their partners are in their reproductive years, many will continue to want children after learning their positive

status, whether to start a family or to have more children. More than 80% of HIV infections in adults are due to heterosexual transmission. In children, more than 90% of HIV infections are due to vertical transmission (NACP, 2008). The magnitude of HIV serodiscordance status is about 8% in Tanzania (NACP, 2008) but may be as higher as 20% in other settings (Myer L, 2007). As many PLWHA desire to have children and whose partners may be HIV-free, they have to have unprotected sex with un-infected or infected partners in order to conceive. This may result into further HIV transmission. As policies and guidelines have emphasized on prevention of heterosexual and vertical transmission or have only bluntly stated 'PLWHA have the right to bear children and raise a family' without providing means on how to go about it safely, information that may help PLWHA make informed decisions on childbearing while limiting vertical and heterosexual transmission of HIV is highly needed. This information may be useful in promoting and protecting the rights of women and men living with HIV/AIDS in making informed decisions about reproduction.

2.6 Choice and use of different Family Planning methods among PLWHVA

Since studies have shown that individuals infected with HIV are of reproductive age and continue to desire and bear children, the prevalence of use of contraception is critical. In the general population, the total demand for family planning among currently married women is 50 percent and only about half of that demand (56 percent) is satisfied (NBS, 2005). Desire and intention to have children have a substantial effect on the choice and use of family planning (FP) methods for HIV seropositive and seronegative individuals (Massad LS et al; 2007). The choice of and level of use of FP

methods have a greater implication on heterosexual HIV transmission and to vertical transmission. Factors associated with non use of FP methods include desire for as many children as possible, number of living children, fear of side effects, husband/partner opposition and lack of knowledge about FP methods and Socio-demographic factors (age, sex, marital status, locality, education, income). Studies have shown that contraceptive use in rural areas is as less as 3.2% (Mroz TA et al; 1999). Some studies have shown that HIV positive status influences fertility intentions, especially the desire to stop childbearing among those who have completed their families, who therefore may favor the choice of permanent methods (Rutenberg N et al; 2006).

Studies of HIV+ women elsewhere in developing and developed countries have revealed contradictory findings. Some of these studies have indicated very low contraceptive use but cannot attribute to HIV status, yet in others contraceptive use among HIV+ women increased after Voluntary Counseling and Testing (VCT). In other studies it has been shown that HIV+ women were no more likely to use contraception than HIV- women with similar characteristics (Rutenberg N et al; 2006). In developed countries, condom use is frequently reported but it is not clear if it is for fertility control or prevention of HIV transmission. There is no evidence for association of HIV status and use of other contraceptive methods and method choice differs by partner serostatus. Seroconcordant couples are more likely to use oral contraceptives and intra-uterine devices while serodiscordant couples prefer condoms (Rutenberg N et al 2006), indicating that individuals are aware that an uninfected partner can be infected from the infected partner but unaware of re-infections. However, there is still uncertainty

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regarding the risk and consequences of re-infection (Delvaux T and Nostlinger C, 2007). For discordant couples, limited evidence shows no association between combined oral contraceptive use and the risk of female-to male HIV transmission (WHO, 2006), although other studies indicate a tendency towards an increased risk among high risk populations of women, such as sex workers (Wang CC et al; 1999). Other studies among those using family planning services found no overall increase in risk of HIV acquisition related to the use of hormonal contraception (WHO 2005 and Morrison CS et al; 2007). IUDs can be used in case of HIV infection, except for women with AIDS and those not on antiretroviral therapy (WHO, 2006 and WHO, 2004). In the Malawian longitudinal study it was found that, the use of non-condom FP methods increased in women who perceived their health to be fair/poor but decreased in those perceiving their health to be good/excellent 12 months after HIV diagnosis. On the other hand, the use of non-condom FP methods increased in both participants with CD4<200 and those with CD4>200 12 months after HIV diagnosis (Chanza, 2006).

Choice of FP methods and level of use among PLWHA have not been investigated in Tanzania and the DHS provide no information. Since recent studies elsewhere have shown that most of hormonal contraceptives and IUDs are safe for use with PLWHA (Myer L, 2007; Richardson BA, 2007 and NACP, 2008), it is therefore important that the level of use and factors influencing FP preferences be systematically explored.

2.7 Overview of HIV/AIDS epidemic in Mbeya region

Mbeya has for many years been reporting the highest prevalence of HIV. Mbeya has two cross-country borders with Malawi at Kyela and with Zambia at Tunduma. These

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two borders act as portals of entry and exit of many businesses with interaction of peoples between the three countries and beyond to Democratic Republic of Congo and Southern Africa. This intermingling of people across cultures and countries make Mbeya a high transmission area. The trans-African highway running all the way from Cairo to South Africa with its main track routes is another transmission factor. High transmission areas in Mbeya include centers and townships where track drivers spend their days and nights while on transit. Track drivers infected with HIV somewhere transmit the infection to women (mainly bar workers and food vendors) who have sex with them and who then pass the infection to the general population. Based on the 1997 epidemiological data, Mbeya region reported the highest cumulative AIDS case rate (858.3 cases per 100,000) followed by Dar es Salaam (663.1 cases per 100,000) and Kilimanjaro (494.9 cases per 100,000) (MOH/NACP Report, 1998). In the 2005-06 HIV-Syphilis surveillance among Antenatal care (ANC) attendees, Mbeya was found to have a 15.9% prevalence of HIV which was about 3 times that in Kagera. In the general population, Mbeya region recorded the highest HIV prevalence of 13.5% in the country (DHS, 2004-05) and this has continued until 2008 when the prevalence was recorded at 7.9% being third after Iringa and Dar es Salaam (THMIS, 2008). Because of its main transmission factors and because of a sustained high infection and transmission rates, Mbeya region is home to many PLWHA and are estimated at 67,000, second after Dar es Salaam.

2.8 HIV/AIDS Care and Treatment in Mbeya region

Mbeya Region responded by forming the Mbeya Regional AIDS Control Program (MRACP) to carry out prevention, care and treatment interventions. MRACP has since then been joined by other partners like the US HIV Military Research Program (USHMRP) which supports HIV vaccine research at the Mbeya Medical Research Program (MMRP). The US Waltereed program perhaps makes Mbeya as unique as it funds and coordinates care and treatment interventions in the Southern Highlands zone. It receives financial support from the US government through the US Presidential Emergency Plan for Aids Relief (PEPFAR) fund for the ART-intervention programme - the Southern Highlands AIDS Care Program (SHACP) that manages several ten-thousands of people. Through Waltereed program, the U.S. assisted with the introduction of comprehensive HIV care and treatment services in the southern highlands and helped build a new centre for infectious diseases that opened in January 2008 at Mbeya Referral Hospital.

In the combined regions of Rukwa, Ruvuma and Mbeya, this program has provided over 26,000 citizens with ART as of March 2008 (USAID, 2008). The HIV/AIDS clinic/Centre of Excellence (The AIDS clinic) at the Mbeya Referral Hospital has been established through PEPFAR funds to deliver ART to patients in the Mbeya area and support the establishment of AIDS clinics in health facilities within the Southern Highlands zone of Tanzania.

CHAPTER THREE

3.0 METHODOLOGY

3.1 Study design

This study employed a Cross-Sectional design. Despite its inability to generate causal-effect relations, gathered information offers a detailed description of the magnitude of fertility desire and intention and family planning methods used by PLWHA. Gathered information also allows exploration of factors associated with their reproductive health needs.

3.2 Study Site

The study was conducted in Mbeya region, which is located in the South-Western highlands of Tanzania, close to the borders of Malawi and Zambia. Mbeya region is located along the trans-African Highway, which interlinks Kenya, Uganda and the northern parts of Tanzania with Zambia, Malawi, Zimbabwe and South Africa. The region has a total population of about 2.3 Million people with 8 administrative districts. The health facilities in Mbeya region consist of 10 hospitals (1 referral hospital, 5 district hospitals and 4 mission hospitals), 19 health centres and 209 dispensaries. This study was conducted at selected Care and Treatment Centers (CTC) obtained using multistage sampling techniques. Accordingly, Mbeya region can be characterized into two main geographical mapping: rural and urban areas. The SHACP program in Mbeya region is a well established and functioning HIV/AIDS care and treatment intervention program managing several thousands of people. This provides a unique opportunity to integrate research questions into a larger framework and possible implementation of the findings into practice.

