ADDIS ABABA UNIVERSITY
SCHOOL OF GRATUATE STUDIES

DETERMINANTS OF WILLINGNESS TO UTILIZE PREVENTION OF MOTHER TO CHILD TRANSMISSION OF HIV AMONG PREGNANT WOMEN IN ADDIS ABABA

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TSION SHIFERAW

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ADVISOR: DR. HABTAMU BELETE

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Determinants of Willingness to Utilize Prevention of Mother to Child Transmission of HIV Among Pregnant Women in Addis Ababa

By

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Approved by the Examining Board

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ACRONYMS

AAU	Addis Ababa University
AIDS	Acquired Immuno Deficiency Syndrome
ANC	Antenatal Care
ART	Antiretroviral Therapy
ARV	Antiretroviral
CDC	Center for Disease Control and Prevention
CI	Confidence Interval
EDHS	Ethiopian Demographic Health Survey
EPHA	Ethiopian Public Health Association
FMOH	Federal Ministry of Health
FGD	Focus Group Discussion
HAPCO	HIV/AIDS Prevention and Control Office
HCT	HIV Counseling and Testing
HIV	Human Immuno Deficiency Virus.
ICPD	International Conference on Population and Development
IEC	Information Education and Communication
MCH	Maternal and Child Health
MOH	Ministry of Health
MTCT	Mother to Child Transmission of HIV
NVP	Nevirapine
PLWHA	People Living With HIV/AIDS
PMTCT	Prevention of Mother to Child Transmission of HIV
SPSS	Statistical Package for Social Science Research
STDs	Sexually Transmitted Diseases
STIs	Sexually Transmitted Infections
VCT	Voluntary Counseling and Testing
UN	United Nations
UNAIDS	Joint United Nations program on HIV/AIDS
UNICEF	United Nation's Children Fund
US	United State
WHO	World Health Organization

Abstract

Mother to child transmission of HIV (MTCT) is the major source of HIV infection among children under the age of 15 years. This can occur during pregnancy, labour and delivery, or breastfeeding. Interventions to prevent mother-to-child transmission of the HIV virus (PMTCT) are now an important part of HIV/AIDS reduction programs worldwide. In Ethiopia the PMTCT program was first launched in 2003 and is being scaled up across the country. The PMTCT program was launched in Addis Ababa in 2004 with an opt-in approach then shifted in to an opt-out approach since August 2006. The objective of this study is to assess willing to utilize the PMTCT services and to identify determinants of the PMTCT service utilization in Addis Ababa, Ethiopia. A cross-sectional study which employed both quantitative and qualitative data collection method was conducted from March to April 2010 in Addis Ababa from the selected hospitals. For the quantitative section, a standardized questionnaire was prepared while Focus Group Discussions (FGDs) and key informants interview were conducted to collect qualitative data. A total of 650 pregnant women in five hospitals in the city participated in the study. The collected data were edited, entered, cleaned and analyzed using descriptive statistics and multi variate analysis with SPSS version 16. The finding revealed that, the mean age of the respondents are 25.5 years, 53.1% of the respondents were willing to utilize the PMTCT service. The reasons given by the pregnant women for not willing to utilize the PMTCT service were found to be; they did not believe that ARV prophylaxis is effective, lack of knowledge, fear of being identified as PLWHA by people, their husbands were not willing to utilize the PMTCT service and religion/cultural reasons. Around 70% had enough knowledge about the PMTCT service. Regarding partners' attitude 68.9% of the husband had positive attitude about the utilization of the PMTCT service., 46.3% percent of pregnant women who discussed with their husband about the existence of PMTCT service and Educational status and family monthly income were positively associated with willing to utilize PMTCT service. Based on the above findings, women should be empowered through education, PMTCT programs should give emphasis on involvement of male partners, intensive education to both pregnant women and their partners on prenatal HIV transmission, improvement of health service (delivery and antenatal care) and stigma and discriminations should be addressed through strong information, education and communication.

CHAPTER ONE

1.1 INTRODUCTION

HIV/AIDS pandemic is one of the largest obstacles to development in many countries and is destroying the lives and livelihoods of millions of people around the world. It is estimated that there were 33.4 million people living with HIV/AIDS worldwide at the end of 2008. In most regions of the world, HIV is affecting women and girls in increasing numbers. At the end of 2008, there were 2.1 million children living with HIV around the world. Sub-Saharan Africa is the region most affected and is home to 67% of all people living with HIV worldwide and 91% of all new infections among children. In sub-Saharan Africa the epidemic has orphaned more than 14 million children (UNAIDS, 2009).

Ethiopia is one of the country's most severely hit by the epidemic. In Ethiopia, the first AIDS cases were diagnosed in hospital of Addis Ababa, the capital city in 1986. In 2007, the national single point adult HIV prevalence rate was 2.1%, (7.7% for urban and 0.9% for rural areas). Prevalence appears to have leveled off in urban areas but continues to rise in rural areas, where 85% of the population lives. Close to one million (977,394) Ethiopians are living with HIV/AIDS, an estimated 75,420 HIV positive pregnant women are anticipated in 2007(MOH, 2007). A women infected with HIV can pass the virus to her baby during pregnancy, labor and delivery or breastfeeding. Without preventive intervention, roughly 15 to 30% of newborns of untreated HIV-positive women will become infected with HIV during pregnancy and delivery and an additional 10 to 20% during breastfeeding (MOH, 2007).

The most effective approach for preventing vertically acquired HIV infection in children is through the prevention of mother-to-child transmission of HIV (PMTCT). As PMTCT programs provide prevention of HIV transmission from mother to child and enrolment of infected pregnant women and their families into antiretroviral treatment, it is undertaken by the government of Ethiopia in an effort to mitigate the impacts of the epidemic in the general population and amongst children in particular (MOH, 2007).

Ethiopia is promoting provider-initiated "opt-out" testing; screening all HIV-positive women for treatment; and providing HIV-positive women prophylaxis and, when appropriate, treatment at facilities with capacity. HIV counseling and testing in relation to pregnancy and other reproductive health services may prove a valuable entry point for provision of counseling and testing to the wider community of healthy and asymptomatic pregnant women and their partners. It is offered for all clients within the context of maternal care (antenatal care setting, labor, and immediate postpartum). When counseling women in ANC setting for HIV testing and PMTCT interventions, special consideration is given to: infant-feeding options, family planning, advantage and disadvantage of disclosure particularly to her partner as well as involving the partner in testing and counseling and decision making (MOH, 2007).

The PMTCT service in Ethiopia was introduced by the Nigat project in 2001. In Addis Ababa the PMTCT program was started as HAREG project in 2004 at four health center and one Hopital (Addis Aababa health bureau, 2006). UNICEF is a partner in the US Government PMTCT initiative and services are currently available in 27 health facilities (14 hospitals and 13 health centers).

1.2 STATEMENT OF THE PROBLEM

In the developing countries, the effect of the HIV epidemic has a drastic effect in the lives of millions of children. Globally, at least a quarter of newborns infected with HIV die before the age of one, up to 60% die before reaching their second birthday, and more than 80% of these deaths occur in Sub Saharan Africa (UNAIDS, 2005). In Ethiopia there are an estimated of 120,000 children who are under the age of 15 living with the virus in 2004 (UNAIDS, 2004).

Addis Ababa is reported to have the highest concentrations of HIV/AIDS cases in the country. The epidemic is claiming the lives of the most productive, energetic and educated segments of the population. The cumulative number of deaths resulting from HIV/AIDS in Addis Ababa was estimated to be 53,000 in 1999 and is projected to be 554,000 by 2014(Addis Ababa city health Bureau, 1999). According to the surveillance report of MOH, HIV prevalence rate in Addis Ababa is 12.4% with 400,000(Adults) and 12,000 children living with HIV/AIDS (MOH, 2005).

Moreover, these number are increasing as each day nearly 100 people in the city are infected HIV. Women in the age group of 20-29 and men in the age group of 25-39 show high prevalence of HIV (Addis Ababa city health Bureau, 2005).

In Ethiopia, nowadays Prevention of mother to child transition of HIV program is being integrated within the antenatal care service in health institutions. During antenatal care services at public health institutions, pregnant women are offered group counseling. It was found, however, that after counseling there are women who do not get tested the same day. Besides more than half of those who opted for HIV testing are not post test counseled and get their results the same day (MOH, 2005).

According to Federal HIV/AIDS Prevention and Control Office 2010 report, puts national PMTCT coverage at 8%. PMTCT coverage has thus showed incremental improvement over the past few years where it was 5% in 2006/07 and 6% in 2007/08. Generally the progress around PMTCT services remained very slow and the coverage has been extremely low. (Federal HIV/AIDS Prevention and Control Office, 2010).

Different studies have tried to assess factors affecting PMTCT test acceptance but so far no studies have tried to why HIV positive mother didn't take ARV prophylaxis uptake is used as one of PMTCT national indicators to assess PMTCT program achievement. Therefore, this study attempted to investigate the level of PMTCT Service Utilization and try to identify factors that affect willingness of utilization of PMTCT service among pregnant women in Addis Ababa.

1.3 OBJECTIVE OF THE STUDY

General Objective:

The general objective of this study is to assess the determinants of willingness of PMTCT service utilization among pregnant women attending antenatal care in Addis Ababa.

Specific Objective:

- To assess the level of utilization of antenatal HIV counseling and testing for PMTCT program.
- To evaluate the knowledge and attitude of PMTCT service among pregnant mother in Addis Ababa.
- To identify the factors (demographic and socio-economic) that affect PMTCT service utilization.

1.4 HYPOTHESIS

- Pregnant women's monthly income, educational status and knowledge about the PMTCT it may have association with willing to utilize the PMTCT service.
- Husbands or partners attitude about the PMTCT service it may influence the pregnant women's willingness to utilize the PMTCT service.
- Educated husbands/partners it may have a correlation with the willingness of utilization of the PMTCT service.

1.5 RATIONAL OF THE STUDY

So far, globally 2.7 million children under the age of 15 have died of AIDS since the beginning of the epidemics. Over 9 in 10 acquire the infection from their mothers at birth or during breast feeding. The virus may be transmitted during pregnancy, childbirth, or breastfeeding (K.lee, 2005). About 90% of these MTCT infections occurred in Africa where AIDS is beginning to reverse decades of steady progress in child survival. Among Ethiopia PLWHA, 96,000 are children less than 15 years (UNAIDS, 1999).

However in comparison to other countries there is lack of information regarding the most important determinants of PMTCT services. Hence, the main objective of this study was to identify the determinants of willing to utilize PMTCT service in Addis Ababa.

1.6 ETHICAL CONSIDERATION

Participants were informed that they have full right not accepted participating in the study at all. No identity was attached to the questionnaire and the data was handled confidentially. Respondents were informed about the purpose of the study and requested their to participate in the study.

1.7 SIGNIFICANCE OF THE STUDY

The result of this study identifies particularly the main barriers for the willingness to utilize PMTCT service in Addis Ababa, will helps governmental and non-governmental organizations in planning and implementing new strategies to increase the utilization of PMTCT service in Ethiopia, particularly, in Addis Ababa. And also this study could serve as an insight for the modification of plans and policies for future program improvement regarding utilization of PMTCT service. On top of this, the study functions as a spring board for those who are interested to extend it for further investigation in depth.

1.8 LIMITATION OF THE STUDY

This study has covered only five public hospitals. However, due to limited resources such as budget, time and other facilities, the study was restricted to limited number (650) of pregnant women, chosen randomly from the above mentioned hospitals. And also Private hospitals were not represented.

1.9 Operational definition

Willingness to utilization of PMTCT: Pregnant women who attended antenatal care expresses her agreement to use PMTCT service.

Voluntary HIV testing: Is an HIV-prevention intervention initiated by the client at his or her free will.

Antenatal care attendees: Pregnant women who attend at least once to health institution for early detection and control of any health problem related to pregnancy and labour.

Opt-in approach: is a testing approach synonymous with voluntary counseling and testing. In this approach a woman is requested to undergo HIV testing voluntarily after pretest counseling on PMTCT, i.e, it is initiated by the clients(pregnant women).

