Addis Ababa University, College of Health Sciences,

School of Nursing and Midwifery Postgraduate program

Assessment of knowledge, utilization and associated factors on prevention of mother to child transmission of HIV/AIDS among antenatal care users at selected public hospitals in Addis Ababa, Ethiopia.

By

- **Yosef Alemayehu (BSc)**

Advisor

- **Bazie Makonnen (BSc, MSc, RN)**

A THESIS SUBMITTED TO SCHOOL OF NURSING AND MIDWIFERY, COLLEGE OF HEALTH SCIENCES, ADDIS ABABA UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE MASTERS DEGREE IN MATERNITY AND REPRODUCTIVE HEALTH NURSING.

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APPROVAL SHEET

ADDS ABABA UNIVERSITY

COLLEGE HEALTH SCIENCE

SCHOOL OF NURSING AND MIDWIFERY

I, the undersigned MSc student, declare that I have submitted my original work on a title Assessment of knowledge, utilization and associated factors on prevention of mother to child transmission of HIV/AIDS among ante natal care users at selected public hospitals in Addis Ababa, Ethiopia for the examination.

Submitted by:

_____ _____ _____

Name of student Signature Date

This thesis work has been submitted for examination with my approval as an advisor.

Approved by:

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Name of Advisor Signature Date

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LIST OF ACRONYMS

Acronym	Meaning
ANC	Antenatal Care
AOR	Adjusted Odds Ratio
ART	Aantiretroviral Therapy
ARVs	Antiretroviral Drug
CI	Confidence Interval
CPT	Cotrimoxazole Preventive Therapy
EDHS	Ethiopian Demographic and Health Survey
FmoH	Federal Minster of Health
HCT	HIV Counseling Testing
MCH	Maternal and Child Health
MNCH	Maternal, Neonatal and Child Health
MTCT	Mother to Child Transmission
NGOs	Non-Governmental Organization
NVP	Nevirapine
OR	Odds Ratio
PEPFAR	President's Emergency Plan for AIDS Relief
PLWHA	People Living With HIV/AIDS
PMTCT	Prevention of Mother to Child Transmission of HIV
SSA	Sub-Saharan Africa
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNGA	United Nations General Assembly
UNGASS	United Nations General Assembly Special Session
UNICEF	United Nations International Children's Educational Fund
VCT	Voluntary Counseling and Testing
WHO	World Health Organization

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ABSTRACT

Yosef Alemayehu (BSc in Midwifery)

Background: Mother-To-Child Transmission (MTCT) of Human Immunodeficiency Virus HIV is the transmission of HIV from an HIV positive woman to her baby during pregnancy, labor, delivery and by breastfeeding. Prevention of Mother-to-Child Transmission (PMTCT) of HIV has become an important area of intervention on HIV/AIDS prevention activities. According to 2011 Ethiopian Demographic and Health Survey 21% the infants were infected. A fifth or fewer of the women and children that need PMTCT services to prevent new infections in children receive them. **Objective:** To assess the Knowledge, Utilization and Associated factors about PMTCT of HIV/AIDS among pregnant women who attend ANC at selected public Hospital in Addis Ababa, Ethiopia. **Method:** An institution based cross sectional study consisting of 409 study participants was conducted among pregnant women who attended ANC service at selected public hospitals in Addis Ababa. The sample size was distributed for each hospital proportionally and study participants were selected by convenience sampling method. An interviewer administered questioner was used to collect data. The data was entered and cleaned using Epi Info version 7 then analyzed using SPSS version 21 statistical package. Ethical approval and Confidentiality were addressed accordingly. **Result:** A total number of 409 (96.9% response rate) pregnant women were interviewed. From thus 82.4% (n=337) were knowledgeable and 70.9% (n=290) utilized PMTCT service. After controlling for confounders using multiple logistic regression Age 26-37 years, Cost of transportation 10 birr and below and Gestational age second trimester and third trimester were associated with knowledge of PMTCT while Age 26-37 years, Number of pregnancy which is multigravida and Partners who are tested with their spouse were found to increase pregnant women utilizing PMTCT service. **Conclusion:** there was a relatively decreased level of knowledge and utilization among pregnant women. This calls for a strong and continued effort from the public and relevant other stake holders to increase mothers' knowledge and utilization of PMTCT service through education, increasing service accessibility, encouraging couples testing for HIV during antenatal care and other women empowerment activities.

Key Words: Prevention of Mother To Child Transmission of HIV, Knowledge, Utilization,

1. Introduction

1.1 Background

Mother-To-Child Transmission (MTCT) of human immunodeficiency virus (HIV) is the transmission of HIV from an HIV positive woman to her baby during pregnancy, labor or delivery and by breastfeeding. Prevention of Mother-to-Child Transmission (PMTCT) of HIV has become an important area of intervention on HIV/AIDS prevention activities. PMTCT programs provide both opportunities for prevention of HIV transmission from mother to child and enrolment of the HIV-positive pregnant women and their HIV exposed or infected families into comprehensive HIV care, treatment and support**(1)**.

In 2016, United Nation Organization for AIDS (UNAIDS) with President's Emergency Plan for AIDS Relief (PEPFAR) developed a framework calling for a worldwide sprint to end AIDS among children, adolescents and young women by 2020**(2)**.PMTCT service is adopted in Ethiopian to reduce the HIV epidemic in the general population and specifically in children. PMTCT program in Ethiopia was launched in 2001. The PMTCT guideline was revised in 2007 and 2012 according to World Health Organization (WHO) guidelines. Ethiopia has launched the accelerated plan for PMTCT service in 2012**(3, 4)**.

Ethiopia has adopted the WHO four pronged PMTCT strategy. The first component is support primary prevention of HIV infection among women of child bearing age, second component prevention of unintended pregnancy among HIV infected women, third component promotes reduction of HIV transmission from HIV-infected women to their infants (PMTCT) and the fourth component provides care, treatment, and support to HIV-infected women, their infants, and their families**(5)**.

1.2 Statement of the Problem

PMTCT service provides low-cost interventions that reduce MTCT of HIV to less than 5%. PMTCT also provides a vital entry point for tracing HIV-exposed children so that they can be diagnosed and receive prophylactic care, Cotrimoxazole Preventive Therapy (CPT) and antiretroviral therapy (ART), as needed **(4)**. MTCT of HIV is preventable. With the latest knowledge and technology in PMTCT, including ARVs, safe delivery practices, and modified infant feeding practices, most cases of MTCT can be prevented. UNAIDS planned for the elimination of `MTCT by 2015. But the number of children living with HIV worldwide (age 0–14) has increased to 3.3 million **(6).**

Around the globe 35 million people have died from AIDS-related illnesses since the start of the epidemic up to the end 2015. In the same year there were around 36.7 million People Living With HIV/AIDS (PLWHA). Worldwide, 2.1 million people became newly infected with HIV in 2015 and also 150,000 children became newly infected with HIV at the same year **(7)**.Around the world MTCT is a major cause of HIV infections among children, especially in developing countries. Around 60% of HIV infections occur among women in most parts of Africa, and the prevalence is as high as40% among antenatal care (ANC) attendees in Sub Sahara Africa (SSA) **(5)**. The United Nations General Assembly (UNGA) set a target for 80% of pregnant women and their children to have access to PMTCT by 2010 to reduce the proportion of infants infected with HIV by 50% but this target could not be realized. In Eastern and Southern African nations, which have the highest rates of infection, coverage with Anti Retro Viral (ARVs) treatment jumped to 58%but this is not enough **(6)**.

In Ethiopia, PMTCT program was launched in 2001. At the year 2014, in Ethiopia, the proportion of pregnant women counseled and tested for PMTCT of HIV was 57%. Even if the number of health facilities providing PMTCT service has increased exponentially in Ethiopia, MTCT of HIV still remains to be a problem for the country due to high missed opportunities and dropout rates in addition to low coverage and utilization of services **(8)**.

Ethiopia has one of the lowest HIV prevalence rates in East Africa, but there are still more than one million people estimated to be living with HIV. Continued education, prevention, and treatment are necessary to prevent the spread of future infections and to care for those already infected. Women's knowledge of AIDS has increased since 2005

but knowledge of HIV prevention methods is not as high which includes MTCT. During the year 2011, about 56% of women know that HIV can be prevented by using condoms and only 65% know that HIV can be prevented by limiting sex to one uninfected partner. Knowledge about MTCT of HIV has increased in recent years. MTCT knowledge among women ranges from a low of only 17% to 81% **(9)**.

Basic knowledge about HIV and its prevention methods among pregnant mothers in accessing PMTCT services are vital to the success of the program. In Ethiopia, the proportion of HIV positive mothers identified at PMTCT sites has increased from 1.88% in 2006 to 22.1% in 2010 **(10)**. According to 2016 Ethiopian Demographic and Health Survey (EDHS)only 74% of women know that HIV can be transmitted through breastfeeding and 51% of women know that the risk of MTCT can be reduced if the mother takes special drugs during pregnancy **(11)**.

According to Country Progress Report on the HIV Response in 2014, the Ethiopian government targets to eliminate MTCT of HIV by 2015 & substantially reduce AIDS-related maternal death. According to 2011 EDHS 21% of the infants were infected. A fifth or fewer of the women and children that need PMTCT services to prevent new infections in children receive them **(12)**. MTCT of HIV remains a major public health problem and continues to account for a substantial proportion of new HIV infections among young children **(13).**

In Ethiopia the national HIV prevalence estimate was 2.4 percent for the adult population group. In 2011, there were 137,494 new HIV infections, which 10% occurred among children. Correct knowledge regarding to transmission of HIV during pregnancy, labor and during breastfeeding were associated with higher likely hood of using PMTCT services. In Ethiopia the main barriers for utilizing PMTCT services were incorrect knowledge and perceptions regarding HIV/AIDS and stigma by husband, family and community **(14)**. Even though progress is made in the reduction of MTCT in Ethiopia by increasing access of pregnant women to HCT services, the proportion of pregnant women receiving the PMTCT services has been low. A total of 90,311 HIV positive pregnant women and 14,276 HIV-positive births were reported in the country in 2010/11.In Addis Ababa during 2010/11, the HIV prevalence among adults aged 15–49 years was 9.2%, with the highest prevalence of HIV infection among women at 11%. The HIV prevalence

rate among pregnant women attending ANC clinics was 5.8% at the same year **(15)**. Assessing the utilization, knowledge and associated factors of pregnant women in Ante Natal Care (ANC) for the PMTCT service provision is very important. There is a continued demand for the a published information on this topic in Ethiopia, especially in the context of scaling up PMTCT service program in high-prevalence areas like in Addis Ababa City. The fight against HIV/AIDS needs an updated and continuous data year after year. This study tries to assess knowledge, utilization and associated factors of ANC attendees towards HIV in the context of PMTCT service at selected public hospitals in Addis Ababa City.

1.3 Significance of the Study

PMTCT program is found to be effective in the reduction of HIV transmission from an infected mother to their babies. But, sometimes with different reasons pregnant women fail to use this service and missed the opportunity to know their sero status and to benefit themselves as well as their babies. Therefore, this evaluation is timely and necessary to find out whether pregnant women are receiving adequate care in accordance with the national PMTCT protocol.