3.3 Study population

This included all PLWHA who were recruited and attending CTC in the selected districts of Mbeya region.

3.3.1 Inclusion Criteria

- Adults, aged 18-49 years for females and 18-54 years for males (adopted from Tamene W and Fantahun M, 2006)
- HIV infected and receiving HIV/AIDS Care and Treatment services in Mbeya region at selected sites
- Willingness to participate in the study and able to give informed consent
- Have attended at least one visit at the CTC

3.3.2 Exclusion Criteria

- Unwillingness to participate in study
- Aged below 18 years or above 49 years for females and 54 years for males
- Health/mental condition rendering it impossible to obtain informed consent or perform interview.
- Too sick to be interviewed or give consent.

3.4 Sample size

The sample size in this study was determined from the single proportion formula for cross sectional, prevalence studies.

$$n = \frac{4p(100 - p)}{\varepsilon^2}$$

Where

n = sample size

p = Order of magnitude of proportion, 70% in this study corresponding to proportion of PLHIV who desire to have children (Mpangile G et al, 2006)

ε = margin of error allowable on population proportion, set at 5%

Substituting, this gave $n = \frac{4 \times 70(100 - 70)}{5^2} = 280 \times 30/25 = 336$

Adding 10% of calculated value to account for possible non response, the minimum required sample size was estimated to be 372 participants from the two selected CT clinics. An equal number of 186 participants came from CTCs of Rujewa District hospital and Mbeya Referral Hospital.

3.5 Sampling Procedure

A three level multistage sampling procedure was employed as follows:

Stage I

This stage involved the selection of study districts. All rural and urban districts were listed separately and simple random sampling was used to select one urban and one rural district. After this procedure (stratified sampling), Mbeya urban and Mbarali districts were selected.

Stage II

Listings of all CT clinics in the two selected districts were obtained from the district ART coordinators. One CT center from each district was selected using simple random sampling. After this procedure, Mbeya Referral Hospital CTC and Rujewa district hospital CTC were selected in Mbeya Urban and Mbarali districts, respectively.

Stage III

This stage involved obtaining study participants from each of the selected CTC identified in stage II. With the help of the CTC staff, the list of all PLWHA registered at each CTC was obtained and the schedules of their attendance were examined. Given the number of clients scheduled per day per week and time allocated for data collection, study participants were recruited by convenience sampling.

3.6 Data collection techniques and tools

A pre-tested structured questionnaire was used to obtain data. The questionnaire comprised of closed- and open-ended questions with items designed to cover the objectives of the study. The questionnaire was developed based on study objectives, literature review and the problem analysis matrix. Data collection covered information on socio-demographic characteristics, HIV/AIDS transmission knowledge in the context of PLWHA, HIV/AIDS history and general health, reproductive history, fertility desires and intentions and family planning practices. These items provided data on outcome and explanatory variables of this study. Using this standard questionnaire which was pre-tested, face-to-face interviews were performed to collect data.

3.7 Research Variables

Outcome Variables

Outcome Variables included Fertility desires, Fertility intention and Use of family planning and were estimated as follows.

Fertility desires in the context of this study, fertility desire referred to the aspiration to want to bear a child or children among study participants. Fertility desire was determined in individuals who already have children and in those who do not have children. Participants who were pregnant or whose partners were pregnant were asked if they would like to have extra children after delivery to determine their fertility desires.

Fertility intention in this study was determined by examining the ideal number of children PLWHA would want to have in their entire lives. The question for fertility intention was phrased differently in individuals who had children from those who did not have children. Fertility intention was determined in both individuals expressing desire for extra children and those who did not express desire at the time of data collection.

Use of family planning was determined by asking clients if they had ever used, currently using or would use family planning in the future to determine past use, current use and future use of family planning.

Explanatory variables

- *Sociocultural factors*
  - Religious values
  - Partner fertility desire
  - Social value on child bearing
- *Biomedical factors*
  - Use and duration of ART

- CD4 count

- *Individual factors*
  - Demographic characteristics (age, sex, education, marital status, residence etc)
  - Desire for parenthood
  - number of living children
  - Perceived risk of vertical transmission
  - Perceived risk of heterosexual transmission
  - Perceived personal health status

3.8 Plan for data collection

3.8.1 Training and Recruitment of Research Assistants

Three Research Assistants (RA) were recruited to assist the Principal Investigator (PI) in data collection. The RAs had a diploma in Nursing with experience in VCT counselling and/or HIV/AIDS Care and treatment. Two of RAs were recruited from each of the study CTCs and one other RA from Mbeya zonal training center. Previous studies on fertility intentions have shown success in recruitment when using counsellors as RAs as this tends to maximize confidentiality and interviewer-interviewee interaction (Chanza H, 2006). One day training was conducted on objectives of the study, overview of data collection process, selection criteria, obtaining consent, interview skills, data collection instrument, how responses are recorded and assuring confidentiality.

3.8.2 Pretest of instruments

Pretest was conducted prior to the real study to test for content and clarity of questionnaire items. This was done by interviewing 20 PLWHA from CTC centers similar to those where the study was done.

Data Collection tasks and logistics

The study was conducted during routine CT visits where participants received routine services at the CTC followed by invitation to participate in the study. The study was introduced at every clinic day every morning prior to commencement of routine clinic activities. Eligible participants went through a consenting process in secured rooms with RA or PI and the consent to participate was finalized by signing the ICF. Interviews were performed at each study site after clients had gone through all clinic operations or before. Each interview lasted for approximately 30-45 minutes. Coding for the open ended questions and data entry was done by the PI.

3.8.3 Data handling and quality control

Supervision of questionnaire filling by the PI was the main aspect of data quality control. PI's availability for clarifications was another measure of quality control. The risk of RAs recording wrong responses on account of having misunderstood questions was minimized. The PI rotated at the two sites after every two days to oversee data collection process and check all previously filled questionnaires for consistence and completeness.

3.9 Data processing and analysis

Data was entered into SPSS version 15.0 statistical software. Frequencies were generated for categorical variables and proportion of fertility desire and FP use obtained. Differences between proportions were examined using Chi-square test for differences in proportions. For comparison purpose, the observed fertility desire prevalence of about 65% (NBS, 2005) was taken as the standard parameter value for the general population and was compared against the prevalence of fertility desire in PLWHA found in this study. Likewise, the observed CPR of 20% is taken as the standard parameter value for the general population and compared against the CPR obtained in this study. Continuous variables were summarized using means and SD and differences between means examined using t-test. To control for potential confounders, multivariable logistic regression models were built where crude odds ratios (COR) and adjusted odds ratios (AOR) were calculated and are presented. All the analyses presented are two-tailed and significance level was set at 0.05.

3.10 Ethical consideration

Ethical clearance for the proposed study was sought from MUHAS ethical review board. Research permit was obtained from regional and district authorities and from directors or heads of health facilities of selected CT centers. Participation in the study was on voluntary basis after participants had received the description of the study and its objectives. Individual informed consent was sought from participants and privacy and confidentiality was ensured during and after data collection.

CHAPTER FOUR

Results

4.1 Sociodemographic profile of respondents

A total of 372 HIV infected individuals consented and participated in this study. Participants came from two selected CT clinics in Mbeya region which were Mbeya Referral hospital at the Waltereed project and Rujewa District Hospital. These were characterized as urban and rural, respectively. The mean age of the participants was 34.4 (Standard deviation (SD) =7.7) and the age ranged from 18 to 54 years. Men were significantly older than women (37.1(SD=8.1) versus 32.9 (SD=7.1), $p<0.001$). Sociodemographic characteristics of the study participants are depicted in Table 1. The highest proportion of respondents was females (64.8%). Majority of the participants reported to have been married (47.0%), had primary education (67.5%), were peasants (42.2%) and Christians (71.2%).

