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Prevalence and Determinants of Acceptance of HIV testing among Pregnant Mothers at Antenatal care Settings of Selected Health centers in Addis Ababa.

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A Thesis Submitted to the School of Graduate Studies of Addis Ababa University in Partial Fulfillment of the Requirements for the Degree of Master′s in Public Health in the Department of Community Health.

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Declaration

I the undersigned declared that this is my original work, this has not been presented for a degree in this or any other university that all resources of materials used for this has been fully acknowledged.

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Signature……..

This has been submitted for examination with my approval as a university advisor

Name Fikre Enquselassie

Signature……

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Abbreviations

AAU	Addis Ababa University
AIDS	Acquired Immuno Deficiency Syndrome
ANC	Antenatal Care
ARV	Anti Retroviral Drugs
BSS	Behavioral Survey surveillance
CI	Confidence Interval
CSA	Central Statistics Authority
DCH	Department of Community Health
FHAPCO	Federal HIV/AIDS Prevention and Control Office
HIV	Human Immuno Deficiency Virus
ICAP	International Center for AIDS Care & Treatment Programs
MF	Medical Faculty
MOH	Ministry of Health
MTCT	Mother to Child Transmission
NGO	Non Government Organization
OR	Odds Ratio
PLWHA	People Living With HIV/AIDS
SPSS	Statistical Package for Social Sciences
UNAIDS	Joint United Nations program for HIV/AIDS
WHO	World Health Organization

ABSTRACT

Back ground: Globally, an estimated 2.3 million children are living with HIV/AIDS, and 2.1 million of these children are in sub-Saharan Africa at the end of 2005. At the end of 2005, 700,000 new infection and 570,000 new deaths occur in children < 15 years of age. MTCT accounts for more than 90% of HIV in children. Prevention of mother-to-child transmission (PMTCT) is a commonly used term for programs and interventions designed to reduce the risk of mother-to-child transmission of HIV (MTCT). HIV testing and counselling services need to be made available to all women of childbearing age because PMTCT interventions depend upon a woman knowing her HIV status.

Objective: To assess prevalence and determinants of acceptance of HIV testing among pregnant mothers at antenatal care settings of selected health centers in Addis Ababa.

Methods: Institution based quantitative case-control study was conducted in selected 10 health centers in Addis Ababa on 88 cases and 176 controls using a pre tested structured questionnaire and records were reviewed to determine the prevalence of acceptance of HIV test in the selected health centers in the month prior to the study period. In addition focus group discussions were conducted with the clients using semi structured questionnaire.

Results: A total of 264 mothers were interviewed. Among the socio demographic variables, acceptance of HIV test was higher among those with secondary and tertiary education level. Acceptance of HIV test was higher in those pregnant mothers with prior HIV test, more pregnancies, who did not want to consult their husband before HIV test, who did not consider them selves to be at risk of HIV, and who perceive that HIV test is beneficial. It was also higher in those mothers who correctly identify modes of HIV transmission and in those who identify ARVs as a way to prevent MTCT. Otherwise stigmatizing attitudes towards PLWHA were not found to be associated with acceptance of HIV test. Adjusting for socio demographic, Knowledge on HIV, MTCT and PMTCT and reproductive health factors, acceptance of HIV test was found to significantly associated with Knowledge of ARVs(OR=1.953, 95% CI=1.2-3.739), Perceived benefit of HIV test(OR=7.085, 95% CI=2.218-22.62), getting Husbands consent before the test(OR=0.458, 95%CI=0.23-0.916), and number of pregnancies(OR=0.319, 95%CI=0.104-0.98).The prevalence of HIV test among pregnant mothers was >80% and the prevalence of HIV was 7% in the selected health centers.

Conclusion: Previous HIV test, knowledge of ARVs and husband's consent were found to be important factors of acceptance of HIV test. The study gives useful information to health care providers to introduce measures that could improve the utilization of antenatal HIV testing.

1. Introduction

1.1 Back ground Globally, an estimated 2.3 million children are living with HIV/AIDS, and 2.1 million of these children are in sub-Saharan Africa at the end of 2005. At the end of 2005, 700,000 new infection and 570,000 new deaths occur in children below 15 years of age. The transmission of HIV from an infected mother to her child can be prevented almost entirely and has become rare in industrialized countries. However, it still occurs very frequently in developing countries, especially those hardest hit by the AIDS pandemic, where preventive interventions have not yet been implemented on the scale required. The most significant source of HIV infection in children and infants is transmission of HIV from mother to child during pregnancy, childbirth, or breastfeeding (1, 2). Reported transmission rates ranged from 13 to 32% in industrialized countries and from 25 to 48% in developing countries (2).

Of the 100 infants born to HIV infected pregnant or breast feeding women with out ARV prophylaxis, 25 to 40 infants will be HIV infected. Of those infected, 5-10 of infants will be infected during pregnancy, about 15 of them will be infected during labour and delivery and 5-15 of infants will be infected during breast feeding (3). A prospective cohort study conducted in estimating the timing of mother to child transmission of HIV in a breast feeding population in Kinshasa, Zaire found that the estimated risk for intrauterine, intrapartum/early partum and late post partum infection were 6%, 18% and 4% respectively. And a study conducted in Zimbabwe reported that of the 249 infants infected, 89 of them were infected during pregnancy, 104 of them were infected during delivery and early post partum and 21 of them were infected during late post partum period. This shows the significant transmission during intrapartum and early post partum period (4, 5).

Southern Africa remains to be the epicentre of the global HIV epidemic. About 32% of people with HIV globally live in this sub region and 34% of AIDS deaths globally occur here. The only declining evidence comes from Zimbabwe: the sero prevalence among pregnant mothers has declined from 30-32% in 2000 to 24% in 2004.The sero prevalence of HIV among ANC attendees in Swaziland has increased from 3.9% in 1992 to 39% in 2004 and the sero prevalence of HIV in South Africa among ANC attendees has increased from 22.4% in 1998 to 30.2%in 2005 (6).

The general trends of stabilizing or declining HIV prevalence appear to be continuing in East Africa. The sero prevalence of HIV among ANC attendees in Tanzania has decreased from 14% in 1995 to 11% in 2003. And there is also a decline in HIV prevalence in Kenya and Uganda among pregnant mothers even though there is a possible erosion of the gains made by Uganda in the 1990s (6).

The national HIV prevalence of Ethiopia in 2005 was 3.5% overall; 3 % among males and 4% among females. In 2005, it was estimated that a total of 1,320,000 people were living with HIV/AIDS. It was estimated that in 2005, a total of 137,500 new AIDS cases, 128, 900 new HIV infections (353 a day) including 30,300 HIV positive births, and 134,500 (368 a day) AIDS deaths (including 20,900 in children [<15 years]) occurred. In 2005, it was estimated that there were a total of 744,100 AIDS orphans ages 0-17. The unadjusted prevalence of HIV in 2005 among ANC attendees was 5.3%. The highest prevalence was recorded at the urban sites (12% in 2003 and 9.5% in 2005) (7, 8). The 2005 EDHS data indicated an adult HIV prevalence of 1.4% (9).

The prevalence of HIV among ANC attendees in Addis Ababa was 17.3% in 1997, 15.2% in 1999, 13.2% in 2001 and 12.4% in 2003. All the above findings were from four health centers which serve as sentinel sites from 1997 to 2003 on continuous basis. In 2005, the prevalence of HIV among ANC attendees at Federal Police Hospital in Addis Ababa was 24.8%. This was the highest of all the prevalence recorded in the available sentinel sites in the country (7).

The Annual report of the Ministry of Health of Ethiopia for the year 2005/2006 also indicated that a total of 91674 pregnant women were given pre test counselling 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. In Addis Ababa in the same year, 28649 women were given pretest counselling and 19541 of them were tested for HIV, and 1834(9.4%) tested HIV positive. Of those HIV positive, 1207(65.8%) of the pregnant women and 715 of their infants received nevirapine for PMTCT (7).

Prevention of mother-to-child transmission (PMTCT) is a commonly used term for programs and interventions designed to reduce the risk of mother-to-child transmission of HIV (MTCT). HIV testing and counselling services need to be made available to all women of childbearing age because PMTCT interventions depend upon a woman knowing her HIV status (3). The HIV test offered to pregnant mothers at antenatal clinics is routine offer and provider initiated for the purpose of providing PMTCT for those who are HIV positive but the client should be offered the opportunity to refuse or "opt-out" of the test (10).

Voluntary Confidential Counselling and Testing (VCCT) in antenatal care of pregnant women should include routine VCT as an essential element of the management of HIV in pregnancy with, of course, an informed right of refusal. In the event the woman refuses the test, she should be given the benefit of repeated VCT throughout pregnancy. When a woman is found to be infected, this knowledge can facilitate early counselling and treatment and educating and counselling HIV-negative pregnant women about HIV infection helps them remain uninfected (3).

The majority of respondents of BSS 2002 Ethiopia (over 76%) reported that they would be willing to under go VCT in the near future even though less than 11% of them have ever been tested and other studies conducted at Arbaminch hospital among pregnant women and in North west Ethiopia among the community in 2003 found that more than 70% of them were willing to be tested for HIV even though only <10% of them were tested for HIV and the availability of VCT services was found to be scarce(11,12,13). This was also seen in other studies conducted in Nigeria and Uganda in 2003 among pregnant mothers where most of them were found to be willing to be tested for HIV and VCT services were found to scarce(14, 15). Other studies conducted in Zimbabwe from 2001 to 2003, in Malawi from 2002 to 2003 and in Barbados in 2002 among pregnant women found that more than 70% of the pregnant mothers counselled for HIV were tested for HIV (16, 17, and 18). But in Ethiopia only 57% of pregnant mothers were tested for HIV in 2005 (7).

1.2 Rationale of the study

The studies conducted in Ethiopia so far focused only on willingness of pregnant mothers to accept HIV test except the study conducted at Army Hospital in Ethiopia, 2005. Studies have shown that more than 90% of pregnant mothers are willing to undergo HIV test. But those who undergo the test are between 50-60% according to the 6th report of AIDS in Ethiopia. Further studies on determinants of acceptance are necessary so as to increase the utilization of PMTCT. Most studies conducted did not include some important factors such as husbands consent before undergoing HIV test and stigmatizing attitudes towards PLWHA which will determine acceptance of HIV test among pregnant mothers. This will help to design programmes which will increase the acceptance of HIV test.

2. Literature Review

2.1 Knowledge, Attitude (willingness) and Practice on PMTCT and VCT

Voluntary Confidential Counselling and Testing (VCCT) in antenatal care of pregnant women should include routine VCT as an essential element of the management of HIV in pregnancy with, of course, an informed right of refusal. In the event the woman refuses the test, she should be given the benefit of repeated VCT throughout pregnancy. When a woman is found to be infected, this knowledge can facilitate early counselling and treatment and educating and counselling HIV-negative pregnant women about HIV infection helps them remain uninfected (3).

Prevention of mother-to-child transmission (PMTCT) is a commonly used term for programs and interventions designed to reduce the risk of mother-to-child transmission of HIV (MTCT). HIV testing and counselling services need to be made available to all women of childbearing age because PMTCT interventions depend upon a woman knowing her HIV status (3). The HIV test offered to pregnant mothers at antenatal clinics is routine offer and provider initiated for the purpose of providing PMTCT for those who are HIV positive but the client should be offered the opportunity to refuse or "opt-out" of the test (10).

The United Nations agencies recommend a three-pronged strategy to prevent transmission of HIV to infants:

- Primary prevention of HIV among parents-to-be
- Prevention of unwanted pregnancies among HIV-infected women
- Prevention of HIV transmission from HIV-infected women to their infants through the provision of antiretroviral drugs to HIV-infected pregnant women and their infants, safe delivery practices, and counselling and support for safer infant feeding practices (2).

Prophylactic use of an antiretroviral regimen is just one component of an MTCT prevention programme .While the focus on the use of such regimens increases public awareness that transmission of HIV to infants can be prevented and provides a catalyst to action; the other components should not be neglected.

MTCT-prevention programmes are often limited to interventions delivered to HIV-infected women during pregnancy and around the time of delivery. A significant and sustainable impact will only be achieved when all components of the comprehensive programme are in place and functioning. Furthermore, many of these other components are themselves key strategies in the broader HIV prevention effort (2).

Primary prevention of HIV infection among future parents and avoidance of unwanted pregnancies among women infected with HIV are fundamental long term strategies in the prevention of transmission of HIV to infants. However, many HIV-infected women become pregnant and others may acquire HIV infection during pregnancy. The use of antiretroviral drugs during pregnancy and delivery has been shown to be effective in reducing the transmission of HIV from mothers to infants (2).

