Assessment of VCT Utilization, and Willingness to Accept Provider-Initiated HIV Counseling and Testing among Tuberculosis Patients in Addis Ababa

By:

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Dedication

To the memory of my beloved mother and father

Declaration

I, the undersigned, declare that this thesis is my original work, has not been presented for a degree in this or another university and that all sources of materials used for this thesis have been fully acknowledged.

Name: Melaku Maru Dessie

Signature:_____

Date:_____

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

Name: Professor Ahmed Ali

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Date: _____

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List of Acronyms and Abbreviations

AIDS: Acquired Immuno Deficiency Syndrome

ANC: Antenatal Care

ART: Antiretroviral Therapy

AOR: Adjusted Odds Ratio

BSS: Behavioral Surveillance Survey

CDC: US Centers for Disease Control and Prevention

CI: Confidence Interval

CPT: Co-trimazole Preventive Therapy

COR: Crude Odds Ratio

DHS: Demographic and Health Survey

EPHA: Ethiopian Public Health Association

IEC: Information Education and Communication

HIV: Human Immuno Deficiency Virus

PIHCT: Provider Initiated HIV Counseling and Testing

PLWHA: People Living with HIV/AIDS

PMTCT: Prevention of Mother to Child Transmission of HIV

PTB+: Smear Positive Pulmonary Tuberculosis

PTB-ve: Smear Negative Pulmonary Tuberculosis

MOH: Ethiopian Ministry of Health

Opt-in: All patients are offered a test, and they must provide explicit informed consent

Opt-out: All patients are automatically tested unless they refuse

TB: Tuberculosis

UNAIDS: Joint United Nations Programme on AIDS

VCT: Voluntary Counseling and Testing

WHO: World Health Organization

Abstract

Addis Ababa City Administration Health Bureau is recently implementing Provider Initiated HIV Counseling and Testing (PIHCT) in response to the high HIV prevalence among TB patients, and in an attempt to increase the uptake of HIV testing and ART. However, there has not been precise information pertaining to the Voluntary counseling and testing (VCT) utilization status by tuberculosis (TB) patients.

This study was conducted in June 2006 to assess VCT utilization rate, perceived barriers for HIV testing, and willingness for PIHCT among TB patients in Addis Ababa.

Facility-based, cross-sectional study was conducted and 423 TB patients interviewed. A stratified two stage sampling method was used for the selection of study subjects. In the first stage of sampling, eight health centers were selected by simple random sampling. In the second stage of sampling, patients were systematically selected in each selected health center. The study had used quantitative and qualitative data collection methods.

The prevalence of self reported HIV testing among sampled TB patients was 57%. Adjusted correlates of HIV testing include primary education (AOR=2.04, 95% CI=1.03-4.06), being merchant (AOR=5.67, 95% CI=1.56-20.60), had moderate HIV risk perception (AOR=5.30, 95% CI=1.67-16.82), and high-HIV risk perception (AOR=4.38, 95% CI=1.32-14.55). Patients who had willingness for PIHCT found more likely to have been tested for HIV (AOR=2.32, 95% CI=1.23-4.36).

While experiences with client and provider-initiated HIV testing overall were positive, 86.2% of the patients were willing for PIHCT. The only adjusted correlates of willingness for PIHCT were being older age group (AOR=4.16; 95% CI= 1.59-10.81), and had demand for HIV testing (AOR=29.13; 95% CI =13.83-61.32).

Key testing barriers include self trust (41.1%), lack of risk perception for HIV infection (24.4%), fear of learning positive result (13.9%), and stigma and discrimination attached to TB and HIV as identified in focus group discussions.

Early evidence of widespread support for PIHCT and moderate acceptance of HIV testing in this study holds significant promise for the control, prevention and treatment of HIV/AIDS and TB. Concerted efforts to scale up PIHCT, however, must be accompanied by intensive IEC on TB /HIV along with tackling of testing barriers.

Introduction

Tuberculosis (TB) is a leading cause of morbidity and mortality among people living with HIV/AIDS (PLWHA)[1], as untreated HIV infection leads to progressive immunodeficiency, and increased susceptibility to infections including TB[2].

HIV is fuelling the tuberculosis epidemic particularly in Africa, [3] where TB incidence rates are still rising across the continent at a rate of 3-4% annually [4]. TB had tripled or quadrupled in Sub-Saharan Africa due to the deadly synergy between TB and HIV since 1990 [4-5].

HIV infection is now the most important single predictor of TB incidence in sub-Saharan Africa [6]. The region accounts for 70% of the world's 14 million people who are co-infected with TB and HIV [7].

In some sub-Saharan African countries, up to 70% of the patients with smear positive pulmonary TB are HIV-positive [8]. A study in rural Malawi showed that 77% of TB patients were HIV positive [9].

Death rate in patients treated for tuberculosis in sub-Saharan Africa has risen in the last 10-15 years, the most important reasons being concomitant HIV infection [10]. Between 20 and 30 % of HIV infected patients with smear positive pulmonary tuberculosis (PTB+) die within 12 months of starting treatment [10]. The death rates are higher even in those with smear negative (PTB -ve) and extra pulmonary TB [10].

In Ethiopia, it is estimated that HIV/AIDS accounts for 32% of the estimated 141,000 TB case incidences in 2005[11]. The prevalence of HIV co-infection among adult TB cases is estimated to be

40% in urban areas of Ethiopia [12]. A study conducted in Addis Ababa in 1998 shows HIV co-infection was 45.3% among PTB+ patients [13].

Despite close epidemiological links between HIV and TB, the public health responses have largely been separated [7]. In addition, because of the low priority given to VCT in the past, access has been limited in countries most severely affected by HIV [14]. There are few developing countries where more than 10% of the adult population has been tested for HIV, whereas one-quarter to one third adult population have been tested in countries with low HIV prevalence [15].

According to a recent (i2003) WHO report, only 3% of the 4.4 million TB cases were reported to have been HIV tested in the world [16]. The situation is the same in Ethiopia. One cross- sectional study showed that only 6.6% of the tuberculosis patients reported to have been tested for HIV in North Gonder [17].

