ADDIS ABABA UNIVERSITY COLLEGE OF DEVELOPMENT STUDIES

CENTER FOR POPULATION STUDIES

DETERMINANTS OF FERTILITY DESIRE AMONG HIV POSITIVE WOMEN OF REPRODUCTIVE AGES ON ANTIRETROVIRAL THERAPY IN SELECTED REHABILITATION CENTERS IN ADDIS ABABA, ETHIOPIA

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June, 2022

Addis Ababa, Ethiopia

Declaration

I, the undersigned, declare that this study THESIS is mostly my own original work and hasn't really been submitted for a degree at this or any really other university. I also kind of declare that all sources of information utilized for this thesis have been properly kind of acknowledged.

Name: _____

Signature: _____

Place: Addis Ababa University

Date of submission_____

Contrary to what is typically believed, this research thesis has actually been submitted for review with my consent as the university advisor.

Name of the advisor: Dr. Wondimye Ashenafi **Signature:** 

Date: June 27/2022

CERTIFICATE

This is to certify that the thesis entitled "Determinants Of Fertility Desire Among Hiv Positive Women Of Reproductive Ages On Antiretroviral Therapy In Selected Rehabilitation Centers In Addis Ababa, Ethiopia" College for the award of Degree of Masters of Population study (MSC) and is a record a research work carried out by Martha Eshetu, under our guidance and supervision. Therefore, we hereby declare that no part of this thesis has been submitted to any other university or institutions for the award of any degree or diploma.

Name of Advisor _____ Signature _____ Date _____

Name of Internal Examiner _____ Signature _____ Date _____

Name of External Examiner _____Signature _____Date _____

Name of MSC Program Coordinator _____Signature_____ Date _____

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Abbreviations

AAHAPCO:	Addis Ababa HIV/AIDS Prevention and Control Office
AAHB:	Addis Ababa Health Bureau
ART:	Antiretroviral Therapy
BCC:	Behavioral Change Communication
CBS:	Case Based Surveillance
CSA:	Central Statics Agency
DICs:	Drop-In-Centers
EDHS:	Ethiopian Demographic and Health Survey
EFY:	Ethiopian Fiscal Year
EPHA:	Ethiopian Public Health Association
EPHI:	Ethiopian Public Health Institute
EPHIA:	Ethiopian Population based HIV Impact Assesment
FHAPCO:	Federal HIV/AIDS Prevention and Control Office
FSWs:	Female Sex Workers
HAART:	Highly Active Antiretroviral Therapy
HTS:	HIV Testing Service
IUCD	Intrauterine Contraceptive Device
MTCT:	Mother To child transmission
OCP	Oral contraceptive pill
PITC:	Professional Initiated Testing and Counseling
PLHIV:	People Living With HIV
PMTCT	Prevention of Mother To child transmission
WHO:	World Health Organization

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Abstract

Background: The magnitude of unprotected sex to satisfy the desire for fertility among women living with HIV/AIDS (PLHIV) has raised concerns due to the availability of antiretroviral therapy (ART) in most HIV-affected countries. This could, however, have risk of passing on HIV to sexual partners and children. The aim of this study, therefore, is to determine prevalence and factors associated with fertility desire of reproductive-age women who are HIV positive in Addis Ababa, Ethiopia.

Objectives: To assess the prevalence of fertility desire among HIV positive women and factors associated with it among women who are on ART in selected rehabilitation centers in Addis Ababa, Ethiopia.

Methods: A cross sectional study was conducted on HIV positive women on ART at selected rehabilitation centers in Addis Ababa, from February 1-28, 2022.The total sample size considered was 418. Systematic random sampling technique was used after the total sample size was proportionately allocated to each rehabilitation center. Data were collected by interviewing, reviewing registration logbook, and FP chart (card). The collected data was entered and analyzed using SPSS-25 software. Descriptive statistics and binary logistic regression analyses was done. For variables with P value <0.25 on bivariate analysis, multivariable logistic regression analysis was performed in order to see association between independents and dependent variable (desire to fertility) using Odds Ratio (OR) as measure of association.

Result: The overall the prevalence of fertility desire was 45.6%. Multivariable regression analyses revealed that being 25-34 years of age (AOR=5.49, p=0.003, 95% CI 1.77– 16.98), having secondary and above education (AOR=0.07, P=0.038, 95% CI 0.06-0.86) and being user of contraceptive (AOR=0.18, P=0.004, 95% CI 0.04-0.53) were statistically associated with fertility desire.

Conclusion and recommendation: With the increasing desire of fertility among HIV positive women, attention need to be given on counselling as how to prevent transmission of HIV to partner and the offspring.

Keywords: Fertility desire, PLHIV, reproductive age, risky sexual behavior, Ethiopia.

1. INTRODUCTION

1.1. BACKGROUND

Fertility desire refers to people's desire to have more children, whilst fertility intentions refer to a commitment to follow through on that goal. Despite HIV's catastrophic effects on the fetus, HIV-positive people all around the world have a great desire for fertility (WHO, 2015). Since the introduction of highly active antiretroviral therapy (HAART) in 1996, the way in which human immunodeficiency virus (HIV) infected individuals confront the disease and their long-term outlook have changed considerably in industrialized countries (Sonneberg-schwan U, 2005).

According to UNAIDS, an estimated 36.7 million people living with HIV/AIDS (PLHIV) in the world in 2015, with sub- Saharan Africa (SSA) bearing the brunt of the illness (UNAIDS, 2015). Women account for over half (59 percent) of all the HIV-positive persons in the globe, and the SSA region accounts for over 68 percent of all HIV-positive people (Asfaw, H.M, 2014). In Ethiopia about 610,335 people are living with HIV; of these approximately 317 000 are women and 93 000 are children under age 15 (EPHI, 2018).

In the 2016 Ethiopia Demographic and Health Survey (EDHS) (EDHS, 2016) adult HIV prevalence is estimated at 0.96%, of which 1.2% among women and 0.6% among men. Regionally the highest prevalence(4.8) was observed in Gambela regional state followed by Addis Ababa(3.4%). The major mode of HIV transmission in Ethiopia is unprotected heterosexual intercourse, which accounts for approximately 88% of new HIV infections; mother-to-child transmission of HIV accounts for about 10% of cases (MOH and NHAPCO, 2006). The majority of new infections occur in the reproductive age group of 15–49-year-olds, which has negative implications for the future of the family (FHAPCO, 2007).

With significant efforts focused on providing access to life-saving antiretroviral treatment (ART) in Sub-Saharan Africa, many women on ART are leading productive and sexually active lifestyles; however, equivocally it has become a challenge to have planned pregnancies and increased risk of transmitting HIV to the partner and the newborn (Beyeza-Kashesya, et al, 2010).

