HARAMAYA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

LEVEL OF UNMET NEED FOR MODERN FAMILY PLANNING METHODS AND FACTORS ASSOCIATED AMONG HIV POSITIVE WOMEN ON ANTIRETROVIRAL THERAPY IN PUBLIC HEALTH FACILITIES OF HORO GUDURU WOLLEGA ZONE, NORTH WEST ETHIOPIA.

MPH THESIS

By: Gedefa Hunde (BSc in Public Health)

June, 2019

Haramaya, Ethiopia

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SCHOOL OF GRADUATE STUDIES

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BIOGRAPHICAL SKETCH

My name is Gedefa Hunde; I was born in Homi kebele of Abay Chomen woreda of HGW Zone, Oromia in 19/06/1987 G.C. I had completed my primary school at Homi, Secondary and preparatory school in Shambu and I had graduate in public health officer (BSC) from Haramaya University in the year 2008G.C.

In July 2013, I had joined school of Graduate Studies, Haramaya University through self-sponsor to pursue my post graduate studies in the program of Reproductive Health, which this volume is in partial fulfillment.

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ACRONYMS /ABBREVIATIONS

AIDS : Acquired Immunodeficiency Syndrome

ART : Antiretroviral Therapy

ARV : Anti Retro-Viral (Drugs)

FP : Family planning

FSF : Finchaa Sugar Factory

H/C : Health Centre

HSSP VI : Health Sector Strategic Plan VI

HGWZ : Horo Guduru Wollega Zone

HIV : Human Immunodeficiency virus

MoH : Ministry of Health

PLWHA : Peoples Living With HIV/AIDS

PMTCT : Prevention of Mother-to-Child Transmission of HIV

TFR : Total Fertility Rate

SRH : Sexual and Reproductive Health

STI : Sexual Transmitted Infection

SRH&R : Sexual and Reproductive Health and Rights

UN : United Nations

UNAIDS : Joint United Nations Programme on HIV/AIDS

UNDP : United Nations Development Programme

UNFPA : United Nations Development Fund

UNICEF : United Nations Children's Fund

WHO : World Health Organization

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ABSTRCT

Background: Most recently contraceptive issues among Human Immunodeficiency virus positive women are becoming increasingly important. Because of Antiretroviral Therapy access and its good life effect, it is expected that the need and desire to get married, and to have sexual partners for Peoples Living with HIV/AIDS would change with the regard to reproductive health. In Ethiopia whether Human Immunodeficiency virus positive individuals are sexually active or not, level of unmet need for contraception was not well known.

Objective: The aim of the study were to assess unmet need and associated factors for modern family planning among HIV positive women on ART in selected ART providing public health facilities of Horro Guduru Wollega Zone, Oromia National Regional State, Ethiopia from 1st April to 15th April 2015 G.C.

Methods: A cross-sectional, facility-based study that encompasses quantitative interviewer administered interviews was conducted. Single and double population proportion was used to estimate the required sample size for outcome and explanatory variables. Three hundred thirty five study subjects was selected using systematic random sampling technique and the data were collected using interviewer administered structured questionnaire. Data entry and analysis was performed using EPI DATA version 3.1 and SPSS version 20. P-value <0.05 was taken as statistically significant and logistic regression were used to control potential confounding factors. P-value ≤0 .2, context and result of previous study were used as a cut of point to include or exclude variables for the multivariate analysis.

Result: The study findings showed that the overall prevalence of unmet need is 27.3% at 95% CI, comprising 11.8% of women who wanted to limit births and 15.5% who wanted to space births. Multiple logistic regression model revealed that being Orthodox (AOR= 1.3, 95% CI: 1.02-4.63), being Amhara (AOR= 3.1, 95% CI: 1.04-9.14), having Exposure to media (AOR=5.75, 95% CI: 1.25-130.09), ≥ two years to have child (AOR=2.26, 95% CI: 1.12-12.91), source of information for modern contraceptive (AOR= 2.6, 95% CI: 1.02-53.43), decision on contraceptive use (AOR= 2.04, 95% C.I : 1.08 - 53.19), time needed to reach F/P source (AOR= 2.5, 95% C.I: 1.01-2.13) were found significantly associated factor with unmet need for family planning.

Conclusion and Recommendations: Unmet needs for F/P were high among HIV positive women on ART in study area which reveals there was broader demand for F/P services. Therefore governments, providers and stakeholders in the study area should focus on the need to develop new strategies ensure availability of family planning commodities, proactive counseling on family planning and ensure service integration at facility level by skilled service provider.

1. INTRODUCTION

1.1. Background

The estimated number of people living with HIV (PLHIV) was 36.9 million worldwide at the end of 2017 and about 21.7 million people on HAART at the end of 2017(USAIDS 2018).This number is increasing due to the recent reduction in mortality rate based on the availability of new and effective anti-retroviral therapy (ART) around the world, including poor and developing countries, where coverage of adults in need of ART was approximately 58.8% at the end of 2017(WHO. 2016). While the overall health status and life expectancy of PLHIV have improved with the use of ART, it has been reported that more HIV-positive women in African countries became pregnant after receiving ART(WHO/UNAIDS/UNICEF 2014).

According to the WHO report 1.8 million women with HIV infection give birth globally each year(WHO. 2016). Pregnancy, childbirth and their consequences are reported to be the leading causes of related morbidity, mortality and subsequently disability among women of reproductive age in developing countries(WHO/UNAIDS/UNICEF 2014).

Although there has been a reduction in new infections of HIV about 41% between 2000 and 2015, HIV infection continues to be a public health problem in Sub-Saharan Africa, where 28.6 million people lived with HIV. Women of reproductive age account for about half of people living with the human immunodeficiency virus (HIV) globally (*Marcel Y., Alison N.* et al. 2015). Each year, some 1.5 million HIV-infected women become pregnant, mainly in sub-Saharan Africa(UNAIDS. 2013). The decline in the incidence of HIV infection is the effect of multiple interventions implemented to prevent HIV transmission among heterosexual and especially from mother-to-child HIV transmission. About 66, 000 children less than 14 years were reported to be newly infected by HIV in Western and Central Africa at the end of 2015(Calvert C. and Ronsmans C. 2013). Most of these infections could have been prevented by antiretroviral therapy (ART) during pregnancy and more by contraceptive use among HIV-infected women, which is the fourth component of preventing mother-to-child transmission (PMTCT). In 2014 the estimated that the level of contraceptive use could prevent over 173, 000 unintended HIV-infected births each year in Sub-Saharan Africa(*Marcel Y., Alison N.* et al. 2015).

Modern methods of contraception such as sterilization, intrauterine devices, male and female condoms are effective means of preventing unwanted pregnancies. (Yemane B., Haftu B. et al. 2013)

Indeed, family planning showed numerous benefits for HIV-infected women, such as the reduction of morbidity and mortality due to pregnancy and also the improvement of health of HIV-infected women by reducing unintended pregnancies. Therefore family planning contributes to PMTCT of HIV(Zaba B., Calvert C. et al. 2013). The use of contraceptives, mainly male and female condoms, could provide dual protection. It could protect against acquisition or transmission of sexually transmitted infections, including HIV(*Marcel Y.*, *Alison N.* et al. 2015). However, in Sub-Saharan Africa, given the progress in PMTCT with the expansion of ART, most of the HIV-infected women still have desire to have children and the prevalence of contraceptive use varies according to the studies(*Marcel Y.*, *Alison N.* et al. 2015).

Prevention of unintended pregnancies among women living with HIV is the second component of the World Health Organization's four-pronged approach to comprehensive prevention of mother-to-child transmission of HIV (PMTCT). Provision of appropriate counseling and support, and contraceptives, to women living with HIV to meet their need for family planning and spacing of births has been shown to be a cost-effective intervention to prevent MTCT.(WHO. 2016)

Family planning (FP) programs have helped women worldwide to avoid millions of unintended pregnancies often associated with high risk abortions and with maternal, newborn and child morbidity and mortality. Globally, about 220 million women have an unmet need for FP and 80 million unplanned pregnancies occur each year. In sub-Saharan Africa (SSA), around 14 million unintended pregnancies occur yearly(*Marcel Y.*, *Alison N.* et al. 2015). Investing in FP to prevent unwanted pregnancies has the potential of averting 13% of maternal, newborn and child deaths (Damian J, Johnston M. et al. 2018).

Recently, the use of FP has been seen to be of high benefit to women living with HIV. As compared to women in the general population, HIV-positive women have high unwanted pregnancy rates (51–90%), especially in SSA region(WHO. 2016). Prevention of unintended pregnancies among HIV-infected women has a vital role in the prevention of mother-to-child-

transmission (MTCT) of HIV. Reducing unintended pregnancies among HIV-positive women through FP reduces the number of HIV-exposed infants born from HIV-positive women and ultimately decreases MTCT(Polisi A., Gebrehanna E. et al. 2014). Prevention of unwanted pregnancies also reduces the vulnerability of women and infants to morbidity and mortality related to pregnancies. FP has also proven to be a cost-effective strategy for the prevention of HIV transmission, as contraception costs are less than the cost of drugs used in the Prevention of Mother-To-Child Transmission (PMTCT)(Zaba B., Calvert C. et al. 2013) .

For the elimination of MTCT of HIV, WHO recommends a comprehensive PMTCT strategy with the 4 prongs: 1) Primary prevention of HIV infection among women of childbearing age; 2) FP for preventing unintended pregnancies among HIV-infected women; 3) preventing HIV transmission from HIV-infected women to their infants; and 4) treatment, care and support for HIV-infected women and their children (WHO. 2016). However, PMTCT of HIV in most SSA countries including Ethiopia is based on the third prong which is usually complex, labor and resource intensive. This has led to the second prong gaining recognition as having a vital role in PMTCT(WHO. 2016).

1.2. Statement of the problem

People with HIV have the same reasons to have children or to prevent pregnancy as everyone else, but they have important additional issues to consider. These may include among others the possibility of transmitting the virus to their babies and partners in case of discordant relationships. It is essential that they are empowered to make informed choices relating to their reproductive lives(Yemane B., Haftu B. et al. 2013). Provision of appropriate counseling and support, and contraceptives, to women living with HIV to meet their need for family planning and spacing of births has been shown to be a cost-effective intervention to prevent MTCT(Zaba B., Calvert C. et al. 2013).

Each year, some 1.5 million HIV-infected women become pregnant, mainly in sub-Saharan Africa(UNAIDS. 2013). Women account for 59% of the people Living with HIV (PLHIV) in Ethiopia (Alemu S., Muluemebet A. et al. 2013). Although HIV prevalence and fertility rates in Ethiopia are among the highest in the world, little is known about how HIV infection affects the met and unmet need for modern family planning (Feyisa M., Yemane B. et al. 2015).