4.2 HIV status disclosure to partner

Results showed that there were 101(75.4%) and 33(24.6%) of participants were concordant and discorcondant couples, respectively. Of these, about 78 (77.2%) and 26% (78.8) of concordant and disconcordant couples reported condom use, respectively. Again, 87% and 73% of concordant and discordant couples, respectively, are aware of re-infection. Majority of participants (79.5%) who were currently in a relation had disclosed test results to partners where concordant couples had disclosed at a higher proportion than discordant couples (Table2).

Table 1: Distribution of the socio-demographic Characteristics of the study participants in Mbeya region

Characteristic	Frequency (n)	Percent (%)
Age		
15-24	38	10.2
25-29	67	18.0
30-34	79	21.2
35-39	86	23.1
40-44	61	16.4
44-49	33	8.9
50-54	8	2.2
Gender		
Male	131	35.2
Female	241	64.8
Marital Status		
Single	48	12.9
Married	175	47.0
Cohabiting	15	4.0
Divorced/Separated	50	13.4
Widowed	84	22.6
Level of Education		
No formal education	32	8.6
Primary	251	67.5
Secondary	55	14.8
College	34	9.1
Occupation		
Peasant	157	42.2
Employed	51	13.7
Self employed	137	36.8
Dependant	27	7.3
Residence		
Urban	173	46.5
Rural	199	53.5
Religion		
Christian	265	71.2
Muslim	79	21.2
Others	28	7.5

Table 2: Respondents' disclosure by partner serostatus

		Partner's serostatus		
		Infected	Uninfected	Total
Disclosure to partner	Yes	79 (81.4)	22(73.3)	101(79.5)
	No	18(18.6)	8(26.7)	26(18.5)
	Total	97(100.0)	30(100.0)	127(100)

4.3 Prevalence of fertility desires and intentions of PLWHA

In this study population a total of 135 (43.1%) respondents reported to desire having children in the future (44.2% for males and 42.5% for females, p=0.764) (Table 3 & 4). The mean number of children desired (Fertility intention) was 3.1 with majority of participants (54.4%) intending to have 0-3 children in their life time.

Table 3: Prevalence of fertility desire and intentions among PLWHA in Mbeya region

Fertility desire		**Frequency**	**Percent**
Yes		135	43.1
No		178	56.9
All		313*	100.0
Fertility intention			
No. of children intended in life time	0-3	172	54.4
	4-7	126	39.9
	8-10	18	5.7
	All	316*	100.0

*Totals are different due to missing data

4.4 Factors associated with fertility desires among PLWHA

4.4.1 Selected socio-demographic characteristics

Respondents in the age group 15-24 had higher 14(53.8%) desire for children than in other age groups and this difference was significant (p=0.036). Likewise, respondents who reported to have never been married expressed a significantly higher desire for children (57.5%) than in the other categories (p=0.001). HIV infected individuals who lived in rural areas appeared to have more desire for children compared to their urban counterparts, however this difference was not statistically significant (p=0.341) (Table 4a).

Regression analysis results

On further analysis with logistic regression, respondents who reported to have never been married, married or divorced/separated were 4.12 times (COR, 4.12, 95%CI: 1.42-6.99), 2.87 times (COR, 2.87, 95%CI:1.21-4.18) and 2.32 times (AOR, 2.32, 95%CI: 1.21-4.90) 2.32 times more likely to desire children compared to those who were widowed, respectively which correspondingly changed to 3.46 times (AOR, 3.46, 95%CI: 1.51-7.97), 2.28 times (AOR, 2.28, 95%CI: 1.23-4.23) and 2.25 times (COR, 2.25, 95%CI: (1.01-4.99) after controlling for other factors in the model (Table 5).

4.4.2 Clinical indicators

The results of this study showed that a large proportion of respondents who reported their health as good (56.1 %) desired for more children in the future while those reporting poor health, only 23.1% expressed desire for more children (p=0.001).

Regression analysis results

When logistic regression models were built, participants reporting fair to excellent health status were 2 times more likely to desire children as compared to those reporting poor health status. However, these findings were not statistically significant at 5% level (Table 5).

4.4.3 Reproductive History

Respondents who have their own children have a significantly higher desire for children (65.6%) than those who do not ($p<0.001$) but was not found to be an independent predictor after performing logistic regression analysis (Table 4b & 5). Similarly, the results indicated a significantly decreasing desire for children as the number of children possessed increased (p value for trend <0.001). Respondents reporting partner desire for children had a higher fertility desire level (68.7%) than those whose partners did not want children ($p<0.001$) (Table 4b).

Regression analysis results

Using logistic regression analysis, individuals with 3-5 children were 52% less likely to desire children as compared to those with 0-2 children (COR, 0 .4, 95CI: 0.32-0.69) and rose to 56% less likely after adjusting for other factors (AOR, 0.44 ,95%CI: 0.25-0.76, p=0.004). Respondents who had 6-8 children were 68% far less likely to desire children (COR, 0.32, 95%CI: 0.08-0.91) and were even far less likely by 71% after controlling for other factors in the model (AOR, 0.29, 95%CI: 0.09-0.93, p=0.038) compared to those with 0-2 children (Table 5).

Table 4a: Sociodemographic factors associated with fertility desires among PLWHA, Mbeya region

Background Characteristic	Category	n	Fertility desire status		p-Value
			Yes n (%)	No n (%)	
Age	15-24	26	14(53.8)	12(46.2)	
	25-29	56	26(46.4)	30(53.6)	
	30-34	66	36(54.5)	30(45.5)	
	35-39	77	31(40.3)	46(59.7)	
	40-44	52	17(32.7)	35(67.3)	
	44-49	30	8(26.7)	22(73.3)	
	50-54	6	3(50.0)	3(50.0)	.036*
Sex	Male	113	50(44.2)	63(55.8)	
	Female	200	85(42.5)	115(57.5)	.764
Marital Status	Never married	40	23(57.5)	17(42.5)	
	Married	140	68(48.6)	72(51.4)	
	Cohabiting	12	6(50.0)	6(50.0)	
	Divorced/separated	43	20(46.5)	23(53.5)	
	Widowed	78	18(23.1)	60(76.9)	.001*
Residence	Rural	148	68(45.9)	80(54.1)	
	Urban	165	67(40.6)	98(59.4)	.341
Level of Educ	No formal educ	28	93(2.1)	19(67.9)	
	Primary	211	101(47.9)	110(52.1)	
	Secondary	44	18(40.9)	26(59.1)	
	College	30	7(23.3)	23(76.7)	
Religion	Christian	233	97(41.6)	136(58.4)	
	Muslim	62	28(45.2)	34(54.8)	
	Others	18	10(55.6)	8(44.4)	.484
Occupation	Peasant	134	50(37.3)	84(62.7)	
	Employed	39	17(43.6)	22(56.4)	
	Self employed	115	59(51.3)	56(48.7)	
	Dependant	21	7(33.3)	14(66.7)	.121

* Indicates statistical significance at 5% level

Table 4b: Clinical and reproductive factors associated with fertility desires among PLWHA in Mbeya region

Background Characteristic	Category	N	Fertility desire status		p-Value
			Yes n (%)	No n (%)	
Clinical factors					
Perceived health status	Excellent	49	16(32.7)	33(67.3)	
	Good	132	74(56.1)	58(43.9)	
	Fair	103	39(37.9)	64(62.1)	
	Bad	26	6(23.1)	20(76.9)	.001*
Antiretroviral treatment	On treatment	99	40(40.4)	59(59.6)	
	Not on treatment	214	95(44.4)	119(55.6)	.508
Duration on ART	0-2 yrs	163	73(44.8)	90(55.2)	
	3-5 yrs	48	22(45.8)	26(54.2)	
	6-9 yrs	4	2(50.0)	2(50.0)	.973
CD4 Levels	200 or less	99	37(37.4)	62(62.6)	
	More than 200	179	86(48.0)	93(52.0)	.086
Reproductive history					
Has own living children	Yes	249	93(37.3)	156(62.7)	
	No	64	42(65.6)	22(34.4)	.000*
Has children with current partner	Yes	35	19(54.3)	16(45.7)	
	No	89	42(47.2)	47(52.8)	.477
No. of living children	0-2	206	109(52.9)	97(47.1)	
	3-5	86	22(25.6)	64(74.4)	
	6-8	20	4(20.0)	16(80.0)	.000**
Partner desires for children	Yes	67	46(68.7)	21(31.3)	
	No	64	12(18.8)	52(81.3)	.000*