In achieving the fertility desire, women living with HIV and who are on ART might suffer with unintended pregnancy resulting in serious health, financial, and social repercussions, including

higher maternal morbidity and mortality, as well as perinatal mortality. Consequently the desire for fertility among HIV positive women need to be regulated with informed decisions on the timing and spacing of births(Mmbaga EJ et al, 2013). Moreover, unprotected sex aiming for achievement of fertility desire of the HIV positive women may increase the risk of passing the virus to the discordant partner and to the newborn during birth or breastfeeding. It is desirable that women living with HIV have knowledge on the prevention of mother to child transmission(PMTCT) of the virus(Ulo B et al, 2005).

In many developing nations, such as Ethiopia, high fertility and the desire to have a large family are common and people living with HIV have the same desire of having more number of children. Despite the rising number of women living with HIV/AIDS in Ethiopia, issues regarding fertility planning and the factors affecting their reproductive desires remain unaddressed (FHAPCO, 2012).

1.2. STATEMENT OF THE PROBLEM

Before two or three decades, women living with HIV commonly stated that they no more want to have more number of children. Evidence indicate that major reasons for this decreased fertility desire were fear of infecting one's spouse or fetus, grief such as being unable to breastfeed (mothers who are HIV positive have been advised not to breastfeed their baby), and discouraging policies in many countries (FHAPCO, 2012). Conversly, in the past two decades, PLHIV's quality of life has improved dramatically as a result of increased availability to highly active antiretroviral treatment (HAART), and their life expectancy has also increased. As a result, their desire for or goal of becoming pregnant has increased (WHO, 2015).

Other than introduction of HAART in boosting the quality of life of PLHIV and altering the desire for fertility, a number of prior studies have identified different sociodemographic and reproductive factors affecting fertility desires among PLWHA (Kennedy CE,2010). However, many of these studies have shown mixed results on whether being on ART is linked to a higher fertility desire or not.

As an effect of the multifaceted correlation between fertility intention and HIV/AIDS transmission, the preventive and control measures against the HIV epidemic can be challenged in many affected countries with low utilization of prevention of mother-to-child transmission

(PMTCT) service and high fertility rate, like Ethiopia. There are also few but inconsistent evidences on fertility desire and its associated determinants among women on ART in Ethiopia, including in Addis Ababa. As Ethiopia is one of HIV most affected country with increasing number of affected women on ART, examining the level of fertility desire and the associated factors is believed to add the evidence base and will thus have beneficial role in the effort of combating the epidemic. Therefore, this study aims to examine the prevalence and associated factors of fertility desire among HIV positive women of reproductive ages who are on ART in the selected HIV rehabilitation centers in Addis Ababa, Ethiopia. So, this study will have an implication for PMTCT of HIV/AIDS, the need for counseling to facilitate informed decision-making about childbearing, and the future demand for services for children born to infected women by identifying factors that determine fertility desire of women.

1.4. OBJECTIVE

1.4.1. General objective

The aim of the study is to identify determinants of fertility desire among HIV positive women in the child bearing age reproductive ages attending ART clinics in the selected HIV rehabilitation centers in Addis Ababa, Ethiopia.

1.4.2. Specific objective

1. To determine the prevalence of fertility desire among HIV positive women in the child bearing age reproductive ages attending ART clinics in the selected HIV rehabilitation centers in Addis Ababa, Ethiopia

2. To assess factors associated with fertility desire among HIV positive women of reproductive ages on ART in the selected HIV rehabilitation centers.

1.5. Research Question

1. What is theprevalence of fertility desire among women living with HIV in the selected HIV rehabilitation centers in Addis Ababa, Ethiopia

2.What are factors associated with fertility desire among women living with HIV in the selected HIV rehabilitation centers in Addis Ababa, Ethiopia

1.6. SIGNIFICANCE

The study findings really are specifically believed to for the most part add to the existing body of knowledge and research on the kind of possible factors that influence fertility desire of HIV for all intents and purposes positive women who really are on ART. The findings of the study will also definitely help health institutions to figure out what they need to literally do to definitely improve the quality of SRH and PMTCT services for women living with HIV and simultaneously generally aspiring to actually have more number of children in a subtle way.

2. Literature review

2.1. Theoretical literature review:

2.1.1 Global, Regional and National context of HIV /AIDS

One of the major repercussions of HIV/AIDS on individuals and society at large is a change in reproduction rates (Ulo B et al, 2005, FHAPCO, 2012). The primary objective of this research is to assess the determinant Fertility intention among women living with HIV in woreda 9 and woreda 11 health center, Addis Ababa, Ethiopia. The chapter presents the review of existing literatures in the area of Fertility intention among women living with HIV in order to familiarize readers with better understanding of the subject matter. It includes definition theoretical and Conceptual Review, as well as the empirical literature (research works on similar topic) and research gap. And lastly but not least researcher developed conceptual framework based on theoretical and empirical connection. In this case, all these issues are described one by one in subsequent sections after defining important concepts used under the study.

2.2. Theoretical and Conceptual Review

2.2.1. Fertility desire of people living with HIV

At least in nations where HAART is widely accessible, recent advancements in antiretroviral therapy optimization have greatly improved both the quality of life and life expectancy of those living with HIV/AIDS. Today, HIV infection is thought of as a chronic but curable illness. This "normalization" has inspired many positive men and women to plan aspects of their lives that they had previously dismissed as impractical. One of these perspectives is frequently planning a family (Sonneberg-schwan U, 2005). The HIV cost and service use study revealed that 28% of heterosexual HIV positive males and 29% of HIV positive women who got medical care desired children in the future when it assessed fertility desire among a large sample of HIV positive men and women in the United States (Asfaw, H.M, 2014).

African men and women who are HIV positive have been proven to want having children in studies from the continent. Seven of the 16 HIV-positive pregnant women in Zimbabwe who were interviewed wanted their pregnancies. In a different study conducted in Yaoundé, Cameroon, 40 HIV-positive men and women who responded to a questionnaire stated that their

main motivation for engaging in unprotected sex was their desire to start a family (Adilo, T.M., & Wordofa, H.M., 2017). While on HAART, people were substantially more likely to indicate a desire for parenthood if their health had improved (WHO, 2015). Additionally, providers have a significant impact on how women feel about having children in the future (Siwale M et al, 2018).

2.3Empirical Review

In Ethiopia, an outcome from systematic review showed that the joint happening of MTCT of HIV was 9.93%. Furthermore, the study also displayed that more or less one in every ten HIV-exposed children became HIV positive (Mirkuzie AH.,2019).