Though, there are researches done about knowledge, utilization and factors affecting PMTCT service in Addis Ababa, they focus on health centers and there is still a need for information about pregnant women knowledge and utilization of PMTCT service. The finding of this study would therefore provide information on the current status of PMTCT in the city and baseline data for future planning and interventions for stakeholders and policy makers. The finding of this study may also be used by PMTCT program supporters and implementers as an input towards supporting and promoting PMTCT service among the study population.

Hence, this study will provide insight about PMTCT service in public hospitals under Addis Ababa Health Bureau and can be used as an input for similar studies that are going to be conducted in the future and it also provides the new and the current aspect of the epidemic among pregnant women within the study area.

2. Literature Review

The 2012 UNAIDS Global Report indicates that the HIV pandemic remains a major public health problem worldwide. According to the report, 69% of adults and children living with HIV were from SSA and women account for almost 60%. More than 90% of the children who acquired HIV infection in 2011 live in SSA. In low- and middle-income countries, in the three years from 2009 to 2011, ARV prophylaxis prevented 409 000 children from acquiring HIV infection and coverage of effective ARV regimens for PMTCT of HIV reached 57% **(6)**. According to WHO from the identified 22 priority countries, with the top 10 (which includes Ethiopia) accounts for 75% of the global PMTCT service need **(13)**.

Even if PMTCT service is available in Ethiopia, during 2012 only 50% of pregnant women used these services, showing that 50% of these pregnant women did not access PMTCT services. Reasons for non-utilization of PMTCT services were unknown **(14)**.

To be optimally effective, prevention efforts should include strategic combinations of behavioral, biomedical and structural programming. Knowledge levels remain low (28%) for young women. It is now estimated that half of all new episodes of HIV transmission to children occur during breastfeeding period **(15)**.

2.1 Knowledge about PMTCT of HIV/AIDS

A woman's knowledge of her HIV status is the first essential requirement for the application of PMTCT interventions. Getting to zero new infections will require effective combination prevention, both intensively in specific populations in concentrated epidemics and across the whole population in generalized epidemics **(13)**.

A study conducted on pregnant women in greater Kingston Jamaica, about knowledge gaps on PMTCT discovered that 62% knew about PMTCT service and this study also indicated that the limited counseling that is provided by health workers and issues of clients confidentiality and stigma were the reasons for the gap in knowledge about PMTCT service **(16)**. According to a comparative study conducted in Malawi, overall 69.8% of pregnant women knew about PMTCT. With regard to interventions to reduce

MTCT, more acceptors (48.8%) mentioned taking ARVs as one method compared to the non acceptors (36.2%) **(17)**.

A Study conducted in Nigeria states found that, pregnant women have low level of knowledge (61%) with PMTCT service utilization of 50%, which is associated with stigma and discrimination and giving births by religious order **(18)**.

A cross-sectional survey which is done in South Africa Soweto, found that from the total of 201 women 62.7% and 43.3% had accurate knowledge on antenatal and intra partum prophylaxis for the purpose prevention of MTCT of HIV, respectively **(19)**. In a case study conducted in Dar es Salaam, Tanzania on knowledge and utilization of PMTCT services found that 56.7% knew about PMTCT and stigmatization, presence or absence of follow up were limiting factors **(20)**.A study which is done in Burkina Faso revealed that up to as much as 47% of the pregnant women knew the existence of MTCT risk, reminding the existence of wide knowledge gap in the community as a whole **(21)**.

In the context of Ethiopia a study done in Ambo Hospital found that regarding to the time of transmission from the infected mother to her child, 31.4% responded that breast feeding, 29.2% during pregnancy, 27.5% during labor and 11.9% did not knew timing of transmission **(22)**.Another study conducted among pregnant women in North West Ethiopia showed that, 88.5% knew MTCT of HIV and 83.5% of them knew that MTCT of HIV is preventable. As to the period of HIV transmission, 35.9%, 33.6% and 24.9% of responded during pregnancy, during labor and breast feeding respectively. On the other hand about the mechanisms for PMTCT service 58.4% knew the protective effect of ARVs drugs, 18% knew not breast feeding can prevent MTCT of HIV and 11% knew that elective cesarean section delivery can prevent MTCT of HIV. Having greater number of ANC visits and increased maternal age were factors associated with PMTCT service knowledge and utilization **(23)**. A study done in Hawassa found that 82.3% of respondents had knowledge about PMTCT service and being multipara, having ANC follow up which is four and above, having previous health facility delivery and also fear of stigma and discrimination were statistically associated with pregnant women PMTCT service knowledge**(24)**.

A study done in Addis Ababa found that 12%of the respondents who claimed to know MTCT of HIV were unable to mention how the virus can be transmitted from mother to her infant **(25).**

2.2 Utilization of PMTCT service

A study done by United Nations International Children's Educational Fund (UNICEF) in 2013 indicated that in the absence of any interventions during pregnancy, labor, delivery or breastfeeding, rates of HIV transmission from MTCT can be between 15-45%. MTCT could be nearly fully prevented **(26)**. According to a study done in the Middle East and North Africa, regional ART coverage remains low at 13%. Less than 5% of the estimated number of HIV infected pregnant women received the most effective ARV regimens for PMTCT in 2010 **(27)**.

An institutional based cross sectional study that is done in Sebeta town found that about 86.9% of the participants utilize PMTCT service during the current pregnancy. The study also outlined that among non-utilizers and the main reasons for not being tested were the absence of counselor/service provider. And in this study pregnant women age (25–34), pregnant mother's occupational status, and partner being tested for HIV were associated with utilization of PMTCT service **(28)**. A study conducted in Jimma town found that 77.3% used PMTCT service and from those pregnant women who had been tested 6.9% were found to be positive **(29)**.

Another study done in Tigray region using a multilevel modeling, found that 79% of pregnant women received PMTCT service and having previous delivery at health institution were an enabling factor for PMTCT service **(30)**. According to a study done in Addis Ababa during 2010 found that about 90% of the pregnant women knew MTCT of HIV and only 18% of respondents attended the facility for HIV Counseling and Testing (HCT). Absence of counselor was found to be associated for not utilization of PMTCT service **(25).**

2.3 Factor associated with Knowledge and Utilization about PMTCT of HIV/AIDS

A cross-sectional assessment of mothers in Phnom Penh, which is in Cambodia, found that 76% had an experience of HIV testing. Most of the mothers got information about HIV testing from health care provider 79.1% and mass media 18.9%. The study found that need of partner's permission for HIV testing and distance from home to ANC clinic were found to be barriers to HIV testing **(31)**.

According to a study done in Zimbabwe the barriers for not utilizing PMTCT service included inaccurate risk perception and fear of stigma were identified **(32)**. Another study done in Coastal province of Kenya's hospital found that age and previous delivery in hospital were associated with utilization of PMTCT service **(33).** A case study done in Ilala Municipality in Dar es Salaam, Tanzania shows that knowledge and communication barriers were found to be associated with uptake of PMTCT service **(20)**. Another study done in South Africa indicated that that only 9% of pregnant women were tested for HIV and being near to the hospital, being single and having higher formal education were associated with utilization of PMTCT service but having to spend higher traveling cost to reach to the hospitals were negatively associated **(34).**In a different study done in South Africa Limpopo province, from 200 woman 23.6% were positive for HIV and PMTCT uptake were 90.6%. The study also found age group 20 – 29 years were more likely to use PMTCT service **(35)**.

According to a study done in South Ethiopia 60.7% of pregnant women knew MTCT of HIV, being government employee and maternal education were associated with utilization of service **(36)**. A study done in Tigray regional state found that 79% of pregnant women used PMTCT service and last pregnancy place of delivery which is in health facility is found to be more likely to utilize PMTCT service **(30).** A study conducted in Gondar town indicated that 88.5% of respondents knew MTCT and 83.5% knew PMTCT service at the same time PMTCT service was associated with greater number of antenatal care visits, having educational level of secondary and above, increased maternal age**(23)**. According to a study done in Dessie town, cost of transportation, being professional women, being Muslim follower and having a greater number of pregnancies were associated with utilization of PMTCT service (**37)**.

And a study done in Dire Dawa found that PMTCT service was positively associated with higher monthly income and gestational age of the pregnant women **(38)**. Another study done in Addis Ababa on 843 participants found that absence of counselor, lack of awareness were associated with utilization of PMTCT service **(25).**

2.4 Conceptual framework

The following conceptual framework is developed upon reading of different literatures and materials on PMTCT of HIV/AIDS.

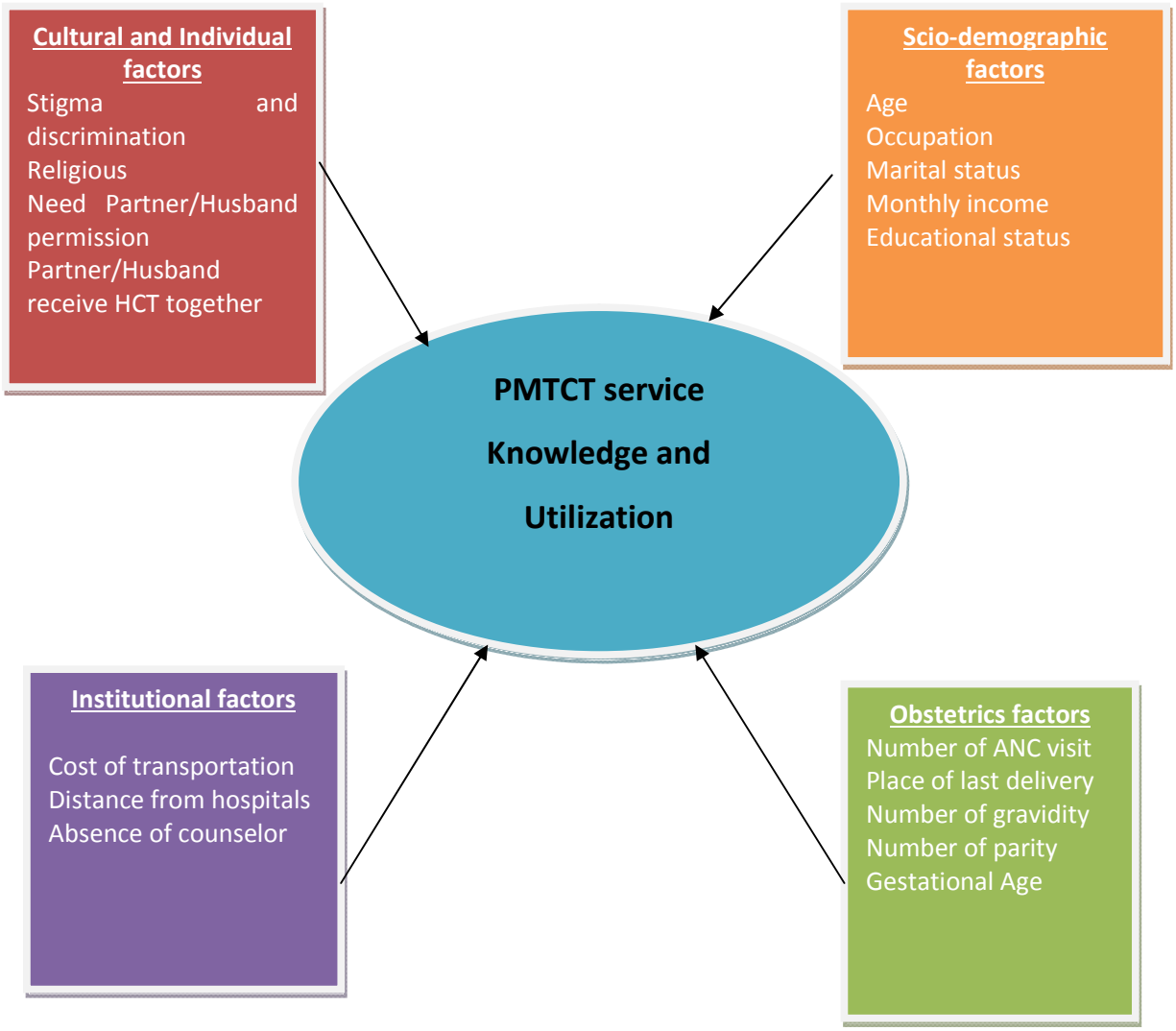

Figure 1: Conceptual Frame work of Factors influencing utilization and knowledge about PMTCT service

3. Objectives

3.1 General Objective

- To assess the Knowledge, Utilization and Associated factors on PMTCT of HIV/AIDS among pregnant women who attend ANC service at selected public Hospital in Addis Ababa, Ethiopia, 2017.