* Indicates statistical significance at 5% level **P value from χ^2 test for trends in proportion

Table 5: Logistic regression analysis of selected predictor variables associated with fertility desire among PLWHA, Mbeya region

Background characteristic	Category	Crude OR (95%CI)	Adjusted OR (95%CI) †	P value
Age				
	15-24	1	1	
	25-29	1.11(0.43-2.32)	1.08(0.47-2.47)	0.842
	30-34	1.78(0.69-3.13)	1.43(0.64-3.17)	0.325
	35-39	1.30(0.43-2.34)	0.96(0.44-2.13)	0.932
	40-44	0.93(0.22-1.54)	0.66(0.28-1.57)	0.352
	45-49	0.87(0.18-1.36)	0.54(0.19-1.54)	0.255
	50-54	1.51(0.17-4.62)	1.02(0.21-4.97)	0.972
Marital Status				
	Widowed	1	1	
	Single	4.12(1.42-6.99)	3.46(1.51-7.97)	0.003*
	Married	2.87(1.21-4.18)	2.28(1.23-4.23)	0.009*
	Cohabiting	2.34(0.95-0.87)	2.26(0.68-7.46)	0.180
	Divorced/Separated	2.32(1.21-4.90)	2.25(1.01-4.99)	0.047*
Perceived Health status				
	Bad	1	1	
	Excellent	3.61(0.30-6.45)	2.93(0.31-27.83)	0.349
	Good	3.45(0.33-5.98)	2.84(0.30-26.84)	0.362
	Fair	3.10(0.26-8.18)	2.57(0.23-28.24)	0.440
Has own living children				
	Yes	1	1	
	No	1.20(0.79-1.87)	1.19(0.74-1.92)	0.455
No. of living children				
	0-2	1	1	
	3-5	0 .48(0.32-0.69)	0.44(0.25-0.76)	0.004*
	6-8	0.32(0.08-0.91)	0.29(0.09-0.93)	0.038*

†Adjusted OR - Odd ratios adjusted for other varia bles in the table, * Indicates statistical significance at 5% level

4.5 Factors associated with fertility intentions among PLWHA

Fertility intention was defined as the number of children study participants desiring to bear children would actually prefer to have. The overall mean fertility intention was 3.6. Factors associated with fertility intention are presented in Table 6a and 6b.

4.5.1 Selected socio-demographic characteristics

Socio demographic factors associated with fertility intention in this study were age, marital status and education level. Results showed that respondents in the lower age groups wanted to have fewer (0-3) children than in higher age groups (p=0.006) (Table 6a). Majority of the participants with secondary education or higher expressed intention to have fewer children as compared to those with primary education or no formal education (p=0.004).

Regression analysis results

With logistic regression analysis, fertility intention was categorized as resopondents wanting three children or less and those wanting more than three children. Three children was chosen from the median which is approximately three. Results show that as the age of the respondent decreases, the intention to have more than 3 children also decreases (AOR: 0.16, 95%CI: 0.03-0.95) after adjusting for other factors in the table (Table 7). Furthermore, respondents who were divorced or separated had about 3 times higher intention of having more than 3 children as compared to those who were widowed (COR, 2.98, 95%CI: 1.11-8.91). After adjusting for other factors, however, this decreased to 2.8 times (AOR, 2.8, 95%CI: 1.05-7.51, p=0.039). After controlling for potential confounders, intention to have more than 3 children decreased as education level increased. As compared to those without any formal education, individuals with primary education had 58% less intention to have more than 3 children while those with

secondary education or higher had 75% less intention to have more than 3 children (AOR, 0.25, 95%CI: 0.13-0.48 p<0.001) (Table 6a).

4.5.2 Clinical factors

Fertility intention was not associated with reported perceived health status, ARV treatment status nor CD4 levels in this study population (Table 6b).

4.5.3 Reproductive history

Majority (78.9%) of the respondents reporting having own children intended to have fewer (0-3) children in their life time compared to those without their own children (p<0.001). Likewise, 146(65.8%) respondents who had 0-2 children reported a significantly higher intention to have fewer children than those with more than 2 children (p<0.001). However, respondents who reported that their partners wanted children had higher fertility intentions of >3 children thasn those whose partners did not want to have children (p=0.029) (Table 6b).

Regression analysis results

Respondents who have own children are 49% less likely to want to have more than 3 children compared to those who do not have own children (COR, 0.61, 95%CI: 0.31-0.88). Controlling for other factors, individuals with children are 56% further less likely to want to have more than 3 children (AOR, 0.54, 95%CI: 0.27-0.84, p=0.048). Reported intention to have more than 3 children also decreased for those having many children (Table 7).

Table 6a: Sociodemographic factors associated with fertility intentions among PLWHA in Mbeya region

Variable	Category	N	No. of children intended in life			p-value†
			0-3	4-7	8-10	
Age	15-24	33	24(72.7)	8(24.3)	1(3.0)	
	25-29	53	32(60.4)	19(35.8)	2(3.8)	
	30-34	72	45(62.5)	25(34.7)	2(2.8)	
	35-39	74	41(55.4)	30(40.5)	3(4.1)	
	40-44	52	23(44.2)	25(48.1)	4(7.7)	
	44-49	26	5(19.2)	16(61.5)	5(19.2)	
	50-54	6	2(33.3)	3(50.0)	1(16.7)	.006*
Sex	Male	116	64(55.2)	49(42.2)	3(2.6)	
	Female	200	108(54.0)	86(43.0)	6(3.0	.964
Marital Status	Never married	37	26(70.3)	10(27.0)	1(2.7)	
	Married	150	71(47.30	70(46.7)	9(5)	
	Cohabiting	13	10(76.9)	3(23.1)	0(.0)	
	Divorced/separated	44	33(75.0)	10(22.7)	1(2.3)	
	Widowed	72	32(44.4)	33(45.8)	7(9.7)	.006*
Residence	Rural	141	73(51.8)	60(42.6)	8(5.7)	
	Urban	175	99(56.6)	66(37.7)	10(5.7)	.674
Education Level	No formal education	27	14(51.9)	9(33.3)	4(14.8)	
	Primary	214	104(48.6)	100(46.7)	10(4.7)	
	Secondary	45	33(73.3)	9(20.0)	3(6.7)	
	College	30	21(70.0)	8(26.7)	1(3.3)	.004*
Religion	Christian	224	119(53.1)	91(40.6)	14(6.3)	
	Muslim	66	36(54.5)	26(39.4)	4(6.1)	
	Others	26	17(65.4)	9(34.6)	0(0)	.649

†P-value from χ^2 test for differences in proportions, * Indicates statistical significance at 5% level

Table 6b: Clinical and reproductive factors associated with fertility intentions among PLWHA in Mbeya region

Variable	Category	N	No. of children intended in life			p- value†
			0-3	4-7	8-10	
Clinical factors						
Perceived health status	Excellent	49	31(63.3)	15(30.6)	3(6.1)	
	Good	131	67(51.1)	54(41.2)	10(7.6)	
	Fair	99	53(53.5)	42(42.4)	4(4.0)	
	Bad	34	20(58.8)	13(38.2)	1(2.9)	.652
Antiretroviral treatment	On treatment	114	59(51.8)	50(43.9)	5(4.4)	
	Not on treatment	202	113(55.9)	76(37.6)	13(6.4)	.476
CD4 Levels	Less than 200	98	58(59.2)	37(37.8)	3(3.1)	
	More than 200	177	88(49.7)	76(42.9)	13(7.3)	.177
Reproductive history						
Has own living children	Yes	76	60(78.9)	15(19.7)	1(1.3)	
	No	240	112(46.7)	111(46.3)	17(7.1)	.000*
Has children with current partner	Yes	33	15(45.5)	16(48.5)	2(6.1)	
	No	90	39(43.3)	43(47.8)	8(8.9)	.876
No. of living children	0-2	222	146(65.8)	72(32.4)	4(1.8)	
	3-5	75	26(34.7)	44(58.7)	5(6.7)	
	6-8	19	0(.0)	10(52.6)	9(47.4)	.000*
Partner wants children	Yes	58	22(37.9)	35(60.3)	1(1.7)	
	No	61	31(50.8)	24(39.3)	6(9.8)	0.029*