Opt-out approach: is a testing approach synonymous with routine offer. In this approach HIV testing is conducted unless the women refuse to have the test, i.e, it is initiated by the health care providers.

Male involvement: male partner participation in dialogue on decisions of the woman concerning HIV testing, utilization of PMTCT service and taking medication during pregnancy.

CHAPTER TWO

LITERATURE REVIEW

2.1 MOTHER-TO-CHILD TRANSMISSION OF HIV

Children could be exposed to HIV infection in various ways such as through contact with HIV infected blood products or un-sterilized equipments (UNAIDS, 2005). However, Mother to Child Transmission (MTCT) of HIV accounts for the vast majority of children who are infected with HIV, where one third of them may be infected during pregnancy, two thirds at delivery and in populations where breastfeeding is the norm, breast feeding accounts for one third of cases of MTCT. In the absence of intervention, the probability of an HIV-positive woman's baby becoming infected ranges from 15% in industrialized countries and 25% to 35% in developing countries (UNAIDS, 2000).

Prevention of Mother-to-Child Transmission (PMTCT) of HIV has become a major focus of HIV control programmes in many sub-Saharan African countries (Dabis et al. 2000). NVP-based PMTCT programmes have been scaled up in Sub-Saharan African (Wilfert,2002). HIV testing is the entry point to PMTCT programme, and crucial to the success of PMTCT services, which furthermore requires the participants to return for their result and accept anti-retroviral therapy (ART). There are two main conceptually different approaches for HIV testing in PMTCT programmes: opt-in and opt-out approach.

The opt-in approach for HIV counseling and testing

Counseling is a major and valuable strategy for the prevention of HIV. An opt-in HIV testing also referred as voluntary counseling and testing was first introduced in the mid 1980s (CDC 1985). The VCT was targeting the then risk groups and was offered on voluntary basis often in stand-alone sites and health facilities. The first VCT recommendation by the Centre for Disease Control (CDC) in 1985 for PMTCT was focusing on pregnant women at risk for HIV infection such as intravenous drug user, those with history of sexually transmitted infections, prostitutes and so on (CDC 1985).

The VCT includes pretest counseling, testing and posttest counseling. Written consent to test was central in the recommendation to respect the women's rights and ensure informed decisions. Treating the women's HIV related information confidential is also of prime importance for the safety of the women (CDC 1985). Following medical advances on PMTCT, CDC revised the VCT recommendation in 1995. The amendment on the revised guideline was universal voluntary HIV testing for women attending antenatal care rather than focusing on risk groups. The women consent to undergo HIV testing after pretest counseling still required and voluntary women can opt-in (CDC 1995).

Features of an opt-in approach are: Often initiated by client, voluntary testing and women are requested to opt-in if they need the service, often requires written consent and structured individual pretest and post counseling

The opt-out approach for HIV counseling and testing

In 2001, the Center for Disease Control and Prevention (CDC) guideline for HIV counseling and testing was revised again. The concept of mainstreaming HIV testing in routine prenatal care services and further expanding the testing offer during labour and delivery is included (CDC 2001). In the light of the CDC recommendation and the availability of safe, efficacious and cheaper prophylactic ARV drugs it became imperative to change the HIV testing strategy. The 2003 WHO publication entitled "THE RIGHT TO KNOW: New Approaches to HIV Testing and Counseling" has brought a major shift on HIV testing from an opt-in to an opt-out (WHO 2003b). Following the recommendation, offering HIV testing for every woman attending antenatal care services has become part of a standard practice. Although, it is mainstreamed as part of routine antenatal care service the women's right to refuse is still maintained. Botswana, one of the countries having the highest HIV prevalence in the world became the first in the sub- Saharan region to implement the opt-out HIV testing in 2004 (Creek, Ntumy et al. 2007).

Features of opt-out approaches are: Offered in routine bases, testing is initiated by health care providers, women have the right to opt-out, written consent is not required, minimal pretest information often in group and individual posttest counseling.

2.2 The utilization of PMTCT service in Ethiopia

HIV/AIDS prevention effort in Ethiopia was started before the official report of the first AIDS case as early as 1985. A task force was assigned to design HIV/AIDS control strategy in 1985. In spite of the early efforts the first national HIV/AIDS policy was drafted as late as in 1991 and approved even later in 1998 (Yemane Berhane 2005). The PMTCT service in Ethiopia was introduced by the Nigat project in 2001. The project was the first clinical trial to assess the preventive efficacy of the single dose NVP for PMTCT among three groups of HIV exposed infants whose mother practiced different feeding methods. The feeding practices reducing MTCT among non breast fed and exclusively breast fed infants but found less efficacious for infants on mix feeding (both breast milk and complementary feeding) (A Abashawl 2004).

Meanwhile the National PMTCT guideline was developed in 2002 (Garbus 2003). In 2003/4 free national PMTCT programs was introduced in selected hospitals throughout the country by HAREG project which is a joint partnership between the Ministry of Health (MOH), HIV Prevention and Control (HAPCO), UNAIDS and the Centre for Disease Control (CDC) funded by Presidential Emergency Plan for AIDS Relief. The HAREG project was supporting the government health institutions across the country to ensure access to counseling on safe delivery and infant feeding (Yemane Berhane 2005; UNICEF 2006). All the PMTCT services are supposed to be linked to the existing reproductive health services (HAPCO 2006).

In Addis Ababa PMTCT program was started as HAREG project in 2004 at four health center and one Hospital. Addis Ketema health center was the first to implement a PMTCT program service and later the service is increasingly available in Addis Ababa and currently 33 health facilities have PMTCT service (Addis Aababa health bureau, 2006).

The Annual report of the Ministry of Health of Ethiopia for the year 2005/2006 indicated that a total of 91,674 pregnant women were given pre test counseling for HIV and 52,428(57%) of them were tested for HIV, and 4,172 (8%) tested HIV positive. Of those HIV positive, 2,208 (52.9%) of the pregnant women and 1,341 (32%) of their infants received nevirapine for PMTCT. (Federal Ministry of Health, 2006).

Despite these most of HIV positive mother didn't received ARV prophylaxis and lost from PMTCT follow up program after they received HIV result and gave birth at home(Addis Ababa health bureau, 2006).

2.3 Determinants of utilization of PMTCT service

2.3.1 Demographic Variables on PMTCT service

Marital status

Marital status is significantly associated with the utilization of PMTCT service. Married women were more likely to utilize than unmarried ones. Married women might feel more protected by their marriage and perceived themselves to be at lower risk (G.Msamanga, W.Fawzi 2006). The same result was reported in the study conducted in Ethiopia at Army Hospital (Worku G, 2007). In contrast, studies from Tanzania and Uganda indicated that single women were more likely to be utilizing the PMTCT service. (Pool R., 2001).

Age

Age is one of the demographic variable for the utilization of PMTCT service. Researches indicated on the acceptance of VCT and PMTCT age becomes important determinant for utilization of PMTCT service. Studies conducted in Addis Ababa on the selected five hospitals reported that age range from 20-29 highly accept the PMTCT service than older age (Abnet Takele, 2007). Another study conducted in Uganda and Malawi acceptance of voluntary HIV counseling and PMTCT service utilization decrease with age increase (Francis Bajunirwe, Michael Muzoora, 2000). But a study conducted in Burkina Faso reported that old age more accept voluntary HIV counseling and testing and utilization of PMTCT service than young age (Salvatore Pignatelli, Jacques, 2006).

Parity

Parity was a significantly associated with acceptance of HIV testing and utilization of PMTCT service. Women who have attended two or more antenatal follow ups were 2.5 times more likely to be tested than those who had less visits. This is consistent with a study conducted in Addis Ababa (E. E. Ekanem and A. Gbadegesin, 2004). The reason for this association could be better exposure of the mothers to information on MTCT, PMTCT, and VCT, due to their frequent ANC visits, which in turn influences their decision to take the test (Worku G., Enquselassie F 2007).

Number of living children

Women having their first child were twice as likely to have facility based ANC compared to women having their fourth or more birth. Women with large numbers of children have greater difficulty than others in attending healthcare facilities because they must arrange for child care (Yared, 1998). The study conducted in rural India, there was a statistically significant reduction in the proportion of women obtaining antenatal care services with increasing number of living children this imply that the utilization of PMTCT service were decline with increase number of children (Nomita Chandhiok,2006).

2.3.2 Socio-Economic Variables

Education

Educational level affects utilization of PMTCT service. Women with less education were less likely to participate in a PMTCT program (Cocu, Thorne et al. 2005). A study from Uganda found that those with higher education were more likely to accept PMTCT service than those with lower education (Annette S, Deborah B, Dangle D, 2006). But it was not found to be significant predictor studies conducted in Nigeria and in Zambia (Stringer EM, Sinkala M, 2003).

Income and Occupation

Studies show that income and Occupation was associated with utilization of PMTCT service. The possible explanation for the association between income and occupation with utilization of PMTCT service would be that those women who had better income could have a better access to health institutes, which in turn, could offer them for opportunities to access health information including PMTCT and VCT, which can ultimately influence their decision for HIV testing (Annette S, Deborah B, Dangle D, 2006). A community-based study carried out in Addis Ababa showed the risk of non-attendance for antenatal care was high for pregnant women whose income was low (Berhane, 2000).

Communication between husband and wife

An association was observed between the subjects' perception of their partners' reaction to the test and acceptance of HIV testing. This association may be due to the women's need of the consent of their partners in most societies as male partners are the primary decision makers in most issues including VCT and PMTCT service utilization (Bainer D, Ginstead OA, Kihuto, 2000). Similar finding was reported from a study conducted among pregnant women in rural and urban Uganda where women whose husbands would approve of the HIV test were more likely to be utilize the PMTCT service and VCT as compared to those who thought their husbands would not approve (Fabiani M, Ayella EO, Nattibi B. 2003). Some studies have shown that women who have been tested for HIV without partners' consent have suffered domestic violence (Degene M., 2001). Disclosure of HIV positive result to a partner can make it easier for a woman to access the complete package of PMTCT services and follow program recommendations (Barakari.JP, 2000). For the vast majority of pregnant women in Tanzania, the support of a partner and/or key family member(s) will be an important factor in determining whether a woman is able to fully participate in, and benefit from, measures to PMTCT. Strong efforts should therefore be made to involve partners in MTCT prevention programmes. A more conducive environment for partner involvement could be created by recruiting more male HIV/AIDS counsellors and by finding a less gender-specific venue than antenatal clinics for MTCT prevention activities. Community education to promote counselling of couples may also be a viable strategy for increasing male participation (M. M. DE PAOLI, 2004).

2.3.3 Proximate Determinant of PMTCT service

Knowledge (Awareness) on PMTCT

Knowledge on PMTCT and VCT was significantly associated with acceptance of PMTCT service. This association could be explained by the fact that mothers with good knowledge could be more aware of the benefits of the test and the treatment options that decrease MTCT of HIV infection. When a woman is found to be infected, this knowledge can facilitate early counseling and treatment and educating and counseling HIV-negative pregnant women about HIV infection helps them remain uninfected (Federal Ministry of Health 2005).