3.2 Specific Objectives

- To determine level of Knowledge about PMTCT of HIV/AIDS among pregnant women who attend ANC service at selected public Hospital in Addis Ababa.
- To determine level of Utilization of PMTCT of HIV/AIDS among pregnant women who attend ANC service at selected public Hospital in Addis Ababa.
- To identify factors associated with PMTCT of HIV/AIDS knowledge among pregnant women who attend ANC service at selected public Hospitals in Addis Ababa.
- To identify factors associated with PMTCT of HIV/AIDS utilization among pregnant women who attend ANC service at selected public Hospitals in Addis Ababa.

4. Methodology

4.1 Study Area and Period

The study was conducted in Addis Ababa which is the Capital City of Ethiopia. In 2013 according to Addis Ababa City Administration Bureau of Finance and Economic Development report on Socio-Economic Profile, Addis Ababa covers 522 km^2 and a total population of more than 3 Million people, of which 51% are females. It has 10 sub-cities and 116 woredas. There are totally 48 hospitals in the metropolis, 13 are public of which 6 are owned by the Addis Ababa City Administration Health Bureau; more than 52 health centers, 2 health posts and more than 500 private health institutions providing health services including ANC and Delivery. Regarding the health professionals, currently there are a total of 4197 **(40)**.

The study was conducted from May15 up to May 25, 2017.

4.2 Study Design

A facility based cross sectional study was conducted among pregnant woman attending ANC clinics at selected public hospitals in Addis Ababa.

4.3 Study Population

4.3.1 Source population

All pregnant woman who live in Addis Ababa Administrative city.

4.3.2 Study population

Pregnant women who fulfill the inclusion criteria and attending ANC service in selected public hospitals during data collection period.

4.4 Sample Size

The minimum required sample size was calculated using the formula of estimating a single population proportion for a cross-sectional survey.

$$n = \frac{\left(Z^{\alpha}/_{2}\right)^{2} p\,(1-p)}{d^{2}}$$

Where **n** = calculated minimum sample size

$Z_{\alpha/2}$ = critical value 1.96 standard normal distribution curve value for 95% CI

d = the acceptable margin of error (precision) = 0.05

P = Assumed proportion of ANC attending women who have knowledge about PMTCT service 50% to get maximum sample size

Before deciding to use p = 50%, it was tried to calculate the sample size using p = 82.3% for knowledge of pregnant woman from a study done in Hawassa **(24)** and with the same critical value and margin of error n = 223

$n_H = \frac{(1.96)^2 \times 0.82(1-0.82)}{(0.05)^2} = 223$

And p = 86.9% for utilization of pregnant woman were used from a study done in Sebeta town and with the same critical value and margin of error **(28)** n = 174

$n_S = \frac{(1.96)^2 \times 0.86(1-0.86)}{(0.05)^2} = 174$

According to the above assumptions and using the single population proportion formula, sample size was $\mathbf{n = \frac{(1.96)^2 \times 0.5(1-0.5)}{(0.05)^2}}$

Therefore, according to the above calculation **n = 384** adding 10% non response rate the final total number of the sample will be **422.**

4.5 Sampling Procedure

Regarding to selection of individual hospitals, all public hospitals which are under Addis Ababa City Administration Health Bureau and which provide PMTCT service currently were included. Namely Zewditu Memorial Hospital, Gandhi Memorial Hospital, Ras Desta Damtaw Memorial Hospital, Yekatit 12 Memorial Hospital and Tirunesh Beijing Hospital. The desired number of clients from each Hospital was determined based on the size of pregnant women in the individual hospital using proportional sampling

method. An individual study participant was selected using convenience sampling including every new comer until the desired number of clients is achieved. Then the data was collected from each pregnant woman with in the data collection period.

The steps for sampling procedure are as follows:

Step 1: All five hospitals which provide PMTCT service and found under Addis Ababa City Administration Health Bureau were included in the study.

Step 2: The desired numbers of study participants were computed proportionally for each study hospital according to their client flow.

Step 3: Each individual participant were selected using convenience sampling method. Every other pregnant woman was interviewed until the desired sample achieved.

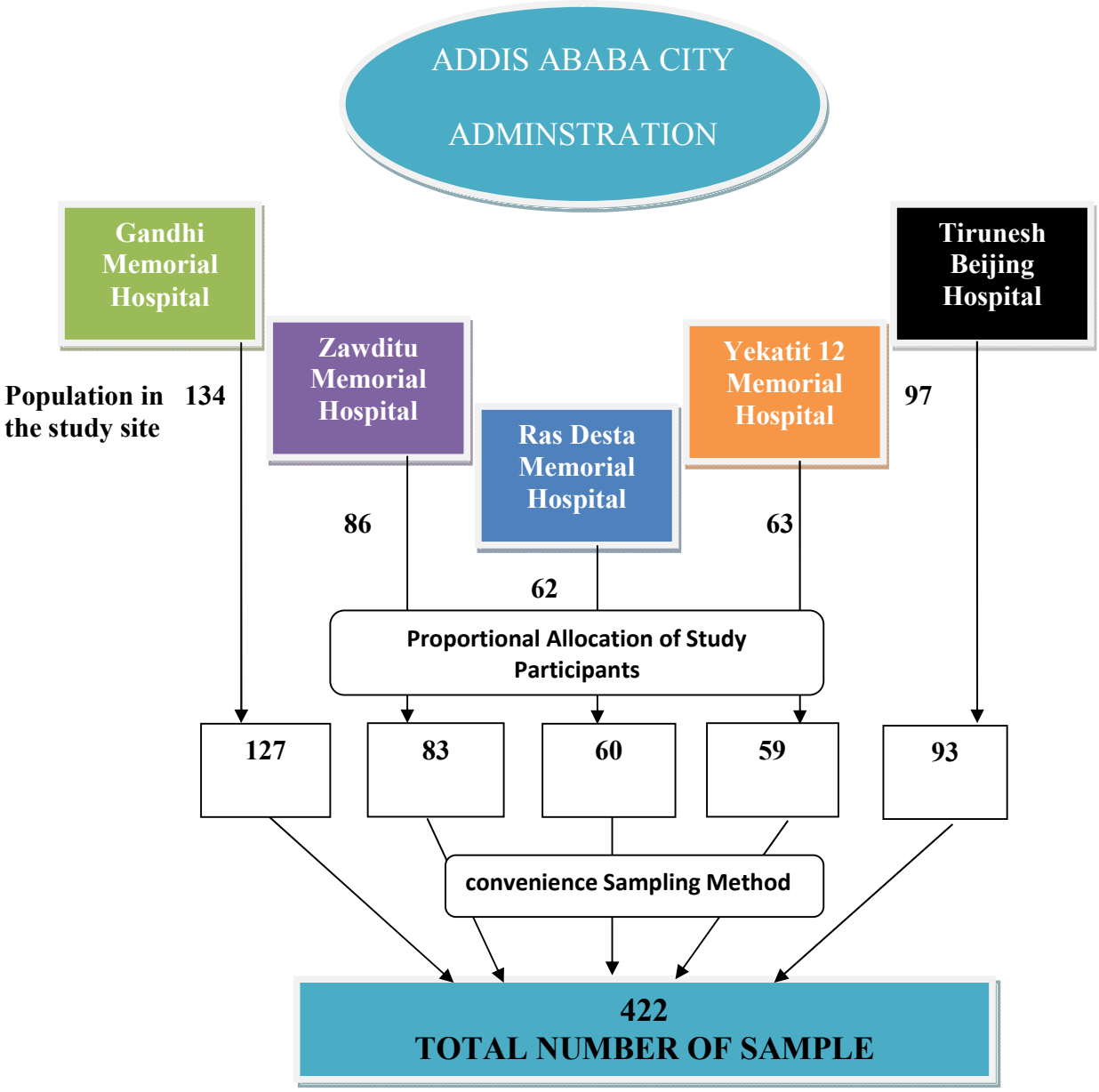

Figure 2: Schematic presentation of the sampling procedure

4.6 Eligibility Criteria

4.6.1 Inclusion criteria

- Pregnant women who are attending ANC service at selected hospitals and consented for the study.

4.6.2 Exclusion criteria

- Pregnant women who are too sick to be interviewed or unable to respond.
- Pregnant women who came by refer from other regions.

- Pregnant women who have lived less than 3 months in the city.

4.7 Study Variables

4.7.1 Dependent variables

- Utilization of PMTCT service
- Knowledge about PMTCT of HIV/AIDS

4.7.2 Independent variables

- Socio-demographic characteristics of clients (age, occupation, marital status, income, educational status)
- Obstetric factors (number of ANC visit, number of gravidity, number of parity, gestational age, place of last delivery)
- Cultural and Individual factors (stigma and discrimination, husband/partner permission, husband/partner receive HCT, religious)
- Institutional factors (cost of transportation, distance from hospital, absence of counselor or service availability)

4.8 Operational Definition

- **Antenatal care (ANC) -** is the care of a pregnant woman and her unborn baby throughout a pregnancy.
- **PMTCT service-** is a service which is received by pregnant mothers from a health facility for prevention of MTCT of HIV/AIDS.
- **Knowledge about PMTCT-** in this study it is when a pregnant woman who answers more than 60% of the questions correctly from the questioner was labeled as knowledgeable **(24)**.
- **PMTCT service utilization-** in this study it is assessed using 7 questions. The response of the study participants was calculated and those who score equal and above mean value of 4.7531 are considered to utilize the service **(35, 41)**.

4.9 Data Collection Procedure

4.9.1 Data collection instrument

An exit, interviewer administered questioner was used. The structured questioner was adapted from UNAIDS Best Practice Collection tool and from the EDHS 2016 report with some modifications **(11, 39)**. A pre test on 10% of the sample was conducted on

different public hospital (Tikur Anbessa Specialized Hospital) that is not included in the actual study.

Main points included in the questionnaire were socio demographic characteristics, knowledge of HIV and PMTCT, service utilization of PMTCT service which includes pregnant women HIV test result. The main issue addressed was assessing knowledge, utilization and factors associated with PMTCT service among ANC users.