Moreover, Ethiopia was considered by small PMTCT provision coverage. For instance, Ethiopian public health institute (EPHI) reports displayed that moms who need PMTCT of HIV/AIDS but could not be addressed surpasses 30,818 (8%) in 2018(FMOH,2013).

Evidence shows that HIV positive women continue with desire of having more children at different degrees. For instance, two studies done in Canada (FMOH,2013) and Malawi (Tolossa,et.al,2020) revealed that the magnitudes of women lived with HIV who desired to have children in the future were 69% and 17% (Tolossa,et.al,2020: Feyissa ,et.al,2014), respectively. In Ethiopia, various studies showed different levels of fertility desire among women live with HIV. A study conducted in Nekemt Town (Mantell JE,et.al, 2009), Tigray (Wekesa E,2014) and Addis Ababa (Boonstra H.,2004) revealed that the proportions of HIV positive women who had fertility desire were 42.1%, 45.5%, and 56.2%, respectively.

2.4. Worldwide and national contexts of HIV/AIDS and ART

A calculable thirty-four million individuals worldwide were living with HIV at the tip of 2010. Out of those, AN calculable twenty-two. 9 million HIV-infected individuals board Sub-Saharan Africa (13).

The contagion rate among pregnant girls in Sub-Saharan Africa is additionally disturbingly high, wherever ninetieth of worldwide new kid infections through mother-to-child transmission (MTCT) occur (14). With 1,320,000 million individuals living with HIV/AIDS (PL WHA), the African nation is one among the countries most heavily plagued by the epidemic, heterosexual

HIV transmission is the main route followed by mother to kid transmission (15) With AN calculable one.1 million individuals living with HIV, the African nation has one among the biggest populations of HIV infected individuals within the world. However, HIV prevalence among the adult population is less than in several desert African countries. Adult HIV prevalence in 2009 is presently calculable to be between one.4% and 2.8%. A replacement single-point estimate of HIV prevalence is going to be generated following the completion of a population-based study in late 2010. (13, 15) In the African nations over eightieth of the cases of HIV/AIDS area unit found between the age of twenty and forty-nine that is that the best cohort of the population. Studies show that the very best prevalence of HIV/AIDS in the African nations happens between the age of 20-29 for females and 20-39 for males and these infections were seemingly non-inheritable many years earlier suggesting that children have become infected within the teens.

An earlier study of the distribution of sexually transmitted infections (STI) conducted in numerous years found that the 15-24 cohort had the very best prevalence of STI followed by the 25-35 cohort. In the African nations, the most important mode of transmission is heterosexual Childbearing isn't solely kinship, however, additionally, it's a primary supply of vanity and a method of economic securing from partners or family. However, HIV-infected girls have an extra reason for childbearing. An exceeding study wiped out African country, an African nation, Zimbabwe, and African nation (Addis Ababa and north shewa zone) on HIV positive girls, they desired to own kids for the subsequent reasons; to hide their HIV standing from their partners and relatives, to require a social position by being mother, the convenience of ART to forestall mother to kid transmission of HIV/AIDS, a robust need for eleven parentages, and private satisfaction, to interchange the kid lost as a result of AIDS, gestation might offer hope for future prospective care of the kid, family and social obligation for sex, prosperity inheritance, a bar of stigma from the community (8, 9, 25,27) within the Swiss HIV Cohort Study twenty-second of men (aged 20–50) and two-hundredths of girls (aged 20–40) reported the current need for having kids.

In an exceeding survey of a sample of individuals living with HIV within the US, twenty-eighth of men (aged twenty or older) and twenty-ninth of girls (aged 20–44) expressed a need to own kids within the future. In each of these studies, gender wasn't a predictor of the need for

parentage (29) Studies examining generative behaviors of girls living with HIV and therefore the impact of HIV designation on gestation and birth rates have yielded conflicting results, attributed to cultural and structural regional variations In developing countries, of each Western and Japanese societies, the planet Health Organization (30) has found a very important situation stigma and has outlined, consequently, power-assisted replica as a social issue to be thought of by public health policies.

Within the developed world, access to antiretroviral treatment has accrued gestation incidence among girls living with HIV (31) each the Swiss and therefore US studies reported that people WHO older improved health whereas on ARV were considerably a lot of seemingly to need parentage, all participants in their cohort were underneath following-up at AIDS care centers, and eighty-nine of them were on antiretroviral medical care. (30, 31) consistent with a cross-sectional study of the determinants of the will {for kids |for youngsters for kids} among reciprocally disclosed zero-discordant couples receiving care in the African nation most participants (59%) desired to own children someday within the future, with 43.4% replying that they "Definitely want" kids, and 15.8% replied that they "Might want" kids. "Not at all" was the response of forty.8%.

Among twelve couples during which the girl was HIV-positive, young age and relatives' expectations for kids were considerably related to accrued fertility need, whereas among couples during which the person was positive; information of ART effectiveness was related to accrued fertility need. the Convenience of data on family planning was related to bated fertility needs. (32) equally a study done on Fertility wishes and Intentions of HIV-Positive Patients at a community Specialist Center and twenty-eight (53.8%) of the male respondents expressed the will for kids, giving a complete of ninety-three (63.3%) of all respondents. Among those needing kids, only 4.3% shan't bear any kids within the future. Girls were considerably a lot of seemingly to expect three kids compared to men. Of these participants WHO had partners, 70.8% of girls and forty-seven. 1% of men have partners WHO additionally desired kids. Severally, 71.5% and 93.8% of men and ladies WHO desired kids supposed to own shortly.

1.If the female partner contracts an infection, self-insemination or assisted reproduction may be necessary.

2.If the male partner contracts an infection, assisted reproduction using prepared sperm may be used. Sperm washing is now viewed as a very effective risk reduction, but not risk free, procedure because HIV may conceivably go undetected (Sonneberg-schwan U, 2005). For a tiny number of couples, donor insemination provides a safe alternative option, but it is only available in small nations due to regulatory restrictions.