With out intervention 40% of infants born to HIV infected mothers and breastfed become HIV infected. ARV prophylaxis can reduce MTCT by 40-70%. The impact is greater (closer

to 70%) when women do not breastfeed, because current ARV prophylaxis regimens only prevent HIV transmission during the early breastfeeding period. Studies are ongoing to determine whether ARV prophylaxis for mother or child during breastfeeding can help reduce the risk of HIV transmission during that period (3).

Cross sectional studies conducted at Arbaminch hospital in Ethiopia among 484 pregnant mothers and a community based cross sectional study conducted in North West Ethiopia among 992 women of child bearing age in 2003 found that the majority of the participants (>70%) were willing to accept HIV test, PMTCT interventions if offered and the modes of HIV transmission were well known to them except that some of participants in North West Ethiopia were not sure whether condom could prevent HIV transmission (12, 13). Similar findings were reported in studies from Uganda & Nigeria in 2003 (14, 15).

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This was also seen in other studies conducted in Nigeria and Uganda in 2003 among pregnant mothers where most of them were found to be willing to be tested for HIV and VCT services were found to scarce (14, 15). Other studies conducted in Zimbabwe from 2001 to 2003, in Malawi from 2002 to 2003 and in Barbados in 2002 among pregnant women found that more than 70% of the pregnant mothers counselled for HIV were tested for HIV (16, 17, and 18). But in Ethiopia only 57% of pregnant mothers were tested for HIV in 2005 (7).

2.2 Factors Influencing Acceptance of HIV Test

Cross sectional studies conducted at Arbaminch hospital in Ethiopia among 484 pregnant mothers and a community based cross sectional study conducted in North West Ethiopia, among 992 women of child bearing age in 2003 found that the majority of the participants (>70%) were willing to accept HIV test, PMTCT interventions if offered and the modes of

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The willingness for VCT was higher among urban residents than rural residents in the community based study conducted in North West Ethiopia but it was almost comparable in the study conducted in Uganda among pregnant mothers (13, 15). The use of ARV prophylaxis was not known to 386(80%) of the mothers at Arbaminch Hospital and it was reported as poor in the study conducted in Nigeria among pregnant mothers (12, 14). The EDHS 2005 found that only slightly more than one-fifth of women knew that the risk of MTCT can be reduced by ARV. Studies in Ethiopia and Nigeria found that more than 90% of the study participants did not know their HIV status even though they were willing to undergo HIV test in the near future (11, 12, 14).

Post-primary education was consistently found to be significant predictor of willingness and acceptance of HIV test in the studies conducted in rural and urban Uganda and in Ethiopia (14, 22). But it was not found to be significant predictor of acceptance in the studies conducted in Nigeria and in Zambia (15, 23). Another study conducted in Tanzania reported that women with higher educational status were less likely to accept HIV test (24). Besides Educational status was found to be highly associated with knowledge of ARV and self perception of being at risk of HIV in the studies conducted in Nigeria and in Ethiopia (15, 22).

Previous HIV test and frequent antenatal visits were found to be higher among those women who have accepted HIV test in the case control study conducted in Army Hospital in Ethiopia (22). A study conducted in Zambia showed that pregnant mothers seeking antenatal care in local clinics, and seen before the third trimester of pregnancy were more likely to request HIV testing than their counter parts (23).But these were not found to be significant in other studies conducted in Burkina Faso and Barbados which included them as variables of interest (25, 18). Number of pregnancies, presence of dead children and abortions were found to be associated with acceptance of HIV test in the Burkina Faso study (25).

Almost in all studies age, marital status and residence were not found to be significant predictors of willingness/acceptance of HIV test except in Burkina Faso study where old age was found to be associated with acceptance of HIV test (23). Husband approval of HIV test was found to be strong predictor of willingness of HIV test in the Uganda study and consulting husband/partner was found to be the reason why women fail to undergo HIV test in the Zimbabwe study (15, 16).

Stigma and discrimination remain to be key barriers to the successful implementation of prevention, treatment and support programmes. Stigma is especially serious obstacle to the success of HIV prevention programmes, including services for vulnerable populations and for preventing mother-to-child transmission. According to civil society reports from over 30 countries, stigma and discrimination against people living with HIV remains widely pervasive(1).

BSS Ethiopia 2002 found that majority of respondents showed at least one stigmatizing attitude to PLWHA. Study conducted in North Gondar among tuberculosis patients in 2003 found that stigmatizing attitude to PLWHA was significantly associated with willingness to have VCT and another study conducted in Harar in the community in 1999 found that fear of positive result and stigma attached to AIDS in the public were reasons for not undergoing VCT (26, 27).

2.4 Type of HIV testing Services and their availability

UNAIDS and WHO recommend the following types of HIV testing:-

1) **Voluntary counselling and testing**

Client-initiated HIV testing to learn HIV status provided through voluntary counselling

2) **Diagnostic HIV testing** is indicated whenever a person shows signs or Symptoms that are consistent with HIV-related disease or AIDS to aid clinical diagnosis and management. .
3) **A routine offer of HIV testing by health care providers** should be made to all patients being seen in the context of pregnancy - to facilitate an offer of antiretroviral prophylaxis for prevention of mother-to-child transmission and in STI clinics (28).

In 2005, 9% of pregnant women in low- and middle-income countries were offered services to prevent transmission to their newborns—a modest increase over the 7.6% coverage in 2003. The global target was 80% for 2005. But no country has reached this target (1). In 2001, approximately 30% of infants were infected. There has been an estimated 10% reduction in HIV transmission between 2001 and 2005. The global target is 20% reduction but only 11 of the most affected countries have achieved this target (1).

Ethiopia's national PMTCT program was launched in 2003. The 12 PMTCT sites in 2002/2003 grew to 37 by 2003/2004 and to 72 by 2004/2005 and currently provide single-dose Nevirapine to women and infants at 136 sites (55 hospitals and 81 health centers) in the public sector. The number of PMTCT centers has reached 168(66 hospitals and 102 health centers) by 2006/2007.
Because of concerns that PMTCT services are not widely available, the issue was a focus of the situational analysis. The situational analysis done by MOH and ICAP-Ethiopia on December 2005 found that, on average, 39% of pregnant women were tested for HIV (range of 7-92%) at the 15 PMTCT facilities visited (21).

Despite progress, numbers reached by the PMTCT services fall dramatically short of national targets i.e. (80%), posing a formidable challenge to the goal of preventing mother-to-child transmission of HIV and to identifying HIV-exposed and HIV-infected infants in the antenatal care settings and there are 658 VCT centers all over the country in 2005 (21).. But ANC coverage is only 28 %(EDHS 2005 report) and the numbers of VCT and PMTCT centers are not adequate.

2.4 The Theory and Methodological Aspects of Case Control Study

Case controls studies are observational studies that provide a research method for investigating factors that may prevent or cause disease. Basically the method involves the comparison of patients with a group of controls that consists of persons who are free of the disease under study. The comparison is aimed at discovering factors that may differ in the two groups and explain the occurrence of disease in patients (cases). A control group is used to compare the history of exposure in cases with that in individuals who are free of the disease. There is no control group that is optimal for all situations. Selection of controls should consider besides comparability, practicability and economic impact (19, 20).

Case control studies are commonly used in rare diseases and in diseases with long incubation period. But it is also possible to assess exposure to factors which are determinants in accepting or denying interventions offered to group of people. These pregnant mothers are cohorts who are attending ANC. Hence it is possible to do a nested case control study by looking at the outcomes of pretest counselling. In this case HIV testing which is offered to pregnant mothers at ANC settings is accepted by some of them and not accepted by others. This discrepancy may arise from prior exposure to factors which determine acceptance of HIV test. The definition of cases is critical in case control studies. It involves two distinct specifications: 1) establishment of objective criteria for the diagnosis of the study disease (condition) and 2) a statement of eligibility criteria for the selection of individuals for study (19, 20).

3. Objectives

3.1 General Objective

To assess the prevalence and determinants of acceptance of HIV testing among pregnant mothers at antenatal care settings.

3.2 Specific objectives

1. To assess the socio-demographic determinants of acceptance of HIV test between acceptors and non-acceptors.
2. To assess the knowledge on HIV transmission, prevention, PMTCT and stigmatizing attitude towards PLWHA between acceptors and non-acceptors.
3. To assess reproductive health and related factors of determinants of acceptance of HIV test between acceptors and non-acceptors.

4. METHODS

4.1 Study Site and Design

The study was conducted in the capital city of Ethiopia, Addis Ababa from December 2006-Janurary 2007. Over 3 million people live in the city. The city is divided into 10 administrative sub cities. There are 24 health centers in the city. All of the health centers provide PMTCT service. The PMTCT service was launched in 2003 in some health centers and currently all of the health centers are providing the service. A case control study was conducted in the selected ten health centers located in the capital Addis Ababa which serve the general population. One health center was selected from each sub city randomly to represent each sub city making the number of the selected health centers ten. Only one health center was present in Kolfe-Keranio Sub city. Hence it was taken and studied.

Cases were all pregnant women attending antenatal clinic in the selected ten health centers who refuse to accept the offer to undergo HIV test prior to the study period and during the study period. Controls were all pregnant mothers who were attending antenatal clinic who accept HIV testing prior to the study period and during the study period. Pregnant women below the age of 18 years old and those who were unable to communicate for different reasons were excluded from the study.

4.2. Study Population

4.2.1 Source Population

The source population was all pregnant mothers who attended antenatal clinics of the selected ten health centers in the period December 2006-January 2007.

4.2.2 Sample size

Sample size was determined using the formula for the difference between population proportions as shown below. In this study educational status was the variable used to calculate the sample size with an estimated exposure of secondary and tertiary level of education 40% among cases and 60% among controls with 5% marginal error and 95% confidence interval, and 80% power. Two controls were taken for each case to increase the power of the study. This proportion was taken based the prevalence of acceptance of HIV test in the selected ten health centers. The prevalence of acceptance of HIV test in the selected ten health centers was more than 80%. A total of 88 cases and 176 controls were studied.

Formula for sample size calculation: -

$$n \text{ (each group)} = \frac{(P_1(1-P_1) + P_2(1-P_2))(Z\alpha + Z\beta)^2}{(P_1-P_2)^2}$$

In which: P_1= the proportion of exposure among cases (0.4)

P_2 = the proportion of exposure among controls (0.6)

Z_1-$\alpha/2$= value of standard normal distribution corresponding to a significance level of alpha (1.96 for a two-sided test at the 0.05 level)

Z_1-$\beta/2$= value of standard normal distribution corresponding to the desired level of power (0.84 for a power of 80%)

4.2.3 Sampling Procedure

The total sample was allocated to each health center based on the number of client flow at ANC clinic of each health center. Total of 264 mothers were interviewed using structured questionnaire. Study subjects were identified based on the information obtained from the client card whether they were tested for HIV or not. Cases were selected consecutively and two controls were selected immediately after one case was identified and interviewed.

4.3. Data Collection Methods

4.3.1. Data collection tools

A structured questionnaire prepared in English and translated into Amharic language was the tool used for data collection. The variables in the questionnaire were adapted from previous studies and by consultation with individuals.

The variables included in this study were:-

1. Socio- demographic variables.
2. Knowledge about modes of HIV transmission, prevention, MTCT and PMTCT.
3. Stigmatizing attitude towards PLWHA.
4. Reproductive health and related factors.

Socio demographic variables, number of pregnancies and frequency of ANC visits were taken as distant determinant factors while knowledge variables, perceived benefit of HIV testing and PMTCT, prior HIV testing and knowledge of existence of PMTCT service, consulting husband before testing and stigmatizing attitude to PLWHA were considered as proximate determinant factors.

Reproductive health and related factors refers to obstetric factors (i.e. number of pregnancies and ANC visits), perception of risk of HIV, benefit of being tested for HIV, existence of intervention to prevent MTC and husband's involvement in decision making for HIV testing.

Data collectors were nurses who were working at antenatal care clinic and labour wards of the selected health centers. They were selected in collaboration with the head of the health center and Metron. Two nurses were selected from each health center for this purpose. Additionally, one health officer and a senior nurse were used as supervisors for all the selected health centers. The data collectors and supervisors were trained by the principal investigator for two days. The training was conducted in the respective health centers in the afternoons during working days. The training focused on selection of cases and controls, on confidentiality of information, informed consent and the contents of the questionnaire in detail. Further training was given for supervisors on data quality management.