4.9.2 Data collectors

The data collectors were selected from each hospital. This includes Midwives or Nurses who had experience on working inside ART and/or PMTCT room. One data collector was selected for each hospital and one supervisor who has the experience on data collection was used to control the data collection process. Finally a two days training on the questioner and data collection procedure was given for data collectors. The data collectors and data collection procedures were over seen by the principal investigator throughout the data collection period.

4.9.3 Data quality control

Appropriate instructions and training were given for the data collectors and supervisors. When problems occur the principal investigator took proper measures for the facilitation of data collection. A structured questionnaire was prepared in English and translated into Amharic and then translated back in to English to check for consistency of the tool. The Amharic version was used for data collection procedure. All completed questionnaires and forms were checked for completeness and consistency and submitted to the supervisor on daily basis and again checked for completeness and consistency by the principal investigator.

4.10 Data Analysis Procedure

For data analysis, the response were coded and entered into the computer using EPI info version 7.0 after cleaning and checking for completeness it was transferred to SPPSS version 21.0 statistical packages for further analysis of the collected data. Comparisons were made with available findings in different literatures against the results of this research finding. Results of the variables were displayed by using different data

representation methods like tables, charts and graph. Different statistical analytic methods were employed to describe the study population. Mean, Median, Frequency and Percent was used for the descriptive statistics. Bi-variate analysis using chi-square test was used with level of significance at $p < 0.05$ to identify the relationship between the dependent variables and independent variables. Multi-variate analysis which is Multiple Logistic Regression was conducted to examine the relationships between outcome variables and independent variables which are identified by the chi-square test to identify factors independently associated with dependent variable.

4.11 Ethical Consideration

Ethical clearance was obtained from Addis Ababa University, College of Health Science, School of Allied Health Science, Department of Nursing and Midwifery Research Review Committee. Official letter was submitted to respective authorities for the permission of the study. Then, study permit was granted from each hospital. After explaining the objectives of the study in detail; informed verbal consent was taken from all study participants. Confidentiality was maintained by omitting their personal identifications such as names and a great deal of care was given for those pregnant women who revealed their test result as to protect their privacy, also the methods used did not affect the study subject at any way possible.

4.12 Dissemination Plan

A copy of the final paper of this study will be given to the relevant authorities and the result of the study will be communicated to the appropriate government bodies such as Addis Ababa University, College of Health science; School of Allied Health Science, Department of Nursing and Midwifery, Addis Ababa Health Bureau and for the respective hospitals who has been participated in the study. Finally, if possible attempts will be made to publish the results of the study on local or international journals.

5. Result

5.1 Socio-Demographic and Obstetric Characteristics of Respondents

In this study a total number of 409pregnant women were included, which consists for a 96.9% response rate. The age of study respondents ranged from 15 to 49 years and the mean age was 29.92 years with a SD of ±1.589. The majority of the respondents were Orthodox Christian followers (40.1%) and a large proportion of pregnant women were married (88.8%). Regarding to their ethnicity 25.4% were Oromo and 24.7% were Amhara. From the total of 409 respondents 37.4% were housewife and52.3% had Tertiary and above educational status. When we came to income status of the respondent's majority of them (49.4%) earn between 1651 birr to 7800 birr monthly. And finally according to the pregnant women response 33%of the pregnant women expend more than 10 birr for a means of transportation and 41.1%of them travel more than 11 km to reach the nearby hospital.

Table 1: Socio demographic characteristics of ANC Attendees, at selected public hospitals, in Addis Ababa, May 2017

Characteristics	Frequency (No)	Percentage (%)
Age		
15-25	136	33.3
26-37	171	41.8
38-49	102	24.9
TOTAL	**409**	**100**
Religious		
Orthodox	164	40.1
Muslim	107	26.2
Other (Protestant ,Catholic …)	138	33.7
TOTAL	**409**	**100**
Ethnicity		
Amhara	99	24.7
Tigray	52	12.7
Oromo	106	25.4
Other (Wolita, Guragea, Selitei…)	152	37.2
TOTAL	**409**	**100**
Occupation		
Housewife	153	37.4
Student	37	9.1
Employee/Owner	219	53.5
TOTAL	**409**	**100**
Level of Education		
Primary	76	18.6
Secondary	119	29.1
Tertiary and above	214	52.3
TOTAL	**409**	**100**
Level of Income		
Below 1650 Birr	95	23.2
1651 – 7800 Birr	202	49.4
Above 7801 Birr	112	27.4
TOTAL	**409**	**100**
Marital Status		
Married	363	88.8
Unmarried	46	11.2
TOTAL	**409**	**100**
Cost of Transportation		
Up to 10 Birr	274	67
Above 10 birr	135	33
TOTAL	**409**	**100**
Distance from home to hospital		
Up to 10 Km	241	58.9
11 Km and above	168	41.1
TOTAL	**409**	**100**

With regard to obstetric characteristics of the respondent's, majority of them (71.1%) had more than one pregnancy including the current one. Moreover, from those pregnant women who had more than one pregnancy the majority of them (95.5%) had delivered their previous pregnancy at health institution and almost half of them (48.8%) had more than two children alive until now. Within the current pregnancy almost half of the pregnancy (43.3%) was in the third trimesters and in terms of their ANC visit while 14.2% of them were on their first visit 45.7% of them had more than four visits including the current one.

Table 2: Obstetric characteristics of ANC attendees, at selected public hospitals, in Addis Ababa, May 2017

Characteristics	Frequency(No)	Percentage (%)
Number of Pregnancy		
Primigravida	118	28.9
Multigravida	291	71.1
TOTAL	**409**	**100**
Place of last delivery		
At Health institution	278	95.5
At home	13	4.5
TOTAL	**291***	**100**
Number of children alive		
Less or equal to 2 children	149	51.2
More than 2 children	142	48.8
TOTAL	**291***	**100**
Number of ANC visit		
One visit	58	14.2
Two visit	73	17.8
Three visit	91	22.2
Four and more visit	187	45.7
TOTAL	**409**	**100**
Gestational Age		
First trimester	70	17.1
Second trimester	162	39.6
Third trimester	177	43.3
TOTAL	**409**	**100**

*= Total number is 291 because of only multigravidas are asked the two questions which are 291 in total.

5.2 Knowledge and Utilization of Pregnant Women regarding to PMTCT service

5.2.1 Knowledge of Pregnant Women towards PMTCT of HIV/AIDS

From the total number of respondents that have participated in this study, about 82.4% (n = 337) of the pregnant women had knowledge about PMTCT of HIV/AIDS service. This is found by using the operational definition for knowledge which states a pregnant woman who answers more than 60% of the questions correctly was labeled as Knowledgeable.

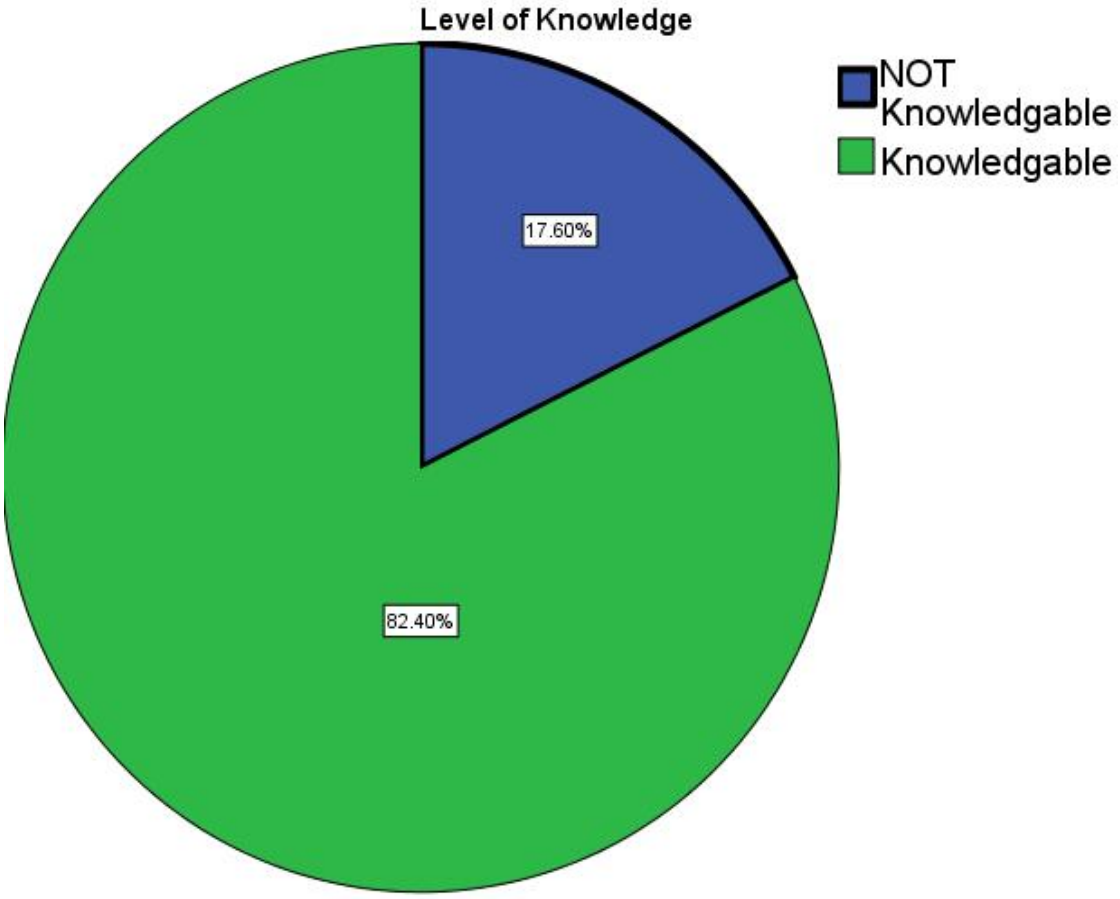

Figure 3: Level of knowledge of pregnant women on PMTCT service, at selected public hospitals in Addis Ababa, May 2017

All of the study respondents had heard about HIV/AIDS. From those who knew the modes of transmission all of them mentioned unsafe sexual intercourse, 98.3% mentioned contact with contaminated blood and 98.3%% mentioned using contaminated injections

and sharp materials while 77.8% of the respondents mention MTCT of HIV as a mode of transmission. But 5.6% (23) of the pregnant women, who heard about HIV/AIDS, couldn't mention the modes of transmission. Regarding to the ways to prevent HIV/AIDS transmission nearly all (99.8%) of them know the mode of prevention. And those who know the modes of prevention of HIV/AIDS transmission, 99.3% say abstinence, 98.8% say being faithful to spouse 98.7% say using condoms and 97.6% say preventing oneself from contaminated injections, materials and infected blood.

According to the study participants response 90% of them knew MTCT of HIV/AIDS. The source of their information for MTCT of HIV/AIDS was health personnel's 68.9%, mass media 63.6%, meetings and seminars 27.4% and friends' relatives' neighbors consists of 21.8%. And 97.6% of pregnant women knew the timing of MTCT of HIV/AIDS. Furthermore those pregnant mothers who knew about timing of MTCT mentioned during pregnancy, during labor and delivery and during breast feeding were 69.9%, 59.4% and 51.6% respectively.