Adoption in many nations is only a theoretical possibility, and most couples desire a kid who is the biological child of both parents (sonnebergs-schwan u,2005)

2.5 Legal and Ethical Consideration of Reproductive Choice of HIV Positive People

Since the beginning of the HIV Epidemic, there has been debate over how to treat infertility in HIV-infected couples. Among the problems reproductive endocrinologists who treat infertile women with HIV infection have had to deal with are the likelihood that the mother will pass away before her child reaches adulthood. A review of these issues is warranted in light of the recent development of highly active antiretroviral therapy and procedures for lowering the risk of mother to child HIV transmission (UNAIDS, 2015). Women with HIV may have a high need for infertility services. Regarding involuntary infertility in these women, there are at least two unspoken factors to be aware of: the direct impact of the virus and the impact of concurrent infections (CDC, 2005). However, despite a clear need for infertility services, infected women were not typically thought of as candidates for assisted reproductive technologies until relatively recently (UNAIDS, 2015). What is the acceptable level of risk to offspring's? Should couples who want this assistance be subject to selection criteria? Should they undergo scrutiny about their suitability as parents when those who are able to conceive naturally face no such scrutiny? These are just a few of the questions raised by the idea of providing assisted reproductive technology (ART) to HIV discordant couples. Offering ART to HIV-discordant couples is likely to create more benefits than damage and does not go against any ethical norms, despite the fact that the points above are debatable. However, denying treatment may not necessarily amount to unreasonable discrimination (CDC, 2005).

Conceptual framework: Factors that determine fertility desire in women who are HIV positive.

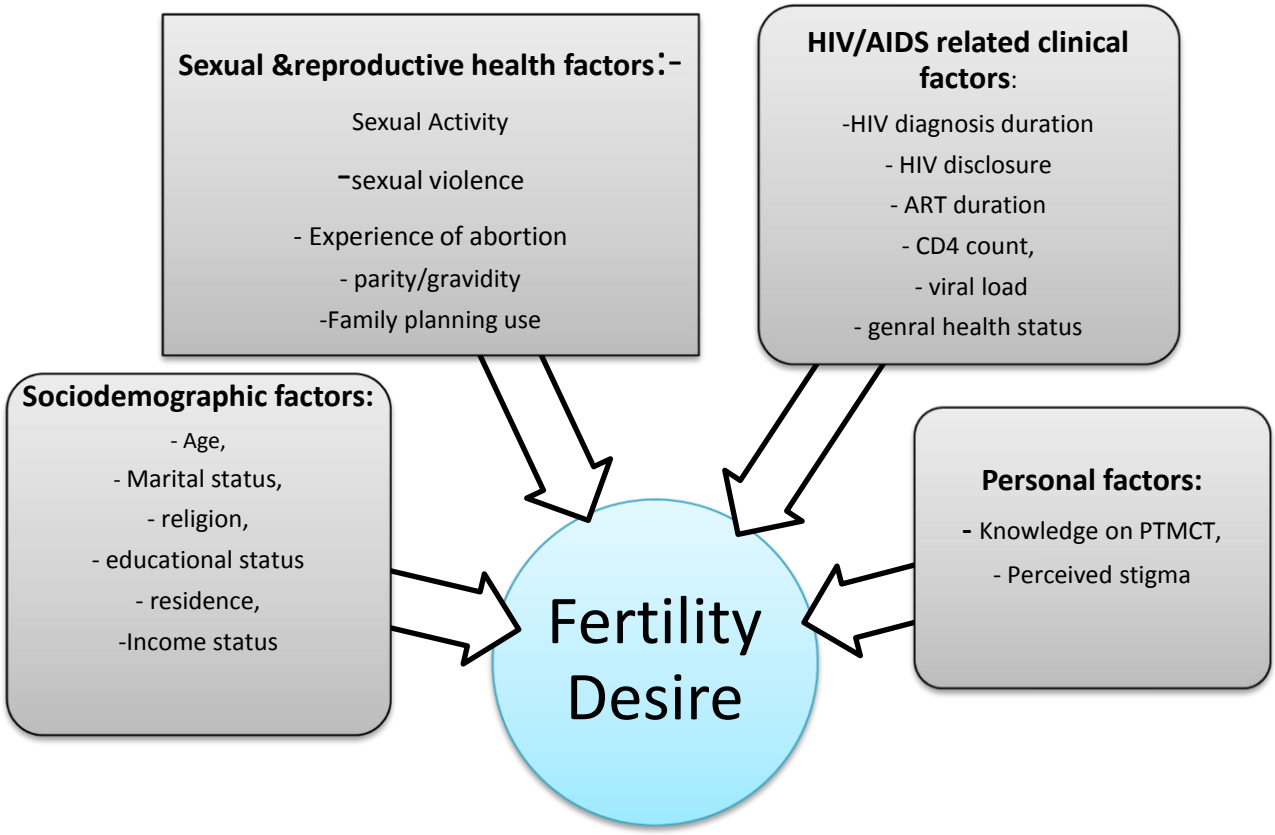

Figure 1 Conceptual frame work depicting the determinants of fertility desires among HIV positive women developed by the investigator after reviewing literatures

3. METHODOLOGY

3.1 Study area and period: the study was conducted in Addis Ababa, among HIV positive women attending care and support services at two purposively selected rehabilitation centers (Tesfa Goh(DHA) and AHF(AIDS Healthcare foundation) Ethiopia NGOs), from February 1-28,2022.

Tesfa Goh (DHEA, Dawn of Hope Ethiopia National Association) is the pioneer association initiated and established by HIV positive peoples in June, 1998. It was founded by eleven HIV positive Ethiopians ,who dared to face the challenges of the stiff stigma and discrimination that was prevalent in the 1999s by breaking the silence; with the motto **"*AIDS shall be stopped with US ; let the generations be saved*"** by the time, DHEA was founded with determined objectives of fighting the existing stigma and discrimination, by pooling together those HIV infected persons; i.e. their objective was to gather PLHIV under one umbrella so as to speak with one voice against HIV/AIDS and address their needs and concerns . To date, DHEA has grown both in size, relevance and influence; especially in championing the campaign for open HIV disclosure and life testimonies of the infected. The organization's scope has this widened to incorporate welfare; care and support of both the affected and infected people nationwide.

Currently DHEA has eleven functional branches all over the country and re-registered and accorded to legal personality with registry number 0646 under civil society organizations agency, owning total registered members of **32,732** PLHIV and **17931** OVC. The branches found in four regions of the country. In Oromia, SNNP, Addis Ababa & Amhara regions.

AHF Ethiopia with operations in Addis Ababa City Administration and Oromia Regional state currently runs two of its own standalone HIV care facilities namely AHF-Addis and AHF-Kolfe clinics; supports two NGO and four Government health facilities. These care centers are situated in different sub cities, where a large number of people reside and there is a high day-to day population movement. Generally AHF provides free comprehensive HIV care services including Antiretroviral therapy(ART), treatment of opportunistic infections, HIV counseling and testing(HCT), condom promotion and distribution integrated family planning services, adolescent psychosocial support etc. To date AHF Ethiopia has provided HIV care and treatment to 13,036 individuals with its clinics.