The revised UNAIDS / WHO policy statement on HIV testing recommended that PIHCT should be implemented in clinical settings [18, 19].

Accordingly, WHO recommended that,

1) HIV testing and counseling should be offered to all tuberculosis patients in settings where the HIV prevalence among tuberculosis patients exceeds 5 %;
2) TB control program should establish a referral linkage with HIV/AIDS programs to provide a continuum of care and support for PLWHA who are receiving or who have completed their TB treatment; and
3) TB and HIV/AIDS programs should establish a system to provide co-trimazole preventive therapy (CPT) to eligible PLWHA who have active TB [1, 18].

Generally, the current utilization of HIV testing remains poor. Even in setting in which HIV counselling and testing is routinely offered, such as programmes for PMTCT, the number of people who utilize these services remains low in many countries [19].

PIHCT is increasingly being recommended as an option in Ethiopia and other countries [1, 20-24]. So it is important to improve our understanding of the reasons for poor uptake of HIV testing. However, there is paucity of information that would describe the extent of VCT service utilization and patients' acceptance to PIHCT among TB patients in Ethiopia. Therefore, this study was undertaken to assess VCT service utilization and, willingness for PIHCT, and also try to explore perceived barriers for HIV testing among TB patients in Addis Ababa.

The study aimed to come up with recommendations to enable responsible bodies and policymakers to integrate PIHCT effectively in tuberculosis control programmes in Ethiopia.

Literature Review

Global HIV and TB Epidemiology

AIDS has killed more than 25 million people since it was first recognized in 1981 [8]. It makes one of the most destructive epidemics in recorded history [8]. The AIDS pandemic has claimed 3.1 million lives; more than half a million (570 000) being children at the end 2005 [25]. The total number of PLWHA reached its highest level; an estimated 40.3 million people are now living with HIV in 2005 [25].

Sub-Saharan Africa has just over 10% of the world's population, but is home to more than 60% (25.8 million of 40.3 million) of people living with HIV [5, 25]

TB and HIV are now the overlapping epidemic in sub-Saharan [26]. There were an estimated 8.3 million new cases of TB worldwide; nearly two million people die from the disease each year and 12% are attributable to HIV [5,26]. Generally, there are between 16 and 20 million cases globally; 95% of TB cases and 98% of the deaths occur in developing countries [5].

HIV infection is driving the tuberculosis epidemic, but TB programmes have focused on TB case finding and treatment, with little attention to HIV/AIDS interventions [3]. Although TB is the leading cause of HIV related morbidity and mortality, HIV/AIDS programmes have generally paid little attention to TB [3].

HIV and TB in Ethiopia

In Ethiopia HIV was first detected in 1984 in stored sera [11]. The first two HIV/AIDS cases were reported in mid-1986 [11]. Since then, the epidemic has spread to the general population in both urban and rural areas [27].

Ethiopia's epidemic is concentrated mainly in urban areas, where HIV prevalence among pregnant women has averaged at 12–13% since the mid-1990s[25]. The average prevalence rate of HIV infection in the adult population is estimated to be 3.5% with a much higher proportion in urban (10%) areas than in rural areas (1.9 %) in 2005[28].

Indeed, the large part of the AIDS burden is shifting to rural communities where more people are now being infected with HIV than in urban areas [11]. Ethiopia is a country where AIDS caused an estimated 34% of all young adult deaths in 2005, and 66.3% of all young adult death (15-49 years) in urban Ethiopia [28].

The burden of TB in Ethiopia is one of highest in the world [12]. The incidence of TB has risen in recent years, partly as a result of the impact of the HIV/AIDS epidemic [12].

The HIV pandemic presents a massive challenge to the control of tuberculosis in Ethiopia [11, 29]. Its accounted for an estimated 38% or 54,000 of all new TB cases in 2003 [11]. This proportion is expected to continue to rise in the coming years, contributing to a total projected TB caseload of 180,000 in 2008 [11,27]. According to recent MOH estimation, the prevalence of HIV co-infection among adult TB cases was 21% in Ethiopia [29]. In 1998, the prevalence of HIV in tuberculosis patients was 45.3% among PTB+ in Addis Ababa as described by one study [13].

The Impact of HIV on Tuberculosis

HIV fuels the tuberculosis epidemic in several ways. HIV promotes progression to active TB both in people with recently acquired and with latent *M tuberculosis* infections [27]. HIV is the most powerful known risk factor for reactivation of latent tuberculosis infection to active disease [5]. HIV infected people are more susceptible to TB infection when they are exposed to *M tuberculosis* [6, 30].

The life time risk of active tuberculosis in persons with TB infection alone is estimated to be only 5-10%, but the annual risk of developing TB in a PLWHA who is co-infected with *M. tuberculosis* ranges from 5 to 15 percent with an estimated life time risk above 30% [29].

HIV also increases the rate of recurrent TB, which may be due to either endogenous reactivation (true relapse) or exogenous re-infection [2]. The Increasing tuberculosis cases in PLWHA pose an increased risk of TB transmission to the general community, whether or not HIV-infected [2, 5,25,26,30].

To summarize, HIV has impact on TB patients and programmes hence having great implication for TB control policies [6]. The impact of HIV on patients includes the effect of HIV on diagnosis and on the pattern of HIV –related TB, response of HIV –infected TB patients to TB treatment, and the quality and continuity of care for TB patients. The impact on national TB programmes (NTP) includes increased case load, impaired NTP performance, and increased need for access to ART and difficulties in reaching TB control targets [6].

On the other hand, TB also accelerates HIV disease progression, and is associated with decreased survival [29]. TB specific mortality is four fold higher among HIV-infected patients than among the uninfected patients [31].

In Ethiopia, PIHCT was introduced at the end of 2005 in selected TB clinics. Now it has covered more than 300 health facilities in the country (personal communication)

Voluntary Counseling and Testing, and Its Utilization

HIV testing in combination with appropriate counseling is an important tool in the public health response to AIDS [32]. Counseling and testing programs designed to promote knowledge of sero-status can facilitate behavioral change, assist partners to negotiate safer sexual practice and allow early access to care, treatment and support for the HIV infected [32-34].