HIV-infected women have a heightened need for guidance from health care providers prior to an attempt for pregnancy because of the potential risks of transmission to the partner while trying to conceive and to the infant during pregnancy, delivery and breast feeding(Abebe M., Addissie A. et al. 2012). Providing HIV-infected women with HIV care, opportunities to plan and space pregnancies, and quality pregnancy care including PMTCT services improve health outcomes for both mothers and infants. Effective programs to prevent perinatal HIV transmission would, if accessed by all women in need, prevent approximately 300,000 HIV transmissions annually(Yemane B., Haftu B. et al. 2013).

HIV-infected women have higher needs for family planning (FP) for their own health and for preventing mother-to-child transmission of HIV. Unintended pregnancies are a major contributor to maternal mortality because they increase the risk of unsafe abortion, lead to frailty in women with high parity and closely spaced pregnancies, and cause obstructed labor in young women with premature pelvic development(Khan D., Wojdyla L. et al. 2014). A recent pooled analysis of data from six community-based studies in eastern and southern Africa with HIV serological surveillance and verbal-autopsy showed that, in HIV-infected women, the risk of death while

pregnant or within 42 days of termination of pregnancy is eight times that of HIV-negative women. Likewise, an estimated 24% of deaths in all pregnant or post-partum women were attributable to HIV(Zaba B., Calvert C. et al. 2013). The high risk of death persists even at higher CD4 count level(Hargrove J. and Humphrey J. 2014). In addition, over 90% of children infected with HIV acquire their infection from their mother during pregnancy, labor and delivery, or through breastfeeding(Calvert C. and Ronsmans C. 2013).

Despite the use of family planning have potential impact on maternal and child health, the use of contraceptives in sub-Sahara Africa is the lowest in the world. Recent estimates show that 60% of women in the region who want to avoid pregnancy have an unmet need for modern contraceptive methods (currently are using no methods or a traditional method)(Darroch J. and Singh S. 2013). Although there are no reliable data from the region quantifying the unmet need for modern contraceptive methods among HIV-infected women, studies suggest that HIV-infected women who know their status are substantially less likely to want more children compared to their HIV-negative peers and the reported rate of unplanned pregnancies among HIV-infected women in the region remains high(WHO 2014). Responding to the gap of unmet reproductive health needs of HIV-infected women, major international organizations including the United Nations have called for stronger linkages between reproductive health and HIV/AIDS care(WHO 2013). Understanding the level of unmet need for modern family planning of HIV-infected women who know their HIV status and their pregnancy incidence is critical in meeting their reproductive health needs and preventing unwanted pregnancies. The level of unmet need and associated factor for family planning among HIV clients on ART in Horo Guduru Wollega Zone is not well known. There are undocumented reports of unwanted and unintended pregnancies among HIV/AIDS infected female clients. The magnitude of the unintended/unwanted pregnancies has not yet been established. Some women are reported to be re-exposed to unsafe illegal abortions which put their lives at risk. Even data on abortion in the public health facilities found in the zone is also poorly documented. All public health facilities found in the Horo Guduru Wollega Zone, providing ART service also provides free SRH services as part of the comprehensive HIV care package(HGWZ Health Office 2013/2014).

1.3. Significance of the study

The findings of this study will be used by different stakeholders like woreda, zonal and regional health offices to enhance the planning of services to better deliver the F/P services to HIV positive women. Health facilities in the study area will be benefited by taking the result of the study as feedback for improvement of the F/P service. Any interested researcher will be benefited from this study by taking it as bench mark and the PI also benefited from this study for partial fulfilment of the requirements for master's degree. This will inevitably impact on reduction of unintended pregnancy and mother to child transmission of HIV.

1.4. Objective:

1.4.1. General objective:

To assess level of unmet need and factors associated for modern family planning methods among HIV positive women 15-49 years on ART in Horo Guduru Wollega Zone public health institutions from 1st to 15th April 2015 G.C.

1.4.2. Specific objective:

1. To assess the level of unmet need for modern family planning methods among HIV positive women attending public ART institutions in Horo Guduru Wollega Zone.
2. To identify the factors associated with unmet need for family planning among HIV positive clients in public ART institutions in Horo Guduru Wollega Zone.

2. LITERATURE REVIEW

2.1 Sexual Behavior of people living with HIV/ AIDS

Over 69% of adults living with HIV reside in sub-Saharan Africa, where the epidemic continues to spread(WHO. 2016). As a result of the success of highly active antiretroviral therapy (HAART) mortality and morbidity from AIDS related disease is dramatically decreasing. Many HIV-infected persons are now living longer and healthier lives, and are also more sexually active(Cooper D., Bracken H. et al. 2014).

Despite counseling, studies in both developed countries and developing countries in the era of wide access to antiretroviral drugs indicate that many HIV positive individuals continue to exhibit high risk sexual behavior characterized by fertility intentions. A study in Kenya revealed that nearly 70% of those who had been receiving ARV for 18 to 24 months were sexually active compared with 50% of those who had been receiving ARV for less than 6 months(KDHS. 2013). Similarly two studies in Uganda showed a statistically significant increase in sexual activity among ART experienced study participants as compared with ART naïve participants. The proportion of sexually active people was higher among ART-experienced than ART-naïve participants(Asres B. and Yifru B. 2013).

Similarly, a study in Brazil found that the percentage of people reporting at least one sexual encounter per months had increased from 60% initially to 78% by 24 months after starting ARV(WHO 2013). Cross-sectional study among patients on ART from an informal urban settlement in Kenya found increased rates of inconsistent condom use among women and increased rates of multiple sexual partners among married men(KDHS. 2013).

A cross sectional study in Uganda Kampala showed that while 52% of the respondents were not sexually active, ARV-experienced patients were more likely to be sexually active than ARV naïve patients, and more likely to have used a condom. Condom use at last sexual intercourse with spouse was 32% and with causal partners 100%(Walter K., Gian S. et al. 2014).

Research on changes in sexual behavior and risk of HIV transmission after antiretroviral therapy and prevention interventions in rural Uganda showed increases in consistent

condom use from 59 to 82% with partners with negative or unknown HIV status. However, 88% of risky sexual acts at baseline and 86% at follow-up occurred within married and cohabiting couples(Walter K., Gian S. et al. 2014).

A cross sectional study conducted in Addis Ababa found that people who were sexually active at the time of study were 50.2%. 74% of these individuals used condom (79.8% used it regularly) in Addis Ababa(Tamene W. 2014).

2.2 Fertility desire of people living with HIV/AIDS

As ARV therapy becomes increasingly accessible, the associated improvements in health, quality of life, and survival are anticipated to influence both the biological and behavioral fertility determinants(*Marcel Y., Alison N.* et al. 2015).

Surveys in developed and developing countries have found that 18% to 43% of women with HIV, respectively, wanted to have children in the future. A cross-sectional study in rural Uganda showed statistically significant association between being on HAART and wanting to have more children than the other(Walter K., Gian S. et al. 2014).

Predictors for desiring more children were younger age, having a higher number of living children and male sex(Reta T., Daniel M. et al. 2013). Sexually active women and men who were sero-discordant with their parents had significantly increased odds of fertility desire. While being a widow and increased WHO stage are associated with decreased fertility desire(Reta T., Daniel M. et al. 2013).

A cross sectional study from South Africa indicated that 29% of HIV positive women wanted to have children in the future. Fertility desire was more common among those who had been taking ART for longer period of time. The desire for children among HIV-positive women who were last tested in the past 12 months and are between age group of 15-49 was found to be 37.8%(Copper D., Zweigenthal V. et al. 2014).Another cross sectional study from the same country found that 50% of men and 45% of women reported being open to the possibility of having a child(Calvert C. and Ronsmans C. 2013).

In Nekemte Hospital 40.2% (44.7% of the female and 35.2% of the male) respondents expressed the desire for children(Alemu S., Muluemebet A. et al. 2013). In SNNPR cross

sectional study from Hawasa hospitals indicated desire for children among people living with HIV/AIDS was 33.9%(Feyisa M., Yemane B. et al. 2015).

In SNNPR and Addis Ababa proportion of study subjects who know about transmission of HIV from mother to Child were 93.4% and 90.3% respectively. In Addis Ababa, from people who had knowledge of MTCT, 93.6% of them knew the availability of mother to child HIV transmission prevention medication which may evoke their fertility need. Also, the use of antiretroviral drugs during pregnancy and avoidance of breastfeeding were identified as methods of reducing mother-to-child transmission of HIV by only 14% and 21% of the respondents, however, 78% did not know that an HIV positive woman who took PMTCT drugs could still deliver an HIV – infected baby(Tamene W. 2014; Feyisa M., Yemane B. et al. 2015)

2.3 Reasons for child bearing among people living with HIV/AIDS.

Since access to antiretroviral therapy has improved quality of life and survival for HIV Positive people, many will contemplate child bearing. Studies in India, and South Africa found out several triggers for the desire to have a child after HIV diagnosis. Most common reasons the study found were: wish to sustain the family genes, need to experience parenthood, social influences, PMTCT services availability, the fear of impending death of the first baby, and financial stability(Darroch J. and Singh S. 2013; Copper D., Zweigenthal V. et al. 2014).

In south Africa commonly reported reason for women and men wanting to have a child was wishing to do so while their health still permitted (21% and 39% respectively), wanting at least one child/more children (16 and 26% respectively,) marriage and replacing a child who had reportedly died of AIDS (13% and 6% respectively). The majority of women (62%) and men (65%) had discussed their fertility intentions with a main intimate partner. 24% of women and 55% of men reported being very strongly influenced in their childbearing desires by a partner's desires(Copper D., Zweigenthal V. et al. 2014).

A study from Uganda showed four main reasons for wanting more children: "need to leave ancestry"(52%), not having any boys (14%), not having any children or all children died (12%), and not having girls (9%). Among those who didn't want children but their partner wanted and were married or cohabiting with a partner, 24% thought that their partners wanted more children(Walter K., Gian S. et al. 2014).

A qualitative study in Nyanza Province, Kenya revealed that the perceived detrimental effects of pregnancy and Childbirth on HIV-related poor health and immune status were frequently expressed concerns as a reason not to have or delay fertility. The majority of participants considered the risk of transmitting HIV to a child in their fertility intentions(Elizabeth K., Harrington B. et al. 2014).