The questionnaire was pre tested on 20 pregnant mothers by the principal investigator at ANC settings of one of health center which was not part of the main study. There was no difficulty

faced by the respondents in understanding the questions present on the questionnaire. The pre tested questionnaire was used for the actual data collection with out any major change.

4.3.2 Data Collection Procedures

Clients were identified as cases and controls after reviewing the information found on the card. The clients were then asked whether they are voluntary to undergo interview. Informed consent was obtained from each participant. Those respondents who were willing to undergo the interview were interviewed using the structured questionnaire. They were interviewed in the room found next to ANC room after a woman completed the antenatal follow up examination.

4.3.3 Variables

The dependent Variable in this study was acceptance of HIV test and the independent variables were: - 1. Socio- demographic variables.

2. Knowledge about modes of HIV transmission, prevention, MTCT and PMTCT.
3. Stigmatizing attitude towards PLWHA.
4. Reproductive health and related factors

Operational Definitions

1. Acceptors (controls): those pregnant mothers who are offered HIV test by the counsellor and OPT IN (accept) the offer to be tested and get tested after full pretest information is provided.
2. Non-Acceptors (cases): those pregnant mothers who are offered HIV test by the counsellor and OPT OUT (decline) the offer to be tested.
3. Living Together : Pregnant mothers marital status is considered as living together if they are not married legally either through religious institutions or City Municipality but living together in the same house.

4.4. Data Quality Control

A structured questionnaire prepared in English and translated into Amharic language was translated back to English by another person to ensure consistency. Then the prepared

questionnaire was first pretested at another health center by the principal investigator. This gave invaluable chance for the investigator to make changes on the questions which were difficult to be understood by the clients during the interview. Hence, this contributed a lot in making the actual face to face interview with clients smooth.

The principal investigator with two other supervisors supervised the actual data collection procedure by data collectors and met frequently with the data collectors to share the problems they face while collecting data. If there were problems encountered, then these were solved by the principal investigator after discussing with the appropriate personnel in the antenatal care setting. The actual filled questionnaires were checked for their completeness. Besides, data was double-entered and compared later to see their similarity. This process helped in maintaining the quality of the data before it was entered and analyzed.

4.5. Data Processing and analysis

The collected quantitative data was first checked for its completeness and then Data was cleaned, entered, and analyzed using SPSS version 11. First, Frequency of all the variables in the questionnaire was run for acceptors and non-acceptors. These include socio demographic characteristics variables, knowledge of HIV and PMTCT variables, reproductive health and related factor variables and stigmatizing attitude towards people living with HIV variables.
Secondly, cross tabulation (univariate analysis) was done between each of the variables and the outcome variable i.e. acceptance of HIV test. Their significance was seen using the chi-square test, and odds ratio with 95% CI was calculated. For those independent variables with more than one category, the last category was taken as a reference and odds ratio and 95% CI was calculated between each of the remaining categories and the reference category.

And finally multivariate analysis was done using the logistic regression model. Only those variables which were found to be statistically significant in the univariate analysis were included in the model. Adjusted odds ratio and 95% confidence interval was calculated for the variables included in the model.

4.6. Qualitative Data Collection Method

Focus group discussions were conducted with selected clients from the selected health centers using a semi structured questionnaire. The semi structured questionnaire prepared in English and translated to Amharic was used for FGD. The FGDs were conducted in the respective health centers auditorium after full permission was secured from the heads of the health centers. The clients were those pregnant mothers who have participated in the quantitative study and composed of both cases and controls. A maximum of 7-10 participants were recruited for each FGD of which 3-4 were cases and the rest were controls. The health centers for FGD were selected purposively from the total of ten health centers included in the study.

Only those pregnant mothers who were willing to participate in the study after informed consent were included in the study. Appropriate time for the FGD was set after discussing with the clients and the data collectors. A total of five FGDs were conducted with clients. It was then discontinued since it was saturated. The principal investigator led FGD discussions and the points raised by the participants were recorded by a tape recorder. This was then transcribed into Amharic and then translated into English. The semi structured questionnaire served as a guide to focus on important topics that should be addressed during the FGD. It focused on the following points:

1. Knowledge about HIV, MTCT and PMTCT
2. Barriers to HIV testing and factors motivating factors to be tested for HIV
3. Quality of counselling service given to them and benefit of HIV testing
4. Benefit of frequent ANC visits and attitude towards people living with HIV.
5. Knowledge of existence of PMTCT service, adequacy of information provided during counselling and its impact on HIV testing

The findings from the FGD were documented properly on the date of interview. They were checked for agreements and differences. The findings were cross checked with the findings of the quantitative study to see agreements and differences between the two. Lastly, important findings of the FGD are included as points of discussion and recommendation. Records at PMTCT counseling room of each health center were reviewed by the principal investigator to determine the prevalence of acceptance of HIV test at each health center in the month prior to the data collection (i.e. November 2006)

4.7. Ethical issues

Ethical clearance was obtained from Addis Ababa University Medical faculty and permission was obtained from Addis Ababa City administration Health bureau and each of the selected health centers. During the interview each participant was informed about the aim of the study, the interviewer discussed the issue of confidentiality and requested for verbal consent before the actual interview was started. Participants were informed that they have full right to refuse or discontinue participating in the research with out any compromise in the service they get from the respective facilities. For these purposes a one page consent letter was attached as a cover page to each questionnaire. Confidentiality of the information was kept by conducting the interview privately in a single room. In addition the names of the study subjects were not included in the questionnaire. This had address somehow concern of confidentiality of the study subjects.

5. Results

5.1. Description of the source population

In 2006/2007, 64,998 pregnant women were expected to attend ANC and post natal care in Addis Ababa. A total of 49,727 pregnant women have attended ANC and post natal care until the end of February 2007(76% of planned for the year). This shows that it is going as planned. In the same year, it is planned to give pretest counseling for 24,455 pregnant mothers. Till the end of February 2007, pretest counseling is given for 16,110 pregnant mothers (66% of planned for the year). This some what below the level planned to be achieved i.e. 75%.

As shown below in Table 1, a total of 1046 pregnant mothers were given pretest counseling on the month prior to data collection (NOVEMBER 2006) in the selected ten health centers. The lowest numbers of pregnant mothers were seen at Kasanchis health center and the highest numbers of them were seen at Bole health center. The average was 105 and the median was 99. A total of 935(89%) accepted HIV test (ranging from 81%-94%). The proportion of non acceptance of HIV test was 11% (ranging from 5.1%-18.5%). Of those tested for HIV, the mean prevalence of HIV was 7% (ranging from 3%- 11.3%) (Table 1)

TABLE 1. Prevalence of HIV testing among attentendants of ANC and post natal care in the selected ten health centers November 2006

Name of Health Center	Pregnant Mothers Counseled for HIV test	Counseled and tested for HIV (Acceptors) No (%)	Pregnant Mothers who are HIV positive No (%)
1. Bole Health Center	198	188(94.9%)	13(6.9%)
2. Kasanchis Health Center	49	44(90%)	5(11.3)
3. Gulele Health Center	95	84(88.4%)	6(7%)
4. Selam Health Center	67	59(88%)	5(8.5%)
5. Addis Ketema Health Center	146	119(81.5%)	5(4.2%)
6. Kolfe Health Center	77	69(89.6%)	4(5.8%)
7. Kaliti Health Center	103	91(88.3%)	8(8.8%)
8. Lideta Health Center	52	44(84.6%)	4(9%)
9. Kotebe Health Center	120	109(90.8%)	6(5.5%)
10.Wereda 23 Health Center No2	139	128(92%)	4(3%)
Total	1046	935(89%)	65(7%)

5.2 Description of the study population

A total of 264 pregnant mothers were interviewed in the selected health centers using a structured questionnaire. Of these 88 of them were cases and 176 of them were controls. As shown below in Table 2, almost half of the non-acceptors and acceptors were between 19-24 years of age. The second majority were between 25-29 years of age. The median age for non-acceptors and acceptors was 25.2 years and 23.9 years respectively. About 70% of both non-acceptors and acceptors were found to be followers of Orthodox Christian religion and almost 20% of them were Muslims. Majority of the study subjects were married (86.3% of non-

acceptors and 91.5% of acceptors). Almost half of the respondents were house wives by occupation (56.8% of non-acceptors and 57.4% of acceptors). About 24% of the respondents were government and NGO employees. About 36.4% of non-acceptors and 53.9% of acceptors were having secondary and tertiary level of education at the time of the interview. The rest were illiterate and at primary education level. More than half of the respondents were having income of <450 Birr per month.

As shown below in Table 2, acceptance of HIV test was slightly higher in the older age group compared to age group 19-24, 25-29 and 30-34 but it was not statistically significant. Married women accept HIV test almost two times than single women (OR=1.73, 95%CI=0.69-4.36) even though it was not statistically significant. Acceptance of HIV test was slightly lower among orthodox religion followers as compared to Protestants even though it was not statistically significant.

Acceptance of HIV test was higher among housewives, students, and merchants as compared to government and NGO employees even though it was not statistically significant. Those women with tertiary level of education were 3 times more likely to accept HIV test in the current pregnancy compared to illiterate ones (OR=3.1, 95%CI=1.28-7.45) and those women with secondary level of education were 2.5 times more likely to accept HIV test in the current pregnancy compared to illiterate ones (OR=2.45, 95%CI=1.15-5.23). It was also higher in those with primary level of education even though it was not statistically significant. Acceptance of HIV test was lower in those women with monthly income of ≤450 Birr as compared to those with monthly income of >450 Birr. But it was not statistically significant.

Table 2. Socio-Demographic Characteristics associated with acceptance of HIV testing among pregnant mothers attending ANC in the selected ten health centers in Addis Ababa, 2006/7.

Variables	Acceptors (n=176) No (%)	Non acceptors (n=88) No (%)	OR	95%CI
Age				

19-24	89(50.5%)	40(45.5%)	0.98	0.28-3.40
25-29	60(34.2%)	32(36.4%)	0.83	0.24-2.91
30-34	18(10.2%)	12(13.6%)	0.67	0.16-2.67
35-39	9(5.1%)	4(4.5%)	1.00	
Religion				
Orthodox	123(69.8%)	63(71.5%)	0.78	0.29-2.11
Muslim	38(21.5%)	19(21.5%)	0.80	0.27-2.39
Protestant	15(8.7%)	6(7%)	1.00	
Marital Status				
Married	161(91.5%)	76(86.3%)	1.73	0.69-4.36
Single	15(8.5%)	12(13.7%)	1.00	
Occupation				
Merchant	19(10.8%)	5(5.6%)	2.34	0.77-7.08
House wife	101(57.4%)	50(56.9%)	1.24	0.67-2.29
Student	17(9.6%)	9(10.2%)	1.16	0.44-3.02
Govt & NGO	39(22.2%)	24(27.3%)	1.00	
Educational Status				
Tertiary	37(22.1%)	11(12.6%)	3.10	1.28-7.45
Primary	58(32.9%)	33(37.5%)	1.62	0.79-3.28
Secondary	56(31.8%)	21(23.8%)	2.45	1.15-5.23
Illiterate	25(14.2%)	23(26.1%)	1.00	
Monthly Income				
≤ 450 Birr	99(56.3%)	56(63.6%)	0.73	0.43-1.24
> 450 Birr	77(43.7%)	32(36.4%)	1.00	

As shown in Table 3, 44.3% of non-acceptor and 49.4% of acceptors and 52.3% of non-acceptors were having their first pregnancy and 52.3% of non-acceptors and 44.3% of acceptors were coming for their first antenatal care visit. About 77.3% of non acceptors and 61.4% of acceptors respectively had discussed with their husbands before undergoing HIV test. Only 38.6% of non-acceptors and 26.7% of acceptors respectively perceived that they are at risk of acquiring HIV. Only 45.5% of non-acceptors and 67.6% of acceptors have

undergone previous HIV test. Of those having previous HIV test, 80% of them undergone the test voluntarily and the rest were requested to undergo the test by a professional. Almost 70% of acceptors and non-acceptors know the existence of PMTCT service before they come to the health center. About 77% of non acceptors and 96.6% of acceptors believed that it is useful to undergo HIV test

Acceptance of HIV test was found to be 3 times more in those pregnant mothers with third pregnancy as compared to those with fourth and more pregnancies but it was not found to be statistically significant (OR=3.51, 95%CI=1.11-11.08). Acceptance of HIV test was slightly lower among those respondents with one ANC visit as compared to those with two or more visits. But it was not found to be statistically significant. The odds of accepting HIV test was lower by 53% for those women who need to consult their husbands for HIV test in the current pregnancy compared to their counter parts (OR=0.47, 95%CI=0.26-0.84). Women who perceive them selves as being at risk of HIV were found to have lower rate of acceptance of HIV test in the current pregnancy as compared to their counter parts (OR=0.58, 95%CI=0.34-0.99).