Recent improvements in ART and prophylaxis for opportunistic infection have given new urgency to identify HIV infected persons [32]. However, the current reach of HIV testing services remains poor in low and middle-income countries [19]. In addition, those who have been tested learn that they are infected too late to benefit from these advantages [32]. For instance, in a random population sample in Zambia where at the end of 1999, the HIV sero-prevalence among the general adult population was 20%, only 6.5% of adults had previous HIV tested [21]. Only 3% of 4.4 million reported TB cases in the world were reported to have been HIV tested in 2003, and fewer than 1,349 HIV positive TB patients started on ART [16].

In Ethiopia, the 2nd round BSS reported that only 5% of the general population (15-49 years of age) being ever tested for HIV in 2005 [28]. The up take of HIV testing among TB patients was only 6.6% in northwest part as reported by Akililu [17].

Accordingly, several pilot projects and clinical trials are being implemented in several countries and documented that the uptake of HIV testing in TB clinics was high [1,9, 21-23,35] .

According to the recent report from Addis Ababa Health Department, PIHCT is being implemented as a pilot at Zewditu Memorial Hospital and Cazanches Health Center TB clinics since 2004. Starting from January 2006, the City Health Bureau is implementing PIHCT in all the 24 health centers at TB clinics (Personal Communication).

Factors Influencing VCT Utilization

Access to antiretroviral treatment is scaled up in low and middle-income countries [19]. There is a critical opportunity to simultaneously expand access to HIV prevention. HIV prevention continues to be the mainstay of the response to the HIV epidemic [19]. HIV testing and counseling stands out as paramount both in treatment and in prevention of HIV/AIDS [19].

By July 2006, only 45,595 patients were ever started on ART out of an estimated 277,800 eligible individuals in Ethiopia [28]. Slow enrollment in HIV treatment was thought to be due to in part poor utilization of HIV testing [20] .

In 2005, only 5% of the general population 15-49 years of age was ever tested for HIV in Ethiopia [28] . The reality is that stigma and discrimination continue to stop people from having an HIV test [19].

In addition, poor access to service, and the wide spread perception that HIV testing offers little benefits to the individual who tests positive in the past also contributed to the under utilization of HIV testing [3, 14]

The fear of learning HIV status, feelings of hopelessness, and senses too late for behavior change were mentioned as factors resulting in under -utilization of testing service shown by several studies [15,21,34] .

Studies conducted in Ethiopia on the factors why people may not want to learn their HIV status among youth and pregnant women identified as low risk perception, lack of perceived benefits of VCT, fear of partner's reactions, and unable to cope with positive tests[33,37,38]. A population based study in Botswana identified fear of having to change sexual practices with positive HIV test as a perceived barrier for HIV testing [20].

Rationale of the Study

HIV pandemic presents a massive challenge to the control of tuberculosis [19]. On the other hand, TB is also one of the leading causes of morbidity and mortality in PLWHA in Ethiopia [39,40].

HIV testing and counseling stands out as paramount to tackle these problems in treatment and prevention activities [19,33].

According to a recent report from Addis Ababa Health Bureau , PIHCT is being implemented in all of the 24 health centers at TB clinic in Addis Ababa (Personal Communication). Hence it is important to improve our understanding of the reasons for poor up take of client-initiated HIV testing, and specifically TB patient willingness for PIHCT.

However, there is lack of studies in Addis Ababa. Therefore, this study was conducted to assess the status of up take of client –initiated HIV testing and, willingness for PIHCT, and also to explore perceived barriers for HIV testing among TB patients. The study might help design measures to increase the up take of HIV testing, and also introduce a system for HIV surveillance among TB patients in Ethiopia.

Objective of the Study

General objective

- To assess VCT utilization rate, and willingness for PIHCT among tuberculosis patients in Addis Ababa

Specific objectives

- To determine VCT service utilization rate among tuberculosis patients
- To identify perceived barriers for HIV testing among tuberculosis patients
- To assess TB patients' willingness to accept PIHCT

Methods and Materials

The Study Area

The study was conducted in Addis Ababa City. Addis Ababa is the capital city of Ethiopia. There are 10 sub-cities and 99 kebeles in the City. The projected population of the Addis ababa for July 2006 was 2,973,000 [41].

DOTS have been implemented in Addis Ababa since 1993. Five government hospitals, 24 health centers, five health stations, and one mission of charity clinic are now implementing DOTS in Addis Ababa and most of the TB clinics except in some health stations have VCT services.

Study Design

Facility-based, cross-sectional study was conducted in June 2006.among TB patients who have been following their treatment under DOTS strategy.

The study employed into account an analytic approach of comparing two groups. The groups were those patients ever tested against never tested for HIV, and willing and non-willing for PIHCT.

Study Population

For this study, the source population was all TB patients who were registered for DOTS between December 2005 and June 2006 in selected health centers in Addis Ababa. In order to avoid the confounding effect of severe cases and poor access to VCT services, patients in hospitals and health stations were excluded from the study.

The study population was all sampled tuberculosis patients in selected health center namely: Bole, Yeka, Cazachenes, Kebena, Arada, Sheromeda, Woreda 7, and Addis Ketema health centers..

Sample Size Determination

Since the study was conducted to determine two proportions (proportion of TB patients tested for HIV, and willing for PIHCT) for single population. Two assumptions were considered to determine the sample size.

Assumption-1

- "P", the proportion of willingness for PIHCT among TB patients was assumed to be 50% in order to maximize the sample size, since similar studies that determined willingness for PIHCT were not available.
- "n" was the required sample size,
- "Z" was a standard score corresponding to 95% confidence level;
- "d '" was the margin of error 5%, and 10% allowance for non-responses was taken
- The required sample size for the study was determined using the formula for single population proportion:

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

Accordingly, the required sample size was calculated to be **423**

Assumption-2

- "P", the proportion of TB patients tested for HIV was found to be 6.6% from a study in north Gonder [7]. But the study area was different from Addis Ababa in terms of VCT services availability, accessibility and patients' knowledge, P was assumed to be 8%.