†P-value from χ^2 test for differences in proportions, * Indicates statistical significance at 5% level

Table 7: Logistic regression analysis of selected predictor variables associated with fertility intentions among PLWHA in Mbeya region

Variabe	Category	Crude OR (95%CI)	Adjusted OR (95%CI) †	p- value
Age				
	15-24	1	1	
	25-29	0.87(0.91-3.23)	0.62(0.18-2.18	0.461
	30-34	1.02(0.31-3.89)	0.92(0.28-2.92)	0.883
	35-39	0.86(0.36-3.01)	0.76(0.24-2.39)	0.637
	40-44	0.41(0.21-2.10)	0.38(0.12-1.27)	0.116
	45-49	0.18(0.03-0.95)	0.16(0.03-0.95)	0.011*
	50-54	0.45(0.42-4.23)	0.44(0.56-3.50)	0.442
Marital Status				
	Widowed	1	1	
	Single	2.34(0.62-6.21)	1.97(0.62-6.18)	0.247
	Married	0.88(0.57-2.15)	0.86(0.46-1.60)	0.644
	Cohabiting	1.81(0.36-8.23)	1.70(0.36-7.94)	0.503
	Divorced/Separated	2.98(1.11-8.91)	2.81(1.05-7.51)	0.039*
Education Level				
	No education	1	1	
	Primary	0.56(0.19-2.61)	0.42(0.14-1.26)	0.122
	Secondary or higher	0.27(0.12-0.49)	0.25(0.13-0.48)	0.000*
Has own living children				
	No	1	1	
	Yes	0.61(0.31-0.88)	0.54(0.27-0.84)	0.048*
No. of living children				
	0-2	1	1	
	3-5	0.42(0.21-0.86)	0.39 (0.22-0.73)	0.003*
	6-8	0.35(0.22-0.84)	0.34(0.21-0.89)	0.001*

† Adjusted OR - Odd ratios adjusted for other variables in the table * Indicates statistical significance at 5% level

4.6 Prevalence of Family Planning methods used by PLWHA

In this study, modern and traditional methods were investigated. Lactation amenorrhea and foam/jelly were not reported and are not included in the analysis. Results of this study revealed that 43.8 %(158) of the respondents had ever used family planning methods and that 37.1% (134) reported to have used before their HIV diagnosis. Of those reporting use, 34.6 % (125) were using family planning methods during the period of data collection (current users). Out of those who reported currently not using family planning methods, 23.3% (55) of them reported that they will use in the future (Table 8). Table 9 depicts the distribution of family planning methods used by the study population. Findings indicate a tendency to switch from hormonal methods before HIV diagnosis to barrier methods after the diagnosis. Oral contraceptives were most prevalent (32.0%) before the HIV diagnosis while condoms were the most currently used (after HIV diagnosis) and preferred method for future use (77.1% and 66.7%, respectively). Overall, about 92.6% (113) of current FP users were on modern contraception (Table 9). When responding to whether or not they changed their FP method, about 17 % (22) reported to have changed or stopped using contraception.

Table 8: Utilization status of Family Planning services among PLWHA in Mbeya Region

History of Use of FP	Status	Frequency	Percent
Ever used	Yes	158	43.8
	No	203	56.2
Used before HIV diagnosis	Yes	134	37.1
	No	227	62.9
Using now	Yes	125	33.6
	No	247	65.4
Will use in future	Yes	55	23.3
	No	181	76.7

About 79.7% (55) of concordant couples reported use of family planning methods (Figure 2). On further analysis, 46.4% and 33.3% of concordant and discorcondant couples, respectively, reported use of condoms.

Figure 2: Respondents' Use of FP by partner HIV serostatus

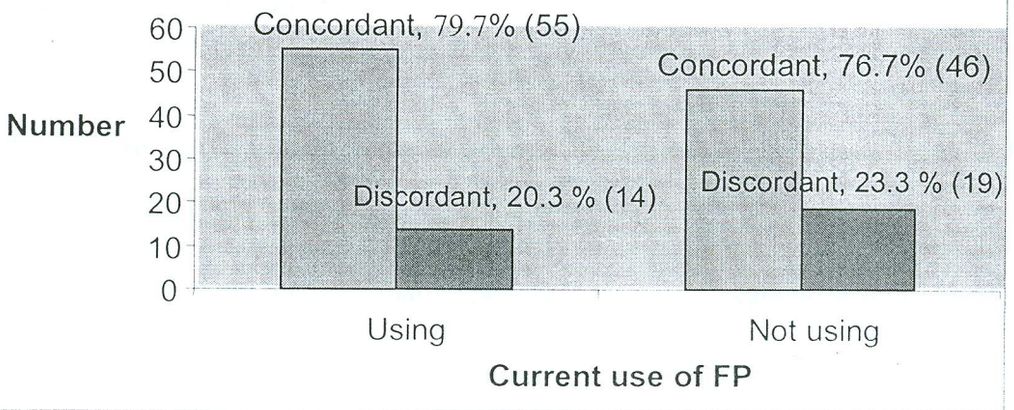


Table 9: Distribution of FP methods used by PLWHA, Mbeya region

Method	Before testing		Currently		Future preferences	
	n	%	n	%	n	%
Condoms	47	27.8	94	77.1	40	66.7
Pills	54	32.0	6	4.9	6	10
Implants	5	3.0	6	4.9	3	5
IUDs	3	1.8	2	1.7	1	1.7
Injectables	54	32.0	2	1.7	7	11.7
Sterilization	1	0.6	3	2.4	2	3.3
Periodic abstinence	1	0.6	8	6.4	1	1.6
Withdrawal	2	1.1	0	0	0	0
Calendar	2	1.1	1	0.9	0	0
All	169	100	122	100	60	100

4.7 Reported pregnancies

About 13.9% (42) of respondents reported to have ever been pregnant since HIV diagnosis. At the time of data collection, there were 29(7.8%) reported current pregnancies. Of these, 9(65.5%) pregnancies were intentional, 9(31.0%) were unwanted while 1(3.4%) was mistimed.

4.8 Factors affecting choice and use of different FP methods among PLWHA

4.8.1 Selected socio-demographic characteristics

Findings of this study revealed that respondents below 35 years were more likely to use family planning methods than older age group (>35 years). Participants who were married (46.3%) and those who are cohabiting (40.0%) reported more use of contraceptives as compared to those who were widowed, divorced/separated or those who never married ($p<0.001$) (Table 10a). About 39.2% (18) of respondents living in urban areas reported using FP as compared to only 27.2% (47) of those living in rural areas ($p=0.039$).

Regression analysis results

Results show that, respondents who were married were about 1.3 times more likely to use family planning methods compared to widowed individuals (COR, 2.31, 95%CI: 1.11-4.32). After adjusting for other factors, this value decreased to 1.0 times (AOR=2.01, 95%CI: 1.01-4.00, p=0.049) (Table 11). Likewise, individuals residing in urban areas were 0.83 times more likely to use family planning methods than their counterparts in rural areas (COR, 1.83, 95%CI: 1.12-2.65). After adjusting for other factors, this value decreased to 1.64 (AOR, 1.64, 95%CI: 1.06-2.51, p=0.025).

4.8.2 Clinical factors

About 34.7% of respondents who perceive their health status as excellent used family planning methods, this is the highest proportion of use than in other groups but the difference was not statistically significant (p=0.929). A total of 93 (39.6%) respondents on antiretroviral treatment reported contraceptive use compared to 32(23.4%) for those not on treatment (p=0.001). CD4 levels were not related to the use of family planning methods (Table 10b).

Regression analysis results

After logistic regression analysis, respondents on antiretroviral treatment were 1.74 times more likely to use family planning compared to those not on treatment (COR, 2.74, 95%CI: 1.56-4.87). After adjusting for other factors, this value decreased to 1.37 (AOR, 2.37 95%CI: 1.48-3.79, p<0.001) (Table 9).