The level of knowledge about HIV and PMTCT is varied in many settings. In many communities, even where PMTCT programs are active, knowledge about mother-to-child transmission is low. In one study in Uganda, where HIV prevalence among pregnant women remains high, 40% of women knew that MTCT was possible during pregnancy, 58% knew it was possible during delivery, and only 19% knew it could occur during breastfeeding. In the same study in Uganda, only 29% of respondents had heard of any drug for PMTCT (Bajunirwe & Muzoora, 2005). A study conducted in 10 health center in Addis Ababa, almost 70% of participant knew the existence of the PMTCT service before coming to the health (Edris, 2007)

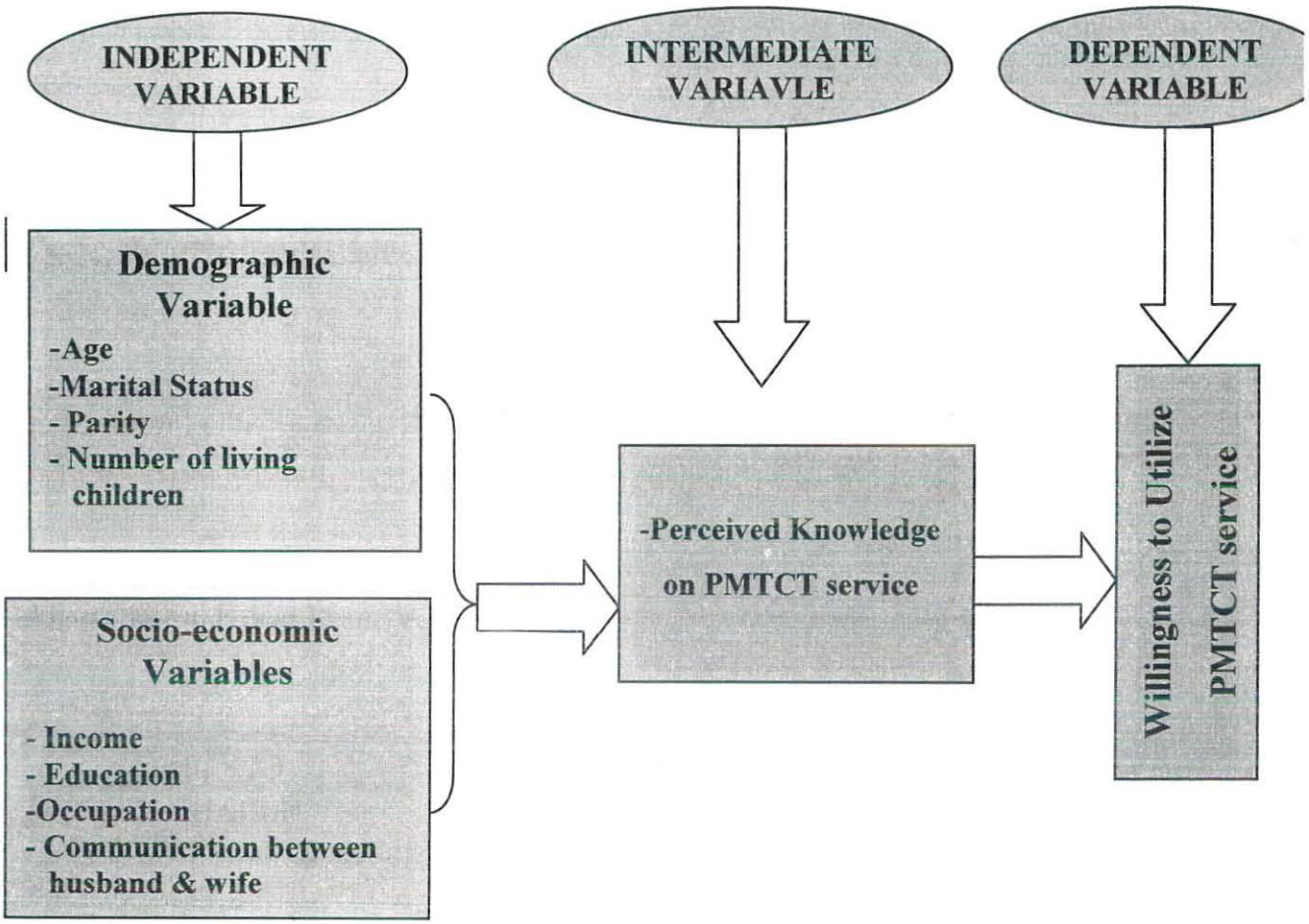
2.4 CONCEPTUAL FRAMEWORK

Conceptual framework shows that the willingness to utilize the PMTCT service is a dependent variable. This dependent variables were affected by different demographic and socio-economic factors through intermediate variable.

The demographic factors include age, marital status, parity and number of living children. There are also certain socio economic variables which have strong relation with willing to utilize the PMTCT service. Such variables are educational status, occupation, family monthly income and communication between husband and wife. The intermediate variable is knowledge of the PMTCT service. In the conceptual frame work the arrow reveals the impact of the dependent variables on the independent variables. Each dependent variable was expected affecting the

independent variable positively or negatively. The figure below show the relationship found between dependent variables and independent variables.

Figure 1: Analytical Framework



Source: Developed by the author on the basis of different literature, 2010

CHAPTER THREE

3. METHODOLOGY

3.1 Study Area

The study was conducted in Addis Ababa. The capital city of Ethiopia. The city is organized into ten sub-cities and 100 Kebeles (the smallest administration unit). The population of this town is 2,738,248 and there were 1,304,518 males and 1,433,730 females (CSA, 2007). There are totally 36 hospitals in the city out of which nine are public hospitals, 27 health centers, 32 health posts and more than 500 private health institutions providing health services including ANC and Delivery (FHAPCO, 2008).

Addis Ababa is reported to have one of the highest concentrations of HIV/AIDS cases in the country. The Region's HIV prevalence estimate for 2005 was 11.7%, with incidence rate of 1.4 and hosted a total of 7,995 HIV positive pregnant and 179,381 children orphaned (MOH, 2007). Specifically this study was conducted in five public hospitals (Gandi Hospital, St. Poulos Hospital, Tikur Ambesa Hospital, Yekatit 12 Hopsital and Zewditu Hospital).

The PMTCT program offered with an integration of ANC services at mother and child health department (MCH) in the hospitals. Every woman who attends ANC it advised to undergo HIV testing after pre-test counseling either individually or in couple with their male partner. Any woman or couple had the right to accept or refuse the offered HIV test.

3.2 Study Design

The study was conducted based on cross-sectional study that has used both quantitative and qualitative techniques.

3.3 Target Population

The target population was all pregnant women who were attending antenatal care in five hospitals (Gandi Hospital, St. Poulos Hospital, Tikur Ambesa Hospital, Yekatit 12 Hopsital and Zewditu Hospital) were selected.

3.4 Data Source

Primary quantitative and qualitative data were collected in this study. The sources of information for this study were structured questionnaire, focus group discussion and key informant interview were administered. Those pregnant mothers in the selected Hospitals during the time of data collection were interviewed using the structured questionnaire. The focus group discussion was conducted in the selected group of pregnant mothers in these hospitals and nurse counselors from selected hospitals for key-informant interview. Besides, secondary sources such as statistical abstract, scientific journals books, published and unpublished reports were used for this study.

3.5 Sampling size determination

Sample size was determined using the formula by Cohran W.G (1977).

$$n = \left[(Z_{\alpha/2})^2 \frac{P(1-P)}{E^2} \right] X\ 1.5$$

Where **n**= the desire sample size

P= the proportion estimated that pregnant women who willing to utilize the PMTCT service. Since local data for the value of P was not available, it take to be 50% (P=0.5) to allow maximum sample size.

E= the margin of error between the sample & the population assumed to be (E=0.05)

Za/2 = Critical value at 95% confidence level of certainty (1.96)

$$n = (1.96)^2 \frac{0.5(1-0.5)}{(0.05)^2}$$

$$n = \underline{384}$$

- To make it more reliable multiply by design effect 1.5

Total sample size = 384 X 1.5

= 576

- 20% non-response added to the sample size obtain using the above formula

= 576 + (576 X 20%)

= 691

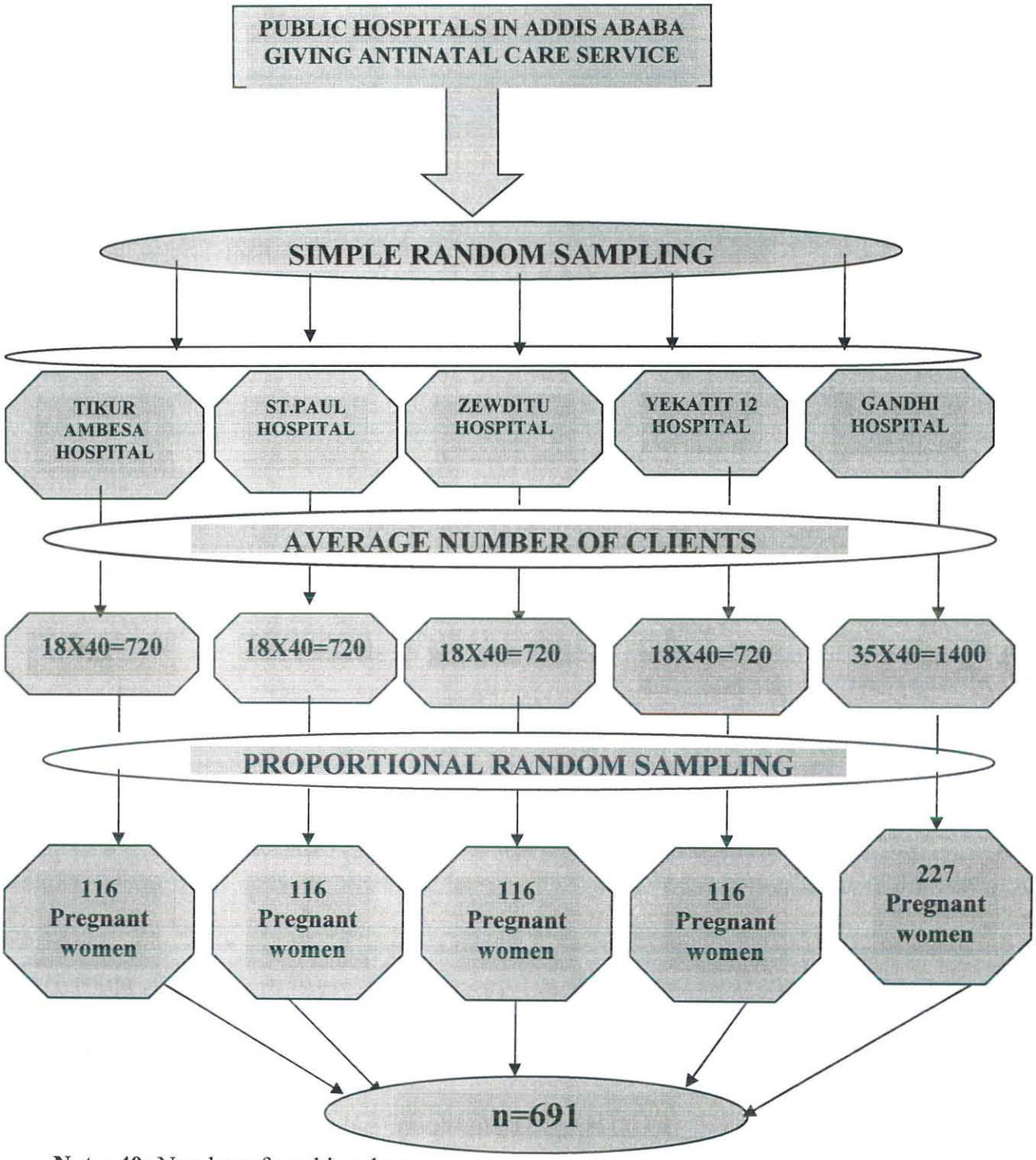
Then the total sample size is for the study was **691** pregnant women.

3.6 Sampling procedure

To get a representative sample population for the survey, a multi-stage sampling technique was employed in order to select the study units. Initially, five public hospitals were selected from nine public hospitals by simple random sampling. The five hospitals which were working on antenatal care in Addis Ababa. The selected hospitals were; Tikur Anbessa specialized hospital, Saint Pauls, Zewditu memorial hospital, Gandhi memorial Hospital and Yekatit 12 Hospital. To this end each selected hospitals was made to prepare the sampling frame from which 691 pregnant women were selected using proportional random sampling. However, the actual number of women successfully interviewed during the survey was 650 giving 94 percent of response rate.

The total study subject was distributed among the hospitals based on the number of clients they serve. At the time, each hospital on average would serve nearly 15-20 clients per day but Gandhi on average 30-40. Therefore interview was administered on pregnant women of 116 each from the four and 227 from Gandhi. Each study subjects were also select through simple random sampling (Figure 1). Data collections were conduct from March to April 2010.