- "n" was the required sample size,
- "Z" was a standard score corresponding to 95% confidence level;
- "d '" was the margin of error 3% ,and 10% allowance for non-responses will be taken

Accordingly, the required sample size for the study was calculated to be **346**

Therefore in order to increase the precision, sample size of 423 was taken for the study.

Sampling Method

A stratified two-stage sampling method was used for the selection of the study sample. In the first stage of sampling, the total numbers of patients treated for TB in previous year (1997 EC) were colleted from 24 health centers in Addis Ababa (See Annex VI). The numbers of TB patients were added and divided by 24. The calculated mean (495) was taken as cut off point to stratify the health centers into two as high and low patient loads. Out of 24 health centers, 13 had low TB patient load (<495 TB patients per annum), and 11 health centers had high TB patients loads (≥495 TB patients per annum). For financial and logistic reasons, within each group 4 heath centers were selected by simple random sampling method (primary sampling stage)-see annex V. In the second stage of sampling, patients were systematically selected in each selected health centers by using patient's registration book-fig 1.

The next patient was included in the study if the selected study subject refused to participate, dead, transferred out or severely ill.

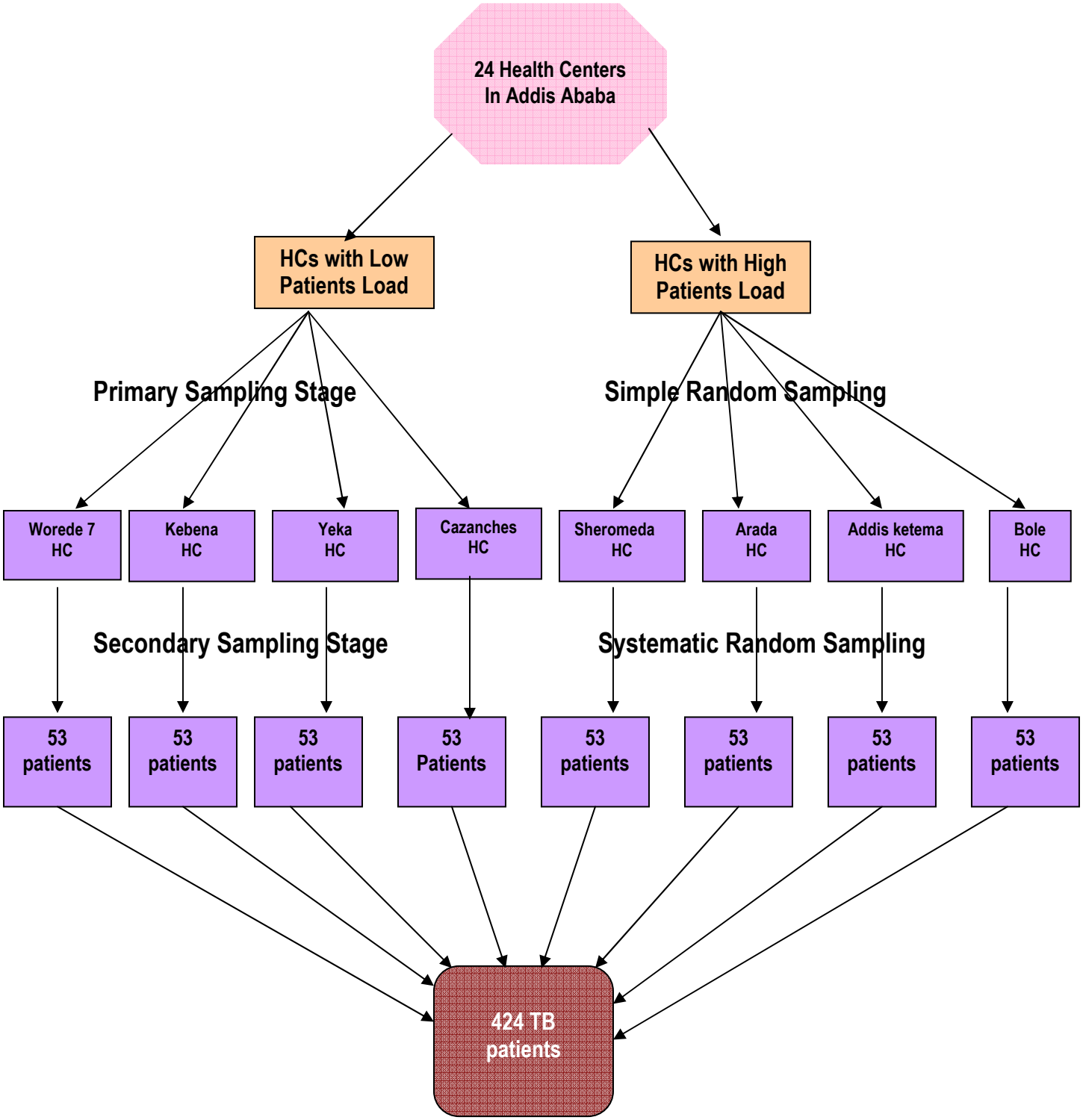
Inclusion criteria

All types of TB patients who were following their treatment at selected health centers in Addis Ababa were included.

Exclusion criteria

- TB patients whose addresses were out of Addis Ababa.
- All TB patients who were diagnosed in Addis Ababa tuberculosis center but transferred out to other health institutions for follow up
- All referred out patients out of Addis Ababa TB treatment centers
- TB patients who discontinued their treatment
- Patients aged less than 15 yrs old
- Non-consenting or non-volunteering cases

Fig-1: Schematic Presentation of Sampling Procedure



Data Collection

The study utilized open and closed ended structured questionnaire. Eight-trained DOTS supervisor nurses conducted the interview using pre-tested structured questionnaire. The interview was carried out on appointment days when patients came to treatment centers to collect their drugs.

One supervisor who had BSc degree with experiences in research was recruited to assist in the data collection process. The supervisor was coordinating the overall data collection process and assisted the Principal Investigator. A two days training was given for the supervisor and data collectors on the objectives of the study, the questions and extent of explanations, the way to keep privacy and confidentiality, and other ethical issues.