A studies from, South Africa and Uganda indicated that reasons for not wanting a child among people living with HIV/AIDS included anxiety about their own health and their child's health, fear about leaving children orphaned, not having family support, stigma by the family, low income, fear of passing on HIV infection to baby, not wanting to take risk, fear of being judge by others, risk of re-infection, having sufficient children, and being not married(Asres B. and Yifru B. 2013; Copper D., Zweigenthal V. et al. 2014)

2.4. Family planning practice of people living with HIV/AIDS

A study demonstrated that adding family planning to PMTCT services in high-HIV prevalence countries could avert 71,000 child HIV infections compared with the 39 000 HIV-positive births averted with PMTCT(WHO. 2016). Study done in Nigeria reviled that the majority (90%) of the respondents were aware that HIV can coexist with pregnancy, but only 68% were aware of any of the route of mother-to-child transmission(Ijeoma N., Miscele L. et al. 2014).

A prospective cohort study in Uganda found that among sexually active women 65% reported using condom at 18 months after starting ART and 63% at 2 years of follow-up. However, only 14% of women used permanent family planning methods by their 2nd year on ART(Andia I , Kaida A. et al. 2013).

In DR Congo, all heterosexual women who were currently on ARVs reported consistent condom use during vaginal sex with their male regular partners(*Marcel Y.*, *Alison N.* et al. 2015). In Tanzania Fifty-four percent of HIV-positive women reported using a family planning method at the time of data collection, almost twice the proportion of HIV-negative women using a family planning method(Damian J, Johnston M. et al. 2018). In Addis Ababa family planning use before and after HIV diagnosis was 48% and 43.3% respectively. Most commonly used family planning

methods before HIV diagnosis were oral family planning pill (45.8%) and injectable (29.3%). Condom and abstinence were the most practiced methods after HIV diagnosis 65.8% and 21.1% respectively. Similarly, when compared With HIV-negative women, HIV-positive respondents were significantly more likely to use a modern method of family planning, particularly more likely to use condoms(Tamene W. 2014).

2.5 Unmet need for Family Planning among women

Unintended pregnancies often result from an unmet need for family planning. According to a study done in DR Congo and Nigeria the unmet need for Family planning ranges from 18% in Niger to 42% in Togo, with a regional average of 19.4%(Ijeoma N., Miscele L. et al. 2014; *Marcel Y., Alison N.* et al. 2015)

Ethiopia many other African countries, has a high demand for family planning , 37% of women either wish to cease childbearing or 38 % want to wait for at least two or more years to have another child and 17% will have children in the next 2 year(Yemane B., Haftu B. et al. 2013). Current family planning prevalence rate among married women in Ethiopia is 25%(EDHS 2011).

According to EDHS 2011 twenty five percent of currently married women have an unmet need for family planning (16 percent for spacing and 9 percent for limiting)(EDHS 2011)

2.6. Conceptual framework

Several factors can lead to unmet need for contraception in the general population. Some factors lead to unmet need for contraception by affecting demand for contraception by clients while other factors increase unmet need due to inadequate supply. Factors that frequently reduce demand for contraception are lack of information, side effects, opposition to use family planning by husband or husband`s family, religion and pressure to have children(Rossem V. and Meekers C. 2010; Beena H., Kapil M. et al. 2014). Some factors have to do with access to contraception and these include frequent stock outs, limited number of contraceptive methods and poor provider client relationships(WHO 2014). It is therefore important to study which of the above factors affect contraceptive use among women on ART if evidence based strategies to reduce unmet need in this population are to be implemented.

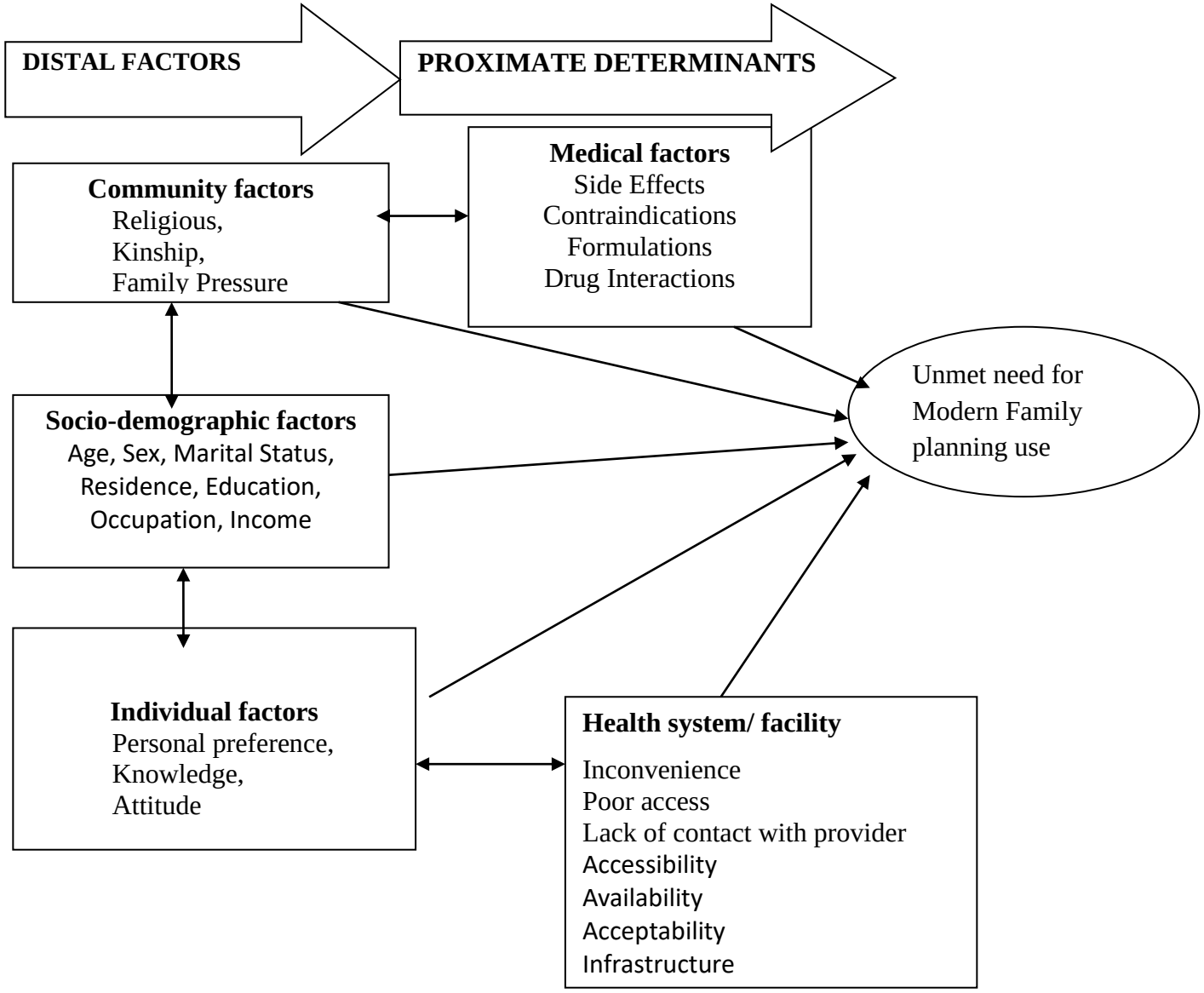


Figure 1: Conceptual framework of unmet need for modern contraceptive use among HIV positive women.

Source: Modified from westof and Bankole 1995 (234) and Literature Review.

3. METHODS AND MATERIALS

3. 1. Study area and period:

The study was conducted in Horo Guduru Wollega Zone which is one of the twenty zones found in Oromia national regional state from 1st April to 15th April 2015 G.C. It was located in North West part of the country 330km away from the capital city Addis Abeba. The Zone was bounded by west showa zone and Amhara regional state in the east, East Wollega in the west, Amhara regional state in north and west showa zone in the south. It has ten woredas with different climatic conditions and the total population of the zone as projected from 2007 CSA was about 570,040 of which 285,515 male and 284,525 females(CSA 2007). Shambu was the capital town of the zone.

The majority of the population in the area belongs to Oromo (92.12%) in ethnicity and Protestants (42.99%) in religion. Oromiffa is most widely spoken as a first language by 94.95% (CSA 2007).

Horo Guduru Wollega Zone has a total of 37 health facilities (health centre and hospital) including ten ART care units with 74% health service coverage. According to 2013/2014 Zonal report there were about 2,194 PLWHAs in the zone out of which 1018 were females and 1,157 were males. Out of total females infected with HIV 1,012 were on ART and from those on ART 981 were women in reproductive age group(HGWZ Health Office 2013/2014). This is because of different projects found in the area like Finchaa sugar factory, Finchaa and Amarti Nashe hydroelectric power and high population movement.

3.2. Study design

Facility based cross-sectional quantitative study.

3.3. Source population and Study population:

Source population:

All registered female ever married and sexually active unmarried HIV positive women aged 15-49 years on ART in Horo Guduru Wollega Zone public health facilities.

Study population:

All married and sexually active unmarried women on ART aged 15-49 years in selected five public health facilities (Finchaa H/C, Kombolcha H/C, Wayu H/C, Agemsa H/C and Shambu Hospital) available during data collection time in Horo Guduru Wollega Zone.

3.4. Inclusion and Exclusion Criteria.

Inclusion criteria

The eligibility criteria included all HIV positive women aged 15–49 years registered for ART and who were taken ART at the time of data collection in the selected health facilities were included in the study.

Exclusion criteria

Clients who were very sick and those who were newly registered (those attending for the first time) were excluded from the study.

3.5. Sample size:

Single population proportion was used to estimate the required sample size for outcome variables (for 1st objective).

With the formula of:

$$n = \frac{(Z\alpha/2)^2 \; P(1-P)}{d^2}$$

$$n = \frac{(Z\alpha/2)^2 \; P(1-P)}{d^2} = \frac{(1.96)^2 \; 0.274(1-0.274)}{(0.05)^2} = 305.67$$

n = 305 x 10% = **335(for first objective).**

At the assumptions of:

The estimated unmet need for contraception was 27.4% which was obtained from kumasi Ghana(Dennis O., Yaw A. et al. 2014). Level of significance p = 0.05 (which means α set at 0.05 and Zα/2 = 1.96 value of Z at α 0.05 two-sided test or critical value for normal distribution at 95% C.I.) which gives 305 sample sizes. By adding a 10% non-response rate the minimum required sample size were 335.