About whether or not a pregnant woman can prevent the transmission of HIV to her unborn fetus if she becomes infected, the response shows that 81.2% knew about it. From those pregnant women who said there is a means of preventing HIV transmission to the fetus 65.5% knew that use of ARV drugs for the purpose of PMTCT of HIV can prevent transmission, 34.5% knew caesarian section delivery can prevent it and 40.1% knew avoiding of breast feeding can help the prevention. About the benefits of using PMTCT service 55.7% said it is useful for preventing transmission to her unborn child, 53.8% said to knew what her HIV status is, 39.4% said to get treatment and care for her and the fetus if positive and 35.9% said to prevent transmission(if positive) to her husband.

Table 3: Knowledge of Pregnant women about PMTCT of HIV/AIDS service, at selected public hospitals in Addis Ababa, May 2017

Questions	Frequency (%)	Alternatives for Yes Answer	
Heard of HIV/AIDS			
YES	409 (100%)		
NO	0 (0%)		
Know Mode of Transmission		Un safe sexual intercourse	386 (100%)
YES	386 (94.4%)	Contaminated blood	380 (98.3%)
		Contaminated materials	380(98.3%)
		Mother to child transmission	318(77.8%)
NO	23 (5.6%)		
Know method of Prevention	408 (99.8%)	Abstinence	406(99.3%)
YES		Being faithful to spouse	404(98.8%)
		Use of condom	403(98.7%)
		Prevention from contamination	399(97.6%)
NO	1(0.2%)		
Do you know MTCT			
YES	368(90%)	Health personnel	282(68.9%)
		Mass media	260(63.6%)
		Meetings	112(27.4%)
		Friends, Relatives…	89(21.8%)
NO	41(10%)		
Know PMTCT of HIV			
YES	332(81.2%)		
NO	77(18.8%)		
Know Timing of MTCT			
YES	399(97.6%)	During Pregnancy	286(69.9%)
		During Labor & Delivery	243(59.4%)
		During Breast Feeding	211(51.6%)
NO	10(2.4%)		
Know mechanisms for PMTCT of HIV	393(96.1%)	Use of ARVs for PMTCT	268(65.5%)
YES		Cesarean Section Delivery	141(34.5%)
		Avoid Breast Feeding	164(40.1%)
NO	16(3.9%)		
Know Benefits of PMTCT			
YES	364(89%)	Know Her Status	220(53.8%)
		Get Treatment & Care	161(39.4%)
		Prevent transmission to her fetus	228(55.7%)
		Prevent transmission to her husband	147(35.9%)
NO	**45(11%)**		

5.2.2 Utilization of PMTCT Service among Pregnant Women

The overall utilization of PMTCT service among those pregnant women who had participated in this study was found to be 70.9% (n = 290). The total number of pregnant women which had utilized PMTCT service was calculated by using a mean score of 4.7531 and pregnant woman which score 4.7531 and above was labeled as to Utilize PMTCT service.

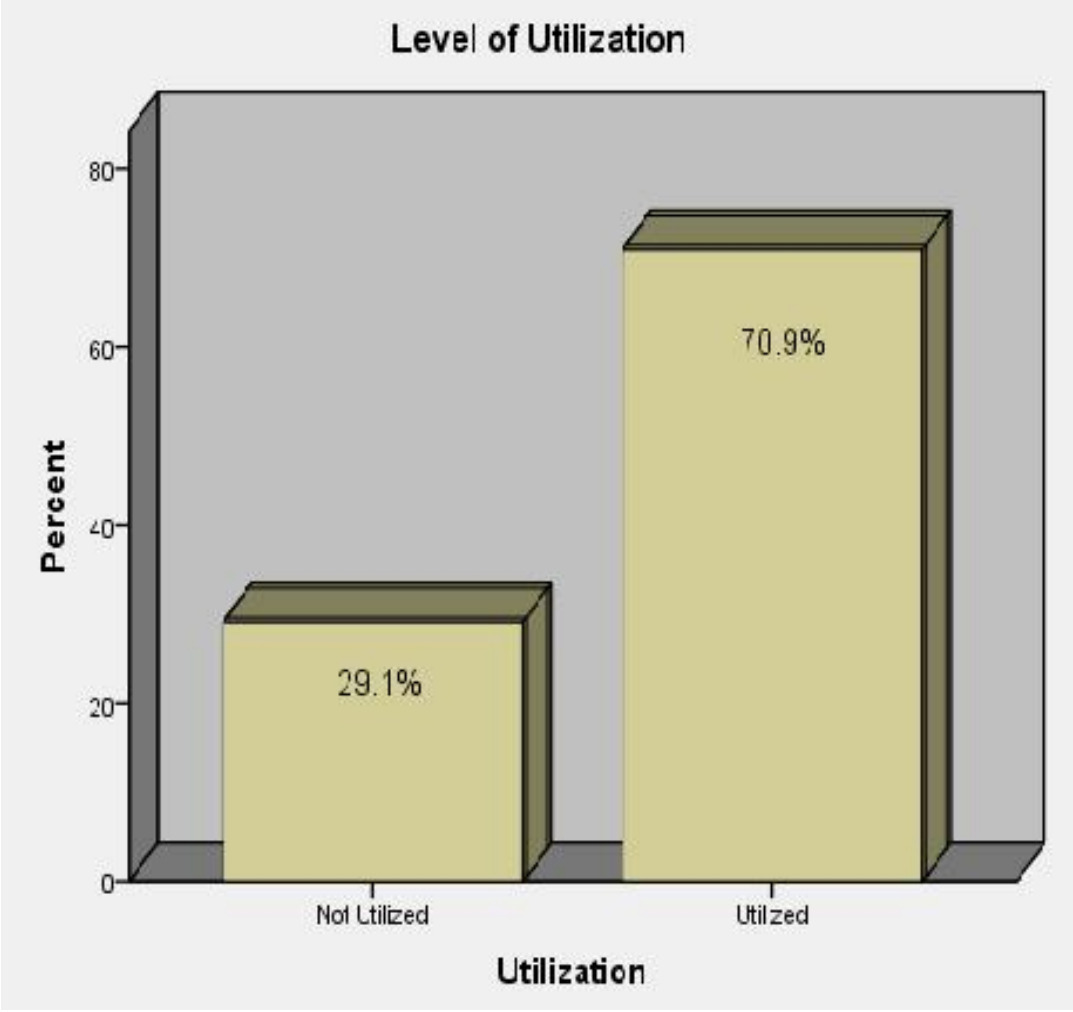

Figure 4: Level of utilization of pregnant women towards PMTCT service, at selected public hospitals in Addis Ababa, May 2017

From the total of 409 respondents, in this study 89.2% have been told about the availability of PMTCT service during their current pregnancy. And also 67% of the respondents had used PMTCT service before the current pregnancy while the rest did not. From those pregnant women who had used PMTCT service before current pregnancy 56.5% used HIV testing, 49.6% used counseling service while only 2.4% used ARV treatment. Whereas from the pregnant women who didn't used PMTCT service the reasons mentioned for not using the service were fear of stigma 20.8%, not knowing the purpose of PMTCT service 16.9%, pregnant women believing not to have risk for HIV consists 16.1%, wanting to have a discussion with partner and lack of PMTCT service consists 15.7%.

Regarding to the current pregnancy, 86.1% had been tested for HIV during their current pregnancy while the rest of respondents had not been tested. And 79.2% of the respondents were offered counseling service before and after their test. From those pregnant women who had been tested 83.1% received their result either in oral or in written form. Moreover, from the total of pregnant women who had been asked whether or not their partner's have been tested together with them, 68.5% were tested together with their husbands during their current pregnancy. From the total of pregnant women who had been tested for HIV during their current pregnancy and who had received their result only 2.6% (n = 9) were found to be Positive. And those pregnant women who were found Positive, all of them began using ARV drugs for the purpose of PMTCT of HIV service.

Table 4: Utilization of PMTCT of HIV/AIDS service among pregnant women, at selected public hospitals in Addis Ababa, May 2017

Questions	Frequency (%)	Alternatives for Answer		
Told about PMTCT				
YES	365(89.2%)			
NO	44(10.8%)			
Used PMTCT Service (Before current pregnancy)				
YES	274(67%)	HIV Counseling		203(49.6%)
		HIV Testing		231(56.5%)
		ARV treatment		10(2.4%)
NO	135(33%)	Need to discuss with partner		60(14.7%)
		Not availability of service		4(1%)
		Fear of stigma/discrimination		85(20.8%)
		I don't have any risk		66(16.1%)
		I don't know the benefit		69(16.9%)
Tested for HIV (current pregnancy)				
YES	352(86.1%)			
NO	57(13.9%)			
Offered counseling (Before/After)				
YES	324(79.2%)			
NO	85(20.8%)			
Received test result (Oral/Written)				
YES	340(96.6%)			
NO	12(3.4%)			
Result of HIV test				
NEGATIVE	331* (97.4%)	**Began using ARV**	YES	9(100%)
POSITIVE	9*(2.6%)	**drugs for PMTCT**	NO	0(0%)
Partner tested together				
YES	280(68.5%)			
NO	129(31.5%)			

* = Total is 340 because only those who receive their HIV test result were asked the question.

5.3 Factors Associated with Knowledge of PMTCT Service among Pregnant Women

5.3.1 Bivariate Analysis of factors affecting Knowledge of PMTCT service

Cross tabulation was done using $p < 0.05$ to find factors which has association with knowledge of PMTCT. All factors were checked for association but few were found to be associated with Knowledge of PMTC service. From the soci-demographic variables Age ($\chi^2(2)=9.79$, $p=0.007$), Occupation ($\chi^2(2)=8.12$, $p=0.017$) and Cost of Transportation ($\chi^2(2)=6.50$, $p=0.011$) had shown a significant association with Knowledge on PMTCT service. And from the obstetrics variables Gestational Age ($\chi^2(2)=20.18$, $p<0.001$), Number of ANC visit ($\chi^2(3)=20.47$, $p<0.001$), Number of Children Alive ($\chi^2(2)=8.96$, $p=0.011$) and Number of Pregnancy ($\chi^2(1)=5.56$, $p=0.018$)had shown a significant association with Knowledge about PMTCT service.

Table 5: Bivariate analysis of factors associated with knowledge about PMTCT service, at selected public hospitals in Addis Ababa, May 2017

Characteristics		Frequency (Percent)		Pearson χ^2 P value
		Knowledgeable	Not Knowledgeable	
Age	15 – 25	101(74.3%)	35(25.7%)	
	26 – 37	150(87.7%)	21(12.3%)	0.007
	38 – 49	86(84.3%)	16(15.7%)	
Occupation	Housewife	116(75.8%)	37(24.2%)	
	Student	30(81.1%)	7(18.9%)	0.017
	Employee or Owner	191(87.2%)	28(12.8%)	
Gestational age	First trimester	45(64.3%)	25(35.7%)	
	Second trimester	136(84.0%)	26(16.0%)	0.000
	Third trimester	156(88.1%)	21(11.9%)	
Number of Children alive	No children alive	24(68.8%)	11(31.4%)	
	Two or less children alive	101(88.6%)	13(11.4%)	0.011
	Above three children alive	123(86.6%)	19(13.4%)	
Number of pregnancy	Primigravida	89(75.4%)	29(24.6%)	
	Multigravida	248(85.2%)	43(14.8%)	0.018
Coast of transportation	10 birr and below	235(85.8%)	39(14.2%)	
	Above 10 birr	102(75.6%)	33(24.4%)	0.01
Number of ANC visit	1st visit	39(67.2%)	19(32.8%)	
	2nd visit	53(72.6%)	20(27.4%)	0.000
	3rd visit	79(86.8%)	12(13.2%)	
	4th visit and above	166(88.8%)	21(11.2%)	

The other variables which includes marital status, monthly income, educational status, place of last delivery, distance from hospital, absence of counselor, stigma and discrimination, religious, partner permission and partner being tested together with pregnant women had not shown a significant association with Knowledge of PMTCT service.