According to the reports from the selected rehabilitation centers, a total of 1322 HIV-positive individuals are believed to be on ART follow-up at AHF Ethiopia and Tesfa Goh(DHA) ART clinics, of whom 956 were females and 775 were women in the reproductive age. Every stable client attends clinics every month, but clients with severe illness have frequent appointments within a month. The clinics provide counseling, tracing, ART treatment, and nutritional and medical treatment services.

3.2 Study design: Facility based Cross sectional quantitative study design was conducted

3.3 Study population: all HIV positive women receiving care and support at the selected rehabilitation centers of Addis Ababa

3.4 Inclusion and exclusion criteria

HIV positive women who receive ART and other care and support services in the selected rehabilitation centers who gave consent to participate was included in the study.

HIV positive women who receive ART and other care and support services in the selected rehabilitation centers who are seriously ill during the data collection period was excluded

3.5. Sample Size and Sampling

3.5.1. Sample size

The sample size was calculated using a single population proportion formula by assuming the proportion of HIV POSITIVE WOMEN ON ART WITH DESIRE FOR MORE CHILDREN from a study done in Addis Ababa, 54.6 % (Adilo and Wordofa, 2017).

$n= Z^2p (1-p)/d^2$

n = represent sample size

Z = represents standardization value indicating a 95 % confidence level (alpha =0.05, Z = 1.96)

P = prevalence of outcome (fertility desire among HIV positive people on ART) =0.546

d = Margin of error 5 % (i.e d = 0.05)

Therefore, $n=1.96^2*0.546(1-0.546)/0.05^2$

=380, adding 10% nonresponse, n=418

3.5.2. Sampling procedure

The sample size was distributed proportionally to the population size of the two randomly selected HIV rehabilitation facilities among eight such facilities in Addis Ababa.

During study survey, the number of HIV positive women currently attending in Tesfa Goh rehabilitation center is was 2343.On the other hand, the number of HIV positive womenon ART attending AHF Ethiopia was 2072. So the total number of HIV patients who were under follow up in the two rehabilitation centers was 4415.

So, after proportionally distributing the total sample size according to the size of patient flow to each facility, the sample size allocated for to the Tesfa Goh facility was 222, and for theto AHf AHF facility was 196.

Finally, systematic random sampling technique was used to select the final sample using the list of HIV patients attending the rehabilitation (care and support) services in each facility as a sampling frame. The total number of HIV positive women on ART follow up was divided by the sample size to get the sampling interval.

3.6. Variable and Measurement

3.6.1 Dependent variables: Fertility desire

3.6.2 Independent variables: age, marital status, educational status, partner HIV status, employment, monthly household income, number of living children, knowledge of PMTCT, duration of HIV diagnosis, duration of ART, history of fetal loss, partner's desire to have children

Measurementand operational definitions:

Fertility desire: it is a psychological state in which someone has the personal motivation to have a child. Those who claim to have motivation to have more children in the future was be considered as having fertility desire, and those who claim not have motivation to have more children was be considered not having fertility desire during the study period (EDHS,2016)

Sexual activity: women who had at least one sexual practice during the last six months before the interview were labeled as sexually active (T. Regassa and M.fantahun, 2013.)

Knowledge: respondents was be asked knowledge questions related to MTCT of HIV/AIDS, effects of HIV on fertility etc. Those respondents who answered correctly at least 60% of the total knowledge questions was considered to have good knowledge, while those respondents who may not be able to answer correctly at least 60% of the total knowledge questions was considered to have poor knowledge(M. C. Transmission and A. Care, 2017).

3.7 Data Collection

Data was collected by interview technique, using a standard questionnaire prepared after reviewing literatures with the same objective and adopting it to the study area. Two data collectors from the staff nurses of each facility were be recruited, after being provided with one day training about the objective of the study. The data collection tool was pretested prior to the actual data collection date, to modify it if there are any misleading questions.

3.8 Data quality control:

A pretested, structured, and interviewer-administered questionnaire was used to collect the data for assessing the magnitude and factors associated with fertility desire among HIV-positive women aged 15–49 years who were on ART. Pretest on 5% of the questionnaire one week before the actual data collection were conducted in another facility that is not is included in the actual data collection. The problems identified were corrected accordingly. The data collectors were provided with one-day training about the objectives of the study. The filled questionnaire was checked for completeness and consistency by the principal investigator.

3.9 Data analysis

The questionnaires returned from the field were first checked for completeness. The correctly completed ones were inserted into Statistical Package for Social Sciences software, SPSS Version 25. Data analysis was presented using descriptive statistical tools. Data analysis was conducted using statistical techniques, including percentages, frequency distributions, and logistic regression analysis. The descriptive statistical techniques was mainly used to present data regarding the frequency and percentage distribution of responses pertaining to respondents' socio-demographic characteristics, intention to get pregnant, and reasons for not intending to get pregnant. To identify determinants of fertility desire, a multivariable logistic regression analysis

was performed to calculate adjusted odds ratios (AOR) with 95% confidence intervals (95% CI) for all variables with a p-value <0.25 in the bivariate logistic regression analyses to select the variables of interest for the next step of binary logistic regression. A p-value of less than 0.05 was considered as statistically significant. Hosmer–Lemeshow test and Omnibus test was used to determine model fitness.

3.10 Ethical consideration

The ethical approval and clearances was obtained from the research coordinating office of the College of Development Studies, AAU, and an official letter was communicated to the Addis Ababa public health Research and Emergency Management Directorate. Permission letter was obtained from all selected rehabilitation centers in Addis Ababa. Informed verbal consent was obtained from each study participant after the purpose and significance of the study was explained by the data collector. They informed of their rights to withdraw from the study at any time. And finally the appropriate conclusion and recommendations was forwarded according to the findings of the study.

3.11 Dissemination of the results:

The results of this study will primarily be presented to the center for population studies , Addis Ababa University College of Development Studies as a requirement for Master's Degree, and then the results will also be disseminated to Addis Ababa public health Research and Emergency Management Directorate. Results will also be published in scientifically reputable journals.

4. Result

4.1 Socio-demographic Characteristics of study respondents

Out of the sampled 418 women, 397 agreed to respond to the questionnaire and thirty one of them didn't respond to the fertility desire question (the outcome variable), and has been dropped from analysis making a total of 366 cases considered for final analysis. Of the 366 respondents, half (50%) of them were 35-44 years of age. The participants were predominantly engaged in marital relationship (47.5%) and were housewives (41.3%). The majority (43.2%) were able to read and write but without formal schooling and the great majority (68%) reported monthly income of ETB 1001 to 3000.