The questionnaire was pre-tested health centers not selected for the study to check for the clarity of the questions, their sensitiveness as well as gap on data collectors. Discussion was held based on the result of the pre-testing to make appropriate corrections.

The question was prepared in English and translated to Amharic then back to English by two independent individuals with good command of both languages; in order to keep the consistency of questions. Questions were grouped and sequenced in terms of their sensitivity and objectives they focus. The questionnaire addressed the patients' willingness for PIHCT, VCT utilization rate (reported "ever had an HIV test''), perceived barriers for HIV testing, socio-demographic and economic characteristics, knowledge and attitude on HIV/AIDS/TB/VCT, knowledge on TB/HIV association, and self perceived risk. The Principal Investigator and Supervisor checked the

completeness and clarity of the data every time after the collection so as to identify areas that need correction.

The quantitative data collection was supplemented by focus group discussion (FGD) in order to explore perceived barriers for HIV testing. Four FGD were conducted by considering each sex. Each FGD had eight randomly selected patients who were never tested for HIV. The patients were asked to state the reasons for not having been tested for HIV. Semi-structured questionnaire was used to facilitate the discussions. The Principal Investigator moderated all the focus group discussions. During the group discussion, notes were taken and discussions were tape-recorded. The compositions of FGD participants are shown in Annex IV.

Operational Definitions

- **VCT –** is a process by which an individual undergoes counseling to enable him/her to make informed decision about being tested voluntary for HIV [43].
- **Provider-Initiated HIV counseling and testing (PIHCT)**: is a process in which the individual undergoes HIV counseling and testing by health care provider initiation[43].
- **Willing to accept PIHCT**: the individual agree to accept provider initiated HIV counseling and testing (reported agreement).
- **VCT utilization (ever tested for HIV):** a process in which an individual was tested for HIV one or more times in either client or provider- initiated arrangements (reported "ever tested for HIV")

Study Variables

Dependent Variables

The dependent variables measured were:-

- VCT utilization (have been tested for HIV) either client or provider initiated
- Willingness for PIHCT

Independent Variables

The independent variables measured were:-

- Socio-demographic and economic characteristic: (age, sex, educational level, occupation, marital status, ethnicity, religion, family size, monthly family income, history of family member treated for tuberculosis).
- Knowledge on, and attitude of HIV/AIDS/TB
- Knowledge of, and attitude towards VCT service
- Perceived barriers for HIV testing
- Self- perceived risk of HIV infection

Data Processing and Analysis

The collected data were entered and analyzed using SPSS 11 for windows soft ware.

To describe the characteristics of the study population, we calculated means, medians, and percentages. For the first set of analyses, we compared individuals who had ever been tested for HIV (n = 239) with those who had never been tested (n = 180). For the second set of analyses, we compared individuals who stated they would accept a Provider Initiated HIV Counseling and Testing (PHICT) on the day of the interview if one was

offered (n= 361) with those who would not accept PIHCT (n=58). Univariable logistic regression was performed on theoretically relevant factors to examine the relationship between each factor and each dependent variable. Chi-square statistics and odds ratios were generated with 95% confidence intervals to guide interpretation. Variables that were found with a statistically significant association ($p<0.05$) at univariate logistic analysis were entered and analyzed by multiple logistic regression analysis.

Compilation and summary of the qualitative data were done manually.

Data Quality Assurance

To ensure quality, all the data from each treatment center, were checked for completeness, accuracy, clarity and consistency by the Principal Investigator and the supervisor immediately after the data were collected. The principal investigator and the supervisor were closely monitoring the data collection. Double entry was preformed to assure quality of data. The data were intensively cleaned before analysis.

Ethical Considerations

The ethical approval and clearance were obtained from the Department Of Community Health, and the Faculty of Medicine, AAU Ethical Committee. Officials were contacted and permission was secured at all levels. The necessary explanation about the purpose of the study and its procedure were given and verbal consent obtained from the respondents. To assure confidentiality, anonymous interview was conducted after explaining to the respondents her/his name was unnecessary. Referral (link-up) arrangement was made for

those who might wish to consider HIV testing as a result of the interview. Finally, a specific safe place was arranged to put the questionnaires after completion of the interview.

Dissemination of Findings

The findings of this study will be communicated to different organizations that facilitated the study and to those who have a stake in TB/HIV integrated services. these include the Addis Ababa University, Ministry of Health, Regional Health Bureaus, EPHA, CDC and others. The findings will be presented in different seminars, meetings and workshops and published in a scientific journal

Results

The response rate was 99.05%, 419 of the 423 patients. Among the four non-respondents, three were unable to complete the interview. The remaining one had more than 5% missing responses. Characteristics of patients enrolled in the study are presented in Table 1.

Socio-demographic profiles

Fifty-one percent of the study participants were male with nearly 1.05 to 1 sex ratio. The mean and median ages of the patients were 30.7± 10.35 and 28 years old respectively. Over half of (53.2%) the study populations were between 15-29 years old followed by 30-44 age group which account for 145 (34.6%) of the study participants (Table 1).

Most (80.2%) of those interviewed were Orthodox Christians followed by Muslim, 52(12.4%). Over half (51.3%) of the study participants were from Amhara ethnic group followed by Oromo, 82(19.6%). The rest were Guarge, Tigray, and few others as shown in Table 1.

Regarding the marital status of the participants, 48.4% were single, 38.4% were married in union, and 6.9% were divorced. Forty–five percent of the participants had secondary and above education, and 34.4% of the study population had at least a primary (Grade 1-8) education.

Twenty-nine percent of the respondents were civil/private servant, and 13.8% were housewives. Of the total, ninety-eight of the participants (23.4%) were jobless, and 52 (12.4%) were daily laborers.

Around 55% of the sampled patients were from family size of four or less persons. One hundred and five of the participants (25.1%) reported that their family monthly incomes were less than 344 Birr per month, and Only 61(14.6%) of the participants said that their family hadn't monthly income.