Figure 2. Schematic Presentation of sampling procedure



Note: 40: Number of working days

18: Are Average number of daily clients who attend antenatal care service in Tikur Anbesa Zewiditu, Paulos and Yekatit 12 Hospital

35: Are Average number of daily clients who attend antenatal care service in Gandi Hospital

3.7 Data Collection

3.7.1. Structured questionnaire for quantitative study

The data for the quantitative section were collected using a structured questionnaire prepareed to address all the important variables. The questionnaires were adopted from different studies developed for similar purpose by different authors. Using the questionnaire, those sampled pregnant women who attend antenatal care from the hospitals were interviewed by trained counselor nurses.

3.7.2. Sampling and data collection for qualitative study

In order to support information collected through structured questionnaire, focus group discussions were used. Focus group discussions (FGD) were held with 38 pregnant women. Four focus group discussions of which each group with 8-10. The participants selected from those pregnant women who were willing to participate on the discussion. The age of the FGD participants varied from 21-45 years but most of them were between 24-35 years of age. Three fourth of the participants were legally married and the rest one fourth were unmarried. Almost half of the participants had attended a secondary school. Above 50% of the pregnant women follow Christianity and the largest proportion were housewives. A checklist was prepared to guide the discussion in such a way to generate relevant information. The FGD were conduct in a quiet and comfortable place, and each has lasted within about one and half hours. Most discussion guides are open ended to give more opportunity for discussion. Discussions were held in local language- Amharic, recorded by a tape recorder and later translated into English and analyzed by the researcher.

In-depth interview with selected key-informant were also conducted with health professionals. It is important to crosscheck the information obtained from the questionnaire. To assess the situation of PMTCT service, five nurses were interviewed by using open ended questionnaire from the selected five hospitals, one person each hospital (Tikur Anbessa specialized hospital, Saint Pauls, Zewditu memorial hospital, Gandhi memorial Hospital and Yekatit 12 Hospital). The interview was recorded using notebook.

3.8 Description of Variable

Dependent Variables: The dependent variables to be measured in this study were: Willing to utilize the PMTCT service

Independent variables: The independent variables to be measured in this study include: age, marital status, number of live children, parity, educational status occupation, income and communication between husband and wife

Intermediate variable: Knowledge about the PMTCT.

3.9 Data Analysis

The data that was collected using structured standardized questionnaire were coded and cleaned before it was entered into a computer. Information from completed questionnaire was entered into a computer and analyzed using Statistical Package for Social Sciences (SPSS) version 16.0.

The method of analysis employed in this study was subjected to different statistical tools depending on the nature of data. Accordingly, uni-variate distribution ranges from simple tabular representation or descriptive analysis such as frequencies that include percentages and means used to summarize data. Then, to test the gross of each independent variable on the dependent variables bi-variate analysis was made, while undertaking bi-variat analysis, the chi-square test was used to assess the relationship of several independent variables with the dependent variable. The chi-square test was used to identify independent variables that explain the dependent variable that would be retained for further analysis at the multivariate stage.

Further, multivariate analysis was carried out to explain the net effect of several independent variables on the dependent variable by controlling possible intervening variables. To examine the relationship between the dichotomous dependent variable and the independent variable, the logistic regression model is employed as the most appropriate one. To do multivariate analysis, binary logistic regression model, that is highly recommended when the outcome variable is

dummy taking the value of 0 and 1, were used. Logistic regression model, in general, overcomes the problem of non linear relationship between the dependent and independent variables when the outcome variables are categorical (Lethonen and Pohkinen, 1995). The equation of logistic regression model is given as:

$$\text{Logit (Pi)} = \text{Ln}\,(P_i/(1-P_i)) = B_0+B_1X_1+B_2X_2+\text{------}+B_kX_k$$

Where the dependent variable Yj and quantitative independent variable

X_{ij}=1, 2, 3-----, k and i=1, 2, 3-----, n.

B_0= Constant

B= Regression coefficient

EXP (B_i) = Odd ratio for a person having characteristics i versus not having characteristic i.

Let $P_i = P(X_{ij})$ denotes the "success probability" when X_{ij} takes the value X_{ij}. We can assume that the transformed variable Ln ($P_i/(1-P_i)$), has a linear form of this logit probability. Where B_i refers to the effect of X_{ij} on the log odds that Y_i=1, controlling for other X.

CHAPTER FOUR

4. RESULTS

4.1 Background Characteristics of participants

4.1.1 Demographic Characteristics of Respondents

A total of 691 pregnant women attending antenatal care in five public hospitals in Addis Ababa were approached and 650 (94%) participated in the questionnaire interviews. Which makes the response rate of the study 94%. There where 41 (6%) missing respondents who full-filled the selection criteria due to their unwillingness to participate.

The age of pregnant women included in this study ranged between 15 and 45 years. The largest study group was in the age of 25-34 (54%) years, with a mean age of 25.53 years. Concerning marital status, the greater majority of pregnant women, 90.8% were married. Fourty six percent of the respondents had two and above live children (Table 1).

Table 1: Demographic description of respondents who attending ANC, Addis Ababa, 2010.

Variable	Frequency	Percentage (%)
Respondents age		
15-24	165	25.4
25-34	351	54.0
35+	134	20.6
Total	650	100.0
Marital status		
Ever married	590	90.8
Never married	60	9.2
Total	650	100.0
Parity		
One	210	32.3
Two	214	32.9
Three and above	226	34.8
Total	650	100.0
Number of live children		
None	173	26.6
One	200	30.8
Two and above	277	42.6
Total	650	100.0

Source: Field Survey Result,2010

4.1.2 Socio-economic Characteristics of Respondents

Amhara ethnic group comprises the largest proportion (42.5%), and majority of pregnant women 62.3% were identified as Orthodox Christian. With regard to educational status, 29.7% of the interviewed women were illiterate and a high proportion 37.5% of the respondents complete secondary education and above. Regarding the occupation of the respondents, most of the respondents were housewives 43.1% and 17.7% of the respondents had monthly income of below 200 birr while 32.6% earned above 1000 birr (Table 2).

Table 2: Socio-economic description of respondents who attended ANC, Addis Ababa, 2010.

Variable	Frequency	Percentage (%)
Religion		
Orthodox	405	62.3
Muslim	128	19.7
Protestant	67	10.3
Others(Catholic, Traditional)	50	7.7
Total	650	100.0
Ethnicity		
Oromo	196	30.2
Amhara	276	42.5
Tigre	73	11.2
Gurage	79	12.2
Others(Hadia, Harari,Kenbata)	26	4.0
Total	650	100.0
Women Education		
No formal education	193	29.7
Primary education	213	32.8
Secondary education & above	244	37.5
Total	650	100.0
Husbands Education		
No formal education	110	18.6
Primary education	227	38.5
Secondary education & above	253	42.9
Total	590	100.0
Wife's Occupation		
House wife	280	43.1
Civil/Gov't employee	139	21.4
Merchant	107	16.5
Non gov't/private employee	100	15.4
Others	24	3.7
Total	650	100.0
Husband's Occupation		
Jobless	14	2.4
Civil/Gov't employee	222	37.5
Merchant	127	21.5
Daily laborer	61	10.3
Non gov't/private employee	105	17.8
Others	61	10.3
Total	590	100.0
Family monthly income		
≤ 200 ETB	103	17.7
201-599 ETB	136	23.4
600-999 ETB	143	24.5
≥1000	200	34.4
Total	650	100.0

4. 3 Pregnant women and male partner's attitude on the issues of voluntary counseling and HIV testing

Seventy four percent of the respondents under gone voluntary counseling and HIV testing. And 92.8% of the respondents were encouraged couples HIV/AIDS testing. Out of this, 58.4% of the respondents chose ANC clinics, 30.5% at government laboratories and 11.1% at private laboratories.

Nearly thirty five percent of respondent's husband want their partner to be tested, 43.2% of a partners wanted to be tested alone but not himself, 16.3% of respondent's husband did not willing their wife tested and 3.3 % of a respondents did not to discuss at all.

Many participants on the FGD said that, VCT is a voluntary process that helps to recognize one's HIV status. They also explained that VCT is important to know HIV status which creates an advantage to plan for the future. One of the pregnant women explained,

"...VCT is helpful to create an opportunity to think and decide how to live on the future regardless of the result."

Great majority of the participants believe that VCT can facilitate to build HIV free and faithful family. They also indicated that VCT enables a pregnant woman as well as the whole family to have a healthy child. Some FGD participants mentioned that:

"...VCT helps to direct a wonderful life; besides, it flourishes love and trust among husband and wife." Another participant added that,

"VCT is a safeguard for the family to obtain a healthy baby who is the source of happiness and hope."

Table 3: Attitude on VCT service Utilization and couple testing, Addis Ababa, 2010

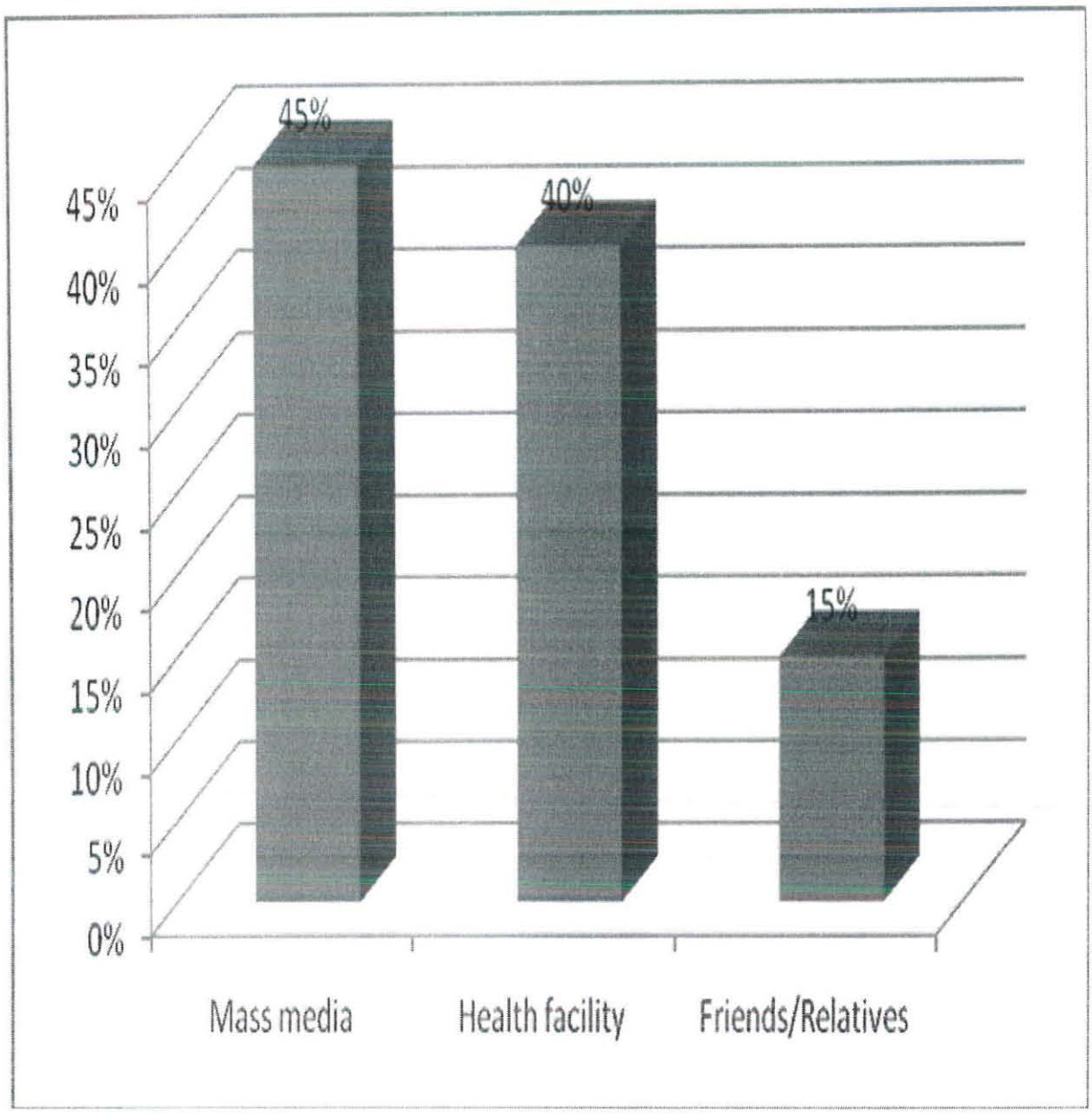
Variable	Frequency	Percentage (%)
Voluntary Counseling and HIV testing		
Yes	481	74.0
No	169	26.0
Total	650	100.0
View's of husband regarding HIV screening		
Wants to have couple testing	115	34.7
Wants me to be teste d alone, but not himself	143	43.2
Doesn't want me to be tested	49	14.8
Doesn't want to discuss at all	24	7.3
Total	331	100.0
Couples HIV/AIDS Testing		
Yes	603	92.8
No	47	7.2
Total	650	100.0
Respondent's choice of couple testing		
At ANC(VCT) clinic	352	58.4
At government laboratories	184	30.5
At private laboratories	67	11.1
Total	603	100.0

Source: Field Survey Result,2010

4. 4 Knowledge, attitude and Practice of PMTCT

Around seventy percent of the pregnant women said that they have sufficient knowledge about PMTCT. About the source of information see figure 2.