4.8.3 Reproductive History

Respondents who have children with current partner reported a higher proportion (74.4%) of use of family planning methods than those without children with partner (p<0.001) (Table 10b).

Regression analysis results

Logistic regression analysis revealed that respondents who have their own children were about 2.5 times more likely to use family planning methods than those who do not have

their own children (COR, 3.45, 95%CI: 1.15-6.71). After controlling for other factors, this value decreased to 2.1 (AOR, 3.12, 95%CI: 1.81-5.37, p<0.001). Again, having children with the current partner was a significant predictor for family planning use in this population (AOR, 2.61, 95%CI: 1.19-5.69, p=0.016) (Table 11).

4.9 Reasons for non use of family planning methods

Regarding the non use of contraceptives, the main reasons cited for non use of family planning methods in this study population were the belief that they can not prevent HIV infection (44%), fear of side effects and infertility (40%) and partner opposition (30%) (Table 12).

4.10 Reproductive health counseling for PLWHA

In this study, 65.0% of participants reported to have been counseled on reproduction and sexuality rights and majority (83.5%) of them cited health workers as the major source of information, mainly VCT and ART counselors. However, the kind of information was markedly varied. Majority (27.4%) of respondents reported that they were advised not to have children because children would also be infected, while the rest reported having been advised to refrain from sex, condom use and consultation before decision to conceive. On the other hand, majority (77.4%) of respondents reported that they were not counseled on family planning.

Table 10a: Sociodemographic factors associated with use of family planning methods among PLWHA, Mbeya region

Background Characteristic	Category	N	Currently using FP		p-Value
			Yes n (%)	No n (%)	
Age	15-24	38	13(34.2)	25 (65.8)	
	25-29	67	23(34.3)	44(65.7)	
	30-34	79	29(36.7)	50(63.3)	
	35-39	86	28(32.6)	58(67.4)	
	40-44	61	22(36.1)	39(63.9)	
	44-49	33	10(30.3)	23(69.7)	
	50-54	8	0(.0)	8(100.0)	.626
Sex	Male	131	41(31.3)	90(68.7)	
	Female	241	84(34.9)	157(65.1)	.488
Marital Status	Never married	48	14(29.2)	34(70.8)	
	Married	175	81(46.3)	94(53.7)	
	Cohabiting	15	6(40.0)	9(60.0)	
	Divorced/separate	50	9(18.0)	41(82.0)	
	Widowed	84	15(17.9)	69(82.1)	.000*
Residence	Rural	173	47(27.2)	126(72.8)	
	Urban	199	78(39.2)	121(60.8)	.039*
Educ Level	No formal educ	32	6(18.8)	26(81.3)	
	Primary	251	90(35.9)	161(64.1)	
	Secondary	55	19(34.5)	36(65.5)	
	College	34	10(29.4)	24(70.6)	.259
Religion	Christian	114	91(34.3)	174(65.7)	
	Muslim	31	25(31.6)	54(68.4)	
	Others	11	9(32.1)	19(67.9)	.893

*p- value from χ^2 test for differences in proportions * Indicates statistical significance at 5% level

Table 10b: Clinical and reproductive factors associated with use of family planning methods among PLWHA, Mbeya region

Background Characteristic	Category	N	Currently using FP		p-Value
			Yes n (%)	No n (%)	
Clinical factors					
Perceived health status	Excellent	54	18(33.3)	36(66.7)	
	Good	150	52(34.7)	98(65.3)	
	Fair	122	42(34.4)	80(65.6)	
	Bad	41	12(29.3)	29(70.7)	.929
Antiretroviral treatment	On treatment	235	93(39.6)	142(60.4)	
	Not on treatment	137	32(23.4)	105(76.6)	.001*
CD4 Levels	Less than 200	51	9(17.6)	42(82.4)	
	More than 200	92	18(19.6)	74(80.4)	.728
Reproductive history					
Has own living children	Yes	275	103(37.5)	172(62.5)	
	No	97	22(22.7)	75(77.3)	.008*
Has children with current partner	Yes	39	29(74.4)	10(25.6)	
	No	99	41(41.4)	58(58.6)	.000*
No. of living children	0-2	259	82(31.7)	177(68.3)	
	3-5	91	33(36.3)	58(63.7)	
	6-8	22	10(45.5)	12(54.5)	.348
Partner desires children	Yes	81	41(50.6)	40(49.4)	
	No	71	39(54.9)	32(45.1)	.595
All		372	125(33.6)	247(66.4)	

*p- value from χ^2 test for differences in proportions * Indicates statistical significance at 5% level

Table 11: Logistic regression analysis of selected predictor variables associated with the use of family planning methods among PLWHA in Mbeya region

Characteristic	Category	Crude OR (95%CI)	Adjusted OR (95%CI) †	p value
Marital Status				
	Never married	1	1	
	Married	2.31(1.11-4.32)	2.01(1.01-4.00)	0.049*
	Cohabiting	1.12(0.33-3.89)	1.09(0.32-3.66)	0.893
	Divorced/Separated	0.83(0.43-2.14)	0.72(0.31-1.68)	0.440
	Widowed	1.23(0.65-3.12)	1.12(0.51-2.49)	0.779
Residence				
	Rural	1	1	
	Urban	1.83(1.12-2.65)	1.64(1.06-2.51)	0.025*
Antiretroviral treatment				
	Not on treatment	1	1	
	On treatment	2.74(1.56-4.87)	2.37(1.48-3.79)	0.000*
Has own living children				
	No	1	1	
	Yes	4.32(2.12-6.89)	3.12(1.81-5.37)	0.000*
Has living children with current partner				
	No	1	1	
	Yes	3.45(1.15-6.71)	2.61(1.19-5.69)	0.016*

†Adjusted OR - Odd ratios adjusted for other variables in the table. * Indicates statistical significance at 5% level

Table 12: Reported reasons for non use of family planning methods among PLWHA in Mbeya region

Reason	n	Percent
Partner opposition	30	16.3
Availability is difficulty	8	4.3
Fear of interaction with ARVs	4	2.3
Can not prevent new HIV infections	44	23.9
Lack of education about FP methods	38	20.6
Fear of side effects and rumor that modern methods cause infertility	40	21.8
Not being in a relation	12	6.5
Feelings of advanced age and not being able to conceive again	8	4.3
Total	184	100.0

CHAPTER FIVE

5.0 DISCUSSION

Studies have reported that many HIV-infected women and men are of reproductive age and continue to desire and bear children despite their knowledge of HIV status. It has also been widely postulated that the advent of antiretroviral treatment has increased survival of PLWHA and improved quality of life and as such many more are now considering child bearing. From that standpoint, this study was undertaken to investigate the prevalence and determinants of reproductive health needs (fertility desire and intention, family planning choices and use) among people living with HIV/AIDS in Mbeya region of Tanzania.

5.1 Prevalence of fertility desires and intentions of PLWHA

Previous studies indicate that a relatively significant number of HIV-infected people desire to have children in the future, although at different proportions. The findings of this study revealed that about 43.1% of participants desired to bear children in the future. This fertility desire rate was lower compared to that reported by Mpangile G et al (2006) who gave an estimated value of 70%. The overall fertility desire rate and that of female obtained in this study is also lower than that of female in the general population in Tanzania which was 65.4% (NBS, 2005). However, the findings of this study are somewhat in line with those reported by Mpendu S (2008) in Tanzania (47.2%) and Tamene W and Fantahun M (2006) in Ethiopia (40%). Considering the Tanzanian studies, it appears there has been a gradual decline in fertility desire among HIV-infected individuals over the years. These gradual decline in fertility desires could partly be attributed to health messages from health workers and/or community members

that frequently discourage childbearing among PLWHA.(Sarna A, 2006; Oliveira LA and França JI, 2003). It can also be due to phenomenological grounds in which people have seen and lived the effects and suffering of orphans left behind by individuals who died of AIDS, which may in turn decrease fertility desires of PLWHA. Regarding fertility intentions, participants in this study wanted to have a mean of 3.6 children in their life time with majority of them wanting to have 0-3 children. This fertility intention rate is slightly lower than that of the general population which is 5.7 (NBS, 2005). Low fertility desire observed among PLWHA can probably explain the correspondingly lower intention. Low intention can also be attributed to observations that there has been a gradual decline in family size preference over time in the general population, where the mean ideal number of children has declined by more than one child since the 1991-92 TDHS (NBS 2005). However, the same DHS data further show that only 8 percent of respondents think two or fewer children is ideal. Low and declining fertility intentions reported in the DHS may be contributed for by populations which differentially want fewer children, such as PLWHA.