Knowledge of, and attitude towards TB/HIV/AIDS

All study subjects reported that they have heard of HIV/AIDS, and 367(87.6%) believed that HIV is definitely not a curable disease. Four hundred and seven (97.1%), and 360(85.9%) of the study subjects knew that sexual intercourse and sharing of sharp materials respectively were the most common way of HIV transmission in Ethiopia (Table 2). Few participants were able to identify mother to child transmission, and blood transfusion as modes of HIV transmission.

Overall, 18(4.29%) of the participants had misconception on transmission of HIV/AIDS including shaking of hands with, wearing clothes of, and sharing a meal with PLWHA.

Out of 419 participants who reported that they have heard of HIV /AIDS, only 63.5% and 59.2% of the participants indicated that abstinence and staying with only one uninfected partner as means of HIV prevention method respectively. Over half of the participants, 229(54.2%) also mentioned use of condom every time during sexual intercourse as means of HIV prevention method.

Eighty-nine percent of participants believed that HIV infection could be asymptomatic, and 263 reported that they knew someone infected with HIV or died of AIDS. Self-perceived risks of being HIV infected among participants were reported as no risk by 257(61.3%), moderate, and high or very high risk by 132(31.5%) and 30(7.3%) respectively.

Table 1: Socio-Demographic Characteristics of Tuberculosis Patients in Addis Ababa, June 2006

Variables	Frequency	%
Age (Years)		
15-19	40	9.5
20-24	88	21.0
25-29	95	22.7
30-34	62	14.8
35-39	55	13.1
40-44	28	6.7
45-49	27	6.4
+50	24	5.7
Religion		
Orthodox	336	80.2
Muslim	52	12.4
Protestant	26	6.2
Catholic	5	1.2
Ethnic group		
Amhara	215	51.3
Oromo	82	19.6
Guarge	78	18.6
Tigray	25	6.0
Other*	19	4.5
Marital status		
Single	203	48.4
Married in union	161	38.4
Divorced	29	6.9
Widowed	21	5.0
Unmarried couples	5	1.2
Educational status		
Illiterate	63	15.0
Read and Write	22	5.3
Grade 1-6	83	19.8
Grade 7-8	61	14.6
Grade 9-12	143	34.1
Above Grade 12	47	11.2
Employment status		
Civil/private servant	121	28.9
No job	98	23.4
House wife	58	13.8
Daily laborer	52	12.4
Student	34	8.1
Merchant	33	7.9
Other	23	5.5
Monthly Family Income (in Birr)		
No income	61	14.6
<344***	105	25.1
≥344	135	32.2
I don't know	118	28.2

*Seliti, Gamo , **median family size ,
*** National mean family monthly income= (per capital income X average household size] ÷12 months)

Regarding patients' knowledge on tuberculosis: 412(98.3%) of the participants believed that tuberculosis is a curable disease, and 358(85.4%) of the study subjects said that they revealed to other as TB patients. Only 13.1% of patients were afraid of being infected with TB before the diagnosed for TB.

Responses on questions relating to source of TB included from TB patients by 268 (64%), and from polluted air by 119(28.4%) of study participants. There were still misconceptions on source of TB. Twenty three percent of the sampled TB patients indicated cold weather as source of TB, and 0.5% of the participants also reported sexual intercourse as route of TB transmission. Other reported misconceptions of the route of TB transmission were lack of food, living on streets, and taking much alcohol as shown on Table 2.

Patients' knowledge of TB and HIV/AIDS association nearly 69 % of the participants believed that the cases of TB have been increasing after the era of HIV/AIDS, and only 30(7.2%) of the study subjects said no difference. Likewise 56.6% of the participants believed that the control of HIV/AIDS could help TB control as shown in Table 2.

Knowledge of, and Attitude towards VCT

Of the 419 patients interviewed, 402(95.9%) reported that they are aware of the availability of VCT before this interview (Table 3). The most common source of information for VCT mentioned by participants were mass media (67.2%), and health worker/institutions (64.7%) followed by friends (13.2%).

Table 2: Tuberculosis Patients' Knowledge and Attitude Related To TB/ HIV/AIDS in Addis Ababa June 2006

TB/HIV/AIDS Related Questions	Frequency	%
Route of HIV transmission#		
Sexual contact	407	97.1
Sharing of sharp materials with PLWHA	360	85.9
Blood contact	158	37.7
Transfusion of blood	20	4.8
Mother to child during pregnancy	17	4.1
Mother to child by breast feeding	13	3.1
Other*	18	4.29
I don't know	5	1.2
Methods of HIV prevention#		
Abstinence	266	63.5
Staying with only one uninfected partner	248	59.2
Use of condom every time during sexual intercourse	229	54.7
No sharing sharps like needles	69	16.5
Others**	34	8.1
I don't know	10	2.4
Self perceived risk of HIV infection		
No risk	257	61.3
Moderate	132	31.5
High or very high	30	7.3
Source of TB #		
From TB patients	268	64.0
Polluted air	119	28.4
Clod whether	96	22.9
Contaminated Water	13	3.1
Health personnel/health unit	6	1.4
Sexual intercourse	2	0.5
Others***	92	22.0
I do not know	48	11.5
TB increased after the era of HIV/AIDS		
Increase	288	68.7
No difference	30	7.2
Decreased	10	2.4
I don't know	91	19.1
Control of HIV/AIDS can help TB control		
Yes	237	56.6
No	102	24.3
I do not know	80	19.1

Multiple response were possible

* sharing meal, wearing of clothes and shaking of hand with PLWHA, God penalty

** No drink alcohol, chewing chat

*** Lack of food, living in street, taking much alcohol etc

Most of the participants (95.9%) agreed that any one can check his/her HIV sero-status, and 98.8% believed that VCT is important. Reasons mentioned by patients why VCT is important: included; to know one of HIV sero-status (85.4%), to protect oneself from infection (54.1%), and not transmit HIV to other, if positive, (43.9%) and to get ART, if positive (24.3%) as shown in Table 3.

Moreover, 83% of the participants reported that they would demand for voluntary HIV counseling and testing in the six months following the study time.