Acceptance of HIV test was found to be 2.5 more in those women with previous HIV test than their counter parts (OR=2.51, 95%CI=1.48-4.24). Acceptance of HIV test was found to be slightly higher in those pregnant mothers who knew the existence of PMTCT service even though it was not statistically significant. Acceptance of HIV test was 8 times more in those women who believed that undergoing HIV test is beneficial as compared to their counter parts (OR=8.33, 95%CI=3.21-21.6).

Table 3. Reproductive Health and Related factors associated with acceptance of HIV testing among pregnant mothers attending ANC in the selected 10 health centers in Addis Ababa, 2006/7

Variables	Acceptors (n=176)	Non acceptors (n=88)	OR 95%CI

	No (%)	No (%)		
No of Pregnancy				
One	87(49.4%)	39(44.3%)	1.17	0.50-2.76
Two	30(17.0%)	33(37.5%)	0.48	0.19-1.19
Three	40(22.70%)	6(6.8%)	3.51	1.11-11.08
Four and above	19(10.9%)	10(11.4%)	1.00	
No of ANC visits				
Once	78(44.3%)	46(52.3%)	0.73	0.44-1.21
Two or more	98(55.7%)	42(47.7%)	1.00	
Consulting husband				
Yes	108(61.4%)	68(77.3%)	0.47	0.26-0.84
No	68(38.6%)	20(22.7%)	1.00	
Self Perceived risk of HIV				
Yes	47(26.7%)	34(38.6%)	0.58	0.33-0.99
No	129(73.3%)	54(61.4%)	1.00	
Prior HIV testing				
Yes	119(67.6%)	40(45.5%)	2.51	1.48-4.24
No	57(32.4%)	48(54.5%)	1.00	
Know existence of intervention That reduces MTCT				
Yes	122(69.3%)	60(68.2%)	1.05	0.61-1.83
No	54(20.7%)	28(31.8%)	1.00	
Perceived benefit of HIV test				
Yes	170(96.6%)	68(77.3%)	8.33	3.28-21.6
No	6(3.4%)	20(22.7%)	1.00	

As shown below in Table 4, about 90% of non acceptors and 96% acceptors correctly identified sexual intercourse as mode of transmission for HIV but only 14.8% of non-acceptors and 25.6% of acceptors correctly identified MTCT as mode of transmission for HIV. Almost half of acceptors and 70% of non acceptors did not correctly identify blood and blood products as mode of transmission for HIV. More than 80% of non acceptors and acceptors correctly identified blades and sharp objects as mode of transmission for HIV. Only 36.4% of non-acceptors and 45.5% of acceptors correctly identified abstinence as a way to prevent HIV transmission. More than 70% of the respondents correctly identified faithfulness as a way to prevent HIV transmission. About 50% of the acceptors and non acceptors correctly identified condom as a way to prevent HIV. Almost 70% of non acceptors and acceptors have responded that a healthy looking person can have HIV.

Almost 60% of non acceptors and acceptors have correctly identified when MTCT could occur during breast feeding. About 17% of non acceptors and 21% of acceptors correctly identified MTCT could occur during pregnancy. About 38.6% of non acceptors and 60.8% of acceptors correctly identified ART as way to prevent MTCT and 44.3% and 48.3% of non acceptors and acceptors; respectively correctly identified avoiding breast feeding could prevent MTCT.

As shown below in Table 4, identifying correctly the modes of HIV transmission was found to be highly associated with acceptance of HIV test (OR=3.23, 2.18, 1.98, 2.37 and 95% CI=1.11-9.38, 1.62-3.76, 1.01-3.91, 1.06-5.28) for sexual intercourse, blood and blood products, MTCT and sharp objects, respectively). Acceptance of HIV test was slightly higher in those respondents who correctly identified ways to prevent HIV. But it was not found to statistically significant. Knowing when MTCT could occur was not found to be associated with acceptance of HIV test ($P>0.05$). Acceptance of HIV test was found to be 2.5 times more in those women who correctly identified of ART as away to prevent MTCT as compared to their counter parts. Knowledge of ART as a way to prevent MTCT was found to be strongly

associated with acceptance of HIV test (OR=2.46, 95%CI=1.46-4.16). But knowledge of avoiding breast feeding was not found to associated with acceptance of HIV test (P>0.05).

Table 4 Acceptors and Non-acceptors of HIV testing by their knowledge on HIV, MTCT and PMTCT in the selected 10 health centers in Addis Ababa, 2006/7

Variables	Acceptors (n=176)	Non acceptors (n=88)	OR	95%CI
	No (%)	No (%)		
Correctly identified Sexual Contact as route of transmission				
Yes	170(96.6%)	79(89.8%)	3.23	1.11-9.38
No	6(3.4%)	9(11.2%)	1.00	
Correctly identified blood and blood Products as route of transmission				
Yes	84(47.7%)	26(29.5%)	2.17	1.26-3.75
No	92(52.3%)	62(70.5%)	1.00	
Correctly identified MTCT as route Of transmission				
Yes	45(25.6%)	13(14.8%)	1.98	1.01-3.90
No	131(74.4%)	75(85.2%)	1.00	
Correctly identified sharp objects As route of transmission				
Yes	163(92.6%)	74(84%)	2.37	1.06-5.29
No	13(7.4%)	14(16.0%)	1.00	

Correctly identified abstinence as a way				
To prevent HIV transmission				
Yes	80(45.5%)	32(36.4%)	1.45	0.86-2.46
No	96(54.5%)	56(63.6%)	1.00	
Correctly identified one to one relation ship				
As a way to prevent HIV transmission				
Yes	134(76.0%)	63(71.6%)	1.26	0.71-2.26
No	42(24.0%)	25(28.4%)	1.00	

Table 4 Continued

Correctly identified condom as a way				
To prevent HIV transmission				
Yes	93(52.8%)	43(48.8%)	1.17	0.70-1.96
No	83(47.2%)	45(51.2%)	1.00	
Can a healthy looking person have HIV?				
Yes	125(71.0%)	61(69.3%)	1.08	0.62-1.89
No	51(29.0%)	27(30.7%)	1.00	
Correctly identified when MTCT could				
Occur during pregnancy				
Yes	38(21.6%)	15(17.0%)	1.34	0.69-2.59
No	138(78.4%)	73(83.0%)	1.00	
Correctly identified when MTCT				
Could occur during breast feeding				
Yes	103(58.5%)	56(63.6%)	0.86	0.47-1.37
No	73(41.5%)	32(36.4%)	1.00	
Correctly identified when MTCT				
Could occur during delivery				
Yes	72(41.0%)	33(37.5%)	1.15	0.68-1.95

No	104(59.0%)	55(62.5%)	1.00	
Correctly identified ARV as preventive Measure of PMTCT				
Yes	107(60.8%)	34(38.6%)	2.463	1.45-4.16
No	69(39.2%)	54(61.4%)	1.00	
Correctly identified avoiding breast feeding As preventive measure of PMTCT				
Yes	85(48.3%)	39(44.3%)	1.17	0.70-1.96
No	91(51.7%)	49(55.7%)	1.00	

As shown below in Table 5, 80.6% and 86.9% of non acceptors and acceptors respectively were willing to share meal with a known HIV positive person, respectively. About 97% of acceptors and 94% of non acceptors were willing to give care for their relative who is HIV positive. About 35% of non-acceptors and 26% of acceptors were not willing to continue to buy food from a known HIV positive shopkeeper. About 55% of non acceptors and 40% of acceptors responded that they will keep secret the HIV status of their family member. Almost 90% of acceptors and non-acceptors said that PLWHA should not be quarantined. About 89% of acceptors and 92% of non-acceptors were not willing to make name of PLWHA to get publicized. 15 (17%) and 14 (8%) of non acceptors and acceptors respectively were not willing to change their children's school if there was any student in the school who was HIV positive. Only 10% of non-acceptors and 5% of acceptors were not willing to continue working with an HIV positive person.

Acceptance of HIV test was found to be slightly higher in those respondents who were willing to eat food with HIV person, to give care for HIV positive family member, to continue buying food from HIV positive person, and continue to work with HIV positive person. But it was not found to be statistically significant. Acceptance of HIV test was found to slightly lower in those respondents who were going to keep secret HIV status of their family member, who

were not willing to make PLWHA quarantined and their names publicized. Acceptance of HIV test was found to be higher in those respondents who were willing to continue to work with HIV positive person (OR=2.39, 95%CI=0.89-6.43). But it was not found to be statistically significant. But acceptance of HIV test was found to be 2.4 times more in those women who responded to continue sending their child to school where HIV positives children are found as compared to their counter parts (OR=2.38, 95%CI=1.09-5.18).

Table 5 Acceptors and Non-acceptors by their stigmatizing attitudes towards PLWHA in the selected ten health centers in Addis Ababa, 2006/7.

Variables	Acceptors (n=176) No (%)	Non acceptors (n=88) No (%)	OR	95%CI
Voluntary to share meal with HIV positive person				
Yes	153(86.9%)	71(80.7%)	1.59	0.80-3.17
No	23(13.1%)	17(19.3%)	1.00	
Ready to give care for a relative Who is HIV positive				
Yes	171(97.0%)	83(94.0%)	2.06	0.58-7.31
No	5(3.0%)	5(6.0%)	1.00	
Continue to buy food from a known HIV positive Person				
Yes	130(74.0%)	57(64.7%)	1.54	0.88-2.6
No	46(26.0%)	31(35.3%)	1.00	
Keeping secret HIV status of relative				

Yes	70(40.0%)	44(55.0%)	0.66	0.39-1.11
No	106(60.0%)	44(55.0%)	1.00	
PLWHA should be quarantined				
Yes	19(11.0%)	7(8.0%)	1.4	0.56-3.47
No	157(89.0%)	81(92.0%)	1.00	
Name of PLWHA should be publicized				
Agree	14(8%)	4(4.5%)	1.82	0.57-5.68
Disagree	162(92.0%)	84(95.5%)	1.00	
Sending child to school where HIV positives Children are found				
Yes	162(92.0%)	73(83.0%)	2.38	1.91-5.18
No	14(8.0%)	15(17%)	1.00	
Working together with PLWHA				
Yes	168(95.5%)	79(89.7%)	2.39	0.89-6.43
No	8(4.5%)	9(10.3%)	1.00	

5.3 Factors associated with acceptance of HIV test

Of the socio demographic factors, only educational status was found to be associated with acceptance of HIV test. But it was not found to be significantly associated with VCT acceptance in the multivariate analysis. Of the reproductive health factors, number of pregnancies, previous HIV test, getting husband's consent before undergoing HIV test, usefulness of undergoing HIV test and taking oneself being at risk of acquiring HIV were found to be associated with acceptance of HIV test. But only getting husband's consent before undergoing HIV test and usefulness of undergoing HIV test were found to be significantly associated with acceptance of HIV test in the multivariate analysis. Of the knowledge factors, knowing modes of HIV transmission and correctly identifying ARVs as a way to prevent MTCT were found to be associated with acceptance of HIV test. But only correctly identifying ARVs as a way to prevent MTCT was found to be significantly associated with acceptance of HIV test in the multivariate analysis. Of the stigma factors, sending ones child

to school where an HIV positive child is attending was found to be associated with acceptance of HIV test. But it was not found to be significantly associated with acceptance of HIV in the multivariate analysis.

Adjusting for socio demographic, reproductive health factors, knowledge of routes of transmission of HIV, MTCT and PMTCT, and stigmatizing attitude towards PLWHA, pregnant women who correctly identify ART as a way to prevent MTCT were about 2 times more likely to accept HIV test in the current pregnancy than their counter parts (OR=1.95, 95% CI=1.20-3.73). Those pregnant women who perceived that it is beneficial to undergo HIV test were 7 times more likely to accept HIV test in the current pregnancy than their counter parts (OR=7.085, 95% CI=2.22-22.62). Those pregnant mothers who did need to consult their husband before undergoing HIV test were found to be by 55% less in accepting HIV test than their counter parts. Those women with their second pregnancy were found to be by 69% less in accepting HIV test than those with their first, third and fourth and above pregnancies (Table 6).

Table 6 Adjusted determinant factors of acceptance of HIV test among pregnant women following ANC in the selected ten health centers in Addis Ababa, 2006/7.