5.2 Factors associated with fertility desire among PLWHA

Selected sociodemographic characteristics

The findings of this study indicate that individuals, who never married, married and divorced or separated desired to have children than those who were widowed. Individuals who never married are most likely to be young and therefore have no or less children and are thus more likely to desire for more children. This finding conforms to findings by Oladapo OT et al (2005) who reported that individuals who were young had

an increased fertility desire. Higher fertility desires among married individuals can be explained by the fact that married individuals exert pressure from different community members, most importantly, the partner. Individuals whose partners wanted children reported higher fertility desires and this is in agreement with findings in other studies (Oladapo OT et al 2005). Fulfilling marriage prospects for couples may also explain this as bearing children tend to cement the relationship (Mpendu S 2008). On the other hand, divorced or separated individuals may have an increased fertility desire as a result of having no sexual partner at the material time. Earlier studies indicated that fertility and birth rates among women with HIV infection are lower than that of the general population and this has been shown to be due to pre-existing sub-fertility (Schmidt L 2005, Thackway SV et al, 1997; Gray RH et al, 1998 and Ross A et al, 1999). Thus women who are divorced or separated may have infertility problems even before HIV infection and may consequently have higher fertility desires so as to counteract social expectations.

Previous studies have indicated a higher fertility desire in HIV infected individuals who live in rural areas compared to their urban counterparts. Social pressures to have children are more pronounced in rural than in urban areas. In rural areas, cultural values are attached on fertility and a significant social status is assigned to people with children (Dyer SJ et al; 2002 and NBS 2005). Similar trend was observed in this study although significant level was not achieved after controlling for confounders. The implication of this observation coupled with reported lower condom use in rural areas could contribute

to the increasing rates of new HIV infections in rural areas (Mmbaga EJ et al 2008 and NACP 2008).

Clinical factors

Previous studies have shown that better self ratings of overall health status and physical functioning were associated with increased fertility desires (Oladapo OT et al 2005). In this study, participants reporting fair to excellent health status were more likely to desire children as compared to those reporting poor health status. Furthermore, concern that health status would deteriorate as a result of pregnancy was the most (37.5%) cited reason for perceiving becoming pregnant as a major problem indicating that perceived health status is a significant determinant of fertility desire among PLWHA. Regarding antiretroviral treatment, this study has showed that ART status did not have any influence on fertility desires. Only as less as 20% of respondents reported to desire to have children again after initiation of antiretroviral treatment stating that they were healthier than before ART. This finding contradicts the general outlook that ART increases childbearing desires among PLWHA which has also been reported by other workers elsewhere (Mpendu S, 2008, Oladapo OT et al 2005 and Homsy J et al 2009). This difference may probably be explained by the fact that these earlier studies involved PLWHA who were on ART alone and there was no comparison from those not on ART.

Reproductive History

It has been observed in other studies that having own children was an important predictor of fertility desires (Sunderam S et al, 2008, Mpendu S, 2008; Mpangile G et

al, 2006 and Oladapo OT et al 2005). This is true also in this study where a tendency to desire children for those participants who did not have their own children as compared to those with no children was observed.

Individuals with children ≥2 were significantly less likely to desire children as compared to those with 0-2 children in this study. This has also been shown elsewhere in which decreasing number of children was independently associated with fertility desire (Myer L et al 2007). Decreased desire for children as the number of children increases could be explained by the fact that 2 or more children could be the desired family size in this population.

Perceived risk of vertical and heterosexual transmission

In this study, Perceived risk of vertical and heterosexual transmission was reflected in responses given to 'reaction if one or partner becomes pregnant in few weeks time' and to the 'reasons for change of family planning methods'. A significant number of participants cited 'need to prevent new infections to child and partner' as a major reason for not wanting any more children and for switching methods. Likewise, respondents singled out their concern for the welfare of the child if infected or inability to provide parental care. This finding is in support of earlier studies (Craft SM et al 2007; Tamene W and Fantahun M, 2006; Kirshenbaum SB et al, 2004 and Kline A et al; 1995) showing that receipt of HIV diagnosis has a major implication in decision making regarding future reproductive health needs and this could explain the lower fertility desires and intentions observed in this study population.

5.3 Factors associated with fertility intentions among PLWHA

On average, participants in this study wanted to have 3.6 children in their life time with majority of them wanting to have 0-3 children. This fertility intention rate is slightly lower than that of the general population which is 5.7 (NBS, 2005). The 2004-05 DHS data further show that, three-fourths of all women surveyed consider four or more children to be ideal and that only 8 percent of women think two or fewer children is ideal (NBS 2005). This difference could be due to the possibility that PLWHA who already have children would not like to risk to give birth of an infected child or out of concern of the welfare of the child in case of orphanage. These findings fairly compare with those by Oladapo OT et al (2005) who showed that, respectively, 71.5% and 93.8% of men and women who desired children intended to have ≥ 2 children in the near future.

Selected sociodemographic characteristics

Fertility intention was found to be determined by level of education, age, having any children and number of living children. Results have shown that respondents in the lower age groups want to have fewer (0-3) children than in higher groups. Likewise, it has been shown from preceding sections that it is the young age groups that have higher fertility desire. As in the younger population, individuals with secondary education were found to want to have significantly fewer children than in other groups. These observations conform to survey results of DHS (NBS 2005). The demand for fewer children means demands for family planning services which were also higher in younger and educated populations. Family planning methods will either be required for delaying (spacing) or limiting child bearing as it appears that young and educated HIV infected individuals would like to stop child birth once they got a few children or none at all. In this study it was observed that age, education level, having own children and

number of living children were independent predictors of fertility intention in this population. Respondents who were divorced or separated were more likely to report intention of having more than 3 children as compared to those who were widowed. Divorced or separated individuals may not have children at all indicating that the desired family size may not have been achieved. In addition, they would have children already with past partners, so they may need extra children so as to strengthen relationships with new partners. It was also found that intention to have more than 3 children decreased as education level increased in this population. This could result from the fact that educated individuals have more exposure to family life and family planning education where the need to control family size is emphasized. This can as well be attributed to the fact that there has been a gradual decline in family size preference over time in the general population which affects both educated and uneducated individuals. The mean ideal number of children has declined by more than one child since the 1991-92 TDHS (NBS 2005).

Clinical factors

In this study, selected biomedical factors (perceived health status, use of ARVs and CD4 count) were independent predictors of fertility intentions. However, poorer recent CD4 counts and emotional wellbeing were shown to be related to intention to have ≥3 versus 1-2 children elsewhere (Oladapo et al 2005). The difference between these findings could be explained by methodological differences. The present study determined fertility intention in terms of ideal number of children in life time while the referent study did so by estimating the extra number of children participants desired to have in the future.

Reproductive History

Although majority 60(78.9%) of the respondents reporting not having own children had higher fertility intention, they actually intended to have fewer (0-3) children in their life time compared to those with own children. These findings contradict findings from other studies where having no children was reported to be an independent predictor for intention to have ≥3 against 1-2.

In this study, having one's own child/ren was an independent predictor for intention to have fewer children. Number of children intended by participants also decreased for those having many children. Thus, the overall intention was to have fewer children. The need for fewer children could be explained by the social construct of child bearing where individuals would like to prove themselves functional in the eyes of others. It may also indicate a state of frustration and dilemma between social demands of childbearing and the reality of possible vertical, heterosexual and/or re-infections in the midst of poor health.

5.4 Prevalence of Family Planning methods used by PLWHA

This study found that 33.6% of the respondents were on FP methods at the period of data collection. Prevalence of ever use of FP in this population was 43.8% indicating a discontinuation of 10.2%. This is less than that observed in the general population where more than one-third (38 percent) of family planning users in Tanzania discontinue using the method within 12 months of starting its use (NBS 2005).