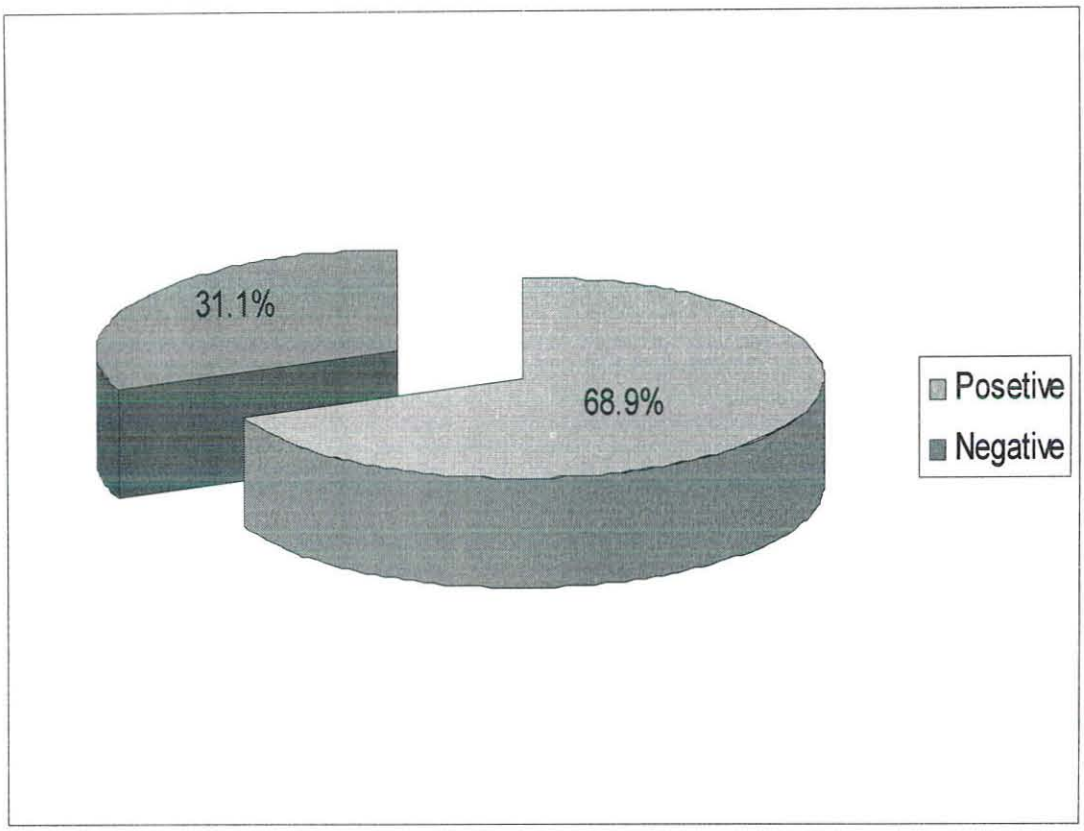
Figure 3: Information source of PMTCT



Source: Field Survey Result, 2010

Among the study subject 42% of the respondents had reported that they were discussed about the existence of PMTCT in the last 12 month with partner. The result of husband's attitude about the utilization of PMTCT service is revealed in Figure 3.

Figure 4: Husband's attitude about the utilization of PMTCT service



Source: Field Survey Result, 2010

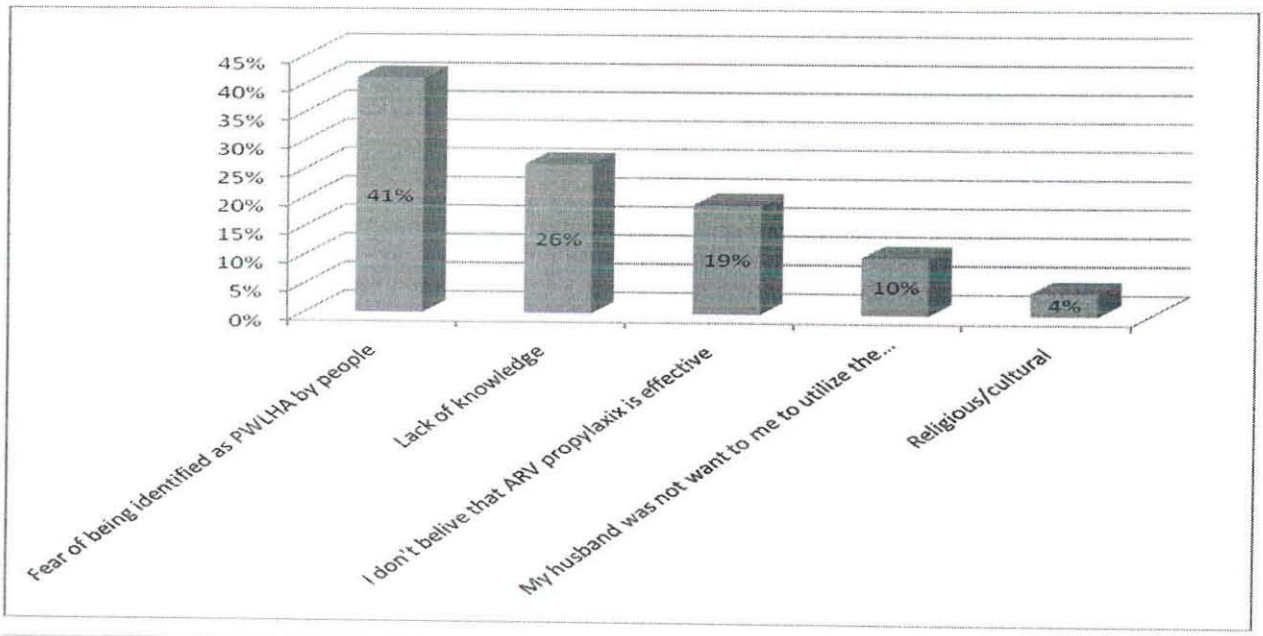
Nearly Fifty three percent of pregnant mothers were willing to utilize the PMTCT service but 46.9% of pregnant mothers were not willing to use PMTCT. Respondents had different reasons why they were not willing to utilize PMTCT service (Figure 4). Regarding the information about PMTCT staff, 76.5% pregnant women reported that the message conveyed about HIV/AIDS by PMTCT staff were clear but 50.3% respondents said that it were not clear (Table 4).

Table 4: Respondents attitude about the PMTCT service, Addis Ababa, 2010

Variable	Frequency	Percentage (%)
Discussed about the existence of PMTCT with partner (n = 590)		
Yes	273	46.3
No	316	53.7
Total	590	100.0
Clients willingness of the Utilization of PMTCT service		
Yes	345	53.1
No	305	46.9
Total	650	100.0
Respondents feeling towards the message conveyed about HIV/AIDS by PMTCT staff		
Clear	497	76.5
Not clear	153	23.5
Total	650	100.0

Source: Field Survey Result,2010

Figure 5: The reason of respondents not willing to utilize PMTCT service



Source: Field Survey Result,2010

4.5 BI-VARIATE ANALYSIS

The bivariate analysis, based on the Pearson's chi-square statistic, provides a preliminary insight into the relationship between all selected independent variables and dependent variable. For all independent variable taking one-at-a-time, a test of association was carried out using the Pearson chi-square. High values of Pearson's chi-square test for a given independent variables indicates that there is strong association between each of the given independent variables and the dependent variable keeping the effect of the other factors constant.

4.5.1 Association of some selected factors with PMTCT service

In this section a bivariate analysis was made to see the relation ship between the independent and dependent variables.

Age of the respondents has a significant association with willing to utilize the PMTCT service at (χ^2= 15.612, P < 0.01). Fifty nine point eight percent of respondents who were willing to utilize PMTCT services have belonged in the age group of 25-34. The result of this study indicates that, respondents age belonging of 25-34 were more willing to utilize the PMTCT service than the other age groups (See table 5). Therefore age and willingness to utilize the PMTCT service have a negatively relationship.

There is association between respondents utilization of PMTCT service by women's education (χ^2= 62.372, P < 0.01). Respondents who have complete Primary education (52.6%) and Secondary education and above (70.1%) had high proportion to utilize PMTCT service respectively but respondents those who are uneducated women only 32.1% were willing. Thus, the proportion of willingness of PMTCT service increases with increase education level of women. With regard to women's occupational status, the chi-square result shows that women's occupational status has strong association with willing to utilize the PMTCT service at (χ^2= 10.520, P < 0.025). Table 5 shows that respondents who were government employee (63.3 %) were more willing to utilize the PMTCT service compared to respondents' who were house wife

(48.2%).This study shows that, respondents who were employee were more willing to utilize the PMTCT service than housewife's.

Household monthly income has strong association with the willingness of PMTCT service (χ^2= 66.840, P < 0.01). Table 5 shows that the proportion of willing to utilize the PMTCT service is highest (81.5%) for those whose family monthly income of above 1000 Birr, while it is the lowest (41.7%) for those whose monthly income were less than 200 Birr.

In this study marital status has not significant association with their PMTCT service (χ^2= 0.579, P > 0.05). However, ever married respondents have higher proportion (53.6%) of the utilization of PMTCT service than never married (48.3%). Respondents who discuss about HIV/AIDS with their partner in the last 12 months had a significant association with utilization of PMTCT at (χ^2= 10.478, P < 0.025). A relatively higher proportion (60%) of respondents who discussed about HIV/AIDS had willing to utilize PMTCT service than others (47.5%).

Knowledge of respondents about the PMTCT service before they came to the health center have significant association. Respondents who have enough knowledge about the PMTCT service high proportion 62.0% willing to utilize PMTCT service than those who haven't enough knowledge 32.3%. The number of children also has a significantly association with willing to utilize the PMTCT service (χ^2 = 53.843; p<0.001). Sixty nine point three percent of respondents who had two and above children relatively high proportion willing to utilize the PMTCT service than others.