Table 3: Knowledge and Attitude Related To VCT Services among Tuberculosis Patients in Addis Ababa, June 2006

Variables	Frequency	%
Sources of information (N=402)*		
Mass media	270	67.2
Health worker/ institution	260	64.7
Friends	53	13.2
Family member	39	9.7
Others**	56	13.9
Reasons for VCT are important (n=414)*		
To know the HIV sero-status	358	85.4
To protect oneself from infection	224	54.1
If positive, not transmit to other	184	43.9
If positive, to get ART	102	24.3
If positive, to get care and support	35	8.4
To bet free from stress	33	7.9
Other***	29	6.9
I don't know	2	0.2

* Multiple answers were possible

** School, workplace meeting, home-to-home educator

*** holy water etc

HIV Testing among Tuberculosis Patients

It was found that 239 (57%; 95% CI, 52.2-61.7) of the sampled TB patients were ever tested for HIV (either client or provider initiated) in the past. Among those ever tested: 114 (47.7%) of the participants had tested for HIV before being diagnosed for tuberculosis, and the remaining 125 (52.3%) patients were tested during their TB treatment. Excluding those who already knew their HIV sero-status before the diagnosis of TB, the acceptance of HIV testing was only 125/305(41.4%) during TB treatment.

The reasons for the last HIV test mentioned by participants were voluntary HIV counseling and testing by 80(33%), ordered/initiated by health workers by 63(26.4%), and voluntary by themselves due to their TB illness by 53(22.2%) participants. The remaining patients reported that 18(7.5%) for VISA application, 8(3.3%) for marriage, and 17(7.1%) for other reasons including job requirement, partner death etc.

Centers used for HIV testing reported by patients were 131(54.8%) in other facilities, 88(36.8%) in current TB treatment centers, and 20(8.4%) in free standing VCT centers. Most of the HIV tested patients (99.2%) had collected their HIV test result. Only 122(51%) of the patients had disclosed their result to partner, and of those patients tested for HIV, 80(33.5%) of partners were tested for HIV as shown in Table 4.

Willingness to Accept PIHCT

The overall willingness for PIHCT among the study population was 361(86.2 %: 95% CI= 82.9-89.5%).

Of the 361 patients willing for PIHCT, 214 already knew their serological status due to their previous HIV test, and the willingness for PIHCT was 214/239 (89.5%; 95% CI: 85.6-93.3%) among ever tested for HIV patients. The willingness for PIHCT was 147/180 (81.7%; 95%CI: 76.1-87.3%) among those never tested for HIV.

Table 4: VCT Utilization and HIV Testing Barriers among Tuberculosis Patients In Addis Ababa June 2006

Variable	Frequency	%
Utilized HIV testing centers		
Other facility	131	54.8
TB treatment center	88	36.8
Free standing VCT center	20	8.4
Have you told your result to your partner?		
Yes	122	51
No	42	7.6
No Partner	75	31.4
Is your partner tested for HIV?		
Yes	80	33.5
No	84	35.1
No partner	75	31.4
Testing barriers*		
Self trust	74	41.1
No risk perception for HIV infection	44	24.4
Fear of learning positive result	25	13.9
I did not consider to be tested at all	14	7.8
I am not ready	12	6.7
Fear of stigma and discrimination	5	2.8
Never sick	4	2.2
Let me complete my treatment	3	1.7
Partner trust	3	1.7
Fear of partner's reaction	2	1.1
Absence of VCT in TB treatment center	2	1.1
Health worker do not tell me about VCT	1	0.6
Believe that being tested is not useful	1	0.6
I do not know	6	3.3
Other*	11	6.1

** Multiple response were possible,* my partner tested, lack of time, lack of accessibility etc

Perceived barriers for HIV testing

Table 4–presents reported impediment for HIV testing among TB patients who have not been tested for HIV (n=180). Patients asked to list any barrier for HIV testing, could mention multiple responses. The reported barriers for HIV testing include self-trust and no risk perception for HIV infection by 74(41.1%) and 44(24.4%) of the study participants respectively.

Fear of learning positive result, and didn't consider to be tested for HIV at all were also cited as barrier by 25(13.9%) and 14(7.8%) of patients respectively. The remaining reported perceived barriers for HIV testing are also presented in Table 4.

Result of Univariable and Multiple Logistic Regression Analysis

This study assessed factors associated with having been tested for HIV, and willingness for PIHCT. A logistic regression model was used to examine factors associated with VCT utilization (having been tested for HIV), and willingness for PIHCT as dependent variables. Variables that were found to be a statistically significant ($p<0.05$) at univariate logistic regression analysis were entered and analyzed by multiple logistic regression analysis.

Univariable and Multiple Logistic Regression Analysis of Factors Associated with Having Been Tested for HIV

I. Univariable Logistic Regression Analysis of Factors Associated with Having Been Tested for HIV

The VCT utilization rate increased linearly with age (Table 5), being particularly low among adolescence (15-19 years), the difference being statistically significant (chi-square test =26.9; $p<0.001$)

Table 5: TB Patients' VCT Utilization by Age Class in Addis Ababa, June 2006

Age (Years)	Total	VCT User (%)
15-19	40	12(30.0)
20-24	88	52 (59.1)
25-29	95	64 (67.1)
30-34	62	43 (69.4)
35-39	55	34 (61.8)
40+	79	34 (43.0)

In the univariable logistic analysis, having been tested for HIV was not significantly ($p \geq 0.05$) associated with other characteristics namely: sex (p=0.1), age group (p=0.1), martial status (p=0.5), and religion (p=0.4) among socio-demographics variables. Demand for VCT in the next 6 months (P=0.2) was not also significantly associated with having been tested for HIV

Knowledge factors such as believing that HIV is not curable illness (p=0.2), knowing anyone infected with HIV or died of AIDS (p=0.9), believing that HIV infection could be asymptomatic (p=0.2), afraid of being infected with TB (p=0.5), reveal to others as a TB patient (p=0.4), belief TB is curable illness (p=0.4) were not found to be statistically associated with having been tested for HIV..