The fact that modern methods were reported by most respondents may show that a good number of PLWHA currently using FP are protected from unintended pregnancies. This is because modern methods such as sterilization, pill, condoms, IUD, injectables and implants, are effective and reliable. While most modern methods (hormonal) offer continuous protection, others such as condoms and most traditional methods such as vaginal methods (foam/jelly), periodic abstinence, and withdrawal are coital-specific, requiring use during intercourse. Current use for coital-specific methods is a difficult concept since it may mean use at last intercourse, which could have been a long time before the interview or intention to use at next intercourse. Since condoms were currently the most prevalent FP method used by PLWHA, we may not expect 100% protection from unintended pregnancies. The 2003-04 DHS established that 20% in the general population were using FP methods. However, this study has revealed a slightly higher proportion of use of FP methods (33.6%) and this can be explained by the time lapse between the 2002-04 calendar period preceding DHS survey and the timing of the present study. Public health promotion initiatives targeting reproductive health services including family planning have been substantially scaled up ever since. Since the current most predominant FP method is condom, the observed 10.6% points increase in FP use can also be explained by the fact that condoms have a dual purpose in this study population. Moreover, the most important reason for the observed difference could be due to differences in the population i.e. PLWHA and the general population. PLWHA have been shown to need contraceptive more than the general population for both prevention of heterosexual HIV transmission and pregnancies.

5.5 Demand for family planning

In Mbeya region, about 45.1% of the total demand for FP is met while 10.8% is not met (NBS 2005). In this study, findings revealed that only 33.6% of total demand for FP is satisfied. In the general population, 56% of the total demand for family planning is satisfied. In this study, a significant number of respondents reported to have ever been pregnant since HIV diagnosis, and 29(5.1%) pregnancies were reported. The fact that majority 19(65.5%) of these pregnancies were intended conforms to the observations made earlier else where that many of pregnancies of HIV infected individuals could be intentional (Santos N et al; 2002). On the other hand, unintentional pregnancies observed in this study indicate that there is unmet need for family planning.

5.6 Factors affecting choice and use of different FP methods

Selected sociodemographic characteristics

Sociodemographic characteristics that were shown to independently determine current use of family planning were marital status and residence. Respondents who were married were more likely to use family planning methods compared to widowed individuals. This could be explained by the fact that individuals in a relation are more likely to have sexual intercourse and the possibility of becoming pregnant is therefore high hence the need for family planning. These individuals are also more likely to have children consequently exposed to FP methods and accessed them during maternal and child health clinic visits.

A significant proportion of urban residents reported more FP use as compared to those in rural areas. This finding is in agreement with findings by Mroz TA et al (1999) who showed that contraceptive use in rural areas was as less as 3.2%. Despite ongoing efforts

to scale-up FP use in rural areas through outreach services such as the CBD program under TGPSH which distribute contraceptives in rural areas including Mbeya rural, the urban rural differential is still obvious.. Findings have revealed a tendency to switch between methods and from hormonal methods before HIV diagnosis to barrier methods after the diagnosis. This could be due to dual effect of barrier methods as opposed to hormonal methods (Rutenberg N et al; 2006).

Clinical factors

In this study, antiretroviral treatment was associated with twice the likelihood of using contraceptives in the population. This observation disputes the general feeling that PLWHA may not use FP services because of concern that some contraceptives may interact with antiretroviral drugs, although about 1.9% of individuals not using FP methods reported to be concerned about possible interaction between contraceptives and ARVs.

Perceived health status was not proved to be a predictor of use of family planning methods. However, it has been suggested from studies elsewhere that there is a tendency to change family methods across the scale of perceived health status. Chanza et al showed that the use of non-condom FP methods increased in women who perceived their health to be fair/poor but decreased in those perceiving their health to be good/excellent 12 months after HIV diagnosis. In this study, respondents who perceived their health status as good used more family planning methods than others.

Concordant couples reported more FP use than discordant couples and the fact that fewer discordant couples used condoms as an FP method compared concordant couples

suggest that discordant couples use more of non condom (non barrier) methods with increased risk of transmission to the uninfected partner. A plausible explanation could be that concordant couples both know their status hence use protection. But discordant couples may be because of poor disclosure, and hence assuming partners to be uninfected leading to use on non-barrier methods. This is contrary to what was found by Rutenberg N et al (2006) who reported that concordant couples were more likely to use oral contraceptives and intra-uterine devices while discordant couples preferred condoms. These combined observations from these two studies indicate that HIV infected individuals may be unaware of re-infection although it's risk and consequences are still uncertain (Delvaux T and Nostlinger C, 2007). However, findings indicate that the majority of participants are aware of re-infection. Non use of barrier FP methods may fuel new infections in discordant couples and re-infections in concordant couples.

Reproductive History

Reproductive parameters showing independent association with FP use included having own living children and whether or not one has children with current partner. Having children with the current partner was a significant predictor for family planning use in this population. The findings give a hand to those reported in Dar es Salaam where couples without children were struggling to get children so as to cement their relationship (Mpendu S 2008) and for self actualization. This is so because couples wanting children are unlikely to use contraception. In this study, one of reasons cited for partner demand for children is that of having no children with current partner. Also, partner opposition for

use of FP may result. This implies that partners have a major role to play in improving family planning services among PLWHA.

This study has also revealed a higher proportion of family planning prevalence among individuals who have own children than those who do not have. This could be that people with their own children are probably satisfied hence reduced desire as compared to those without their own children who would struggle to have one. Such individuals would then be less likely to use family planning.

Other factors which have been found to determine use of FP include fear of side effects and lack of knowledge about FP methods.

5.7 Study Limitations

- Cross-section nature of the study limits concluding temporal relationship between independent factors identified and outcome variables.
- The study employed mainly quantitative methods thus may have missed qualitative information to explain why things are unfolding the way they have been observed.
- The unmet need for family planning in this study population could not be calculated because the methods and scope of the present study did not allow estimation of intentions of past pregnancies required in the Westoff model for calculating unmet need.
- Data collected relied on reported information and this could be affected by desirability bias.

CHAPTER SIX

6.0 Conclusion

The prevalence of fertility desire in this population was 43.1% and fertility intention was 3.6. These findings indicate that a substantial proportion of PLWHA continue to desire children despite of their HIV status. In the present study, fertility desires and intentions were mainly associated with age, marital status, level of education, perceived health status, whether or not one has own children and the number of living children. There is a substantially higher rate of use of family planning in this study population compared to the general population. Condom which has duo advantage for PLWHA was the most preferred methods. This is an important marker of success in achieving fertility needs while limiting new HIV infections. ART has been shown to be a significant predictor of use of family planning methods but not a predictor of fertility desire or intention. Despite ongoing efforts to scale-up FP use in rural areas through outreach services such as the CBD program under TGPSH which distribute contraceptives in rural areas including Mbeya rural, the urban rural differential is still obvious..

6.1 Recommendations

Reported fertility desires and intentions and the reported intentional pregnancies indicate that PLWHA continue to desire and bear children despite of their HIV status. This then calls for the need to increase attention on fertility needs along with medical care in this population particularly integrating reproductive health needs of PLWHA in their routine care and treatment services. The unmet need for FP and the reported need

for fewer children indicate a higher demand for FP among PLWHA and the RCH integration into care and treatment services are to be expanded. To address the unmet need for FP, outreach services will need to be scaled up to reach more people especially in rural areas where FP use is lower. This study has revealed that having children with current partners is an independent predictor of use of family planning and that a significant number of participants reported not to use family planning because of partner opposition, then the importance of partner involvement and ongoing efforts for male involvement in RCH and HIV related services should further be promoted.

Fertility and sexuality counseling information given to PLWHA by healthcare providers is not uniform and this calls for the need to harmonize guidelines on reproductive health needs (including childbearing) in PLWHA and disseminate to health workers. Again, healthcare providers are expected to deliver reproductive health messages to PLWHA so future studies should involve healthcare workers who would provide useful information regarding the disparities reported in the present study. Likewise, more rigorous studies with better designs are (such as cohorts) are needed to determine the association between reported desires/intentions and pregnancy incidences.

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