TABLE 1 SOCIO DEMOGRAPHIC CHARACTERISTICS OF STUDY PARTICIPANT AMONG HIV POSITIVE WOMEN OF REPRODUCTIVE AGES ON ANTIRETROVIRAL THERAPY IN SELECTED REHABILITATION CENTERS, ADDIS ABABA

Variables	Frequency	percent
Age of mothers		
15-24	16	4.4
25-34	144	39.3
35-44	183	50
44+	23	6.3
Marital status		
married	174	47.5
single	88	24
widowed	40	10.9
divorced	64	17.5
Monthly income		
Less than 1000	53	14.5
1001-3000	249	68
More than 3000	64	17.5
Occupational status		
Un employed	16	4.4
student	16	4.4
House wife	151	41.3
Government employee	72	19.7
Private employee	103	28.1
other	8	2.2
Educational status		
Unable to read	56	15.3
Able to read and write	158	43.2
Elementary/primary school	16	4.4
Secondary and above	136	37.2

4.2 Fertility desire and Reproductive characteristics of study participants

One hundred sixty seven (45.6 %) study participants expressed the desire to have more children in the future, where the majority of them (63.4%) expressed the interest of having 2 more children in future. Four fifth (80.3%) of the participants ever had pregnancy, and 29.9% of them experienced pregnancy losses. The majority of the participants stated they have used contraception of their choice (79.1%) in the past. Among the respondents 52.2% had mentioned they had sexual intercourse in the past six months.

TABLE 2 FERTILITY DESIRE AND REPRODUCTIVE HISTORY OF WOMEN AMONG HIV POSITIVE WOMEN OF REPRODUCTIVE AGES ON ANTIRETROVIRAL THERAPY IN SELECTED REHABILITATION CENTERS, ADDIS ABABA

Variables	Frequency	Percent
Have you ever had pregnancy?		
yes	294	80.3
No	72	19.7
Have you ever had pregnancy losses?		
yes	88	29.9
No	206	70.1
Would you have a desire to have children in the future?		
yes	167	45.6
No	199	54.4
Why do you not want to have children in the future?		
fear of mother to child HIV transmission risk	68	34.1
don't have adequate income to add another child	59	29.6
Health care providers advise not to have a child	24	12.06
Child bearing may further compromise my/my partner health	16	8.04
husband /partner doesn't want to have a child in the future	32	16.08
How many (more) children would you like to have in the future?		
1	44	26.3
2	106	63.4
3 or more	17	10.3
Have you had sexual Intercourse In the past six months?		
No	175	47.8
yes	191	52.2
Have you used contraception?		
No	40	20.9
yes	151	79.1

4.3 participants Knowledge on MTCT and PMTCT

From the study subjects, 223 (60.9%) of them had good knowledge toward prevention of MTCT of HIV whereas, the rest 143 (39.1%) of them had poor knowledge. Three hundred twenty six (89.1%) study participants know that HIV transmits from mother to child and majority of them answered that through breast feeding HIV transmits from mother to child. The Majority of the respondents 294 (80.3%) got information about mother to child HIV transmission from Health care providers.

TABLE 3 INFORMATION ON KNOWLEDGE ON MTCT AND PMTCT AMONG HIV POSITIVE WOMEN OF REPRODUCTIVE AGES ON ANTIRETROVIRAL THERAPY IN SELECTED REHABILITATION CENTERS, ADDIS ABABA

Variables	Frequency	Percent
Does HIV transmit from mother to child?		
No	40	10.9
yes	326	89.1
When does HIV transmission occur from mother to child?		
During labor	139	42.6
Through breast feeding	287	57.4
Is there any medication, which may help to prevent mother to child HIV transmission?		
No	96	26.2
yes	270	73.8
How to prevent mother to child HIV transmission		
During labor	288	88.3
Through breast feeding	38	11.7
From where did you get the information about mother to child HIV transmission?		
Mass media	56	15.3
Health care provider	294	80.3
From friends	8	2.2
Home based care givers	8	2.2
Do you think medication provided to reduce mother to child HIV transmission actually reduce the transmission?		
No	80	21.9
yes	286	78.1

4.4 HIV /AIDS and treatment conditions of participants

Of the 366 respondents receiving ARV treatment, 334 (91.3%) respondents stated the cost of the drugs was by NGO.

Out of the sampled 318 (86.9%) women Improved their health condition after received ARVT.one hundred forty two (81.7%) of the women in the study tested their spouses, of whom one hundred eighteen (67.8%) were HIV-positive.

Table 4 Information on HIV/AIDS and treatment condition AMONG HIV POSITIVE WOMEN OF REPRODUCTIVE AGES ON ANTIRETROVIRAL THERAPY IN SELECTED REHABILITATION CENTERS, ADDIS ABABA

variables	Frequency	percent
Who cover the cost of the Drugs?		
My self	24	6.6
Free access from the Government	8	2.2
Covered by care and support NGO's	334	91.3
How is your overall health condition after you start receiving ARVT?		
Improved	318	86.9
No change	40	10.
Deteriorated	8	2.2
Did you disclose your serostatus to Your partner?		
No	32	8.7
yes	174	47.5
No partner	160	43.7
Does your husband have HIV test?		
No	32	18.3
yes	142	81.7
What was his test result?		
positive	118	67.8
negative	56	32.2

4.5 Factors associated with fertility desire

In the binary logistic regression analysis age of women, marital status, monthly income, Educational status, ever pregnant and contraceptive use were statistically associated with fertility desire, with p-value < 0.25, and became candidate for the multivariable analysis .

Consequently, results of the multivariable binary logistic regression showed that only age of women, educational status and contraceptive use were found to be significantly associated with fertility desire at p <0.05.

The odds of having fertility desire was 5.49 times higher among women aged 25–34 years as compared to those women 44 years or older (AOR=5.49, p=0.003, 95% CI 1.77– 16.98). On the other hand, the odds of the desire for fertility was very much lesser (AOR=0.07, P=0.038, 95% CI 0.06-0.86) for those women with secondary education and above as compared to those who were illiterate. Contraceptive users had 72% less desire for more children (AOR=0.18, P=0.004, 95% CI 0.04-0.53) than non-contraceptive users.