5.3.2 Multivariate Analysis of factors associated with Knowledge of PMTCT

From the bivariate analysis Age, Occupation, Cost of Transportation, Gestational age, Number of Pregnancy, Number of ANC visit and Number of children alive had shown a significant association with Knowledge about PMTCT service. And multivariate analysis using Multiple Logistic Regression analysis was done to identify the factors independently associated with PMTCT service.

The Multiple Logistic Regression analysis with 95% confidence interval by the Forward Conditional method reviled the following outcome. Age, Gestational age and Cost of transportation were independently associated with pregnant women Knowledge about PMTCT service. A pregnant women whose age is between 26 up to 37 years is 2.3 times more knowledgeable than a pregnant women whose age is between 15 up to 25 years [AOR (95% CI) = 2.32 (1.24 – 4.32)] was significant at (P=0.008). And also a pregnant women who expend 10 birr and below for transportation were 2.1 times more knowledgeable than those who expend more than 10 birr [AOR (95% CI) = 2.12 (1.23 – 3.65)] was significant at (P= 0.007).Lastly pregnant women who are in second trimester were 2.5 times more knowledgeable[AOR (95% CI) = 2.48 (1.27 – 4.85)] was significant at (P= 0.007) and also whose gestational age is in the third trimester were also 3.8 times more knowledgeable [AOR (95% CI) = 3.75 (1.88 – 7.50)] was significant at (P< 0.001),from those pregnant women in the first trimester. (See Table 7)

5.4 Factors Associated with Utilization of PMTCT Service among Pregnant Women

5.4.1 Bivariate Analysis of factors affecting Utilization of PMTCT Service

Regarding factors associated with Utilization of PMTCT service all variables were entered and checked for association using chi-square test to see their relation with the outcome variable. And level of significance was set at $p < 0.05$, the findings are as follows.

This are Age ($\chi^2(2)=16.58$, $p<0.001$), Occupation ($\chi^2(2)=15.89$, $p<0.001$), Level of Income ($\chi^2(2)=11.91$, $p=0.003$) and Cost of transportation ($\chi^2(1)=4.08$, $p=0.043$) Gestational Age ($\chi^2(2)=6.29$, $p=0.043$), Number of Pregnancy ($\chi^2(1)=14.17$, $p<0.001$) and also Partner`s Being tested together with the pregnant women ($\chi^2(1)=162.63$, $p<0.001$) were found to be statistically associated with utilization of PMTCT service.

Table 6: Bivariate analysis factors associated with Utilization of PMTCT service, at selected public hospitals in Addis Ababa, May 2017

Characteristics		Frequency (Percent)		Pearson χ^2 P value
		Utilized	Not Utilized	
Age	15 – 25	79(58.1%)	57(41.9%)	
	26 – 37	130(76.0%)	41(24.0%)	0.000
	38 – 49	81(79.4%)	21(20.6%)	
Occupation	Housewife	99(64.7%)	54(35.3%)	
	Student	19(51.4%)	18(48.6%)	0.000
	Employee or Owner	172(78.5%)	47(21.5%)	
Gestational age	First trimester	41(58.6%)	29(41.4%)	
	Second trimester	120(74.1%)	42(25.9%)	0.043
	Third trimester	129(72.9%)	48(27.1%)	
Level of Income	Below 1650 birr	54(56.8%)	41(43.2%)	
	1651 – 7800 birr	151(74.8%)	51(25.2%)	0.003
	Above 7801 birr	85(75.9%)	27(24.1%)	
Coast of transportation	10 birr and below	203(74.1%)	71(25.9%)	0.043
	Above 10 birr	87(64.4%)	48(35.6%)	
Number of pregnancy	Primigravida	68(57.6%)	50(42.4%)	0.000
	Multigravida	222(76.3%)	69(23.7%)	
Partner tested together	Yes	253(90.4%)	27(9.6%)	0.000
	No	37(28.7%)	92(71.3%)	

The rest of independent variables which include marital status, educational status, number of ANC visit, number of children alive, place of last delivery, distance from hospital, absence of counselor, stigma and discrimination, religious and needing partner permission to be tested didn`t result in a significant association with Utilization of PMTCT service.

5.4.2 Multivariate Analysis of factors associated with Utilization of PMTCT

As shown in the bivariate analysis some of the factors were associated with Utilization of PMTCT service and those factors were further statically treated to find the independently associated variables using Multiple Logistic Regression. The factors identified and used were Age, Occupation, Level of Income, Cost of Transportation, Number of Pregnancy, Gestational Age and Partner being tested together.

According to the Multiple Logistic Regression which used 95% CI with Forward Conditional method Age, Number of Pregnancy and Being Partner testing together with the pregnant women were found to be independently associated with PMTCT service utilization. A pregnant woman whose age is between 26 up to 37 years were 2.6 times more likely to utilize PMTCT service than a pregnant women whose age is between 15 up to 25 years [AOR (95% CI) = 2.63 (1.34 – 5.17)] was significant at (P=0.005). Regarding to pregnant women's number of pregnancy, a pregnant woman who is multigravida were 2.2 time more likely to utilize PMTCT service than those who were primigravida [AOR (95% CI) = 2.16 (1.13 – 4.12)] was significant at (P=0.019). And finally if a pregnant woman is tested with her partner she is 26 times more likely to utilize PMTCT service than those who did not [AOR (95% CI) = 26.19 (14.48 – 47.38)] was significant at (P<0.001). (See Table 7)

Table 7: Multivariate analysis of factors associated with Knowledge and utilization of PMTCT service, at selected public hospitals in Addis Ababa, May 2017

PREDICTORS	OUTCOMES					
	Knowledge			Utilization		
	N=	AOR(95% CI)	Sig.	N=	AOR(95% CI)	Sig.
Age						
15 – 25	101	**1**		79	**1**	
26 – 37	150	**2.32(1.24-4.32)**	0.008*	130	**2.63(1.34-5.17)**	0.005*
38 – 49	86	**1.62(0.81-3.24)**	0.166	81	**1.91(0.85-4.29)**	0.166
TOTAL	**337**			**290**		
Gestational age						
First trimester	45	**1**				
Second trimester	136	**2.48(1.27-4.83)**	0.007*			
Third trimester	156	**3.75(1.88-7.50)**	0.000*			
TOTAL	**337**					
Coast of transportation						
10 birr and below	235	**2.12(1.23-3.65)**	0.007*			
Above 10 birr	102	**1**				
TOTAL	**337**					
Number of pregnancy						
Primigravida				68	**1**	
Multigravida				222	**2.16(1.13-4.12)**	0.019*
TOTAL				**290**		
Partner tested together						
Yes				253	**26.19(14.48-47.38)**	0.000*
No				37	**1**	
TOTAL				**290**		

Note: * significant at p value < 0.05. Other omitted factors in the above table are for Knowledge (occupation, number of pregnancy, number of ANC visit and number of children alive) while for Utilization (gestational age, occupation, cost of transportation and level of income). These factors were entered in the multivariate analysis but did not show a significant association with the outcome variables.

6. Discussion

In this study majority of the study participants 82.4% (n=337) have knowledge about PMTCT service and this finding was consistent with study findings from Hawassa (**24**) where 82.3% was knowledgeable. But, slightly lower than the findings from the study done in Dessie (**37**) which is (93.4%), this could be due to the difference in the study set up which is only on Hospitals in this study.

Regarding to MTCT of HIV/AIDS large proportion of pregnant women (90%) knew about MTCT which is in line with a study done in Addis Ababa (**25**) which was 94.5% but higher than the study done in Southern part of Ethiopia (**36**) it was only 62.9% and from Burkina Faso (**21**) which was only 47%. This might be due to study area difference which is rural for both studies and urban in this study set up.

In this study it is found that 70.9% (n=290) pregnant women used PMTCT service and this is in line with the study from Kenya (**33**) which is 75% but lower than the study from Sebeta (**28**) (86.9%) and South Africa Limpopo province (**35**) which is 97.4%. This lower utilization in the study area can be explained by the reason that this study did not include all hospitals in the city and only public hospitals that are under Addis Ababa health bureau were included.

Accordingly, it is found that 79.2% of pregnant women had received counseling service before and after being tested during their current pregnancy and this finding is different from the study done in Hawassa (**24**) which was 88.8%. This difference might be due to the difference in counseling provision in two sites and this study includes pre and post test counseling together. And also 86.1% of them had been tested for HIV in recent pregnancy, this is in line with the study from Southern Ethiopia (**36**) which is 86.3,

however, it is largely different from those studies done in Ambo (**22**) and Hawassa (**24**) (15.3% and 52.5% respectively). The difference might probably be explained by difference in sample size which was smaller for the two studies (236 and 232 respectively). Likewise, 82.6% of them who had been tested for HIV received or collected their result. But it is lower than the study done in Gonder (**23**) which was 94.8%. This might be due to the presence of inadequate counseling provided by the providers which were explained above.

Most of pregnant women`s partners in this study were tested together with their spouse (68.5%) and this is consistent with the study from Ambo (**22**) and Addis Ababa (**25**) 60% each but higher than from the study done in rural community of South Africa(**34**) and Hawassa (**24**) (13% and 52.6% respectively). This relied on the time difference, geographical and developmental difference between the studies.

Different factors were identified to be associated with knowledge or utilization of PMTCT service. A pregnant woman whose age is between 26 – 37 years was more knowledgeable than those who are between 15 – 25 years. And this finding is different from a study done in Sebeta (**28**) where increased age was barrier for knowledge of PMTCT service but because of the difference setting these two sites have, it is not expected to work like the same in two different areas. In the same way a pregnant woman whose gestational age is in the second trimester was more knowledgeable than those who were in first trimester. And also pregnant women who spend less than 10 birr to reach to hospital were more knowledgeable than their counter parts. This finding is supported by the study from Dessie (**37**) which found transport fee were among the factors associated with knowledge of pregnant women.

Lastly, pregnant woman who is between the age of 26 – 37 years and who is multigravida and who is tested with her partner is more likely to utilize PMTCT of HIV/AIDS service. This finding is in line with the study from Sebeta (Age of 25 - 34) and from Southern Ethiopia (**36**) (Partner tested together with spouse) but different from the study done in Dessie (**37**) (Primigravida). This might be due to the difference in culture, information provision and counseling methods.

7. Conclusion and Recommendation

7.1 Conclusion

In general there was a relatively decreased level of knowledge and utilization among pregnant women. This need for strengthen the level of PMTCT services in ANC settings.