For objective 2: Double population proportion was used to estimate the required sample size for independent variables (for associated factors) by using EPI-Info version 3.3.2 statistical software program. By the formula of:

$$n_1 = \frac{\left[Z_{\frac{\alpha}{2}} \sqrt{\left(1 + \frac{1}{r}\right) P(1-P)} + Z_{\beta} \sqrt{P_1(1-P_1) + \frac{P_2(1-P_2)}{r}} \right]^2}{(P_1 - P_2)^2}$$

To determine the sample size the following assumptions was made: women's education, marital status and partner discussion was found to be a major factor determining utilization of F/P use in the previous study in the North West Oromia (Reta T., Daniel M. et al. 2013) Where,

n1= Sample size of women with married

n2= Sample size of women with not married

r=n1/n2=2 for the population allocation ratio

Zα/2=1.96 for the standard scale of 95% level of confidence**,** Zβ= standard scale of 0**.**80

Corresponding to an 80% for power to detect a difference of (P1-P2) is 90%

P1=Proportion for women with married (exposed), 95% (Reta T., Daniel M. et al. 2013)

P2=Proportion of women with not married (non-exposed), 5%(Reta T., Daniel M. et al. 2013)

P (pooled population proportion) = $\frac{P1+rP2}{1+r}$

The sample size for married HIV positive women was 146. Considering non-response rate of 10%, the total calculated sample size were 161. By comparing the two sample sizes calculated using single and double population formula which was 335 and 161 respectively, the larger sample size **(**335) was taken as the total sample size for the study.

Table 1: Illustrates Sample Size calculation for the second specific objectives considering other variables as a factor using double population proportion formula(Alemu S., Muluemebet A. et al. 2013).

Variable		proportion	Sample taken	ratio	P1-p2	Sample size (n)
Educational status	Exposed	p1= 90.1%	N1=411	9.1:1	80.2 %	153
	Non exposed	p2 =9.9%	N2=45			
Marital status	Exposed	p1 = 95%	N1=303	1.9:1	32.8 %	146
	Non exposed	p2= 5%	N2=153			
Partner discussion	Have discussed	p1= 95%	N1=303	1.9:1	32.6 %	146
	Not discussed	p2= 5%	N2=153			

3.6. Sampling Procedure and Technique*:*

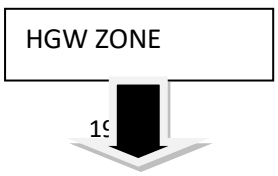
Ten ART providing health facilities were selected first from the available health facilities in the zone based on their homogeneity (ART service availability in health centre and hospital). Then four health centres and one Hospital ART providing were selected by simple random sampling method.

After selecting health facilities, by proportionate allocation of sample size for the selected 5 health facilities, every 3rd selected HIV positive women was interviewed for modern family planning methods from the ART registration book/ data base without the considering their current CD_4 level and type of treatment they are taking by systematic sampling method.

Sampling frame: Were taken from ART HMIS registration book or data base.

Table 2: Distributed sample size for each selected Health Facilities.

Selected H/F	Number of HIV positive women 15-49 in each	Calculated sample size by proportionate allocation	Interval for interview
Finchaa H/C	178	77	Every 3rd client(one in three)
Agemsa H/C	164	71	Every 3rd
Wayu H/C	116	50	Every 3rd
Kombolcha H/C	102	44	Every 3rd
Shambu Hospital	217	93	Every 3rd
Total	777	335	



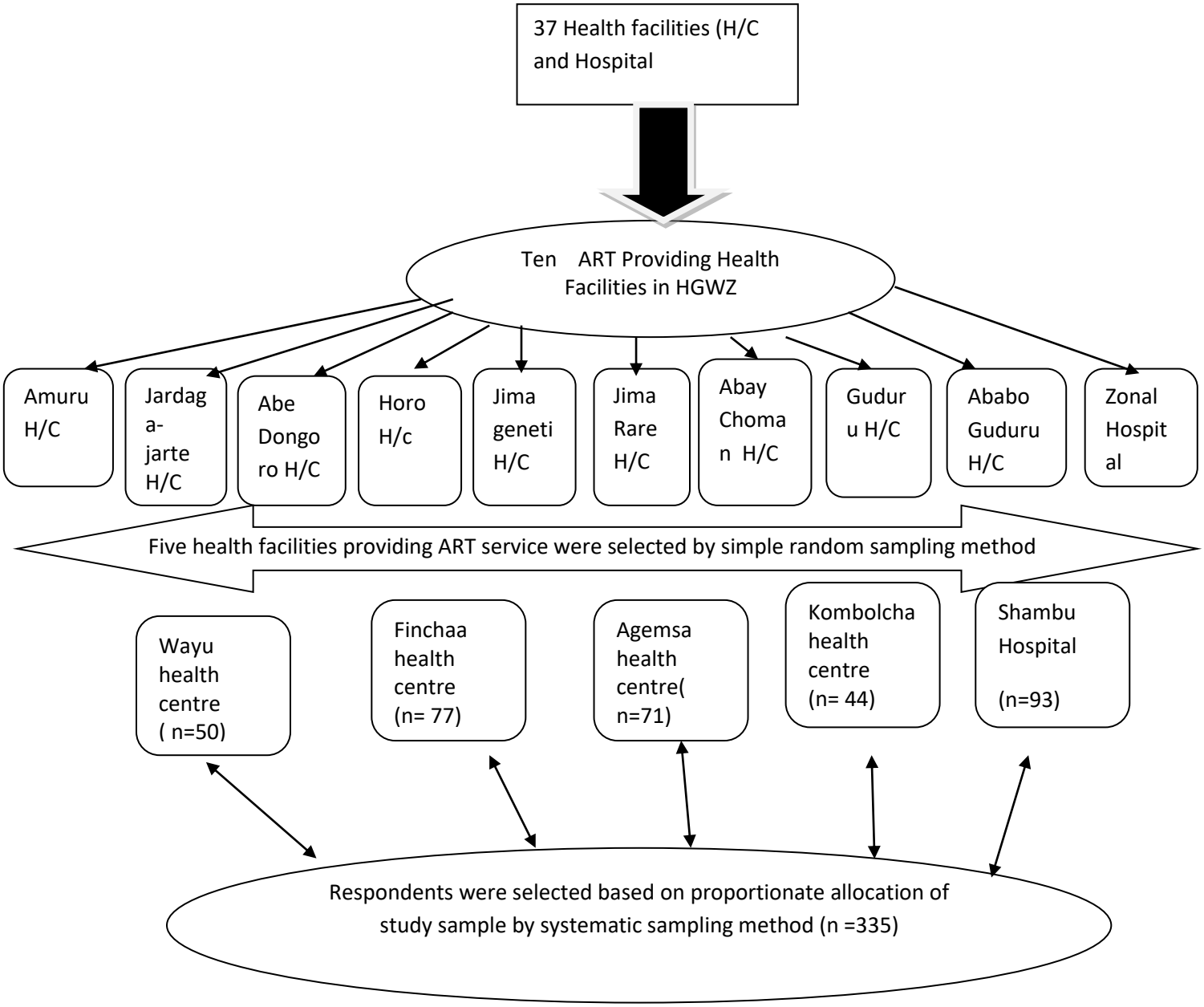


Figure 2: Schematic presentation of sampling procedure to select respondents and public health facilities in the study area.

3.7. Data collection methods

3.7.1. Data collection Instruments

Structured close-ended questionnaires were interviewed by data collectors, which consist of different parts like socio-demographic factors, health facility/system factors, individual factors and community factors.

The data collection instrument was prepared in English and translated into the regional working language Afan Oromo, by experts who were fluent in languages and back transcribed to English by another expert to ensure consistency and accuracy.

3.7.2. Data collectors

Five bilingual experienced ART or F/P service provider Nurses who were fluent in Afan Oromo language for client interview and three supervisors were recruited and trained for data collection. Data collectors were recruited based on their previous experience in data collection, relevance of qualification, training and ability of the local language. Two days training were given on theoretical and practical skills for handling data collection. The training was based on the guide that was developed by principal investigator for data collectors and clarifying how to interview the questionnaire.

The trainings were covered general interviewing guidelines, handling sensitive issues, confidentiality, and data collection protocols, question-by-question reviews of Afan Oromo version of the questionnaires, role playing, and record keeping. They were allowed to fill the questionnaire and later discussion were made in all contents of the format and areas of difficulties were revised. Beside this, they were trained on their responsibilities for describing the purpose of the study, giving orientation and telling service users the importance of honest and sincere reply, on responding to questions.

The principal investigator was strictly followed the overall activities for each activity on daily bases to ensure the completeness of questionnaire, to give further clarification and support for data collectors.

3.7.3. Method of data collection

Interviewers were briefed all ART clinic staff about the project, including medical assistants and clinicians. Structured questionnaires that were able to explore the objectives of the study were

designed for interview of 335 clients. Most of the questions were close-ended to be interviewed by data collector on the day of clients' appointment for ART service. After the client left ART clinic, an interviewer approached the client to ask if she was voluntary talk about the visit and the service she received. The interviewer was explained that she did not work for the clinic, that all responses were remain confidential and interviews were conducted in a private space to protect confidentiality and that the women's answers were in no way affect the services she received in future. After getting her permission or written consent the interviewers were proceeded to ask her a series of questions which were take 20 minutes on average.

3.8. Study Variables

3.8.1. Dependent Variables

- Unmet need for modern F/P.

3.8.2. Independent variables

Independent variables included: age of clients, religion, education level, marital status, Spouse and or family objection Pressure to have children, F/P information, side effects, access to facility, provider client relationship, use HAART, knowledge and availability contraceptive methods.

3.9. Quality control methods: *measures were undertaken:*

To ensure quality control all data collection tools were translated into local language (Afan Oromo), a pre-testing exercise was conducted to assess the reliability of the questionnaires in collecting the intended information, regular monitoring and supervision of the research assistants was done during the data collection period including checking of completed questionnaires, the completed questionnaires were manually checked for completeness before data entry and a check programme in EpiData was applied to limit entry errors. In addition, data was entered twice and the two sets will be compared for entry errors. Training was conducted for data collector and supervisor to increase the understanding of data collectors in all topics covered in the field work.

3.10. Data processing and analysis:

The completed questionnaires were checked manually for completeness, consistency by the principal investigator and un-coded data was coded before entry in EpiData software version 3.1 and analysed in SPSS version 20.0. Then data clean-up was performed to check for accuracy, consistencies and values. Any error then identified and was corrected.