Variables	Acceptors (n=176)	Non acceptors (n=88)	Adjusted OR	95%CI
	No	No		
Number of pregnancy				
Two	30	33	0.32	0.10-0.98
One, three and ≥4	146	55	1.00	
Consent from husband before the test				
Yes	108	68	0.45	0.23-0.91
No	68	20	1.00	
Perceived benefit of HIV test				

Yes	122	68	7.08	2.22-22.62
No	54	20	1.00	
Correctly identified ARV as a way to Prevent MTCT				
Yes	107	34	1.95	1.20-3.73
No	69	54	1.00	

5.4 Qualitative part

The FGDs were conducted at the MCH room of the selected health centers. There were 8-10 partipants at each FGD session. The FGD was conducted using semi-structured questionnaire. Knowledge about modes of HIV transmission, barriers and motivating factors to undergo HIV test, PMTCT, ANC and stigma attached to PLWHA were areas of the FGD. Participants of the FGD mentioned MTCT, sexual intercourse and sharp blades as possible modes of HIV transmission. They also mentioned that MTCT could occur during labor and delivery and breast feeding. ANC, delivery in the health facility, avoiding breast feeding, taking medicine during delivery and getting advice from the health care provider were raised as important ways to decrease MTCT of HIV. The participants stressed that good knowledge on modes of HIV transmission, timing of MTCT and PMTCT will increase acceptance of HIV test.

The participants of the FGD mentioned that women with frequent ANC visit will have a chance to get advice from a health care provider, to get treated if they are sick, and to know the position and lie of the fetus. It is also useful for the health of the mother and the fetus, and it is also useful to detect problems early. They also mentioned that ANC is useful to avoid problems arising during labor and delivery. Moreover, it is important to get information on HIV, MTCT and usefulness of HIV test. They also agreed that frequently undergoing ANC will increase the number of pregnant women who will undergo HIV test.

Fear of being HIV positive, inability to convince oneself to get tested, self perception of being HIV positive and lack of knowledge on the benefit of undergoing HIV test were mentioned by the participants as perceived barriers to accept HIV test. Interest of pregnant mothers to know

their sero status and to save the life of the unborn child were mentioned as motivating factors to undergo HIV test by the participants.

Some of the participants argued that they would inform the sero status of their family member to others after taking his/her consent. But others argued that they would not mention the sero status of their family member to others even if he/she is willing to do so. The participants agreed that it is useful to give care to PLWHA. They pointed out that it is not a good practice to discriminate a person due to his/her HIV status. The most important thing is to know the modes of transmission and taking care of oneself accordingly.

They also pointed out that the stigma and discrimination towards PLWHA has really improved but still there are people who still have stigmatizing attitudes towards PLWHA. They attribute this to lack of knowledge on HIV. Some of the participants have argued that stigmatizing attitude towards PLWHA does not have effect on acceptance of HIV test. But others strongly argued that it has effect on acceptance of HIV test. They said that those people with stigmatizing attitudes to PLWHA will not undergo HIV test because they fear that they will be stigmatized if their test result becomes positive.

Most of the participants said that they had knowledge of existence of PMTCT services before they came to the health center. They had this information from the media, and from other pregnant mothers. Few of them claimed that they did not know the existence of PMTCT services before coming to the health center. Almost all of the participants said that the counseling service given before and after HIV test was fair enough. The pre test counseling service focused on what to do if you became positive, any previous HIV test and the benefit of HIV test. The post test counseling session focused on the test result, possibility of discordance, importance of disclosure of sero status to husband and bringing husband for HIV test. Almost all of the participants claimed that their husbands are not willing to come for HIV test even though they get informed about possibility of discordant results.

6. Discussions

ARV prophylaxis can reduce MTCT by 40-70%. The impact is greater (closer to 70%) when women do not breastfeed, because current ARV prophylaxis regimens only prevent HIV transmission during the early breastfeeding period. Nowadays ARVs are available for PMTCT of HIV. For a pregnant mother to benefit from this intervention, her sero status should be known. Provider initiated counselling and testing provides an opportunity to know her status and serves as an entry point to make decision on use of the intervention to reduce mother-to-child transmission of HIV infection (3).

The proportion of acceptance of HIV test was more than 80% in the ten health centers included in this study. This figure is higher than the figure reported by the MOH in the 6th report of AIDS in Ethiopia for Addis Ababa i.e. 68.2% (7). The same findings were reported in the studies conducted in Malawi, Barbados, and Zimbabwe in which the rate of acceptance was more than 90% (17, 18, and 16). But only 18% of pregnant mothers undergo HIV test in the Burkina Faso study (25). The MOH of Ethiopia report was for 2005/2006. But this study was done in 2006/2007 and is only a one month report. Besides it had reports only from 10 health centers. So there may be variations in the rate of acceptance of HIV test in each month of the year or there may be actual variations in the rate of acceptance of HIV among the different health centers. It may also be a true picture of the increment in the rate of acceptance of HIV test in Addis Ababa health centers.

The prevalence of HIV among pregnant mothers attending ANC in the ten selected health centers was 7% which was lower than that of Addis Ababa reported by MOH in the 6th report of AIDS in Ethiopia as 9.4% and that of the national prevalence of HIV among pregnant mothers from PMTCT clinics i.e. 8% (7). The above mentioned reasons can be applied to this difference in prevalence of HIV among pregnant mothers. Of the health centers included in this study, three of them were serving as sentinel sites since 1997, namely Gulele, Kasanchis, and Higher 23 health centers. The HIV prevalence among ANC attendees of pregnant mothers for the year 2005 from these sentinel sites was reported as 13.0%, 16.7%, and 10.1% respectively. But the prevalence of HIV among pregnant mothers at PMTCT clinics of the above mentioned health centers was found to be lower in this study i.e. 7%, 11.3%, and 3% respectively (7).
This discrepancy is expected because the HIV prevalence from those three sentinel sites is determined using left over blood while the HIV prevalence for PMTCT is determined only for those clients who accept the offer after pre test counselling.

This study showed that higher level of education (secondary and tertiary) of the mothers is strongly associated with acceptance of HIV test even though it was not stastically significant in the multi variate analysis. The result of this study is consistent with the findings from other studies. A study conducted in Army Hospital in Addis Ababa reported that higher level of

education was strongly associated with acceptance of HIV test (22). This has been also reported by another study conducted in Uganda where post primary education was found to be stronger predictor of acceptance of HIV test (15). 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 between less educated ones and their counterparts (23, 14).

In this study single women were less likely to accept HIV test than married women even though it was not statistically significant. The same result was reported in the study conducted in Ethiopia at Army Hospital. But another study conducted in Barbados reported that single women were more likely to accept the HIV test. But it was not statistically significant. A study from Tanzania also showed that women cohabitating while unmarried was more likely to be tested than married mothers (22, 18, and 24).

Age was not found to be associated with acceptance of HIV test in this study and in the study conducted at Army Hospital in Ethiopia. But a study conducted in Burkina Faso reported that old age was associated with acceptance of HIV test. It was not found to be associated with acceptance/willingness of HIV test in other studies conducted in Uganda, and Malawi (25, 15, and 17). Income was not found to be associated with acceptance of HIV test in this study. But it was found to be associated with acceptance of HIV test in the study conducted at Army Hospital where HIV acceptance of HIV test was found to increase as the income increases. But a study from Tanzania showed that higher socioeconomic status was significantly associated with declining of HIV test (22, 24).

In this study frequency of antenatal care visit was not found to be associated with acceptance of HIV test. The same result was reported in the studies conducted in Barbados and Burkina Faso in which it was included as variable of interest. But the study conducted at army Hospital found that mothers with two or more antenatal care visits were more likely to accept HIV test (18, 25, and 22). Frequent ANC visits will expose the mothers to more information regarding HIV, MTCT, and PMTCT. This will increase acceptance of HIV test. This point was also mentioned by the participants of the FGD in this study. In this study it is found that

more than 70% of the mothers knew the existence of PMTCT service before they came to the health center which helps to make up their mind before coming to the health center.

In this study after adjusting for possible confounders, those with third, fourth pregnancies were found to accept HIV test than those with second pregnancy. The same finding was reported from the study conducted in Burkina Faso HIV where acceptance of HIV test was found to increase as the number of pregnancies increase. Otherwise it was not reported to be significantly associated with acceptance of HIV test in other studies (25).

In this study, previous HIV test was found to be associated with acceptance of HIV test even though it was not found to be significantly associated with it in the multi variate analysis. Prior HIV test was reported as a significant predictor of acceptance of HIV test in the study conducted at Army Hospital after adjusting for possible confounding factors. The same finding was reported in a study conducted in Barbados (22, 18). Behavioural studies have shown that individuals with previous HIV test will decrease their risky sexual behaviours. So when they are asked to undergo HIV test, they are more likely to accept it thinking that the result will be negative.

In this study, getting husband's consent before HIV test was found to be an independent and a significant predictor of acceptance of HIV test after adjusting for confounding variables. This study found that those mothers who need to consult their husbands before HIV test were found to be less likely to accept HIV test than their counterparts. Husband consent before undergoing the test was the reason for non acceptance of HIV test in the Zimbabwe study (16). But other studies conducted reported that husband’s consent and involvement increased HIV acceptance and willingness to be tested. In the FGD conducted in this study, the participants reported that their husbands were not willing to undergo HIV test when requested by their partners.

Only 6% and 2.3% of partners in Burkina Faso and Zimbabwe study tested for HIV respectively (16, 25). Hence, pregnant mothers who think that they should discuss the issue of HIV test with their husband may be reluctant to accept the test while their counterparts may be ready to accept tests. But involvement of husband in PMTCT will make the programme effective since males are the decision makers in the house. There is a need to involve partners

beforehand in HIV/VCT with the objective of increasing awareness of the benefits of HIV testing, and helping couples to cope with HIV sero positive status.

In this study mothers self perception of risk of HIV was found to be associated with non acceptance of HIV test even though it was not found to be significantly associated with non acceptance of HIV test in multi variate analysis. Those who consider themselves as being at risk of HIV may not accept HIV test because they may be afraid of the results being HIV positive. In the FGD conducted in this study, all of the participants reported fearful of being HIV positive as the main reason not to undergo HIV test. The participants reported that being fearful to undergo the test stems from self perception of risk of HIV.

Knowing existence of PMTCT service before coming to the health center was not found to be associated with acceptance of HIV test. But a study conducted at Army hospital reported it as a significant predictor of HIV acceptance (22). Almost 70% of acceptors and non-acceptors knew the existence of the service and almost all participants of the FGD reported that they know the existence of PMTCT service before coming to the health. These may partly explain why knowledge of existence of PMTCT service became insignificant predictor of acceptance of HIV test.

In this study, perceived benefit of HIV test was found to be independent and significant predictor of acceptance of HIV test. The same result was reported from the study conducted in Army Hospital even though it was not found to be significant predictor of HIV test in the multi variate analysis (22). The participants of the FGD in this study pointed out knowing ones HIV status, and saving life of the unborn child as motivating factors to undergo HIV test. Hence those who perceive the benefits of being tested are likely to undergo the test. It is important to provide information to pregnant mothers on the benefits of HIV test in a clear and understandable manner to increase the uptake of HIV test as some pregnant mothers may fail to accept the offer due to lack of knowledge of the benefits of HIV test.

Knowledge on modes of HIV transmission was found to be associated with acceptance of HIV test. Those with good knowledge were found to be more likely to accept HIV test even though it was not found to be significant predictor of acceptance of HIV test in the

multivariate analysis. The same finding was reported in the study conducted at Army Hospital (22). But knowledge of MTCT was not reported to be associated with willingness to accept HIV test in the study conducted in Uganda among pregnant mothers living in the rural and urban settings (15).

The participants of the FGD in this study pointed out sexual intercourse and sharp blades as modes of HIV transmission but they fail to mention spontaneously MTCT and blood and blood products as modes of HIV transmission. This finding was consistent with the findings in the quantitave part where MTCT and blood and blood products were only the least identified modes of HIV transmission i.e. 85 % of non acceptors and 74 % of acceptors fail to identify MTCT). This may be partly due to the way the question was presented to the respondents. It was an open ended question. Otherwise they were able to mention them in the FGD when they were given clues. Knowledge on ways to prevent HIV was not found to be associated with acceptance of HIV test. The same result was reported from the study conducted at Army Hospital (22).

In this study the question "can a healthy looking person be HIV positive?" was not found to be associated with acceptance of HIV test. Almost 70% of acceptors and non acceptors reported yes to the above question. In the EDHS 2005, about 69% of the total women and 92.3% of women from Addis Ababa interviewed reported that a healthy looking person can have HIV. And in a study conducted in North West Ethiopia, 80% of urban dwellers reported that a healthy looking person could have HIV (13). The result of this finding is lower than the EDHS report for Addis Ababa.