Table 5: Association of some selected variables with PMTCT service, Addis Ababa, 2010

Variable	Clients willing to utilize PMTCT service		Total	P-value	Chi-squa (Value
	Use	Not use			
Age					
15-24	80 (48.5%)	85 (51.5%)	165 (100%)		
25-34	210 (59.8%)	141 (40.2%)	351 (100%)	0.000	15.612
35+	55 (41%)	79 (59%)	134 (100%)		
Women education					
No formal education	62 (32.1%)	131 (67.9%)	193 (100%)	0.000	29.280
Primary education	112 (51.6%)	101 (48.4%)	213 (100%)		
Secondary education & above	171 (70.1%)	73 (29.9%)	244 (100%)		
Wife's Occupation					
House wife	135 (48.2%)	145 (51.8%)	280 (100%)		
Civil/Gov't employee	88 (63.3%)	51 (36.7%)	139 (100%)		
Merchant	53 (49.5%)	54 (50.5%)	107 (100%)	0.033	10.520
Non gov't/private employee	58 (58%)	42 (42%)	100 (100%)		
Others	11 (45.8%)	13 (54.2%)	24 (100%)		
Family monthly income					
≤ 200 ETB	43 (41.7%)	60 (58.3%)	103 (100%)		
201-599 ETB	64 (47.1%)	72 (52.9%)	136 (100%)	0.000	66.840
600-999 ETB	72 (50.3%)	71 (49.7%)	142 (100%)		
≥1000	163 (81.5%)	37 (18.5%)	200 (100%)		
Marital status					
Ever married	316 (53.6%)	247 (46.4%)	590 (100%)	0.262	0.579
Never married	29 (48.3%)	31 (51.7%)	60 (100%)		
Number of living children					
None	63 (36.4%)	110 (63.6%)	173 (100%)	0.000	53.843
One	90 (40.0%)	110 (50.0%)	200 (100%)		
Two and above	192 (69.3%)	85 (30.7%)	277 (100%)		
Discussed about PMTCT in the last 12 month with partner					
Yes	166 (60.8%)	107 (39.2%)	273 (100%)	0.001	10.478
No	150 (47.5%)	166 (52.5%)	316 (100%)		
Knowledge about the PMTCT service					
Enough	282 (62.0%)	173 (38.0%)	520 (100%)	0.000	48.249
Not enough	63 (32.3%)	132 (67.7%)	130 (100%)		

Source: Field Survey Result,2010

4.5.2 Association between male partner attitudes about the utilization of PMTCT service with selecting variables

As shown in table 6, there is a strong association between clients willingness of utilization of PMTCT service by their husband's education (χ^2= 75.291, P<0.001). Respondent's whose husbands were completed secondary school and above have higher proportion (71.5%) willing to utilize the PMTCT service than those husbands' completed primary school (48%) and illiterate (23.6%). With regard to husbands work status, there is a significant association at (χ^2= 15.033, P<0.025). Respondents whose husbands were Civil/government employees have a relatively higher proportion willing to utilize the PMTCT service (60.8%) than others. The study show that, husband's attitude about the utilization of PMTCT service has a significant association with PMTCT service at (χ^2=29.348, P<0.001). Respondents whose husbands had a positive attitude about the PMTCT service were high proportion (67.3%) willing to utilize the PMTCT service than those husbands have a negative attitude (35.3%) (Table 6).

Table 6: Association between male partner attitudes about the utilization of PMTCT service with selecting variables in Addis Ababa, 2010

Variable	Clients willing to utilize PMTCT service		Total	P-value	Chi-square (Value)
	Use	Not Use			
Husband's Education					
No formal education	26(23.6%)	84(76.4%)	110(100%)	0.000	75.291
Primary education	109(48%)	118(52%)	227(100%)		
Secondary education & above	181(71.5%)	72(28.5%)	253(100%)		
Husband's Occupation					
Jobless	5(35.7%)	9 (64.3%)	14 (100%)	0.010	15.033
Civil/Gov't employee	135(60.8%)	87(39.2%)	222(100%)		
Merchant	73(57.5%)	54(42.5%)	127(100%)		
Daily laborer	24(39.3%)	37(60.7%)	61(100%)		
Non Gov't/private employee	52(49.5%)	53(50.5%)	105(100%)		
Others	27(44.3%)	34(55.7%)	61(100%)		
Husband's attitude about the utilization of PMTCT service					
Positive	152(67.3%)	74(32.7%)	226(100%)	0.000	29.348
Negative	36(35.3%)	66(64.7%)	102(100%)		

Source: Field Survey Result, 2010

4.6 Multivariate Analysis

Checking Multi-collinearity

To avoid the Multi-collinearity coefficient of contingency has been computed because all independent variables included in the study are categorical. The values of coefficient of contingency ranges between 0 and 1; the smaller value of coefficient of contingency indicates weak association between predictor variables and the opposite is true if the value is larger; based on the result variables that have strong correlation either merged or dropped out. (See annex II)

4.6.1 Goodness of Fit of the model

In this particular study the purpose is to check whether the model is well fitted to the data or not. The technique used is classification table. Classification table indicates the number and percentage of observed cases that are correctly classified or incorrectly classified. With regard to this study, willing to use the PMTC service are correctly classified compared to not willing to utilize the PMTCT service, as can be seen the classification table, 165 and 73 respectively. But 59 pregnant mothers were misclassified: 37 as not willing to use and 22 as willing to use the PMTCT service. To sum up, 78.9 % and 89.9% of not willing to use and willing to use are classified correctly respectively. As a whole, about 80.1% of respondents are classified correctly

Table 7: classification table

			Predicted		
			Clients willingness of the Utilization of PMTCT service		**Percentage Correct**
			Not use	**Use**	
Observed	Clients willingness about the utilization of PMTCT service	Not use	73	37	66.4
		Use	22	165	88.2
	Overall Percentage				80.1

The second technique used was Hosmer and Lemeshow goodness-of-fit test, which help to diagnose the significant level either to accept or reject the alternative hypothesis. According to this technique, if the significance level of the test is less than 0.05, it indicates that the alternative hypothesis is to be rejected and the null hypothesis which states the inadequacy of the model to describe the data is to be accepted. Concerning this study, the significance level of the test was found to be 0.808, which is statistically insignificant. Therefore, the alternative hypothesis which states that the model is adequate to describe the data is accepted. The independent variable explains the dependent variable by 55 percent.

4.6.2 Factors Associated with utilization of PMTCT SERVICE

Selected independent variables were cross tabulated with age, women education, husbands education status, family monthly income, number of pregnancy, knowledge about the PMTCT service and husbands attitude about the utilization of PMTCT service. Chi-square statistic showed that these variables were significantly associated with the willingness of the utilization of PMTCT service ($P< 0.05$).

However, this simple cross-tabulated chi-square result may not show the independent variables exact influence on the dependent variable, because the influences of other variables were not controlled. Thus, binary logistic regression analyses were applied to those variables that had significant association in the bivariate analysis, to examine the net effect of each independent variable on the willingness of utilization of PMTCT service by controlling for the effects of all other intervening variables.

As it has been mentioned earlier, the binary logistic regression model is appropriate to use when the response to a set of explanatory variables is in a binary form that in this case is willing to use a PMTCT service and not willing to use PMTCT service. It is coded as a dummy variable (1= to Use PMTCT service and 0=Not willing to use PMTCT service).

Logistic regression calculates changes in the log odds of the dependent (not changes in the dependent it self). For the dichotomies case, if the logit for a given independent variable is B, then a unit increase in the independent variable is associated with a B change in the log odds of

the dependent variable. A relative risk, EXP (B), estimates greater than one signifies an increased likelihood for the given outcome, while a value less than one indicates a decreased likelihood for the given outcome. In addition, the sign of B (logistic coefficient) indicate the direction of the change.

Socio-economic, demographic and individual related factors, which had significant association in the bivariate analysis, were further tested by binary logistic regression. It is used to investigate the overall net effects of these variables on willingness of the utilization of PMTCT service. The variables included in the binary logistic model, are depicted in table 8.

Table 8: Logistic Regression Model Parameters' Estimates for the Likelihood of Willingness of the utilization of PMTCT service in selected five hospitals in Addis Ababa, 2010

Independent Variable	B	S.E.	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
					Lower	Upper
Age 15-24	-0.612	0.374	0.102	0.542	0.261	1.129
25-34(RC)			0.007	1.000		
35+	-1.311	0.422	0.002	0.270	0.118	0.617
Parity One	-1.054	0.401	0.009	0.349	0.159	0.766
Two	-0.429	0.389	0.270	0.651	0.304	1.395
Three and above(RC)			0.032	1.000		
Women Education status No formal education	-1.803	0.423	0.000	0.165	0.072	0.378
Primary education	-0.551	0.397	0.164	0.576	0.265	1.254
Secondary education(RC)			0.000	1.000		

Husband Education status No formal education	-1.357	0.519	0.009	0.257	0.093	0.712
Primary education	-0.386	0.372	0.299	0.680	0.328	1.409
Secondary education(RC)			0.033	1.000		
Family monthly income ≤ 200 ETB	-1.494	0.476	0.002	0.224	0.088	0.570
201-599 ETB	-0.168	0.470	0.721	0.845	0.337	2.122
600-999 ETB	-0.056	0.510	0.912	0.945	0.348	2.567
≥1000 ETB(RC)			0.008	1.000		
Discussed about PMTCT in the last 12 month with partner Yes	-0.959	0.763	0.209	0.383	0.086	1.709
No(RC)				1.000		
Husband attitude about the utilization of PMTCT Positive(RC)				1.000		
Negative	-1.266	0.351	0.000	0.282	0.142	0.561
Knowledge about the PMTCT service Enough(RC)				1.000		
Not enough	-0.998	0.401	0.013	0.369	0.168	0.810

Note:

N = 650

S.E = Standard Error

Sig = Significance value (p < 0.05)

EXP (β) = Odd ratio

β = Beta coefficient

RC = Reference Category

Age was found to have an influence on the utilization of PMTCT service. The result of the analysis showed that, The odds of utilization of PMTCT service among the pregnant women who are aged above 35 years were reduced by 73% than those pregnant women whose aged 25-34 years. Thus, pregnant women 25-34 years of age were more likely to willing utilization of PMTCT service as compared with those whose ages were greater than 35 years.

The model revealed that, respondents who had no pregnancy experience before were by 65% less likely to willing to utilize PMTCT service than those respondents who had two and above pregnancy experience.

As respondent's education progressed, the likelihood of willing to utilize the PMTCT service increased. According to table 8, respondents who were not attended formal education were 83% less likely to willing to utilize PMTCT service compared with those respondents whose level of education were secondary and above. Regarding to respondents husband education, husband's who were not attended formal education were 74 % less likely to willing to utilize the PMTCT service than those respondents husband whose level of education were secondary and above. This result shows that education and the willingness of utilization of PMTCT had direct relationship.

Pertaining to family monthly income, the multivariate analysis result showed that the likelihood of utilizing PMTCT service decreased, as household income decline. The result of table 8 showed that respondents who earned Birr ≥200 were by 78% less likely to utilize PMTCT services as compared with those who earned above 1000 Birr per month.

Husband's attitude about the utilization of PMTCT service was found to have an influence on the willingness of utilization of PMTCT service. The result of the analysis showed that respondents husband who had negative attitude about the utilization of PMTCT service reduce the willingness to utilize the PMTCT service by 80% than those husband's who had positive attitude about the PMTCT service.

Knowledge is also one of the important factors included in this model. The odds ratio revealed that respondents who had not enough knowledge about the PMTCT service less likelihood to willingness to utilize the PMTCT service by 98% as compared to respondents who had a good knowledge.

CHAPTER FIVE

5. Discussion of the main finding

Results are discussed in relation to other literatures, qualitative results were used to strengthen and clarify the quantitative findings.

Age of the respondent has a profound effect on willing to utilize the PMTCT service. The odds ratio result indicated that respondents the age group 35+ years old were reduced by 68.5% than those pregnant women whose aged 25-34 years. The result of this study indicates that willing to utilize the PMTCT service is decrease with age increases. Other study conducted in Uganda and Malawi support this study, acceptance of voluntary HIV counseling and PMTCT service utilization is decrease with age increase (Francis Bajunirwe, Michael Muzoora, 2000; M.Manzi, 2005). The key informant also said that, young women were more willing to utilize the VCT and PMTCT service than older one. But a study conducted in Burkina Faso reported that old age was more accept voluntary HIV counseling and testing and utilization of PMTCT service than young age (Salvatore Pignatelli, Jacques,2006).

Parity is one of the important factors in this model (Table 8). The model revealed that, respondents who had pregnancy experience (two and above) more willing to utilize the PMTCT service than those who had not pregnancy experience before. The same finding was reported from the study conducted in Awasa. Women who had more than one antenatal visits were two times more likely to use PMTCT services than those who have only one visit. The main reason is that, women having more than one antenatal visits having awareness on the availability and use of PMTCT (Alemnesh, 2008). This is also supported by the key informant, women with frequent ANC visit have chance to get advice from a health care providers which useful for the health of the mother and the fetus. It is also useful to detect problems early. They also mentioned that ANC is essential to utilize the PMTCT service. Moreover, it is important to get information on HIV, PMTCT and importance of HIV test. They also agreed that frequently undergoing antenatal care service would increase the number of pregnant women who will undergo HIV test.