The distributions of categorical variable were summarized by using frequency distribution, the mean age and standard deviation that was calculated for socio demographic characteristics. Also descriptive analysis such as proportions, percentages and measures of central tendency were used. Binary logistic regression was applied to determine association between dependent variables and multivariate analysis was used to control the predictor of confounding factor by using SPSS software.

The odds ratios were used to determine the effect of independent variables on use unmet need for F/P. The confidence Intervals (CI) were set at 95% and probability value (*p*-values) at 5% was computed to assess presence and degree of association between dependent and independent variables. P-value ≤0.2, context and result of previous study were used as a cut of point to include or exclude variables for the multivariate analysis.

3.11. Ethical considerations

Ethical clearance was secured from Institutional Health Research Ethics Review Committee (IHRERC) of Haramaya University.

A letter of support and permission was written to concern officials at all levels, the community leaders, Zonal and district managers in order to get the assurance of the study. The purpose, objectives and importance of the study was explained and informed consent was secured from each participant. Confidentiality was maintained at all levels of the study. Participation in the study was on a voluntary basis, participants who refused to participate in the study and those who wished to quit from the study at any point in time were informed to do so without any restriction.

3.12. Dissemination

The findings of this study will be presented to local, national and any interested body who want to take intervention. Hard copies of the finding will be distributed to Haramaya University School of graduate libraries. At the end I will be prepare and publish the finding in a peer reviewed scientific journal.

3.13 Operational definitions:

Contraceptive prevalence: is the percentage of women who are currently using at least one method of contraception, regardless of the method used.

Family planning: the use of various methods of fertility control that will help individuals or couples to have the number of children they want and when they want them in order to assure the well-being of children and the parents.

Public health facilities: state owned health facility that provides ART services.

Unmet need for family planning: The number of women on ART, who are currently sexually active, and are fecund, who want to use Family planning to limit or space their birth but are not using any form of family planning, and those currently pregnant women whose pregnancy is mistimed or unwanted.

Unmet need for limiting: refers to pregnant women whose pregnancy is unwanted, and fecund women who are neither pregnant nor amenorrhea, who are not using any method of family planning, and who want no more children.

Unmet need for spacing: includes pregnant women whose pregnancy is mistimed and fecund women who are neither pregnant nor amenorrhea, who are not using any method of Family planning and say they want to wait two or more years before their next birth.

Woman who are on ART follow up care: Women who have had at least one visit to the selected ART treatment unit to receive ART

Unintended pregnancy: a pregnancy that is mistimed or unwanted

Family planning demand: - Is the percentage of women using family planning plus the percentage of women with unmet need for family planning.

Knowledge of contraception methods: a woman aware of at least two methods of contraceptives.

Wealth Index: The economic index was constructed using household asset data including ownership of a number of consumer items ranging from a donkey to a horse, as well as dwelling characteristics, such as source of drinking water, sanitation facilities and type of material used for flooring. Each asset is assigned a weight (factor score) generated through principal components analysis, and the resulting asset scores were standardized in relation to a normal distribution with a mean of zero and standard deviation of one. Each household was then assigned a score for each asset and the scores were summed for each household; individuals were ranked according to the score of the household in which they resided. The sample was then divided into quintiles from one (lowest) to three (highest)(WFO. 2017).

Attitude of Contraceptive Methods: Respondents were asked to respond on one positive and four negative structured attitude type questions with three choices: agree, disagree and neutral. Choices agree was scored as 3 for positive and 1 for negative questions. Disagree was scored as 1 for positive and 3 for negative questions and finally the third choice neutral scored 2 on both sides. Accordingly the maximum score would be five times five and the minimum score would be one times five. Based on the total score they got further categorized in to two, respondents scored four times five and five times five had considered as a good attitude and less than four times five score considered as poor attitude towards family planning(Tamene W. 2014).

4. RESULT OF THE STUDY

4.1. Socio-demographic characteristics of the study population

Out of 335 women invited, 331(98.8%) responded to the questionnaire. The reasons for non-response of 4(1.2%) to the survey was refusal to be interviewed. One hundred twelve (33.8%) were from rural and 219 (66.2%) from the urban area. The mean (±standard deviation) age of respondents was 27 (±3.7) years. Out of the total respondents 164 (49.5%) were married, 38(11.5%) were single and 129(39.0%) were married but not living together. The great majority of the respondents were Oromo 234 (70.7%]. About 144 (43.5%) of the respondents were Protestants in religion. About 49(14.8%) percent of the respondents were illiterate while 116(35.0%) of the respondents had primary school education. Regarding to their occupation, the majority of respondents 88(26.6%) were merchant followed by daily laborer 80(24.2%) respectively. One hundred forty four (43.5%) of respondents reported their wealth index showed middle status while about 94 (28.4%) was poor. About three fourth 248(74.9%) of the respondents had exposure to mass media. Table1.

Table 1:- Socio-Economic And Demographic Characteristics Of HIV Positive Women On ART In The Age Range Of 15-49 In Horo Guduru Wollega Zone, April 2015

Variable	Number	%

Respondents' age in year (n=331)		
≤ 24	182	55
≥25	149	45
Place of residence (n= 331)		
Rural	112	33.8
Urban	219	66.2
Religion (n= 331)		
Orthodox	116	35.0
Protestant	144	43.5
Muslim	52	15.7
Catholic	19	5.7
Ethnicity (n=331)		
Oromo	234	70.7
Amhara	56	16.9
Tigrai	41	12.4
Gurage	331	100
Marital status (n= 331)		
Single	38	11.5
Married	164	49.5
Married but not living together	129	39.0
Educational level (n=331)		
Illiterate	49	14.8
1-8 grade	116	35.0
9 - 12 grade	111	33.5
12 and above	55	16.6
Occupation (n=331)		
House wife	79	23.9
Government employee	75	22.7
Merchant	88	26.6
Daily laborer	80	24.2
Commercial sex worker	9	2.7
Wealth Index (n=331)		
Poor	94	28.4
Middle	144	43.5
Rich	93	28.1
Exposure to Mass media (n=331)		
Yes	248	74.9
No	83	25.1

4.2. Sexual and Reproductive Characteristics of study population

It was noted that age at first marriage was as early as 17 years and as late as 24 years. The mean (±standard deviation) age at marriage of respondents was 19 (±2.9) years. Majority of the respondents 292(88.2%) had ever been pregnant and 289(87.3%) of them had given birth. Majority of respondents 307(92.7%) were sexually active in the last six months prior to study while the rest was not. About 259(78.2%) of respondents want to have a child in the future and out of these 185(55.9%) respondents want to have child less or equal to 2 years while 74(21.8%) of respondents want to have child after 2 years. 12.4%, 34.7% and 52.9% of respondents had 0, 1 to 2 and greater or equal to three ever born children respectively. Table 2.

Table 2:- Reproductive characteristics of HIV positive women on ART in Horo Guduru Wellega Zone, April 2015.

Variables	Frequency	Percent
Age at first marriage (n=331)		
≤20 years	295	89.1
≥21years	36	10.9
Ever been pregnant (n=331)		
Yes	292	88.2
No	39	11.8
Ever gave birth (n=331)		
Yes	289	87.3
No	42	12.7
Sexually active in last six month (n=331)		
Yes	307	92.7
No	24	7.3
Desire child in future (n=331)		
Yes	259	78.2
No	72	21.8
Time desire to have child (n=331)		
<2 years	74	21.8
>2 years	185	55.9
Number of ever born children (n=331)		
0	41	12.4
1	115	34.7
≥2	175	52.9
Number of living children (n=331)		
0	55	16.6
1	87	26.3
≥2	189	57.1

4.3. Knowledge of contraception

A total of 302(91.2%) of respondents had heard of any contraception methods. Majority of respondents 176(53.2%) had got information on the source of contraceptive from health workers. About 302 (91.2%) respondents does not provided on contraceptive information by ART service providers. 260(78.5%) of respondents know the place where modern contraceptive methods obtained and 125(37.8%) of respondents responded as health facility was the main places were modern contraceptive obtained. Majority 280(84.6%) of respondents responded as contraceptive service were not available in ART unit. Injectables 88(26.6%) was the commonest types of family planning services available for women on ART. To avoid unwanted pregnancy 158(47.7%) was the main advantage for what respondents had used contraceptive method.

Table 3:- Knowledge Characteristics of HIV positive women on ART in Horo Guduru Wollega Zone April 2015.

Variables	Frequency	Percent
Ever heard of F/P method		
Yes	302	91.2
No	29	8.8
Types of contraceptive methods known		
Pills	83	25.1
IUCD	21	6.3
Injectable	88	26.6
Implant/ Norplant	63	19.0
Condom	24	6.5
Female sterilization	21	.3
All methods	48	14.5
Source of information		
Health worker	176	53.2
Radio and TV	101	30.5
Others	54	16.3
Contraceptive information provided by ART provider		
Yes	29	8.8
No	302	91.2
Know place where F/P obtained		
Yes	260	78.5
No	71	21.5
Main place for contraception		
Health facility	125	37.8
Shop /Hotels	20	6.3

Pharmacy/drug vendor	115	34.7
Availability of F/P in ART unit		
Yes	51	15.4
No	280	84.6
Types of Contraceptives available		
Pills	125	37.8
Injectables	101	30.5
Implants	52	15.7
IUCD	25	7.6
Condoms	28	8.5
Advantages of contraceptives		
Avoid unwanted pregnancy	158	47.7
Regulation of period	28	8.5
To limit family size	124	37.5
To prevent STI	21	6.3

4.4. Attitude toward contraception

About 306(92.4%) of respondents desired to know more about different types contraceptive methods and 227(68.6%) of respondents had good attitude towards contraceptives as compared to non-users with majority of users being agreed with positively worded questions compared to non-users (COR = 3.09, 95%CI: 2.88-5.69). About 74(22.4%) and 257(77.6%) of respondents reported that they had discussed and not discussed contraception with their sexual partner within the six months preceding the survey respectively. 41(12.4%) husbands approved using contraception and 200(60.4%) of respondents did not know their husband attitude toward using contraception, while 90(27.2%) husband disapproved using contraception. About 155(46.8%) of respondents reported they are not sure as their husband know as they are using contraception. Forty four percent of decision to use contraceptive were made mainly by respondent's husband while 13.3% of decision were made by joint decision between husband and respondents. Eighty one percent of respondents didn't disclose their HIV serostatus to contraceptive service providers.

Table 4:- Attitude of HIV positive women on ART in Horo Guduru Wollega Zone April 2015.