Knowledge of when MTCT could occur was not found to be associated with acceptance of HIV test. The same result was reported in the study conducted at Army hospital in Addis Ababa, Ethiopia. 138 (78%) and 73 (83%) of acceptors and non-acceptors did not mention spontaneously that MTCT could occur during pregnancy. The participants of the FGD also did not mention spontaneously that MTCT could occur during pregnancy. Studies conducted at Arbaminch hospital and in the North West part of Ethiopia reported that more than 80% of pregnant mothers were aware of perinatal transmission of HIV (22, 13).

Identifying correctly ARVs as a way to prevent MTCT was found to be independently and significantly associated with acceptance of HIV test. Those who correctly identify ARV as a way to prevent MTCT were found to accept the test than their counterparts (OR=1.953, 95% CI= 1.2-3.74). But it was not found to be associated with acceptance of HIV test in the study conducted at Army Hospital (22). On the other hand identifying correctly avoiding breast feeding as a way to prevent MTCT was not found to be associated with acceptance of HIV test in this study. But this variable was found to be associated with acceptance of HIV test in the study conducted at Army Hospital (22). The participants of the FGD fail to mention spontaneously ARVs as a way to prevent MTCT but most of them mentioned avoiding breast feeding as a way to prevent MTCT. But they were aware that some medicine will be given during delivery and they strongly advice delivery at health facility. 55 (62.5%) and 69 (40%) of non acceptors and acceptors did not mention ARVs as a way to prevent MTCT respectively. But only 20% and 24.5% of the pregnant mothers were aware of ARVs as a way to prevent MTCT in the study conducted at Arbaminch Hospital and in Nigeria respectively. In this study, almost 40% of them were aware of it (12, 14).

In the EDHS 2005, Almost 78% of women of Addis responded that MTCT can be prevented by taking special medicine during pregnancy. This by far exceeds the response in this study. But this is partly due to the way the questions presented to the participants in the EDHS and this study. ARVs were not available during the Arbaminch study. This may contribute to the low level of awareness of to ARVs in the Arbaminch study.

Stigmatizing attitudes towards PLWHA were not found to be associated with acceptance of HIV test in this study. A study conducted in Nigeria among different ethnic groups reported that those individuals with negative attitudes to PLWHA were less likely to utilize VCT. In this study there was no major difference in the proportion of people responding to the variables included in the study to assess stigma to PLWHA between acceptors and non-acceptors. This may partly explain why there was no association between stigma and acceptance of HIV test. 29% of the study subjects were not willing to continue buying food from a shopkeeper who is HIV positive. Of these 31(35%) were non-acceptors and 46(26%) were acceptors. This finding was consistent with the EDHS 2005 in which 73.9% of women from Addis Ababa and the findings of the study in North West Ethiopia in which 75.9% of

urban dwellers were willing to continue buy fresh food from a known HIV positive person. 30% of the participants in this study wanted to keep secret the HIV status of their relative. This finding is consistent with the findings of the EDHS 2005 in which 68.5% of women from Addis Ababa and 63% of urban dwellers from the study conducted in North West Ethiopia did not want to keep the HIV status of their relatives HIV status secret. This was also reported in the FGD conducted in this study in which few of the participants did want to keep the HIV status of their relative while the majority did not want to keep it secret.

Study conducted in North Gondar among tuberculosis patients in 2003 found that stigmatizing attitude to PLWHA was significantly associated with willingness to have VCT and another study conducted in Harar in the community in 1999 found that fear of positive result and stigma attached to AIDS in the public were reasons for not undergoing VCT (26, 27). The participants of the FGD in this study mentioned that pregnant mothers with stigmatizing attitude to PLWHA will not accept the offer to get tested for HIV and still there is stigma attached to HIV in the population even though it is getting better. Some pregnant people may not undergo HIV test due o fear of positive HIV test result and the stigma attached to it in the population. So the stigma attached to PLWHA is decreasing and people are developing positive attitude to them. This change should be sustained and a lot has to be done on this issue.

The participants of the FGD have raised their concern over their partners' reluctance to get tested for HIV when requested by their wives. It is expected that in most occasions, only those pregnant mothers with a negative HIV result will request their partners to get tested. In the studies conducted in Burkina Faso and Zimbabwe, only few of the partners get tested for HIV. One of the reasons for the low rate of appearance of the partners was failure of the pregnant mothers to tell their husband to have HIV test. This was most pronounced in those with HIV positive results. The level of Discordance rate of HIV test result can reach up to 20% in the Ethiopian set up. So the HIV status of the pregnant mother does not guarantee the sero status of her partner. It is known that married couples will continue to have unprotected sexual intercourse. Hence this may facilitate HIV transmission if the partner is HIV positive. So efforts could be made to involve partners in the PMTCT programme.

7. Strength and Limitations

Strength of the study: This is a case control study nested in a cohort of pregnant mothers who are following ANC in the selected ten health centers.

So the strengths of the study are:-

1. It has collected information on different variables which can be important exposures for determining acceptance of HIV test.
2. It is also economical and not time consuming.
3. This study has tried to see the first out come of PMTCT which is acceptance of HIV test. Hence it is an appropriate study design to study the factors which determine acceptance of HIV test since it is collecting information from clients who have the outcome of interest at hand..

Limitations of the study:

1. Recall bias is going to happen. This may affect the result if there is a differential misclassification in the information provided by the two groups.
2. Since both cases and controls are interviewed after getting counselling, they are going to get some information about HIV. It is not possible to avoid this because this was the objective of the study.
3. Some of the revisits may have been non acceptors before the study period and may accept the HIV test during the study period since clients who decline to get tested are requested to undergo the test during each visit. Hence those revisits that refuse to accept the test may have accumulated information on HIV in the health facility and this may some how affect the comparison between cases and controls
4. Moreover, information may be shared between clients (contamination).

8. Conclusions and Recommendations

In conclusion,

1. Husbands consent before undergoing HIV test, knowledge of ARVs as a way to prevent MTCT, and perceived benefit of HIV test were important factors of acceptance of HIV test.
2. The prevalence of acceptance of HIV test was 89% in the selected ten health centers and the prevalence of HIV was also found to be 7%.
3. Almost half of the cases and controls are revisits
4. In the FGDs, the participants pointed out that their husbands are not willing to undergo HIV test when requested by partners
5. Almost 54% of the cases and 32% of controls did not have prior HIV test and the majority of the respondents were married
6. Almost half of the respondents fail to correctly identify condom as a way to prevent transmission of HIV while 90% of them correctly identify sexual intercourse as a way to prevent transmission of HIV.

Hence the following recommendations are fore worded to solve the above mentioned findings

1. More over, there is a need for intensive and continued education on MTCT, benefits of HIV test, and benefits of HIV test on PMTCT and about the existence of intervention that reduces MTCT.
2. There is a need to involve partners beforehand in HIV/VCT with the objective of increasing awareness of the benefits of HIV testing, and helping couples to cope with HIV sero positive status.
3. It is imperative to make pre marital HIV testing mandatory so as to decrease further spread of HIV.
4. Every effort must be undertaken to test all pregnant mothers on the first visit.
5. Health education on ways to prevent transmission of HIV should be provided to pregnant mothers by using different techniques

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9. References

1. UNAIDS, Report on the global AIDS epidemic, May 2006.
2. WHO, Strategic approaches to the prevention of HIV infection in infants, a report of a WHO meeting Morges, Switzerland, 20-22 March 2002.
3. Federal Ministry of Health, Disease Prevention and Control Department, Prevention of Mother to Child Transmission of HIV reference manual, April 2005.
4. Bertoll J, St Louis ME, Simonds RJ, et al, Estimating the timing of mother to child transmission of HIV in a breast feeding population in Kinshasa, Zaire, Journal of infectious disease 1996 Oct, 174(4): 722-6.
5. Zijenah, Lynn S, Moulton, et al, timing of mother to child transmission of HIV and infant mortality in the first six months of life in Harare, Zimbabwe, AIDS Volume 18(2) 23 January 2004 pp 273-280.
6. UNAIDS, Sub Saharan Africa, AIDS Epidemic Update, 2006.
7. Federal Ministry of Health, AIDS in Ethiopia, 6th Report, September 2006.
8. Federal Ministry of Health, Disease Prevention and Control Department, Fifth Report AIDS in Ethiopia, June 2004.
9. CSA and ORC Macro, the Ethiopian Demographic and Health Survey 2005, September 2006.
10. Federal Ministry of Health, Integrated management of Adult and Adolescent ILLNESS ,Guideline for First Level Facility Health Facility Workers, Acute Care, November 2005.
11. FHAPCO, HIV/AIDS Behavioural survey surveillance (BSS), Round One, Ethiopia 2002.
12. Haddis M., Jerene D., Awareness of antenatal care clients on Mother-to child transmission (MTCT) of HIV infection and its prevention in Arbaminch Hospital, Ethiopian Journal of Health Development 2006; 20(1):55-57.
13. Alemu S., Abeseno N., Wondmikun Y., Amsalu S. Knowledge and attitude toward Voluntary counselling and testing for HIV: A community based study in Northwest

Ethiopia, Ethiopian Journal of Health Development 2004; 18(2):82-89.

14. EE Ekanem, A.Gbadegesin, Voluntary Counselling and Testing (VCT) for Human Immunodeficiency Virus: A Study on Acceptability by Nigerian Women Attending Antenatal Clinics, African Journal of Reproductive Health Women's Health and Action Research Centre ISSN: 1118-4841 2004; 8(2): 91-100.
15. Francis Bajunirwe, Michael Muzoora, Barriers to the implementation of programs for the prevention of mother-to-child transmission of HIV: A cross-sectional survey in rural and urban Uganda, AIDS Research and Therapy 2005; 2(10).
16. Freddy Perez, Tarisai Mukotekwa, Anna Miller, et al, implementing a rural programme of prevention of mother-to-child transmission of HIV in Zimbabwe: first 18 months of experience, Tropical Medicine and International Health July 2004; 9(7): 774–783.
17. M. Manzi, R.Zachariah, R.Tech, et al, high acceptability of voluntary counselling and HIV-testing but unacceptable loss to follow up in a prevention of mother to-child HIV transmission programme in rural Malawi, Tropical Medicine and International Health, December 2005; 10(12): 1242–1250.
18. Alok Kumar, Elizabeth Rocheste, Michelle Gibson, et al, antenatal voluntary counselling and testing for HIV in Barbados; success and barriers to implementation, Rev Panam Salud Publica 2004; 15(4): 242– 8.
19. The Federal Ministry of Health Ethiopia, the International Center for AIDS Care & Treatment Programs PEDIATRIC HIV/AIDS CARE AND TREATMENT IN ETHIOPI

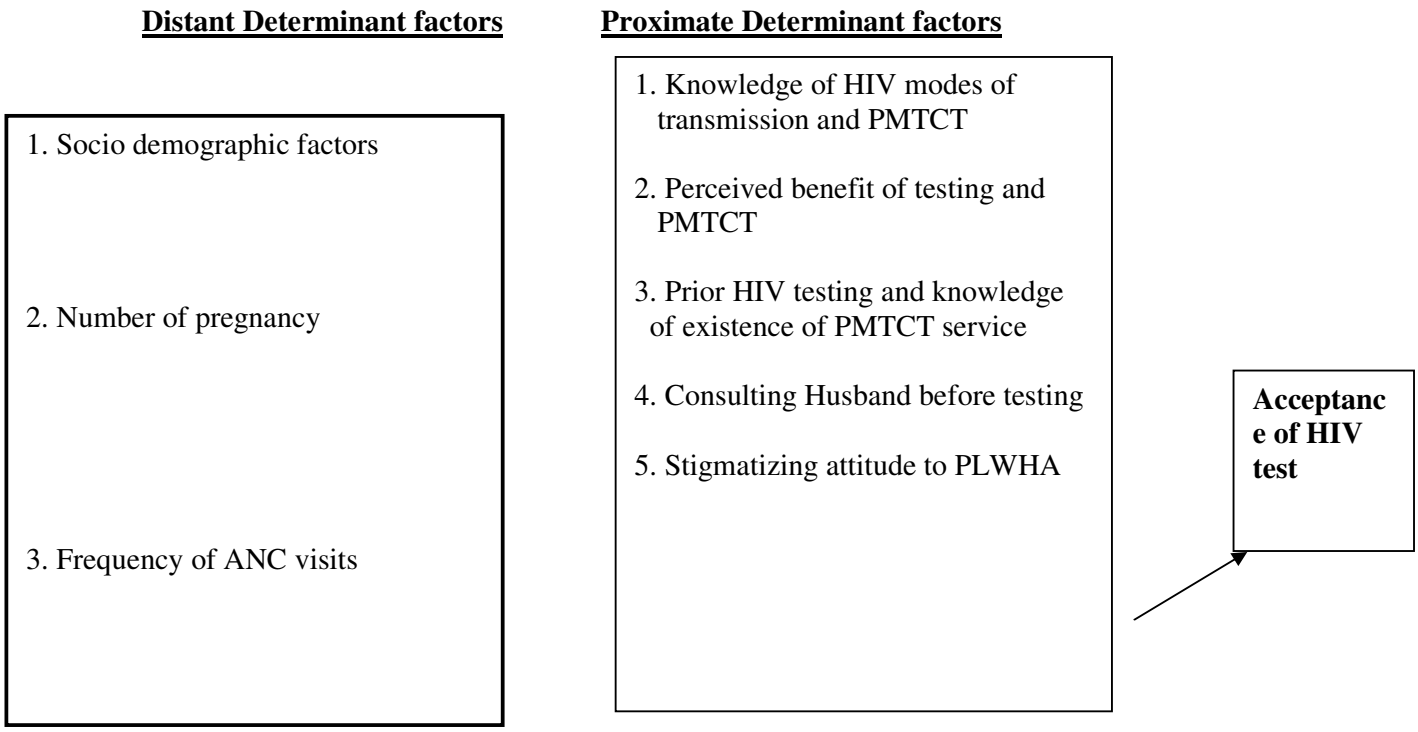
A: RESULTS OF A SITUATIONAL ANALYSIS, February 2006, Addis Ababa, Ethiopia.