More than four-fifth of pregnant woman had knowledge about PMTCT of HIV service.

Being within 26 – 37 years of age, being in second trimester and having to spend less than 10 birr to reach to the hospitals increased the likely would of pregnant women knowledge about PMTCT of HIV/AIDS service.

Pregnant women who receive counseling service and their test result were found to be lower.

Majority of pregnant women were tested with their partners. Partner involvement in PMTCT service was higher among respondents.

Age within 26 – 37 years, being multigravida and partners being tested together with pregnant women increased utilization of PMTC service by the pregnant women.

7.2 Recommendation

Based on the findings of the study, the following activities are recommended to be achieved by the following bodies:

For the Government

- Develop strategy for community mobilization and program support in hospitals.
- Empower women continuously to make informed choices about their health.
- Encourage and promote male involvement in PMTCT service.
- Provide easy and cheap means of transportations for pregnant women.
- Implement targeted IEC programs to address pregnant women knowledge about PMTCT service and convince them to utilization PMTCT service also to minimize stigma and discrimination.

For Health care Providers

- Service providers should give more emphasis for counseling service.
- Encourage pregnant women to continue ANC service and involve their partners.

For Researchers

- Further community based and qualitative study is important to deeply explain the findings of the study and to identify factors for compliance.

Strengths and Limitations of the Study

Strengths

This study adopts standard questionnaire from UNAIDS Best Practice Survey with reasonable modifications.

Data collection was done by nurse/midwifes directly working in the PMTCT program and this facilitates respondents to share confidential information freely.

Limitations

As seen in all cross- sectional study design it fails to show the causal relationship.

Since it was institutional based and non probable, it is likely that selection bias might occur and affect the study too.

Pregnant mothers were selected based on non probability sampling technique. Generalization might not be possible by the fact that it used convenience sampling.

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APPENDIX

A. Questioner

1. English Version

Informed consent

Good morning/afternoon! My name is _____. I am a data collector in a survey that will be conducted on the utilization and knowledge of pregnant women about Prevention of Mother To Child Transmission of HIV/AIDS by Yosef Alemayehu who is a Masters Degree student in Addis Ababa University. If you are willing to participate, you will not write your name and your response will be kept confidentially including your HIV test result and it will only be used for this research purpose. Your participation in this study is completely on voluntary basis; you have the right to participate or not to participate, you have the right not to answer any questions that you don't want to answer and you have the right to refuse to do so at any time during the interview. However, your honest answer to these questions is very important to identify problems related to Prevention of Mother To Child Transmission of HIV/AIDS and it also helps to take appropriate measures. It would take 20-30 minutes to complete the questionnaire. If you want any further information, you can contact the following principal investigator.

Yosef Alemayehu, BSc, MSc Candidate,

+251913981054, jmtumu@gmail.com

Are you willing to participate? Yes ☐ **No** ☐

Questionnaire Code _____Date _____

Data collector name _____ Sign _____

Name of hospital _____

Please encircle the choice of your answer number or the term itself.

Section A - Socio demographic, economic and religious information.

S.NO	QUESTIONS	ALTERNATIVE RESPONSE	REMARK
A01	In which age group you are?	1. 15-20 4. 31-35 2. 21-25 5. 36-40 3. 26-30 6. 41-45 7. 46-49	
A02	What is your religious?	1. Orthodox 2. Muslim 3. Protestant 4. Catholic 5. Other	
A03	To which ethnic group you belong?	1. Amhara 2. Tigray 3. Oromo 4. Guragea 5. Other	
A04	What is your occupation currently?	1. Housewife 2. Student 3. Business owner 4. Government employee 5. Private employee	
A05	What is the highest level of education reached as of today?	1. 1^{st}-4^{th} grade 2. 5^{th}-8^{th} grade 3. 9^{th}-12^{th} grade 4. TVET and above	
A06	What is your marital status?	1. Married 2. Unmarried/single 3. Widowed 4. Divorced	
A07	What is the average house hold income per month?	1. Up to 600 Birr 2. 601 - 1650 Birr 3. 1,651 – 3,200 Birr 4. 3,201 – 5,250 Birr 5. 5,251 – 7,800 Birr 6. 7,801 – 10,900 Birr 7. Over 10,900 Birr	
A08	What is the amount of birr you spent to come here for transportation?	1. Less than 2.50 birr 2. 3.50 birr to 5 birr 3. 6 birr to 10 birr 4. More than 10 birr	
A09	How much is the distance from your home to the Hospital in Km?		

Section B – Obstetrics history and reproductive health information.

S.NO	QUESTION	ALTERNATIVE RESPONSE	REMARK
B01	Number of pregnancies you have? (including current one)	1. Primigravida (one) 2. Multigravida(two-five) 3. Grandmultigravida(more than six)	
B02	If multigravida where was your last delivery?	1. At home 2. At health institution	
B03	How many completed months gestation you are?	1. Up to 3 months 2. Up to 6 months 3. Up to 9 months	
B04	How many ANC visits do you have? (including current one)	1. One visit 2. Two visits 3. Three visits 4. Four visits 5. More than four	
B05	Number of children alive? (If she have more than one pregnancy)	1. No children alive 2. Two or less 3. Three and more	

Section C – Knowledge towards PMTCT.

S.NO	QUESTION	ALTERNATIVE RESPONSE	REMARK
C01	Have you ever heard of HIV or AIDS?	1. Yes 2. No → C04	
C02	Do you know the modes of HIV/AIDS transmission? (don't read the alternative & more than one choice is possible)	1. I don't know 2. Unsafe Sexual transmission 3. Contaminated Blood & blood products 4. Contaminated Injectables and sharp materials 5. MTCT	
C03	Do you know methods how to prevent HIV/AIDS transmission? (don't read the alternative & more than one choice is possible)	1. I don't know 2. Abstinence 3. Being faithful to spouse 4. Use of condom 5. Prevention from blood & sharp	
C04	Do you know what MTCT of HIV/AIDS is?	1. Yes 2. No → C07	
C05	From where do you heard about MTCT of HIV/AIDS? (don't read the alternative & more than one choice is possible)	1. Mass media (Radio newsletter TV) 2. Health Institution or worker 3. Friend/relative/peer/neighbors 4. Meeting/seminar 5. Others	
C06	When is the time for HIV transmitted from pregnant mother to her fetus? (don't read the alternative & more than	1. I don't know 2. During Pregnancy 3. During labor & Delivery	

	one choice is possible)	4. During Breast feeding	
C07	Is there any way HIV positive pregnant women can prevent transmission from her to the fetus?	1. Yes ——→ C08 2. No	
C08	How can pregnant women avoid HIV transmission to the Baby?	1. I don't know 2. Use of ARVs for PMTCT 3. Cesarean section delivery 4. Avoid breast feeding	
C09	What is the benefit of PMTCT service for pregnant women?	1. I don't know 2. To know her status 3. To prevent transmission to her husband 4. To prevent transmission to her fetus 5. To get treatment and care	

Section D – Utilization of PMTCT service.

S.NO	QUESTION	ALTERNATIVE RESPONSE	REMARK
D01	During your ANC visit have you ever been told about PMTCT service?	1. Yes 2. No	
D02	Have you ever used PMTCT service before your current pregnancy?	1. Yes ——→ D03 2. No ——→ D04	
D03	What service have you used?	1. HIV counseling 2. HIV testing for you & your husband 3. ARV treatment 4. Other list	

D03	If you did not use any service, what was the reason?	1. Need to discuss with Partner/husband 2. Not availability of service 3. Fear of stigma 4. I don't have any risk 5. I don't know the use	
D04	Have you been tested during current pregnancy?	1. Yes 2. No	
D05	Have you been offered counseling before and after the test?	1. Yes 2. No	
D06	Have you received your HIV test result?	1. Yes 2. No	
D07	What was the result of your HIV test?	1. Negative ~~D10~~ 2. Positive	
D08	If positive have you began using ARV drugs for PMTCT?	1. Yes 2. No	
D09	If no why don't you are taking ARV drugs for purpose of PMTCT?	1. To avoid discrimination by the family 2. Not having knowledge about ARV for PMTCT 3. Lack of trust on the effectiveness of the drug 4. Other list	
D10	Is your partner tested with you in the current pregnancy?	1. Yes 2. No	

Now I have finished my questions! Thank you very much!

2. Amharic Version

መጠይቅ

ለነፍሰ ጡሯ የሚነበብ

ጤና ይስጥልኝ፡፡ ስሜ _____ ይባላል፡፡ ይህ ጥናት በአዲስ አበባ ዩኒቨርሲቲ የማስተርስ ዲግሪ በእናቶች እና ስነ ተዋልዶ የትምህርት ዘርፍ ተማሪ በሆነው ዮሴፍ አለማየሁ የሚደረግ ነዉ፡፡ ይህ ጥናት የሚካሂደው የኤች አይ ቪ/ ኤድስ ቫይረስ ከእናት ወደ ልጅ እንዳይተላለፍ የሚረዱና ለእናቶች የሚሰጡ አገልግሎቶች ላይ ያለዎትን እውቀት እና የአገልግሎቱ ተጠቃሚት ላይ ነው፡፡ የጥናቱ ተሳታፊዎች የሚመረጡት በዕጣ ነው፡፡ ስለዚህ እርስዎም የተመረጡት በዕጣ ነው፡፡ እርስዎ የሚሰጡን መረጃዎች ለአገልግሎት አቅርቦትና ጥራት መሻሻል ከፍተኛ አስተዋጽአ ያበረክታሉ፡፡ በጥናቱ ወቅት እርስዎ የሚሰጡን ማናቸውም አይነት መረጃዎች የኤች አይ ቪ ምርመራ ውጤት ጨምሮ ለዚህ ጥናት ብቻ ይውላሉ ለሌላ አካል ተላልፈው አይሰጡም፡፡ የእርስዎ ስም ወይም ማንነት አይመዘገብም፡፡ ማንኛውም በዚህ ጥናት የሚሳተፍ ወይም በዚህ ጤና ድርጅት ውስጥ የሚሰራ ሰው ስለእርስዎ ምንም አይነት መረጃ አይነገረውም፡፡ በጥናቱ ላይ ያለመሳተፍ፣ በፈለጉት ሰዓት መጠይቁን የማቋረጥና መመለስ የማይፈልጉትን ጥያቄዎች የመተው ወይም ያለመመለስ ሙሉ መብት አለዎት፡፡ በጥያቄው መሳተፍዎም ሆነ ያለመሳተፍዎ በሚያገኙት የጤና አገልግሎት ላይ የሚኖረው አዎንታዊም ሆነ አሉታዊ ተፅዕኖ የለም፡፡ ቃለ መጠይቁን በሙሉ ለማጠናቀቅ በአማካይ 20-30 ደቂቃ ያህል ይፈጃል፡፡ ከእርስዎ የሚገኘው መረጃ መንግስትና ሌሎች ድርጅቶች የአቅርቦቱን ጥራት ለማሻሻል ለሚያደርጉት እንቅስቃሴ ከፍተኛ አስተዋጽኦ ና ድጋፍ ይኖረዋል፡፡ ተጨማሪ መረጃ ከፈለጉ ከታች ባለው አድራሻ መጠየቅ ይችላሉ፡፡