Variables	Frequency	Percent

Desire to know more about contraception		
Yes	306	92.4
No	25	7.6
Respondents attitude to contraception use		
Good Attitude	227	68.6
Poor Attitude	104	31.4
Discussion with partner on contraception issue		
Yes	74	22.4
No	257	77.6
Husbands attitude on contraception use		
Approve	41	12.4
Disapprove	90	27.2
Do not know	200	60.4
Husband know as you are using F/P		
Yes	42	12.7
No	134	40.5
Not sure	155	46.8
Decision on contraception		
Mainly respondents	120	36.1
Mainly husband	147	44.2
Joint decision	44	13.3
Other	20	6.5
HIV status disclosed to F/P service provider		
Yes	62	18.7
No	269	81.3
Reason for not disclosing your status		
Fear of stigma and discrimination	79	23.9
Luck of trust on service provider	110	33.2
Other	80	24.2

4.5. **Family planning utilization and unmet need**

About 208(62.8%) of respondents were ever used contraceptive were us for the current use it was 196(59.2%). About 307(92.7%) of respondents were sexually active in the last six months prior to this study. Of those women who were sexually active, 196(59.2%) of them were using one method of family planning to prevent pregnancy, while 135(40.8%) of them were not using any form of family planning method at the time of the data collection. Among the sexually active women and who were not using any form of family planning, 57(17.2%) was pregnant while 87(26.3%) respondents were not sure for pregnancy at the time of the data collection. Of those women who were pregnant 17(5.1%) pregnancies were intended while the rest of the pregnancies were either unwanted (unintended) 16(4.8%) or mistimed 24(7.3%). Out of currently non users, 135(40.8%) of respondents reported they were currently not using any method of modern contraceptive despite they doesn't want to have another child. Out of non-family planning users, 78(23.6%) were not pregnant and 10(3.0%) were in fecund were as 68(20.6%) of respondents were fecund. Out of those fecund 27(8.21%) of respondents planned to have child latter, 23(6.99%) of them don't want any more children while 18(5.4%) of them want a child soon.

The Contraceptive Prevalence Rate (CPR) is the number of sexually active women using family panning method /total number of women in the study*100; 196/331*100=59.2%.
Total demand for family planning, (CPR+ unmet need): 59.2%+27.3% =86.5%.
Demand Satisfied, for family planning , (met need/total demand)*100; = 59.2%/86.5%*100 = 68.4%.

Table 5:- Family Planning Utilization and Unmet Need of HIV Positive Women on ART in Horo Guduru Wollega Zone April 2015.

Variables	Frequencies	Percent
Ever used modern contraception		
Yes	208	62.8
No	123	37.2
Current using contraception		
Yes	196	59.2
No	135	40.8
Face Unmet need		
Yes	125	37.8
No	206	62.2
Currently pregnant (n=331)		
Yes	57	17.2
No	187	58.5
Not sure	87	26.3
Pregnancy intention (n=57)		
Wanted now	17	5.1
Wanted later	24	7.3
Not wanted at all	16	4.8
If no or not sure for pregnancy (n=68)		
Not fecund	10	3.0
Fecund, want child now	18	5.4
Fecund, want child later	27	8.21
Fecund, not want at all	23	6.99
Reason not using family planning		
Fear of side effects	12	3.6
No preferred method	21	6.3
Little pregnancy risk(ambivalence)	33	10.0
Husband disapproval	22	6.6
Lack of knowledge	16	4.8
Religion prohibition	20	6.0
Familial opposition	11	3.3
Too far from the source	14	4.2
Objection to male provider	8	2.4
Availability of F/P for type choice		
Easily available	93	28.1
Not easily available	123	37.2
Not know	115	34.7
Open discussion on F/P with partner		
Yes	67	20.2
No	264	79.8
Time needed to reach F/P sources		
<1hr	108	32.6
1-2hr	127	38.4
>3hr	63	19.0
Not know	33	10.0

Total Surveyed Women
331

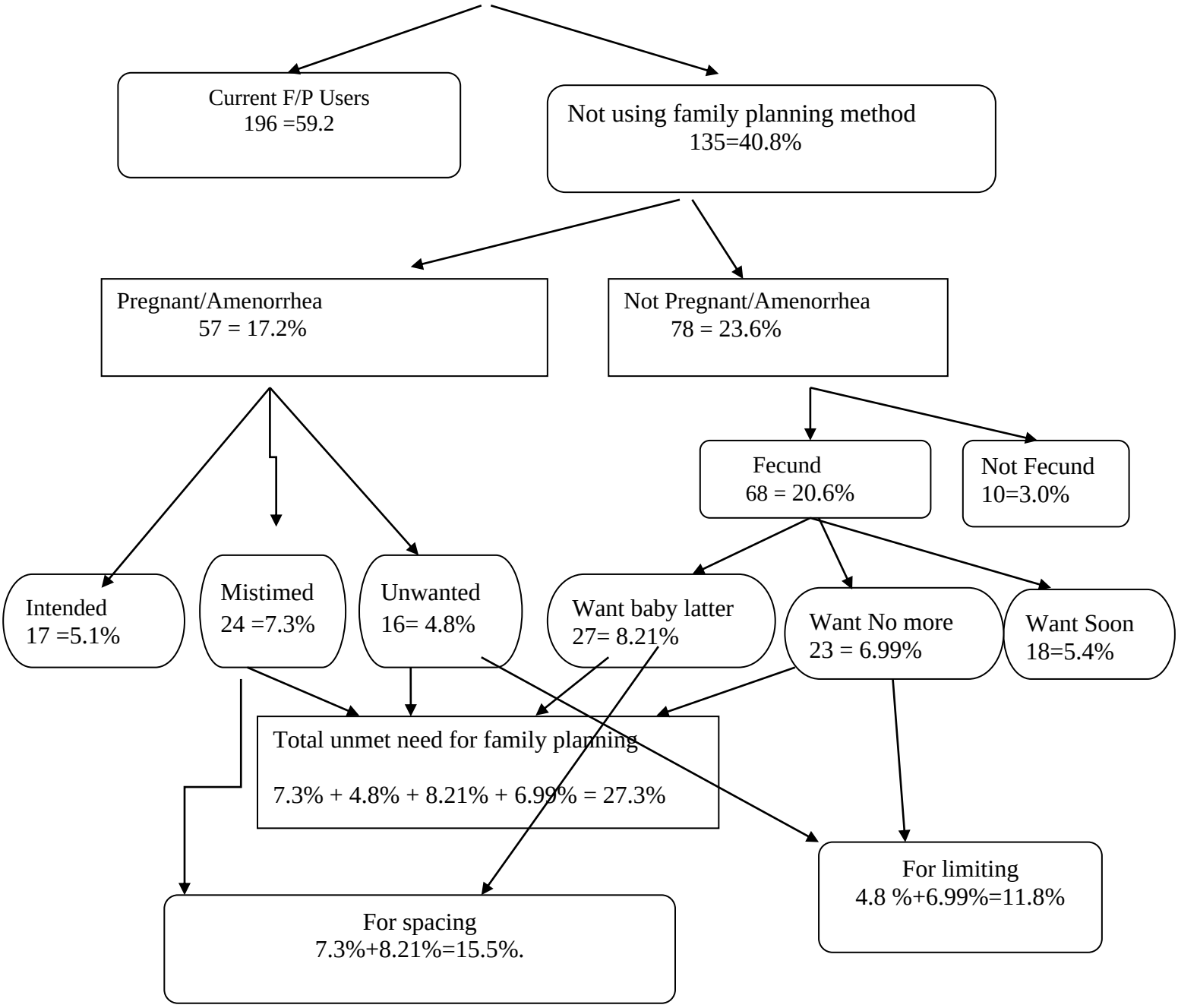


Figure 3: Components of unmet need for family planning among HIV Positive women on ART who are not using Family planning in HGWZ Public Health Facilities Westoof Model, Ethiopia, April, 2015

Factors Associated With Unmet Need For Modern Family Planning Methods Among HIV Positive Women On ART In Horo Guduru Wollega Zone Public Health Institutions.

Socio- demographic characteristics were analyzed by using Cross tab and Logistic regression to identify significant associated with unmet need for modern contraceptive among HIV positive women on ART and the candidate variables were selected by using bivariate logistic regression method with entry point of 0.05 significant levels at 95% CI. Religion of respondents, Ethnicity of respondents, Educational level of women, occupational status and monthly income were found to be significant candidate for modern contraceptive use. Multivariate analysis was employed to assess the net effect of selected socio-demographic, reproductive, Knowledge about modern contraceptive and related explanatory variables on unmet need for modern contraceptive. The result of multiple logistic regression model revealed that religion of respondent, ethnicity of respondents, having exposure to mass media, time want to have child, source of information for modern contraceptive, decision on contraceptive use and time needed to reach F/P source were found to be significant predictors for unmet need for modern contraceptives among HIV positive women on ART (Table 6).

In this study the ethnicity of respondents was found to be a determinant factor for unmet for modern contraceptive use. Women with Amhara in ethnicity were about three times more likely to have unmet need for modern contraception than those with Oromo ethnic group (AOR = 3.1, 95%CI: 1.04-9.14).

Religion of respondents, women who were reported as followers of Orthodox religion were 1.3 times more likely to have unmet need for modern contraceptives than those who were followers of Muslim (AOR= 1.3, 95% CI: 1.02-4.63). The study revealed that occupational status of women were significantly affects Modern contraceptive utilization, women who were commercial sex worker were about 4 times more likely to had unmet need for modern contraceptive methods as compared to house wife women. (COR=4.64, 95% CI: .55-38.99).

In bivariate analysis, respondent's monthly income showed statistically significant difference between the two groups. Women whose average monthly income greater or equal to 1501 birr were about 1.4 times more likely to have unmet need for modern contraceptives than those whose average monthly income were less than or equal to1500 birr (COR=2.17, 95% CI: .1.13-4.14).

A number of factors may influence unmet need for modern contraceptives. Among the socioeconomic factor, having exposure to mass media was found to be a determinant factor for unmet need for modern contraceptive use. Respondents who had exposure to mass media were 5.8 times more likely to have unmet need for modern contraception than those who had not (AOR = 5.75, 95%CI: 1.25-130.09). From the reproductive factor women's time desire to have a child was found to be a determinant factor for unmet need for modern contraceptive use. Women whose time desire to have child were greater or equal to 2 years were 2.2 times more likely to have unmet need for modern contraception than those less or equal to 2 years (AOR = 2.26, 95%CI: 1.12-12.91).

Time needed to reach source of family planning were among factors that determine the unmet need for modern contraceptive. This study reveals that, respondents who had distance one to two hour to reach places where family planning obtained were 2.5 times more likely to had unmet need than those with greater than three hour rated distance.(AOR = 2.51, 95%CI: 1.01-4.13).