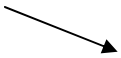
20. Schlessman J., Case Control studies design, conduct, analysis, New York Oxford University Press, pp 69-101, 1982.
21. Berhane Y., lecture note, principles of Epidemiology, April 2005
22. Worku G., Enquselassie F., Factors determining acceptance of VCT among pregnant women attending antenatal care at Army Hospital in Addis Ababa, Ethiopian Medical J 2007 ;45(1): 1-8.
23. Bakari JP., McKenna S, Myriak A., et al, Rapid Voluntary testing and counselling for HIV, acceptability and feasibility in Zambian antenatal care clinics, Annals of NY Acad Sciences 2000 Nov, 918: 64-76.

24. Westheimer EF, Urassa W., Msamanga G., et al, acceptance of HIV testing among pregnant women in Dares-Salaam, Tanzania, Journal of Acquired immune deficiency Syndrome 2004 Sep 1; 37(1): 1197-205.
25. Salvatore Pignatelli, Jacques S.impore, Virginia Pietra, et al, Factors predicting uptake of voluntary Counselling and testing in a real life setting in a mother and child center Ouagadougou, Burkina Faso, Tropical Medicine and International Health March 2006; 11(3): 350–357.
26. Ayenew A., Assessment of willingness of tuberculosis patients to VCT in North Gondar, April 2004, DCH, MF, AAU (Master′s Thesis).
27. Fahmi Mohammed, Factors related to VCT among urban community of Ethiopia, December 2000 DCH, MF, AAU (Master′s Thesis).
28. UNAIDS/WHO, Policy Statement on HIV Testing, June 2004.

10. Appendix

10.1 Conceptual Frame Work





10.2 Structured Questionnaire English Version

Addis Ababa University

Faculty of Medicine

Department of Community Health

Questionnaire on

Prevalence and determinants of acceptance of HIV testing among pregnant mothers at antenatal care settings of selected health centers in Addis Ababa

Consent form that certify the respondents agreement before the interview

01. Sub City_____

02. Name of Health Center_____

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 would like to inform you that you and I would have a short discussion concerning this study. Before we go to our discussion, I will ask you to listen carefully to what I am going to read to you about the purpose and general condition of the study and tell me whether you agree or disagree to

participate in this study. I am interviewing pregnant mothers who follow their antenatal care at…….. (Name of the health institution) about the determinants of acceptability of HIV testing among pregnant mothers in this health facility. You are selected to be one of the participants in the study. The study will be conducted through interview. The information you give us is confidential and will be used only for study purpose. A code number will identify every participant and no names will be used. If a report of the result is published, only summarized information of the total group will appear. 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?

1. ( ) 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----------2006

Result

Completed----------

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

Refused----------

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

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

Checked by supervisor

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

Part 1. Socio-Demographic Characteristics of Respondents

No	Questions	Coding Classification	Skip
101	How old were you at your last birth day?	1. 19-24 2. 25-29 3. 30-34 4. 35-39 5. 40-44 6. 45-49 8. I do not Know 9. Refuse to answer	
102	What is your Religion?	1. Orthodox 2. Muslim 3. Protestant 4. Catholic 5.Others(specify)_____	
103	What is your current marital status?	1. Married 2. Single 3. Living together	

		4. widowed 5. divorced	
104	What is your current occupation?	1. Merchant 2. House wife 3. Student 4. Government employee 5. NGO employee 6. Un employed	
105	What is your current educational status?	1. Illiterate 2. grade 1-8 3. grade 9-12 4. above grade 12	
106	What is your average house hold income per month?	1. less than 100 birr 2. 100-450 birr 3. more than 450 birr 88. I do not know 99. Refuse to answer	

Part 2: Reproductive health and related factors

No	**Question**	**Coding Classification**	**Skip**
201	How many pregnancies do you have including current pregnancy?	1. one 2. Two 3. Three 4. Four and above	
202	How many antenatal care visits do you have in the current pregnancy including today's visit?	1. One 2.Two and above	
203	Do you need to contact your husband before	1. Yes	**Skip this Q for**

	undergoing HIV test?	2. No 8. I do not know 9. No response	**divorced, widowed and single ones**
204	Do you think that you are at risk of acquiring HIV?	1. Yes 2. No 8. I do not know 9. No response	
205	I do not want to know the result but have you ever had an HIV test before?	1. Yes 2. No 9. No response	**Skip Q 206 if the answer is "NO" for Q 205**
206	Do you know the existence of PMTCT service before you come to the Health center?	1. Yes 2. No 9. No response	
207	Do you feel that it is beneficial to undergo HIV test?	1. Yes 2. No 8. I do not know 9. No response	

Part 3 Knowledge on HIV transmission, prevention, MTCT and PMTCT

No	Question	coding classification	Skip
301	Do you know the modes of HIV transmission? (Do not read, Circle what she says)	1. Sexual intercourse 2. Blood and blood products 3. MTCT 4. injections and blades 8. I do not know 9. Refuse to answer	
302	Do you know the methods how to prevent oneself from being infected? (Do not read, Circle	1. Abstinence 2. Faithful one to one relationship 3. use of condom	

	what she says)	8. I do not know 9. No response	
303	Do you think that a healthy looking person can have HIV in his/her blood?	1. Yes 2. No 8. I do not know 9. No response	
304	Do you know the time when HIV is transmitted from pregnant mother to her new born? (Do not read, Circle what she says)	1. During pregnancy 2. During breast feeding 3. During labor and delivery 8. I do not know 9. Refuse to answer	
305	What can a pregnant woman do to reduce the risk of transmission of HIV to her new born**?** (Do not read, Circle what she says)	1. ARVs 2. Avoid breast feeding 88. I do not know 99. refuse to answer	

Part 4 Stigmatizing Attitude towards people living with HIV/AIDS

No	**Questions**	**coding classification**	**Skip**
401	Would you be willing to share a meal with a person you knew had HIV/AIDS?	1. Yes 2. No 8. I do not know 9. No response	
402	If a male/female member of your family became ill with HIV, the virus that causes AIDS, would you be willing to care for	1. Yes 2. No 8. I do not know 9. No response	

	him/her in your household?		
403	If you knew a shopkeeper or food seller had HIV, would you buy food from them?	1. Yes 2. No 8. I do not know 9. No response	
404	If a member of your family became ill with HIV, the virus that causes AIDS, would you want it to remain secret?	1. Yes 2. No 8. I do not know 9. No response	
405	Do you think people living with HIV/AIDS should be quarantined?	1. Yes 2. No 8. I do not know 99. No response	
406	Do you think the names of PLWHA should be made public so that others can avoid them?	1. Strongly agree 2. agree 3. In different 4. Disagree 5. Strongly disagree	

Part 4 continued

407	Suppose you had a young child who was attending school where one of the students was known to have HIV, would you send your child to another school or leave him in the same school?	1. Leave the child in the same school 2. Send the child to another school 8. I am not sure 9. No response	
408	Suppose you had working place where one of the men working with you had HIV, would you be willing to work with him/her in the same work place	1. Yes 2. No 88. I do not know 99. No response	**Skip this question for students, house wife and**

10.3 Structured Questionnaire Amharic Version

u›Ç=e ›uv À'>y`c=+
l¡U“ ó"M+
¾lw[}cw Ö?“ ƒUl`ƒ ¡õM

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ŸSÖÃl uòƒ ¾}ÖÁm¬” eUU'ƒ T[ÒÑÝ pê
01. ¡õM Ÿ}T----------
02. ¾Ö?“ ×u=Á¬ eU----------
03. ¾SÖÃl SKÁ lØ`----------

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u²=I Ø“ƒ ”Á”Ç”Æ” }d”ò KSK¾ƒ SKÁ lØ` ”Í= eU ›”ÖkUU:: ¾Ø“~ ¬Ö?ƒ c=”}U ¾T>”}S¨< ›ß` TÖnKÁ c=J” Ã¤U ¾nK SÖÃl” }d”ò-‹ ÁÖnKK S[Í ÃJ“M:: SÖÃl uðnÅ˜'ƒ LÃ ¾}Sc[} c=J” ”`e- uØ“~ ¬eØ ¾Sd}õ ÁKSd}õ ”“ ¾Sn¨U Swƒ- uT”—¬U c¯ƒ ¾}Öuk '¨<:: uØ“~ ¨<eØ ›Md}õU TKƒ- ”`e-“ u?}cw- uÖ?“ ×u=Á¬ ¬eØ uT>ÁÑ–<ƒ ›ÑMÓKAƒ LÃ U”U ¯Ã'ƒ }ê°• ›ÃðØ`U:: u=J”U Ó” ¾`e- }dƒö Ø“~” KTTELƒ“ }Ñu= ¾J' Ÿ”ƒ ¨ÅMÏ ¾S}LKòÁ S”ÑÉ” ¾SŸLŸÁ ¾Ö?“ ›ÑMÓKAƒ K›Ç=e ›uv“ KK?KA‹ Ÿ}V‹ KSk¾e u×U ›eðLÑ> '¨<::

uØ“~ KSd}õ ðnÅ— '-ƒ;
1. ›-( ) 2. ›ÃÅKG<U( )
›ScÓ“KG<

¾Ø“~ }d”ò uØ“~ KSd}õ ðnÅ— ŸJ'< nKSÖÃl ÃËS`::

01. }ÖÁmª unM }'Óbƒ ¾}eTT‹ KSJ“E ¾T>Á[ÒÓØ ¾nKSÖÃl ›É^Ñ> eU“ ò`T
G. eU---------- ò`T----------
K. k”----------¨`----------1999

02. ¬Ö?ƒ(SÖÃl SVL~” KT[ÒÑØ)
G. S<K< uS<K< ¾}VL K. uŸòM ¾}VL
N. K?L "K ÃÑKê----------

03. u}q××]¬ ¾}[ÒÑÖ(SÖÃl SVL~” KT[ÒÑØ)
eU ò`T----------k”----------

¾nKSÖÃl ª“a“ ¡õKA‹ Ÿ’Ã²„‰†¨<

¡õM ›”É: ¾}dò-‹” Tlu^©“ ›=¢•T>Á© G<’@-‹ u}SKŸ}

101. °ÉT@- e”ƒ ’¨<;----------

1. 19-24 2. 25-29 3. 30-34 4. 35-39 5. 40-44 6. 45-49

88. ›L¬k¬U 99. KSSKe ðnÅ— ›ÃÅKG<U

102. GÃT•ƒ- U”É” ’¨<;
1. *`„Ê¡e 2. S<eK=U

3. ýa,e”ƒ 4. "„K=¡ 5. K?L "K ÃÓKê

103. u›G<’< Ñ>²? ¾Òw‰- G<’@- U”É” ’¨<;
1. ÁÑv 2. ÁLÑv

3. ›w[¬ ¾T>•\ 4. ¾V}uƒ 5. ¾}ó~

104. u›G<’< Ñ>²? e^- U”É” ’¬;
1. ’ÒÈ 2. ¾u?ƒ Su?ƒ 3. }T]