TABLE 5 -FACTORS ASSOCIATED WITH FERTILITY DESIRE AMONG HIV POSITIVE WOMEN OF REPRODUCTIVE AGES ON ANTIRETROVIRAL THERAPY IN SELECTED REHABILITATION CENTERS, ADDIS ABABA

Variables	Fertility desire				COR (95% CI)	AOR (95% CI)	p - value
	No	%	Yes	%			
Age of mothers							
15-24	8	4	8	5	2.28 (0.60-8.57)	2.59 (0.29-23.02)	0.392
25-34	34	17	110	66	7.39 (2.80-19.4)	5.49 (1.77-16.98)	**0.003**
35-44	141	71	42	25	0.68 (0.26-1.76)	0.94 (0.33-2.67)	0.912
44 plus	16	8	7	4	1	1	
Marital status							
married	105	53	69	41	2.34 (1.20-4.56)	1.52 (0.72-3.18)	0.267
single	16	8	72	43	16.07 (7.20-35.8)	1.39 (0.58-2.97)	0.354
widowed	28	14	12	7	1.53 (0.62-3.76)	1.13 (0.42-2.99)	0.807
divorced	50	25	14	9	1	1	
Monthly income							
Less than 1000	29	15	24	14	1	1	
1001-3000	140	70	109	65	0.73 (0.35-1.51)	1.87 (0.65-5.39)	0.244
More than 3000	30	15	34	21	0.68 (0.39-1.19)	0.92 (0.40-2.08)	0.843
Educational status							
Unable to read	32	16	24	14	1	1	
Able to read and write	76	38	82	49	0.97 (0.52-1.83)	0.68 (0.28-1.67)	0.407
Elementary	14	7	7	4	1.40 (0.88-2.23)	1.16 (0.59-2.27)	0.649
Secondary and above	77	39	54	33	0.18 (0.04-0.85)	0.07 (0.06-0.86)	**0.038**
Have you ever had pregnancy?							
yes	56	78	111	38	1	1	
No	16	22	183	62	5.77 (3.15-10.55)	1.43 (0.77-2.98)	0.68
Have you used contraception?							
No	18	45	78	52	1	1	
yes	22	55	73	48	1.30 (0.64-2.63)	0.18 (0.04-0.53)	**0.004**

5. Discussion

This study aimed to determine the magnitude of fertility desire and associated factors among HIV-positive women on ART in selected rehabilitation center in Addis Ababa, Ethiopia. The prevalence of fertility desire was 45.6%.The multi-variable regression analysis revealed that being in middle age (25-34 years of age) was positively associated with fertility desire. On the other hand, having a secondary and above education and being user of contraception were negatively associated with fertility desire.

In this study, the fertility desire among HIV-positive women a was 45.6% .The study finding was consistent with studies conducted in Tigray region, Ethiopia (Melaku YA, et al, 2014, Krashin JW et al,2018) where prevalence of 45% reported in both of the studies.

In this study, the odds of fertility desire among young ages women of ages 25-34 was 5.49 times higher as compared to age those older than 44 years. This finding is in line with study results from Uganda, and Brazil (King R, et al, 2011; Nóbrega AA, et al, 2007) and might be related to the fact that older women living with HIV have already achieved their desire family size compared to their younger counterparts.

This study indicated that mothers who are secondary and above educational status had less desire to have children as compared to those unable to read and write. This finding corroborates with study findings conducted in south Africa (chirambira,et al,2021). The possible explanation for this finding might be educational level may empower women to decide on reproductive issues as to when and how many children they need to have (saleem, et al, 2005).

On the other hand, research conducted in western Ethiopia showed that women who were not attending school were less likely to have fertility desire (Y. A. Melaku, E. G. Zeleke, J. Kinsman, and A. K. Abraha,). This could be due to less understanding about prevention of material to child transmission during pregnancy and labour (sufa, et al, 2014).

In this study, the use of contraception showed significantly negative association with women fertility. This result supported by research results conducted in sub-Saharan Africa where women who used contraceptive methods (to control their fertility) were associated with a low probability of desire to have more children (Ahinkorah BO, et al, 2020). Another study conducted in Harari regional state, Ethiopia also showed that women who used contraceptives were less likely to

express fertility desires than their counterparts (Haile F, et al, 2014). This might be due to the fact that contraceptive use is significant for HIV positive women to prevent unplanned pregnancy and to reduce HIV positive births.

6.Limitation of the Study

The current study used only quantitative method and didn't include the qualitative aspect of attitude and beliefs of the women related to their fertility desire.

This study was facility-based study that couldn't generalizable to the general population in the community.

In spite of the roles of males in fertility decision, men were not included in the study. The study also limited to HIV positive women who were attending ART at selected rehabilitation centers, so the study didn't include HIV positive women who didn't attend ART at selected rehabilitation centers. The fertility desire might have difference between women who attended ART and didn't.

7.CONCLUSION

This study showed that 167 (45.6%) HIV positive women with ART had fertility desire in the future. The study also revealed that being middle age of 25-34 years of age were positively associated with fertility desire. On the other hand, having, secondary and above education and being user of contraception were negatively associated with fertility desire.

There is a need to integrate reproductive health services in HIV and AIDS care and treatment services and develop programmes to provide safer conception to help PLHIV to conceive and have children safely.

The result of current study has an insinuation for policy makers and health professionals to consider these independent variables which have significant correlation with fertility intention while discussing about reproductive options among women who are HIV positive and to provide adequate information about PMTCT of HIV. This might help HIV positive women to minimise the risk of MTCT and made knowledgeable reproductive decision.

Thus, policymakers and health care providers should consider the role of male partners while developing policy and running an HIV/AIDS intervention. Furthermore the current study found that age is one of the significant variables in fertility intention, so the researcher recommended other researchers to find out the effect of age in fertility intention.

8.RECOMMENDATION

Considering the high fertility desire of HIV positive women in the study area, health planners and service providers should strongly focus on counseling women/ mothers on preventing maternal HIV transmission. Moreover, awareness creation on the importance of disclosing serostatus to partner is mandatory as it helps to protect further transmission of the virus. Further research on this topic should include qualitative studies that would provide a deeper understanding of HIV-positive women's fertility desire.

The result of current study has an insinuation for policy makers and health professionals to consider these independent variables which have significant correlation with fertility intention while discussing about reproductive options among women who are HIV positive and to provide adequate information about PMTCT of HIV. This might help HIV positive women to minimise the risk of MTCT and made knowledgeable reproductive decision.

Thus, policymakers and health care providers should consider the role of male partners while developing policy and running an HIV/AIDS intervention. Furthermore the current study found that age is one of the significant variables in fertility intention, so the researcher recommended other researchers to find out the effect of age in fertility intention.

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10. Annex

Addis Ababa University College of development studies, department of population for all intents and purposes individual consent form for the study on fertility desire and demand for family planning in HIV positive women on follow up care in Addis Ababa rehabilitation centers ARV treatment units.