Respondents who had joint decision with her husband about modern family planning issues were 2 times more likely to had unmet need for modern contraceptives than those women whose decision on contraceptive was made mainly by respondent. (AOR= 2.04, 95% C.I: 1.08 – 53.19).

Table 6: Multivariate analysis of variables associated with unmet need for family planning among HIV positive women on ART in HGWZ Public Health facilities, Ethiopia, April, 2015

Variables	Unmet Need		COR(95%CI)	AOR(95%CI)
	Yes	No		
Religion				
Orthodox	47	66	8.43(1.08,65.56)*	**1.30(1.02,4.63)****
Protestant	58	83	1.47(.62,2.63)	.63(.07,.18)
Muslim	16	36	1.3(.62,2.63)	0.21(.07,.18)
Catholic	10	15	1	1
Ethnicity				
Oromo	99	135	2.48(1.19,5.17)**	0.14(.01,3.18)
Amhara	17	39	**6.83(2.05,22.83)*****	**3.1(1.04,9.14)****
Gurage	9	32	1	1
Exposure to Mass Media				
Yes	80	168	**4.16(1.08,16.03)****	**5.75(1.25,130.09)*****
No	44	39	1	1
Time desire to have child				
<2 years	28	46	1	1
≥2 years	68	117	**1.87(1.04,3.37)*****	**2.26(1.12,12.91)****
Source of information				
Health worker	76	100	1	1
Radio and TV	31	70	**2.34(1.33,4.14)****	.40(.00,.117.36)
Others	18	36	**4.13(1.76,9.66)****	**2.60(1.02,53.43)****
Decision on contraception				
Mainly respondents	48	78	1	1
Mainly husband	67	89	0.99(.54,1.48)	0.99(.55,1.48)
Joint decision	6	38	9.41(2.17,40.86)***	**2.04(1.08,53.19)****
Other	4	1	0.67(.11,4.19)	0.67(.11,.49)
Time needed to reach F/P source				
<1hr	30	78	1	1
1-2 hr	54	73	**8.85(3.68,21.27)****	**2.51(1.01,2.13)****
>3 hr	20	43	**3.35(1.52,7.39)****	0.02(.00,1.57)
Not know	21	12	0.22(.10,.50)	0.03(.00,.48)

KEY *= p<0.05, ** = p<0.01, *** = p<0.001, COR = Crude Odds Ratio, AOR =Adjusted Odds Ratio

5- DISCUSSIONS

5.1 Prevalence of Unmet need for modern family planning

The overall prevalence of unmet need for modern family planning was 27.3% with 15.5% of unmet need for spacing and 11.8% of unmet need for limiting. Family planning prevalence rate was 59.2% and total demand for family planning was 86.5%. Satisfied demand for family planning was 68.4%. This prevalence of unmet need is higher than studies conducted in Zambia (10.8%), Swaziland (13%), Zimbabwe (18.4%) and Hawasa referral Hospital (19.1 %) (WHO 2010, Dennis O. et al., 2014, Yaw A. et al., 2011 FeyisaM., Yemane B. et al. 2015) and lower than studies conducted in Uganda (33.5%), South Africa (30.2%) and Lesotho (31.3%)(LDHS. 2013) and Kenya (32.2%) (FeyisaM., Yemane B. et al. 2015, KCBS. 2011) were as it was in consistent with studies in Kumasi of Ghana (27.4%)(Dennis O., Yaw A. et al. 2014) and EDHS (28.6%). This discrepancy might be due to differences in expanded health service provision, availability and awwerness to contraceptive methods and socioeconomic status and educational stutus of respondants.

In this study unmet need for Spacing (15.5%) was higher than unmet need for limiting (11.8%). This was similar with studies conducted in Hawasa referral hospital(Spacers 13.2% and limiters 5.9%) and EDHS 2011(spacers 16%, limiters 9%) (FeyisaM., Yemane B. et al. 2015). The finding of higher unmet need for spacing than for limiting implies that HIV positive women's need for family planning follows had similar trend with general population which might be a result of ART drugs which decreases the risk of MTCT, decrease fear of leaving orphans in case they die and the unique risk of unintended pregnancy on their health.

In this study total demand (86.5%) and satisfied demand (68.4%) which was higher than general population of EDHS 2011 report where total demand was 53.9% and demand satisfied was 53.1%.(EDHS 2011).This may be due to perceived fear of MTCT among HIV positive women, availability of family planning commodities in ART unit and the client was on regular chronic illness follow up.

5.2 Associated Factor for Unmet Need for Family Planning

In this study, there was high unmet needs among orthodox followers (AOR=1.30) compared to other religions. The reason behind this might be there is less religious prohibition for using family planning method among orthodox compared to other religions. In contrary Muslims are found to be more likely to had unmet need in the study of urban slums of Kenya (KCBS. 2011).

In this study, Educational level of the women was associated with unmet need for modern family planning. Women with primary education are more likely had a higher unmet need for family planning than women with secondary or higher education. (COR=3.41, p<0.001). Similar finding were also reported in Kenya.(AOR=1.57, p<0.035) (KCBS. 2011) and in Nekemte ART Clinics, East Wollega. (AOR=3.19, 95% CI (1.487-6.541), (Alemu S., Muluemebet A. et al. 2013; Reta T., Daniel M. et al. 2013). In this study, the fact that women with higher educational status had a better met need for family planning than their referent imply that the roll of education in increasing female decision-making power on reproductive health particularly in preventing unmet need for family planning among HIV positive women.

In this study, respondents who had exposure to mass media were 5.8 times more likely to have unmet need for modern contraception than those who had not(AOR = 5.75, 95%CI: 1.25-130.09). Similar finding also reported in Kenya in which respondents who was exposed to media has high unmet need for family planning (AOR=3.83) (KCBS. 2011). This might be suggests that more respondents had got information from media that encourages them to use family planning.

This study found that, Women who discuss jointly with their husbands about family planning had high unmet need for modern contraceptive than those women who never discussed on modern contraceptive use with their partners (AOR= 2.04, 95% C.I : 1.08 - 53.19). Similar finding were also reported in Addis Abeba, women who have open discussion with partner had higher unmet need modern contraceptive than their counterparts(Reta T., Daniel M. et al. 2013). This suggests that men often play decisive roles in either supporting or hindering the use of contraceptives by their spouses. Thus, communication with a partner is vital to remove challenges such as partner opposition in fertility related decisions, including choice of modern

family planning. Men should also be involved in the programmatic response in order to reduce unmet need among women living with HIV.

In multivariate analysis those women who had desire to have a child after two years had significantly greater odds of unmet need for modern family planning (AOR=2.26, 95% C.I: 1.12-12.91). This is consistent with studies from DR Congo, among HIV positive on care(*Marcel Y.*, *Alison N.* et al. 2015). Because HIV positive women on ART care want to delay births for greater than two years which might be due to they are concerning about their current health status, fear of MTCT and fear of their viral load status.

This study shows that house hold wealth had association with unmet need for family planning in bivariate analysis, but multivariate logistic regression shows that no significant association between wealth and unmet need for family planning. This is different from other studies observed in Lesotho(LDHS. 2013) and Ghana(Dennis O., Yaw A. et al. 2014), where women in the lowest wealth quintile had high unmet need for contraception to limit or space birth as compared to those with highest wealth quintile. This might be as a result of integration of F/P with ART service and the availability of free family planning service in study public health institutions.

6. STRENGTH AND LIMITATION OF THE STUDY

Strength

- The study used quantitative method research and findings can be generalized since data were collected based on systematic sampling technique of sufficient size.

Limitations

- **Social desirability effect and information bias** are anticipated as a result of over reporting of contraceptive use and under reporting of unmet need for F/P and associated factors. Women may report a birth or current pregnancy as wanted and timely once the child is born, and this reason of a current birth or pregnancy as wanted may in fact result in an under estimate the true extent of unwanted births.
- As it is a cross-sectional study it could be difficult to establish temporal relationship between exposure and control variables.

7. CONCLUSIONS:

According to the study findings unmet need for family planning was 27.3% with 15.5% of unmet need for spacing and 11.8% of unmet need for limiting. Family planning prevalence rate was 59.2% and total demand for family planning was 86.5%. Satisfied demand for family planning was 68.4%. Contraceptive information was not provided for majority (91.2%) of respondents by ART service provider and 84.6% of respondents complained as family planning commodity was not available in ART clinic.

Religion, ethnicity, exposure to mass media, time want to have child, source of information for modern contraceptive, decision on contraceptive use and time needed to reach F/P source were found to be significantly and independently predictors for unmet need for modern contraceptives among HIV positive women on ART.

The current study has revealed that unmet need and total demand for family planning services among HIV positive women on ART were relatively high which reveals broader demand for these services and the need for new strategies like ensuring the availability and integration of family planning service to ART service at facility leveland counseling clients for F/P those are on ART as taking them as good opportunity to address family planning needs among HIV positive clients.

8. RECOMMENDATIONS

On the base of these findings, the following recommendations are forwarded in order to help in improving unmet need for modern contraceptive:

Government and stakeholders in the study area

- Policy-makers, donors and implementers should include family planning as a core technical component of the preventing mother-to-child transmission (PMTCT)
- Stakeholders should act to satisfy the family planning demand focusing on improving knowledge of PMTCT, ensure availability of family planning commodity and to promote counseling about family planning at ART clinic.

Health care providers

- Comprehensive, continuous and quality family planning counseling and care services should be provided for all women in the ART units despite their marital status and other condition.
- Pro-active family planning counseling should be provided not only at the time of screening patients for ART follow up but also, on a regular basis including after a woman enrolled in the ART units.
- Emergency family planning utilization in the ART units should also be advocated.

Researchers

- Researchers are advised to conduct further studies on same issue outside of the health facilities and in different parts of the country to come up with more representative results to potentiate previous findings and come up with new findings to fill the remaining gap.

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7. APPENDICES

Appendix I: Participant Information Sheet and informed consent form, (English Version)

Haramaya University

Collage of Medical and Health Sciences

SGS, Master of public health/ Reproductive Health Track

Good morning dear client! My name is _____. I am collecting data for Gedefa Hunde who is postgraduate student at Haramaya University, Collage of Health and Medical Sciences for an academic research conducted in partial fulfilment of Master of public health in Reproductive Health.

Title: Unmet need and associated factors for modern family planning methods among HIV positive women on antiretroviral therapy in Public health facilities of Horo Guduru Wollega Zone, North West Ethiopia.