4. ¾S”Óeƒ c^}— 5. S”Óe© ÁMJ’ É`Ïƒ c^}—
6. e^ ¾K?K¬

105. u›G<’< Ñ>²? ¾ƒUl`ƒ Å[Í- U”É” ’¬;
1. ÁM}T[2. Ÿ1—----8— ¡õM ¾}T[

3. Ÿ9—---12— ¡õM ¾}T[4. Ÿ12— ¡õM uLÃ ¾}T[

106. ¾¨` Ñu=- u›T"˜ e”ƒ ’¨<;
1. ŸS„ w` u‹ 2. Ÿ100----450 w`

3. Ÿ450 w` uLÃ 88. ›L¬k¬U 99. KSSKe ðnÅ— ›ÃÅKG<U

¡õM G<K*ƒ*: ¾e’ }ªMÊ Ö?“‘ }ÁÁ» Ñ<ÇÄ‹

201. ¾›G<’<” ÚUa Ÿ›G<” uò*ƒ* e”*ƒ* Ñ>²? ›`Ó²hM;
1. ›”É 2. G<K*ƒ*

3. fe*ƒ* 4. ›^*ƒ*“ Ÿ³ uLÃ

202. ¾³_¬” ÚUa u²=l Ó´“i e”*ƒ* Ñ>²? K’õcÖ<` U`S^ SØ}hM;
1. ›”È 2. G<K,“ Ÿ³ uLÃ

203. ¾›?‹ ›Ãy= U`U^ ŸTÉ[Ói uò*ƒ* vKu?*ƒ*i” TS¨Á¾*ƒ*(T’ÒÑ`) Ã•`whM ¨Ã;
1. ›- Ã•`w—M 2. ›Ã•`w˜U(›MðMÓU)

88. U” ”ÅTÅ`Ó ›L¨<pU 99. ULi ¾KU
(Ã¤ ØÁo K}ó~: vL†¬ KV}v†¬“ LLÑu< ’õcÖ<` „‹ Ã²KM)

204. K›?‹ ›Ãy= zÃ[e }ÒLß’*ƒ*(¾SÁ² °ÉM) ›K˜ wKi eu=ÁKi;
1. ›- ›evKG< 2. ›LewU

88. ›L¬pU 99. ULi ¾KU

205. ¬Ö?~” T¨p ›MðMÓU ’Ñ` Ó” Ÿ›G<” uò*ƒ* }S`U[i ¬mÁKi ¨Ã;
1. ›- }S`U_ ›¬nKG< 2. }S`U_ ›L¬pU

99. ULi ¾KU

206. ¨Å Ö?“ ×u=Á¬ ŸSU×*ƒ*i uò*ƒ* zÃ[c< Ÿ“*ƒ* ¨ÅMÏ ”ÇÃ}LKõ KTÉ[Ó ¾T>cÖ¬ ¾l¡U“ ›ÑMÓKA*ƒ* S•\” ¬m ’u`;
1. ›- ›¬nKG< 2. S•\” ›L¬pU

99. ULi ¾KU

207. ¾›?‹ ›Ãy= U`S^ TÉ[Ó ÖnT> ’¨< wKi eu=ÁKi;
1. ›- ›evKG< 2. ›LewU

88. ›L¬pU 99. ULi ¾KU

¡õM fe*ƒ*: ¾›?‹ ›Ãy= ›?Ée S}LKòÁ S”ÑÉ: Ÿ“*ƒ* ¨Å MÏ S}LKòÁ S”ÑÉ“ Ÿ“*ƒ* ¨Å MÏ ”ÇÃ}LKõ SŸLŸÁ S”ÑÉ LÃ ÁK ¬k*ƒ*” ¾}SKŸ}

301. ¾›?‹ ›Ãy= zÃ[e S”ÑÊ‡” ¬mÁKi ¨Ã;
(}ÖÁmª ¾U*ƒ*K¬” w‰ Á¡wu< U`Ý-‡” ›Á”wu<)
1. uÓw[eÒ Ó”–<’*ƒ* 2. uÅU“ uK?KA‹ ¾c¬’*ƒ* ðdj‹

3. Ÿ“*ƒ* ¨Å MÏ 4. g<M“ eK T uJ’< Sd]Á-‹

88. ›L¬pU 99. ØÁo¬” KSSKe ›MðMÓU

302. ›”É c¨< ^c<” u›?‹ ›Ãy= zÃ[e ŸSÁ´ ¾T>ŸLŸMv‹¬” S”ÑÊ‹ ¬mÁKi;((}ÖÁmª ¾U*ƒ*K¬” w‰ Á¡wu< U`Ý-‡” ›Á”wu<)
1. uS kw 2. uS¨c” 3. u¢”ÊU uSÖkU

88. ›L¬pU 99. ØÁo¬” KSSKe ›MðMÓU

303. c=Á¿*ƒ* Ö?’— ¾T>SeM c¬ ›?‹ ›Ãy= K=•`u*ƒ* Ã‹LM wKi eu=ÁKi;
1. ›-” ›evKG< 2. ›LewU

88. ›L¬pU 99. ØÁo¬” KSSKe ›MðMÓU

304. ¾›?‹ ›Ãy= zÃ[e ’õcÖ<` ŸJ’‹ “*ƒ* ¨Å MÍD ¾T>}LKõu*ƒ*” Ñ>²? ¨ÃU c®*ƒ* ¨ÃU S”ÑÉ ¬mÁKi;(}ÖÁmª ¾U*ƒ*K¬” w‰ Á¡wu< U`Ý-‡” ›Á”wu<)
1. u`Ó´“ Ñ>²? 2. Ö<*ƒ* uTØv*ƒ* Ñ>²? 3. uUØ“ u¨K=É Ñ>²?

88. ›L¬pU 99. ØÁo¬” KSSKe ›MðMÓU

305. ›?‹ ›Ãy= ÁKv*ƒ* ’õcÖ<` “*ƒ* zÃ[c< ¨Å MÍD ”ÇÃ}LKõ U” TÉ[Ó *ƒ*‹LK‹;(}ÖÁmª ¾U*ƒ*K¬” w‰ Á¡wu< U`Ý-‡” ›Á”wu<)

1. ¾ì[›?‹ ›Ãy= SÉH’>„‹ S¬cÉ 2. Ö<*ƒ* ›KTØv*ƒ*

88. ›L¬pU 99. ØÁo¬” KSSKe ›MðMÓU

¡õM ›^ƒ: Ÿ›?‹ ›Ãy= zÃ[e Ò` eKT>•\ c-‹ SÑKM” ¾T>ðØ\ ›SK"Ÿ„‹” ¾}SKŸ}

401. ¾›?‹ ›Ãy= zÃ[e ”ÇKuƒ ¾U¬m¬ c¬ Ò` UÓw ›w[i KSwLƒ ðnÅ— ’i;
1. ›- ðnÅ— ’˜< 2. ðnÅ— ›ÃÅKG<U
88. ›L¬pU 99. ØÁo¬” KSSKe ›MðMÓU

402. Ÿu?}cx‹i ›”Æ u›?‹ ›Ã zÃ[e u=Á´ ”¡w"u?“ ÉÒõ KTÉ[Ó ðnÅ— ’i;
1. ›- 2. ›ÃÅKG<U

403. ¾U¨<m¨< vKc<p ¨ÃU UÓw ¾T>gØ c¨< ¾›?‹ ›Ãy= zÃ[e ”ÇKuƒ w¨<m Ÿ`c< UÓw SÓ³ƒi” ƒkØÁKi;

1. kØLKG< 2. ›MkØMU

88. ›L¨<pU 99. ØÁo¬” KSSKe ›MðMÓU

404. Ÿu?}cx‹i ›”Æ ›?Ée” uT>ÁS×¨< ›?‹ ›Ãy= zÃ[e SÁ²<” w¨<m T>eÖ=` ”Ç=J” ¨ÃU ”ÇÃ’Ñ` ƒðMÑ>ÁKi ;

1. ›- T>eØ` ”Ç=J” ðMÒKG< 2. T>eØ` ”Ç=J” ›MðMÓU

88. ›L¬pU 99. ØÁo¬” KSSKe ›MðMÓU

405. ›?Ée” ¾T>ÁS×¬ zÃ[e ›?‹ ›Ãy= ÁKv†¨< c-‹ }KÃ}¬ ›”É x SkSØ ›Kv†¨< wKi eu=ÁKi;
1. ›-” ›evKG< 2. ›LewU
88. ›L¬pU 99. ØÁo¬” KSSKe ›MðMÓU

406. ¾›?‹ ›Ãy= zÃ[e ÁKv†¬ c-‹ eT†¬ Ãó J• K?KA‹ ”ÇÃk`vD†¬(”Ç=ÁÑLD†¬) u=Å[Ó U” eu=ÁKi;
1. u×U ›É`Ñ@ eTTKG< 2. eTTKG<

3. ULi ¾K˜U 4. ›MeTTU 5. u×U ›É`Ñ@ ›MeTTU

407. ÉT@¬ KƒUI`ƒ ¾Å[c MÏ ›K-ƒ ”uM“ ¾T>T`uƒ ƒUI`ƒ u?ƒ ¬eØ ›”É MÏ ¾›?‹ ›Ãy= zÃ[e ÅS< ¬eØ ”ÇK u=¨p MÏ-ƒ” ¨Å³ ƒUI`ƒ u?ƒ ÅÓS¬ ÃMŸ<M ¨Ãe K?L ƒUI`ƒ u?ƒ ÁeÑu<M;
1. ³¬ ”Ç=T` ›Å`ÒKG< 2. ¨Å K?L ƒUI`ƒ u?ƒ MŸªKG<
88. `ÓÖ— ›ÃÅKG<U 99. ØÁo¬” KSSKe ›MðMÓU

408. e^ ¾c\ vK<uƒ Se]Á u?ƒ ¬eØ ¾›?‹ ›Ãy= zÃ[e ÁKvƒ(ÁKuƒ) vMÅ[v u=•`-ƒ Ÿ`c<(Ÿ`dD)Ò` ›w[¨< KSe^ƒ õLÔƒ ›K-ƒ;
1. ›-" ›K˜ 2. ¾K˜U 88. ›L¬pU 99. ULi ¾K˜U

10.4 Semi Structured Questionnaire for Qualitative Study English Version

1. Knowledge of HIV modes of transmission, MTCT and PMTCT
2. Benefit of frequent ANC visit and its impact on HIV testing
3. Perceived Barriers to HIV testing at ANC settings and motivating factors to be tested for HIV
4. Attitude towards PLWHA and the attitude of the community towards PLWHA and its impact on HIV testing
5. Knowledge of existence of PMTCT service, adequacy of information provided during counselling and its impact on HIV testing.

10.5 Semi Structured Questionnaire for Qualitative Study Amharic Version

Ku<É" ¬ÃÃƒ ¾}²ÒÌ S¨ÁÁ 'Øx‹

1. u›?‹ ›Ãy= S}LKòÁ S"ÑÊ‹' Ÿ"ƒ ¨Å ê"e S}LKòÁ S"ÑÊ‹" Ÿ"ƒ ¨Å ê "e "ÇÃ}LKõ uT>Å[Ñ< SŸLŸÁ S"ÑÊ‹ LÃ ÁK °¬kƒ

2. u}ÅÒÒT> ¾T>Å[Ó ¾'õcÖ<` U`S^ ØpU" u›?‹ ›Ãy= U`S^ LÃ ÁK¬ }ê°•

3. u`Ó´" Ñ>²? ¾›?‹ ›Ãy= U`S^ "ÇÃÅ[Ó "póƒ K=J'< ¾T>‹K< du?-‹" KU`S^ ¾T>Áu[~ G<'@-‹

4. lw[}cu< Ÿ›?‹ ›Ãy= zÃ[e Ò` KT>•\ c-‹ ÁK¬ ›SK"Ÿƒ" Ã¡U uU`S^ LÃ ÁK¬ }ê°•

5. Ÿ"ƒ ¨Å MÏ "ÇÃ}LKõ ¾T>cÖ¬ ¾l¡U" ›ÑMÓKAƒ eKS•\ ÁK Ó"³u?" uU`S^ Ñ>²? ¾T>cÖ¬ ¾U¡` ›ÑMÓKAƒ(S[Í) um'ƒ" "˜l G<'@-‹ u›?‹ ›Ãy= U`S^ LÃ eKT>ÁdÉ\ƒ }ê°•