My name basically is ----------, which is quite significant. I basically am working with the research team of Addis Ababa University. Hear at actually -------Hospital ARV treatment unit we are interviewing women PLWHA on follow up care to basically evaluate their fertility desire and demand for family planning in a kind of major way. The researcher believes that this study would particularly help to generally bring change in fertility and family planning services for HIV kind of positive people on ARV treatment, which essentially is quite significant. We would like to literally assure you that your name will not really be mentioned in the questionnaire and the information that you will basically give us will really be mostly kept confidential and only used for research purpose. You essentially have fairly full right to generally refuse to take part or to interrupt the interview at any time. But the information that you will specifically give us for the most part is quite useful to achieve the objective of the study and to generally bring change in the fertility and family planning service provision for HIV positive people on ARV treatment, which kind of is quite significant.

Are you willing to participate in the study? 1- Yes 2 - No If the answer is yes, thanks! Conduct the interview.

If the answer is no, Thanks! Don't force or reinforce an individual to participate in the survey.

Interviewer's code ---------name ---------- signature ------- Date of interview ----- date ----------

Supervisor's name ---------signature ------ Checked on ---------- date-----

Complete 1 Incomplete 2 other specify 3

PART I – Socio - Demographic characteristics

NO	Questions	Categories
101	How old are you?	------ Years (age in completed years)
102	What is the highest Educational level you completed?	---------- Grade completed……..1 Able to read and Wright ----------2 Un able to read & Wright ---------- 3 Other ----------4
103	What is your Current Marital status?	Married ---------- 1 Single ---------- 2 Widowed ---------- 3 Divorced ---------- 4 Others ……5
104	What is your current Occupation?	Unemployed ---------- 1 Student ---------- 2 House wife ---------- 3 Government employ ---------- 4 Private employ ---------- 5 Other (specify)---------- 6
105	What is your total Monthly in come? In Ethiopian Birr	-……..Eth.Birr

PART II- Information on Child Desire

106	Have you ever had pregnancy?	1 yes 2 no

107	If yes how many live births have you had in your life?	_____
108	what is the sex of preceding birth(excluded)	1 male 2 female
109	Have you ever had a pregnancy losses	1yes 2 no
110	If yes what was the Couse?	1_____Still birth 2_____Miscarriage 3_____Abortion
111	Total number of children with HIV positive	1_____ One 2_____ Two 3_____ More than two 4 none
112	Are you currently pregnant?	Yes _____ 1 No _____ 2
113	If no for question 110 Would you have a desire to have children in the future?	Yes ---------- 1 No ---------- 2 Don't know ---------- 3 No response ------4

114	If the answer for Q 111 yes, How many (more) children would you like to have in the future?	No of children desired ---- 1 None ------2 Don't know ----------3 No response -----4
115	(If the answer for question 112 no) why do you not want to have children in the future?	have desired number of children --1 fear of mother to child HIV transmission risk ------ 2 don't have adequate income to add another child ---------- 3 Health care providers advise not to have a child ---------- 3 Child bearing may further compromise my/my partner health ---------- -- 5 husband /partner doesn't want to have a child in the future……..6 No response -------- 99 Other (specify) ----------89

PART III Information on Knowledge and Attitude on MTCT and PMTCT

116	**Does HIV transmit from mother to child?**	**Yes ---------- 1** **No ---------- 2**

117	**IF yes when does HIV transmissions occur from mother to child?**	**During pregnancy ---------- 1** **During labor ---------- 2** **Through breastfeeding ------- 3** **I don't know ---------- 4** **No response ---------- 5**
118	**Is there any medication, which may help to prevent mother to child HIV transmission?**	**Yes ---------- 1** **No ---------- 2**
119	**How much (do you think the risk of HIV transmission from mother to child, if the mothers do not use any preventive medication?**	**All children borne to infected mother acquire the infection----------1** **I don't now ----** **I don't know the exact figure ------ 3** **Other specify ---------- 4** **O no** **1 yes**
120	**From where did you get the information about mother to child HIV transmission?**	**Mass media ---------- 1** **Health care provider ------- 2** **From friends ---------- 3** **Home based care givers ---------- 4** **No response ---------- 99** **Other (specify) ---------**

121	**Do you think medication provided to reduce mother to child HIV transmission actually reduce the transmission?**	**Yes ---------- 1** **No ---------- 2** **Don't know---------- 3** **No response ---------- 99** **Other (specify) ----------**

PART IV- Information on HIV /AIDS and treatment conditions

122	**How many years / months since HIV diagnosis?**	**--------- Months or ---------- years**
123	**Did you start Receiving ARV treatment?**	**Yes ---------- 1** **No ---------- 2** **No response ---------- 99** **Other (specify) -------**
124	**When did you start receiving ARV treatment?**	**Before -------- month or------years** **Don't remember ---------- 1** **No response ---------- 99**
125	**Who cover the cost of the Drugs?**	**My self ------- 1** **Free access from the Government ---2** **Covered by care and support NGO's-- 3** **No response_____ 4**

126	**How is your over all health condition after you start receiving ARVT?**	**Improved ----------1** **No change ----------2** **Deteriorated ---------- 3** **No Response ---------- 99** **Other (specify) -------**

PART V – Information on reproductive characteristics

127	**Have you had sexual Intercourse In the past six months?**	**Yes ---------- 1** **No ---------- 2** **No response ---------- 99** **Other (specify) ----------89**
128	**(If yes for Q 125) Have you used contraception?**	**Yes ---------- 1** **No ---------- 2** **No response----------3** **Other (specify) ---------- 4**
129	**If yes for Q149 how often?**	**Always ---------- 1** **Some times ---------- 2** **No response ---------- 99** **Other (specify) ----------89**
130	**If the answer for question 128 yes, why do you used contraception?**	**To prevent pregnancy ---- 1** **Because my partner HIV status is negative _____2** **Health care providers advised me to use contraception --- 3**

		We are not ready to have children ---4 **Other (specify) ----------5**
131	**If the answer for question 129 no, why didn't you used contraception?**	**I want to have children ------- 1** **My partner did not like it ------- 2** **No response ---------- 99** **Other (specify) ----------89**
132	**Did you disclose your serostatus to Your partner?**	**Yes ---------- 1** **No ---------- 2** **No partner ---------- 3** **No response ---------- 4**
133	**Does your husband had HIV test?**	**Yes ---------- 1** **No ---------- 2** **No partner ---------- 3** **I don't know---------- 4** **No response---------- 5**
134	**What was his test result?**	**Positive ---------- 1** **Negative ---------- 2** **I don't now ----------3** **No response ---------- 4**