Purpose of the study:

The purpose of this study was for partial fulfilment of Master of public health in Reproductive Health as an academic research on unmet need for modern F/P and associated factors among HIV positive women on antiretroviral therapy in women of reproductive potential who receive ART public health facilities HGWZ. Then the result of this study will be used to recommend preventive strategies to improve the health of the target group.

Procedures and duration:

Your participation in this study is on your full voluntary basis. You are free to decline participation or withdraw from study participation at any time. The services you receive will not be affected by your decision on whether to participate in the study or not. If you accept to participate in the study you will be expected to answer a couple of questions about contraception and how you wish contraception should be provided for HIV positive women on ART. The entire session will take about 20 minutes.

Risks and benefits:

There is no known risk of participating in this study. However some people may feel a little uncomfortable to discuss contraception which some people normally regard as a private issue. You may not directly benefit from participating in this study, however information obtained in this study may be used to improve provision of contraception for HIV positive people.

Confidentiality:

To protect your privacy the interviews will take place in a private room. Anything discussed between you and research assistants will be confidential. All documented information will not be seen by other people outside the study. However, the information may be seen by study supervisors from the research team and confidentiality will still be guaranteed as your name will not be recorded, instead unique study identification numbers will be used which cannot be linked to you.

Rights:

You have full right to participate or not to participate in this study. You have a right to decline participation or withdraw from study participation at any time. The services you receive will not be affected by your decision on whether to participate in the study or not.

Contact address:

If you have any questions concerning your participation in the study or any things that makes you discomfort please contact Ato Gedefa Hunde (PI) by:

Mobile 0911659692 / 0913355295

e.mail hundegeda@yahoo.com

IHRERC of Haramaya University by:

Office phone: 0256661899

P.O.Box 235 Harar

Declaration of informed voluntary consent:

The data collector had read the information for me and I have understood the purpose of the study. I have had the opportunity to ask questions about it and any questions that I have asked have been answered to my satisfaction and they told me as I can ask questions at any time while on interview. I consent voluntarily to participate as a subject in this study and understand that I have the right to withdraw from the study at any time without in any way affecting my future medical care.

_____ _____

Name and signature of participant Name and signature of data collector

Annex II: Questionnaires: English version

Part one:-demographic and socio economic characteristics

S.No	Questions	Choice of answer	Skip to question…
101	How old are you? (in complete years)	--------years.	
102	What is your place of residence?	1.Rural 2.Urban	
103	What is your religion?	1. orthodox 2. protestant 3. Muslim 4. catholic	
104	What is your ethnicity?	1. Oromo 2. Amhara 3. Tigrai 4. Gurage	
105	What is your current marital status?	1.Single 2.Married 3.Separated 4.Divorced 5.Widowed	
106	What is your educational level?	1.illtrate 2-8 grade 3. 9-12 grade 4. 12and above	
107	What type of occupation you are currently engaged in?	1. house wife 2. government employee 3. merchant 4. daily laborer 5. commercial sex worker	
108	Household wealth Index	1. Poor 2. Middle 3.Rich	
109	Do you have exposure to mass media?	1.Yes 2.No	

Part Two: Reproductive History

S.No	Questions	Response	Skip to question
201	At what age did you first got married?	**----------years**	
202	Have you ever been pregnant?	1. yes 2. no	
203	Have you ever given birth?	1. yes 2. no	
204	Are you in sexual union/sexually active in the last 6 months?	1.Yes 2.No	
205	Do you want to have a child in the future	1. yes 2. no ⟶	**Skip to question 207**
206	After what time would you like to have a child?	1. <=2 years 2. >2 years	
207	How many children have you ever born during your life?	1. 0 2. 1 3. ≥2	
208	How many living children do you have?	1. 0 2. 1 3. ≥2	
209	Are you pregnant now?	1. yes 2. no ⟶ 3. I am not sure ⟶	 Skip to question 211 Skip to question 211
210	If YES for Q209, Is the pregnancy wanted now, wanted later or not wanted at all?	1. wanted now 2. wanted later 3. not wanted at all	
211	If NO or Not sure for Q209 are currently fecund or not?	1. Not fecund 2. Fecund and want child now 3.Fecund and want child latter 4.Fecund and not want child at all	

Part three; knowledge about contraception

301	Have you ever heard of family planning methods that women can use to avoid pregnancy?	1. yes 2. no			
302	Which of the following methods do you know about?		**Yes**	**No**	
		1. pill	**1**	**2**	
		2. IUCD	**1**	**2**	
		3. inject able	**1**	**2**	
		4. implant (Norplant)	**1**	**2**	
		5. condom	**1**	**2**	
		6. female sterilization	**1**	**2**	
		7. All methods	**1**	**2**	
303	What is your source of information about family planning		**Yes**	**No**	
		1. health workers	**1**	**2**	
		2. Radio and TV	**1**	**2**	
		3. others	**1**	**2**	
304	Are you provided with contraceptive information by ART service providers?	1.Yes 2.No			
305	Do you know the place where modern contraceptive methods could be obtained?	1. yes 2. no →	Skip to question 307		
306	If you know where the methods are obtained, where is the main place that you or others are able to get modern contraceptive?		**Yes**	**No**	
		1. health facility	**1**	**2**	
		2. shop	**1**	**2**	
		3. hotels	**1**	**2**	
		4. pharmacy/drug vendors	**1**	**2**	
307	Was F/P services available for clients in ART unit?	1.yes 2.no			
308	Which types of contraceptive services are available for women on ART?	1.Pills 2.Injectable 3.Implants 4.IUCD 5.Condoms			
309	Which advantage of		**Yes**	**No**	

	contraceptive methods do you know?	1. avoid unwanted pregnancy 2. regulation of period 3. to limit family size 4. to prevent STI	**1** **1** **1** **1**	**2** **2** **2** **2**	

Part four: Attitude towards contraceptive methods

401	Would you like to know more about contraceptive method?	1. yes 2. no	
402	Do you approve or disapprove of couples using a method of family planning?	1. approve 2. disapprove	
403	Have you discussed about contraception with your partner within the last six months?	1. yes 2. no	
404	What is your husband's attitude towards contraceptive methods?	1. approve 2. disapprove 3. do not know	
405	Does your husband know whether you are using any modern contraceptive?	1. yes 2. no 3. I am not sure	
406	Would you say that using Contraception is mainly your decision or your husband's decision or did you both decide together?	1. mainly respondent's 2. manly husband 3. joint decision 4. other	
407	Did you have Disclosed your HIV status to contraceptive service Provider?	1.Yes → 2.No	Skip to question 501
408	If NO to question 408, what was the Reason for not disclosing your status?	1.Fear of stigma and discrimination 2.Lack of trust on service provider 3.Other	

Part five: practice of modern contraceptive methods

501	Have you ever used modern contraceptives?	1. yes 2. no	
502	Are you currently using modern contraceptive methods	1. yes 2. no	
503	If you are pregnant or unsure, but don't want to have another child, are you currently doing	1. yes 2. no	

	some thing or using any method to delay the pregnancy?			
504	A re you currently using condoms and another modern method of family planning?	1.Yes 2.No		
505	What is the availability of method if you want to change other methods form the source you belong to?	1. easily available 2. not easily available 3. don't know		
506	If you do not want another child soon and you are not using any F/P method to avoid pregnancy, what are your reasons for not using contraceptive**?**	1. fear of side effects 4. no preferred method 3. little pregnancy risk (ambivalence) 4. husband disapproval 5. lack of knowledge 6. religion prohibition 7. familial opposition 8. too far from the source 9.objection to male provider	**Yes** **1** **1** **1** **1** **1** **1** **1** **1** **1**	**No** **2** **2** **2** **2** **2** **2** **2** **2** **2**
507	Did you have discussed openly on F/P with your sexual partner?	1.Yes 2.No		
508	How long would it take to reach to the source of contraceptive methods?	1.<1hour 2.1-2 hour 3.>3 hour 4. I do not know		

Thank you for time!!!!

Appendix III: Information Sheet and informed consent form for Heads of public health facilities, (English)

Haramaya University

Collage of Medical and Health Sciences

SGS, Master of public health/ Reproductive Health Track

Title: Unmet need and associated factors for modern family planning methods among HIV positive women on antiretroviral therapy in Public health facilities of Horo Guduru Wollega Zone, North West Ethiopia.

Purpose of the study

The purpose of this study was for partial fulfilment of Master of public health in Reproductive Health as an academic research on unmet need for modern F/P and associated factors among HIV positive women on antiretroviral therapy in women of reproductive potential who receive ART public health facilities HGWZ. Then the result of this study will be used to recommend preventive strategies to improve the health of the target group.

Procedures and duration

Participation of participants in this study will be based on their full voluntary basis. They are free to decline participation or withdraw from study at any time. The services they receive will not be affected by their decision on whether to participate in the study or not. If they accept to participate in the study they will be expected to answer a couple of questions about contraception and how they wish contraception should be provided for HIV positive women on ART. The entire session will take about 20 minutes.

Risks and benefits:

There is no known risk of participating in this study. However some people may feel a little uncomfortable to discuss contraception which some people normally regard as a private issue. Participants may not directly benefit from participating in this study, however information obtained in this study may be used to improve provision of contraception for HIV positive people.

Confidentiality:

To protect privacy the interviews will take place in a private room. Anything discussed between participants and research assistants will be confidential. All documented information will not be seen by other people outside the study. However, the information may be seen by study supervisors from the research team and confidentiality will still be guaranteed as participants name will not be recorded, instead unique study identification numbers will be used which cannot be linked to study participants.

Rights:

Participants have full right to participate or not to participate in this study. They have a right to decline participation or withdraw from study at any time. The services they receive will not be affected by their decision on whether to participate in the study or not.

Contact address:

If you have any questions concerning the study or any things that makes you discomfort please contact Ato Gedefa Hunde (PI) by:

Mobile 0911659692 / 0913355295

e.mail hundegeda@yahoo.com

IHRERC of Haramaya University by:

Office phone: 0256661899

P.O.Box 235 Harar

Declaration of informed voluntary consent form for Heads of public health facilities:

I have read and understood the purpose, procedure, risks, benefits, confidentiality issues and rights of respondents in the study. I have had the opportunity to talk and discuss with PI about the study and he had told me as I can ask questions at any time the PI and IHRERC with the given address. I consent voluntarily to permit the study to take place in my health facility and I have the right to stop the study at any time if it does not respect the above mentioned prerequisites.

_____ _____

Name and signature Heads of public health facilities Name and signature of PI