Women education status is found to be strongly associated with willing to utilize the PMTCT service. This study showed that respondents who were higher level of education (secondary and above) of the mothers is more willing to utilize the PMTCT service than others. The result of this study is consistent with the findings from other studies. A study conducted in 10 selected Health centers in Addis Ababa reported that higher level of education was strongly associated with utilization of PMTCT service(Edris 2007). This has been also reported a survey in Uganda showed that women educated beyond seventh grade and literate women were three and two times more likely to accept testing respectively(Bajunirwe & Muzoora,2005), this was also found in a Malawian study (Creeketal.,2009) and Botswana (Kuhlmannetal.,2008). These findings show that low education and illiteracy may be a barrier to the access and use of counseling and testing services in PMTCT programs. But a study conducted in Zambia reported that pregnant women with primary or less educational level were likely to accept HIV test and another study conducted in Nigeria found no major difference in acceptance of HIV test and utilization of PMTCT service between less educated ones (A.Gbadegesin, 2004).

Husband's education was found to be one of the key factors for utilization of PMTCT service. In the Ethiopian context, women traditionally are under influence of men and have suffered socio-cultural and economic discrimination and have fewer opportunities than men for education and employment. There is power imbalance between men and women. Thus they are easily influenced by their partner's decisions (National institute of Heath, 2003). This could have great implication to acceptance of HIV testing and PMTCT program. In this study, husbands education has positive association with enrolment to PMTCT program. Study conducted in Namibia and Tanzania, reported that educated husband play a critical role in facilitating PMTCT service of women during ANC visits (Maria n. Shangula, 2006). The FGDs participants also reported that husbands education might have significant association with willing to utilize the PMTCT service.

In this study income of the respondents had a positive relation with willing to utilize the PMTCT service. A community-based study carried out in Addis Ababa showed the risk of non-attendance of antenatal care service was high for pregnant women whose income was low (Berhane Y., 2000). Similar study conducted at Tanzania where utilization of PMTCT service was found to increase as the income increases (Westheimer EF, Urassa W. et al, 2004). This could be

respondents with low income might give priority for production activities than their own and the unborn child health.

Few women share their HIV status with their partners. In many countries men do not attend antenatal care with their partners and only lower numbers of men receive HIV test with their partner (Rachel Baggaley, 2001). Husbands appear to play an important role on women's decisions to accept HIV testing, and they should be considered when developing interventions on HIV testing and counselling and utilization of PMTCT service. In this study the bi-variate result shows that, respondents how discussed about PMTCT with their partner with in the last 12 month were more willing to utilize the PMTCT service as compared with those respondents who were not discussed. The result is consistent with earlier studies in Ethiopia, at Addis Ababa Hospitals indicated that pregnant women need their male partner psychological, social and financial support as well as active involvement in HIV testing and counseling services in order to utilize the service properly (Abenet Takele K, 2007). Other study conducted in Uganda demonstrates that male partners' attitude is important in a woman's willingness to utilize the service(Francis Bajunirwe, 2005). As the FGD's result indicates that partner discussion about PMTCT is very important to increase utilization of the PMTCT service.

Knowledge about the PMTCT service was a significant predictor variable associated with willing to utilize the PMTCT service. In this study both a bi-variate and multivariate result showed that, respondents who have enough knowledge about the PMTCT service were more willing to utilize the PMTCT service than those respondents who had not enough knowledge. This finding was inline with in the other findings; in Awasa, women who were aware of the availability of prophylactic ARV for PMTCT were over four times more likely to use PMTCT services than those who were not a good knowledge (Alemnesh, 2008). The key informant reported that pregnant women's who heard about the PMTCT service before they came to the hospital were more willing to utilize the PMTCT service as compared with who were not heard about the PMTCT service

In quantitative and qualitative part of this study fear of rejection by the community or stigma and discrimination, husband reaction and fear of positive test result were frequently given reasons not

willing to utilize the PMTCT service. Similar researches done in Vietnam (Inh TH, 2004) have also mentioned the above reasons as an obstacle to accept utilize the PMTCT service. The key informant also mentioned the reasons for low utilization of PMTCT by pregnant women;

Stigma and discrimination

Stigma and associated discrimination from their families and relative is implicated as main reason for lost from the PMTCT follow up service. They said that mothers were afraid of being identified as HIV positive if they continue to follow PMTCT care at PMTCT clinic as many mothers see them. For fear of facing stigma and discrimination the mother didn't disclose their result to their husband and other facility staffs. The mother takes all care not to be identified as HIV positive by their husband, families and relatives who are coming to health facilities and as a result they stop to come to facilities for follow up and gave birth home.

Emotional reaction after HIV post test counseling

Unexpected HIV positive result and the reaction after post test HIV counseling has contributed for lost from PMTCT follow up. The counseling support and approach during post test counseling will modify clients test result acceptance. HIV positive mothers immediately after they heard the result they had stopped follow up counseling.

Religious Factor

Religion has also mentioned as one of contributing factors for mothers to lose from PMTCT program. Client believes that HIV infection is from God and wants to accept the disease and gave birth at home.

Disbelief of HIV result

Pregnant mothers would be counseled and tested for HIV at PMTCT clinic and receive post test counseling there. Some mothers who attend the post test counseling session didn't expect to have HIV positive result and hesitate about the test. Misunderstanding on HIV and other HIV test results also contribute for not accepting the result.

Information source of PMTCT had a strongly associated with utilization of PMTCT service. Accordingly, bi-variate finding of this study showed that respondents who heard information from health facility were highly willing to utilize the PMTCT service than those respondents who heard from mass media and friends (relatives). Findings from a Kenya Demographic and Health Survey indicated that clients get information mainly at health facilities (D O Kaseje, 2005), 52.4% obtained information from the health facility, 43.7% from mass media and 3.9% from other sources (D O Kaseje, 2005).

Most of the time, male partners make decisions or strongly influence women's decisions related to reproductive health aspects. In the contrary, positive male attitudes and appropriate involvement can benefit women's reproductive health and reduce the incidence of harmful practices in many ways. Both the bi-variate and multivariate result of this study showed that respondents husband who had a positive attitude about the utilization of PMTCT service were highly willing to utilize the PMTCT service than those respondents husband who had negative attitude. Previous similar studies conducted provide a strong support for the present finding, male partners are the first to learn women's status in the context of PMTCT, which is to solicit men's support on women's health choices in order to promote shared responsibility rather than inadvertently foster men's control over women's decision making. Approaching men is needed and reaching male partners of pregnant women is crucial (Anne Eckman, 2004). Even if it is widely felt that the partner's involvement is crucial for the success of uptake of HCT and MTCT prevention interventions, the majority of antenatal services in developing countries continue to be largely 'female' centred (Kapoor A, Vani SN, 2006). FGD participants pointed out that most husbands do not give any attention to pregnant women to follow antenatal care. The participants have agreed that husbands' involvement is essential for the success of PMTCT programmes. Two Participants, among them mentioned that great number of women especially who were house wives economically dependent on their male partners. This indicates that major issues of household are decided by husbands. Likewise majority women defer their own right to decide on to their husbands.

CHAPTER SIX

Summery, Conclusion and Recommendations

6.1 Summery

Mother-to-child HIV transmission (MTCT) accounts for the vast majority of more than 700,000 estimated new HIV infections in children worldwide annually (U.S. Global AIDS Coordinator and Bureau, 2008). This study has provided that factors that affect utilization of PMTCT service among pregnant women in Addis Ababa. A cross-sectional study which employed both quantitative and qualitativeq data collection method. For the quantitative section, a standardized questionnaire was prepared while Focus Group Discussions (FGDs) and key informants interview were conducted to collect qualitative data. The total eligible 650 pregnant women aged from 15-49 years old were participated in the study. The mean age of this study is 25.53 year. Concerning marital status, 90.8% were married. Forty six percent of the respondents had two and above live children. The education level of most of the respondents (69.3%) was primary and above. Majority of the respondents are followers of the Orthodox Church (62.3%) while more than half (42.5%) of the respondents are Amhara by ethnic group. Around eighty two percent of the respondents income is 200 birr and above. Nearly forty three percent of the respondents were house wife.

Out of the total respondents, 53.1% were willing to utilize the PMTCT service. 46.3% of the respondents were discussed about the existence of PMTCT service with their partner. Around sixty nine percent of the respondents husband had a positive attitude about the utilization of PMTCT service. Nearly seventy percent of the respondents of the pregnant women they had sufficient knowledge about the PMTCT service. Out of this, 45% of the respondents information got from mass media, 40% from health facility and 15% of respondents got information form friends/relatives.

The bi-variate statistical analyses result depict that variables like: age, educational level (wife and Husband), occupation (wife and husband), number of living children and income of the respondents have significant association with willing to utilize the PMTCT service. Similarly,

discussions about the existence of PMTCT service and knowledge about the PMTCT service have significant association with the willing to utilize the PMTCT service.

To identify the most important predicators of willing to utilize the PMTCT service, multivariate logistic analyses were employed. Thus, in multivariate logistic analyses, the most important predicator are: age, women education, husbands education status, family monthly income, number of pregnancy, knowledge about the PMTCT service and husbands attitude about the utilization of PMTCT service. Educational status, monthly income, knowledge about the PMTCT service had a positive association with willing to utilize the PMTCT service.

6.2 Conclusion

There are a number of factors that are found to determine willingness to utilize the PMTCT service among pregnant women. Results have shown that;

- This study shows that nearly 53% of respondent were willing to utilize the PMTCT service. The reasons given by the individual women for not willing to utilize the PMTCT service were found to be; they were not believe that ARV prophylaxis is effective, lack of knowledge, fear of being identified as PLWHA by people, husband reaction and fear of positive test result were frequently given reasons not willing to utilize the PMTCT service.
- The study shows were older age group was found to be more at risk (not willing to utilize the PMTCT service) as compared to the younger age.
- Educated pregnant who complete primary, secondary and above have showed higher probability of willing to utilize the PMTCT service.
- Employed and pregnant women her income is above 1000 birr per month were highly willing to utilize the PMTCT service.
- Respondents who had pregnancy experience (two and above) were higher probability of willing to utilize the PMTCT service.
- The study revealed that, respondents who have sufficient knowledge about the PMTCT service were more willing to utilize the PMTCT service as compared with respondents were not sufficient knowledge.

- Pregnant women whose husbands were educated highly willing to utilize the PMTCT service than illiterate one.
- Discussion between Partners about the PMTCT makes ANC attendees more willing to utilize the PMTCT service and this indicates that discussion allows exchange of ideas between partners and that could give a chance for male partner to exert his idea. And also respondents husband who have positive attitude about the utilization of PMTCT service were highly willing to utilize the PMTCT service than whose husband had negative attitude. In general, pregnant women need their male partners' psychological, social and financial support.

6.3 Recommendation

Based on the results obtained and the conclusion drawn, the following recommendations are forwarded for the improvement of PMTCT services.

- Government should improve antenatal care coverage and promoting PMTCT services in all health care facilities to provide essential care to women and her fetus in the catchments areas. And also community based education and sensitization on PMTCT, and specific education against stigma and discrimination targeted to women and the community is required.
- The government updates the national PMTCT protocols to ensure that all women who come for antenatal care, regardless of the length of their pregnancy, are tested for HIV and receive their results.
- Government and non-governmental organizations should increase information, education, and communication (IEC) and counseling efforts to encourage pregnant women to receive ANC starting with the first trimester about the PMTCT service.
- The regional health bureau improve the quality of counseling and health care service through extensive training for VCT/PMTCT counselors, allocation of sufficient resources, continuous supervision and refresher training for the counselors to update with recent advances.