ዮሴፍ አለማየሁ፣ +251913981054 ፣jmtumu@yahoo.com

ለመሳተፍ ፍቃደኛ ነዎት? አዎን ☐ አይደለሁም ☐

የመጠይቅ ቁጥር ቀን _____ _____

የመረጃ ሰብሳቢ ስም ፊርማ _____ _____

የሆስፒታል ስም _____

እባክዎትንየተመረጠውንመልስቁጥርወይምመልሱንያክብቡት፡፡

ክፍልሀ፡ማሕበራዊናኢኮኖሚያዊመረጃዎችየሚመለከቱጥያቄዎች

ቁጥር	ጥያቄዎች	አማራጭመልሶች	ተጨማሪ
A01	እድሜሽ ስንት ነው?	1. 15-20 2. 21-25 3. 26-30 4. 31-35 5. 36-40 6. 41-45	
A02	ሀይማኖትሽ ምንድን ነው?	1. ኦርቶዶክስ 2. ሙስሊም 3. ፕሮቴስታንት 4. ካቶሊክ 5. ከላይከተዘረዘሩት ውጪ	
A03	ቢሔርሽ ምንድን ነው?	1. አማራ 2. ትግራይ 3. ኦሮሞ 4. ጉራጌ 5. ከላይከተዘረዘሩት ውጪ	
A04	ስራሽ ምንድን ነው?	1. የቤትእመቤት 2. ተማሪ 3. ነጋዴ 4. የመንግስትተቀጣሪ 5. የግልተቀጣሪ	
A05	የትምህርት ደረጃሽ ምንድን ነው?	1. 1ኛ-4ኛክፍል 2. 5ኛ-8ኛክፍል 3. 9ኛ-12ኛክፍል 4. TVET እናከዛበላይ	
A06	የትዳር ሁኔታ?	1. ያገባ 2. ያላገባ 3. የተፋታች 4. የሞተባት	
A07	የቤተሰቡ ገቢ በአማካኝ በወር ስንት	1. እስከ 600ብር 2. ከ601-1650ብር	

	ይሆናል?	3. ከ1651-3200ብር 4. ከ3201-5250 ብር 5. ከ5251-7800 ብር 6. ከ7801-10900 ብር 7. ከ 10900 በላይ	
A08	ሆስፒታሉ ለመድረስ ስንት ብር ፈጅቦሽ ለመጓጓዛ?	1. ከ 2.50 በታች 2. 3.50 እስከ 5 ብር 3. 6 ብርእስከ 10 ብር 4. ከ 10 ብርበላይ	
A09	ከሆስፒታሉ እስከ መኖሪያ ቤትሽ ያለው እርቀት ስንት ነው በግምት?		

ክፍል ለ ፡ እርግዝና ነክ መጠይቆች

ቁጥር	ጥያቄዎች	አማራጭ መልሶች	ተጨማሪ
B01	ያሁኑን ጨምሮ ስንት ጊዜ እርግዘሽ ታውቂያለሽ?	1. አንድግዜ 2. ከሁለትእስከአምስተጊዜ 3. ስድስትናከዚያበላይ	
B02	ከአንድ ግዜ በልይ ካረገዝሽ፡ የመጨረሻ ግዜ የወለድሽበት ቦታ የት ነበር?	1. እቤትውስጥ 2. በጤናተቋም	
B03	ያአሁኑ እርግዝናዎ በግምት ስንት ሳምንት ይሆነዋል?	1. እስከ 12 ሳምንት 2. እስከ 25 ሳምንት 3. እስከ 39 ሳምንት	

B04	ይህ ስንተኛው የርግዝና ጊዜ ክትትልዎ ነው ?	1. የመጀመሪያግዜ 2. ሁለተኛውግዜ 3. ሶስተኛውግዜ 4. አራተኛግዜ 5. ከላይከተዘረዘሩትውጪ	
B05	ከተወለዱት ልጆች ውስጥ ስንቱ በህይወት አሉ?	1. ምንምየሉም 2. ከ 2 በታች 3. 3 እናከዛበላይ	

ክፍል ሐ ፡ ከእናት ወደ ልጅ እንዳይተላለፍ የመከላከያ አገልግሎት እውቀትን የሚመለከቱ ጥያቄዎች።

ቁጥር	ጥያዎችቄ	አማራጭ መልሶች	ተጨማሪ
C01	ኤች.አይ.ቪ./ኤድስ የሚባል በሽታ ሰምተው ያውቃሉ?	1. አዎ 2. አይ ⟶	C04
C02	ለላይኛው ጥያቄ አዎ ከሆነ ፤ የመተላለፊያ መንገዶቹን ይግለጹ? (ከአንድበላይመልስመግለጽይቻላል፣ምርጫዎቹንአያንብቡ)	1. አላውቅም 2. ልቅየሆነየግብረስጋግንኙነት 3. የተበከለደም 4. የተበከለስለታማነገር 5. ከእናትወደልጅ	
C03	ሰዎች ከኤድስ በሽታ ራሳቸውን እንዴት ይጠብቃሉ? (ከአንድበላይመልስመግለጽይቻላል፣ምርጫዎቹንአያንብቡ)	1. አላውቅም 2. መታቀብ 3. መወሰን 4. ኮንዶምመጠቀም 5. ከተበከለደምእናስለትበመ	

		ጠበቅ	
C04	ኤች.አይ.ቪ. ከእናት ወደ ልጅ እንደሚተላለፉ ታውቂያለሽ ወይ?	1. አዎ 2. አይ ⟶	C07
C05	ከላይ ላለው ጥያቄ አዎ ከሆነ መልሶ ከየት ነው የሰሙት? (ከአንድበላይመልስመግለጽይቻላል፣ምርጫዎቹንአያንብቡ)	1. ከመገናኛብዙሀን 2. ከጤናባለሙያ 3. ከጓደኛ፣ከጎረቤት 4. ከስብሰባ 5. ከሌላምንጭይጠቀስ	
C06	በየትኛው ወቅት ቫይረሱ ከእናት ወደ ልጅ የሚተላለፍ ይመስሎታል? (ከአንድበላይመልስመግለጽይቻላል፣ምርጫዎቹንአያንብቡ)	1. አላውቅም 2. በእርግዝናግዜ 3. በምጥግዜ 4. በጡትበማጥባትግዜ	
C07	ቫይረሱ ከእናት ወደ ልጅ ይተላለፍ ብለው ካሉ ፤ መከላከያስ እንደለው ታውቂያለሽ ወይ?	1. አዎ ⟶ 2. አይ	C08
C08	ከእናት ወደ ልጅ ቫይረሱ መተላለፍን የሚቀንስ መንገድ ከሚከተሉት የትኞቹ ታውቂያለሽ?(ከአንድበላይመልስ መግለጽይቻላል፣ምርጫዎቹንአያንብቡ)	1. አላውቅም 2. ፀረኤች. ኤይ. ቪመድሀኒት 3. በቀዶጥገናበመውለድ 4. ጡትባለማጥባት	
C09	ከእናት ወደ ልጅ ቫይረሱ መተላለፍን የሚቀንስ አገልግሎት	1. አላውቅም 2. የኤች. ኤይ. ቪውጤትለማወቅ	

	ምን ጥቅም አለው ?(ከአንድበላይመልስመግለጽይቻላል፣ምርጫዎቹንአያንብቡ)	3. ኤች. ኤይ. ቪወደባለቤቷእዳይተላለፍ 4. ኤች. ኤይ. ቪወደልጇእዳይተላለፍ 5. ህክምንእናመድሀኒትለማግኘት	

ክፍል መ፡ ከእናት ወደ ልጅ እንዳይተላለፍ የመከላከያ አገልግሎት ተጠቃሚነት የተመለከቱ ጥያቄዎች

ቁጥር	ጥያቄዎች	አማራጭመልሶች	ተጨማሪ
D01	በእርግዝና ክትትልሽ ጊዜ ስለ ኤች.አይ.ቪ ከእናት ወደ ልጅ እንዳይተላለፍ የመከላከያ አገልግሎት ተነግሮሽ ያውቃል?	1. አዎ 2. አይ	
D02	ከአሁኑ እርግዝና ክትትልሽ በፊት ከእናት ወደ ልጅ እንዳይተላለፍ የመከላከያ አገልግሎት ተጠቅመሻል?	1. አዎ 2. አይ	
D03	ምን አይነት አገልግሎት ተጠቀምሽ? (ከአንድበላይመልስመግለጽይቻላል፣ምርጫዎቹንአያንብቡ)	1. የኤች. አይቪምክርአገልግሎት 2. የኤች. አይቪምርመራአገልግሎትለአንቺእናለባለቤትሽ 3. ፀረኤች. ኤይ. ቪመድሀኒት 4. ከላይከተጠቀሱትውጪከሆነይጠቀስ	

D04	አገልግሎቱን ካልተጠቀምሽ ምክንያቱ ምን ነበር? (ከአንድበላይመልስመግለጽይቻላል፣ምርጫዎቹንአያንብቡ)	1. ከባለቤቴጋርመነጋገርስላለብኝ 2. አገልግሎቱስለሌለ 3. መገለልይደርስብኛልብዬስለምፈራ 4. ቫይረሱይኖርብኛልብዮስለማላስብ 5. ጥቅሙንስለማላውቅ	
D05	በአሁኑ እርግዝና ግዜሽ ተመርምረሻል?	1. አዎ 2. አይ	
D06	ስትመረመሪ መጀመሪያ ና መጨረሻ ላይ የምክር አገልግሎት ተሰጥቶሻል ነበር ወይ?	1. አዎ 2. አይ	
D07	የምርመራውን ውጤት ተቀብለሻል (ተነግሮሻል)?	1. አዎ 2. አይ	
D08	የምርመራው ውጤት ምን ነበር?	1. ኔጌቲቭ 2. ፖዝቲቭ	
D09	ውጤቱ ፖዝቲቭ ከሆነ ፀረ ኤች. ኤይ. ቪ መድሀኒት መጠቀም ጀምረሻል ወይ?	1. አዎ 2. አይ	
D10	ፀረ ኤች. ኤይ. ቪ መድሀኒት መጠቀም ካልጀመርሽ ምክንያቱ ምን ነበር? (ከአንድበላይመልስመግለጽይቻላል፣ምርጫዎቹንአያንብቡ)	1. መገለልናመድሎንፍራቻ 2. በእርግዝናግዜስለሚሰጡፀረኤች. ኤይ. ቪመድሀኒትእዉቀቱስለሌለኝ 3. በመድሀኒቶቹላይእምነትስለሌለኝ 4. ከላይከተጠቀሱትሌላከሆነይጠቀስ	
D11	በአሁኑ እርግዝናሽ ስትመረመሪ ባለቤትሽ አብሮሽ ተመርምሮ ያውቃል?	1. አዎ 2. አይ	

መጠይቁ አልቆአል። ስለ ትብብሮ እጅግ አድርጌ አመሰግናለሁ።

B. Map

No	Sub city	Weredas
1	Addis Ketema	10
2	Arada	10
3	Lideta	10
4	Kirkos	11
5	Yeka	13
6	Bole	14
7	Akaki Kaliti	11
8	Nifas Silk Lafto	12
9	Kolfe Keranyo	15
10	Gulele	10
	Total	*116*

Source: Addis Ababa city Administration Bureau of Finance and Economic Development