- The government should encourage women empowerment through education to the highest possible level.
- Improve family income, the government and other development partners should design medium and long term plans to increase the income of women. And also they should create employment opportunity for women.
- In the light of the study results, men are the secrete ingredients and the future PMTCT programs should give emphasis on involvement of male partners.

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ANNEX I

Structured Questionnaire English Version

Addis Ababa University

College of Development Study

Institute of Population study

Questionnaire on

Determinants of the Utilization of PMTCT Service among Pregnant women in Addis Ababa

Consent form that certify the respondents agreement before the interview

01. Sub City_____

02. Name of the Hospital_____

03. Questionnaire Identification Number _____

Introduction:

My name is _____. I came from_____. I am a member of the research team of the Addis Ababa University. I am interviewing pregnant mothers who follow their antenatal care at..... (Name of the Hospital) about Determinants of the Utilization of PMTCT Service among Pregnant women in Addis Ababa. You are selected to be one of the participants in the study. The information you give us is confidential and will be used only for study purpose. The interview is voluntary and you have the right to participate, or not to participate or to refuse at any time during the interview. Your refusal will not have any effect on services that you or any members of your family receive. However, your participation is important to fulfill the study and design appropriate PMTCT health services for Addis Ababa and other similar setups.

Are you willing to participate in the study?

A. ( ) Yes B. ( ) No

Thank you!!

If the study subject agrees to participate in the study, start the interview.

Interviewer signature certifying that the informed consent has been given verbally.

Name---------- signature----------

Code----------

Date----------month----------2010

Result Completed----------

Respondent not available----------

Partially completed----------

Other (please specify) ----------

Checked by supervisor

Name ----------signature---------- date ----------

Part I. Socio-Demographic Characteristics of Respondents

No.	Question Item	Response		Code No
101	How old are you?	_____Years old		
		don't know		98
102	What is your Religion?	Orthodox		1
		Muslim		2
		Protestant		3
		Catholic		4
		Others		99
		_____(Specify)		
103	To which ethnic group do you belong?	Oromo		1
		Amhara		2
		Tigre		3
		Gurage		4
		Other		99
		_____(Specify)		
104	What was the highest grade you have completed?	**WIFE**	**HUSBAND**	
		No formal education	No formal education	1
		Primary (grade 1-8) education	Primary (grade 1-8) education	2
		High school (grade 9-12) and education	High school (grade 9-12) and education	3

105	What is your occupation?	House wife Civil/Gov't employee Merchant Daily laborer Non gov't/private employee Other (Specify)_____	Jobless Civil/Gov't employee Merchant Daily laborer Non gov't/private employee Other (Specify)_____	1 2 3 4 5 99
106	Family monthly income per month?	_____ ETB Birr per month don't know		 98
107	Current marital status?	Ever Married Never married		1 2
108	Number of parity?	One Two Three and above		1 2 3
109	Number of alive children	None One Two and above		1 2 3

Part II: Knowledge, Perceptions and Attitudes towards HIV/AIDS

No.	Question Item	Response	Code No
201	Do you agree that HIV/AIDS is a curse sent from God rather than it is due to human misbehavior?	Yes No I am not sure don't know	1 2 3 98
202	Do you know how HIV is transmitted?	Yes No(skip to 202)	1 2
203	Can you tell me how HIV is transmitted from one person to another?	Sexual intercourse Getting injections Blood transfusions Mother to child during pregnancy	1 2 3 4

		Mother to child during delivery	5
		Mother to child through breast milk	6
		Others (specify)----------	99
		don't know	98
204	Do you know the methods how to prevent oneself from being infected with HIV?	Abstinence	1
		Faithful one to one relationship	2
		Use of condom what she says	3
		No response	4
		don't know	98
205	Have you ever discussed about HIV/AIDS with husband in the last 12 months?	Yes	1
		No(skip to 206)	2
206	What is the view of your husband regarding HIV screening?	Wants to have couple testing	1
		Wants me to be tested alone, but not himself	2
			3
		Doesn't want me to be tested	4
		Doesn't want to discuss at all	98
		don't know	
207	Do you believe that couples should be screened for HIV before getting married?	Yes	1
		No(skip to 208)	2
208	Where should they be tested preferably?	At ANC clinics (VCT clinics)	1
		At private laboratories	2
		At government laboratories	3
		Others (specify)----------	99
		don't know	98
209	What is community attitude to wards handle people living with HIV/AIDS?	Care for them as any other sick people	
		Outcast	1
		Consider them as people who are cursed & evil	2
		Deprive them of any of the social benefits in the society	3
		Others (specify)----------	99
		don't know	98

Part III: Knowledge, Perception and Attitude of PMTCT

No.	Question Item	Response	Code No
301	How many antenatal care visits do you have in the current pregnancy including today's visit?	One Two and above don't know	1 2 98
302	Are you voluntary for counseling and providing blood sample for HIV testing?	Yes No	1 2
303	Suppose you are HIV + do you come to have follow up counseling?	Yes No Not sure I do not want to respond	1 2 3 99
304	Do you support that pregnant woman screening HIV/AIDS?	Yes No don't know	1 2 98
305	Is your husband willing to accompany you to ANC?	Yes No	1 2
306	Have you ever discussed about HIV/ADIS transmitted to the new born baby during in pregnancy with your husband?	Yes No(skip 309)	1 2
307	Have you ever discussed about PMTCT with your husband in the last 12 months?	Yes No(skip to 309)	1 2
308	What is your Husband's attitude about the utilization of PMTCT service?	Positive Negative	1 2
309	Did you have knowledge about the existence of PMTCT?	Enough Not enough	1 2
310	Where did you hear about PMTCT service?	Friends/Relatives Health institutions Mass media Other(Specify)----------	1 2 3 99

311	Have you ever discussed with your husband about the existence of PMTCT & the possible outcomes of the current pregnancy?	Yes No	1 2
312	Is your husband willing to accompany you take Medication to prevent transmission of HIV to your yet un born?	Yes(skip 312) No	1 2
313	If the response is No, Why Not?	They don't believe that ARV prophylaxis is effective Lack of knowledge Fear of being identified as PLWHA by people Fear of Drug side effect Their husbands were not willing Cultural/religious	1 2 3 4 5 6
314	Do you believe the idea that every HIV positive pregnant woman should be follow PMTCT program?	Yes No	1 2
315	If you were supposed to be tested and result turns out to be positive, would you willing to utilize the Medication to prevent transmission of HIV to your yet un born fetus?	Use(skip 315) Not use	1 2
315	If the response is not use, Why Not?	I don't believe that ARV prophylaxis is effective Lack of knowledge Fear of being identified as PLWHA by people Religious/cultural Other (specify)----------	1 2 3 4 99
316	What is your feeling towards the message conveyed about HIV/AIDS by PMTCT staff?	Appropriate Inappropriate Don't know	1 2 98
317	How do you see the health professions regarding PMTCT service?	Clear Not clear	1 2

Any Additional information you would like to mention with respect to underutilization of PMTCT service by pregnant women. ----------

---

Thank you for your Participation!!

Assurance of Completeness

Certified By (Name)		Completed/Interrupted/ Incomplete	Signature	Date
Interviewer				
Supervisor				

Focus Group Discussions

The focus group discussions cover a range of topics including

1. Can you tell me the benefit of ANC visit and its impact on HIV testing?
2. What is your response about PMTCT and VCT issues?
3. How is your interest about the utilization of PMTCT service and can you tell the importance of PMTCT?
4. Do you think that PMTCT is being utilized by pregnant mother?
   If not, what are the reasons?
5. What is the husband's role on PMTCT program?

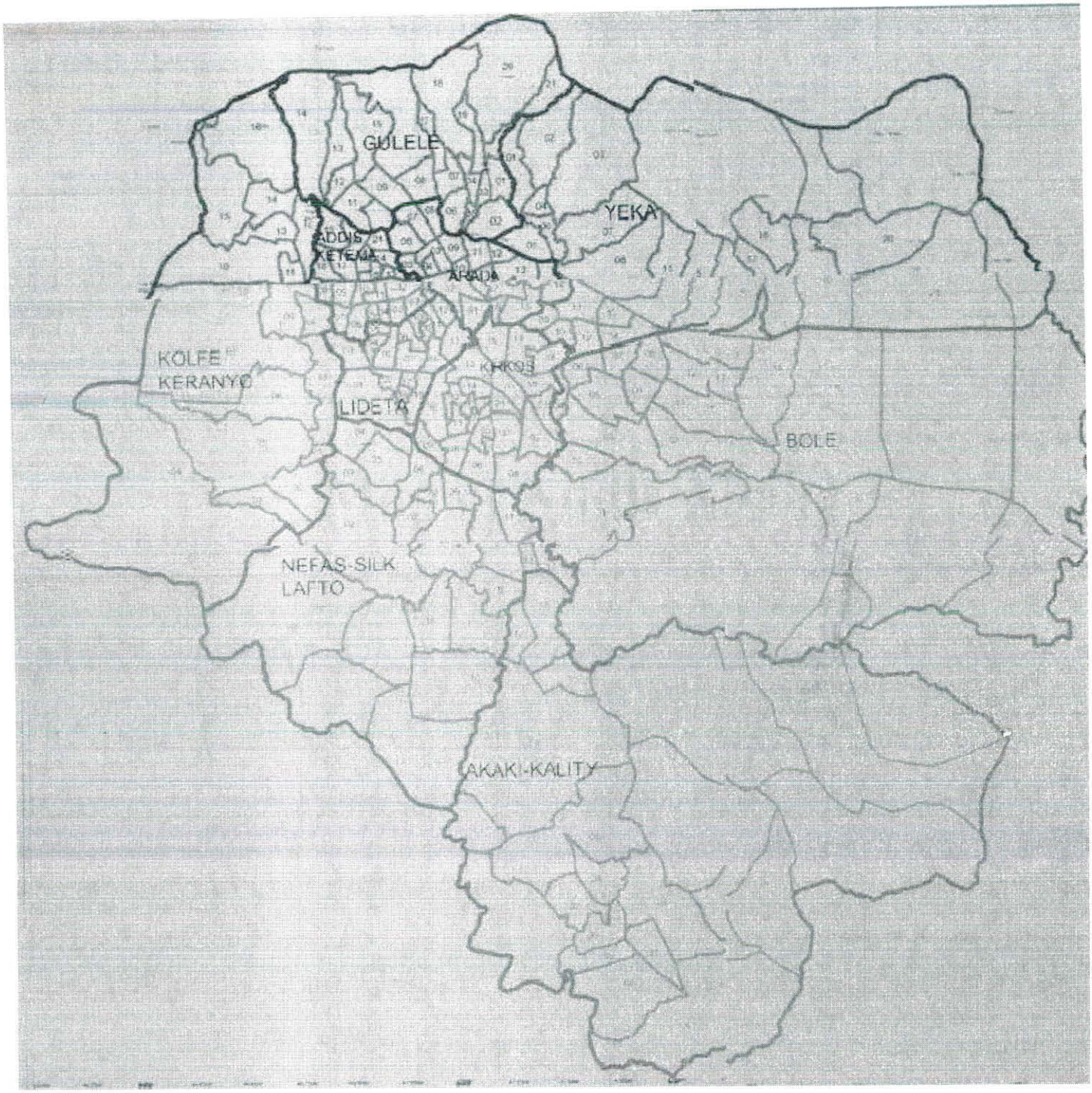
In-depth interview

In depth interview guide for key informant (health worker)

1. What do you know a pregnant women can benefit from VCT?
2. How is the trend of pregnant women utilization of PMTCT?
3. What do you think is the reason that many women do not willing to utilize the PMTCT service?
4. In your hospital what is the role of male partners in ANC/HIV counseling and testing?
   a. Going together?
   b. Being counseled and tested together?
   c. Do not participate?
5. How should male partners participate in ANC/PMTCT and HIV test with pregnant women?

ANNEX III

Map of Addis Ababa



Declaration

The thesis is my original work, has not been presented for a degree in any other university and that all sources of material used for the thesis have been duly acknowledged.

Tsion Shiferaw	[signature]	July 11, 2010
Student	Signature	Date

I confirm that this thesis has been submitted with my approval as the supervisor of the same.

Advisor	Signature	Date