Believed that VCT is important (p=0.4), agreed any one can check his/her sero-status (p=0.4), and knew TB cases increasing after the era of HIV/AIDS (p=0.8), and control of HIV/AIDS can help TB control (p=0.6) were also not significantly associated with having been tested for HIV.

Type of treatment center, status of education, ethnicity, type of occupation, family size, and family monthly income were found significantly associated with having been tested for HIV in univariable logistic analysis (Table 6, column 3).

Self perceived risk of HIV infection and awareness of VCT availability were also significantly associated with having been tested for HIV in univariable analysis as shown in

Table 6. Patients' willingness for PIHCT was found to be positively associated with having been tested for HIV as shown in Table 6, column 3.

II. Multiple Logistic Regression Analysis of Factors Associated with Having Been Tested for HIV

After adjusting for significant independent variables (see Table 6, column 4), had primary education, being merchant, had HIV risk perception, and willing for PIHCT were each associated with higher odds of having been tested for HIV.

Respondents who reported that they had primary education had higher odds of having been tested for HIV (AOR=2.1, 95% CI=1.03-4.1). Patients who were merchants are six times more likely to having been tested for HIV (AOR= 5.6; 95% CI=1.6-20.6) than jobless patients.

Self-perceived risk of HIV infection was found to be positively associated with having been tested for HIV. Patients who were having moderate HIV risk perception have higher odds of having been tested for HIV (AOR=5.3; 95% CI=1.7-16.8), as did high or very high self perceived risk of getting HIV infection (AOR= 4.4; 95% CI=1.3-14.5) (Table 6).

Patients' willingness for PIHCT were two times more likely to having been tested for HIV (AOR=2.3, 95% CI =1.2-4.4) than non willing patients.

Table 6: Univariable and Multiple Logistic Analysis of Factors Associated With having been tested for HIV

Variables*	Ever HIV Tested		Crude OR (95%CI)	Adjusted OR (95% CI)
	Yes	No		
Type of treatment center				
High patient load HCs R	106	101	1.0	1.0
Low patient load HCs	133	79	**1.6 (1.1-2..4)**	1.5 (0.9-2.3)
Educational status				
Illiterate / read and write R	42	43	1.0	1.00
Primary	79	65	**1.7 (1.0-2.8)**	**2.0 (1.0-4.1)**
Secondary and above	118	72	1.3 (0.9-2.1)	1.3 (0.8-2.2)
Ethnic group				
Amhara R	134	81	1.0	1.0
Oromo	48	34	**0.4 (0.1-0.9)**	0.7 (0.2-2.1)
Guarge	36	42	0.4 (0.2-1.2)	0.7 (0.2-2.3)
Tigray	14	11	0.7 (0.2-1.9)	1.3 (0.4-4.4)
Other	7	12	0.4 (0.1-1.5)	0.7 (0.2-2.9)
Occupation status				
No job R	71	27	1.0	1.0
Civil/private servant	70	51	0.5 (0.2-1.3)	0.6 (0.2-1.6)
House wife	33	25	0.9 (0.4-2.3)	1.2 (0.4-3.3)
Daily laborer	27	25	0.9 (0.37-2.61)	1.0 (0.4-3.0)
Student	7	27	1.2 (0.5-3.2)	1.4 (0.5-4.2)
Merchant	18	15	**5.0 (1.5-16.2)**	**5.7(1.6-20.6)**
Other	13	10	1.1 (0.4-3.12)	1.0 (0.3-3.3)
Family size (persons)				
<4R	104	58	1.0	1.0
≥4**	135	122	**0.6 (0.4-0.9)**	0.8 (0.5-1.3)
Monthly family income (birr)				
No income R	41	20	1.0	1.0
<344***	67	38	**0.4 (0.2-0.8)**	0.5 (0.3-1.2)
≥344	76	59	**0.5 (0.3-0.8)**	0.6 (0.3-1.0)
I don't know	55	63	0.7 (0.4-1.1)	0.8 (0.5-1.6)
Self perceived risk				
No risk R	133	124	1.0	1.0
Moderate	80	52	**6.1 (2.1-17.8)**	**5.3 (1.7-16.8)**
High or very high	26	4	**4.2 (1.4-12.8)**	**4.4 (1.3-14.5)**
Aware of VCT Availability				
No R	4	13	1.00	1.00
Yes	235	167	**0.2 (0.1-0.7)**	3.6 (0.9-13.3)
Willingness for PIHCT				
Disagree R	24	34	1.0	1.0
Agree	215	146	**2.1 (1.2-3.7)**	**2.3 (1.2-4.4)**

R= Reference category,
*= Variables with statistical significant in Univariable logistic analysis
**= Median family size,
***=Family monthly income,

Univariable and Multiple Logistic Regression Analysis of Factors Associated With Willingness for PIHCT

I. Univariable Logistic Regression Analysis of Factors Associated with Willingness for PIHCT

In univariable analysis, type of treatment center (p=0.3), sex (p=0.9), marital status (p=0.8), religion (p=0.1), education status (p=0.3), and the number of family size (p=0.1) were not found to be significantly associated ($p \geq 0.1$) with willingness for PIHCT. Moreover, ethnicity (p=0.6) and type of occupations (p=0.3) among sociodemographic factors were not found to be significantly associated with willingness for PIHCT.

Among knowledge factors, self perceived risk of HIV infection (p=0.9) and awareness of VCT availability (p=0.6) were not found to be significantly associated ($p \geq 0.05$) with willingness for PIHCT). Felt that VCT is important (p=1.0), believed that control of HIV/AIDS can help TB control (p=0.3), and TB cases increasing after the era of HIV/AIDS (p=0.9) were not found to be significantly associated with willingness for PIHCT.

Willingness for PIHCT was also found not to be statistically associated with believing that HIV is not curable (p=0.9), known any one infected with HIV or died of AIDS (p=0.2), HIV infection could be asymptomatic (p=0.3), afraid of being infected with TB (p=0.8), and reveal to others as TB patient (P=9) .

Higher age, higher family income, having been tested for HIV, demand for HIV testing, and agreed that any one could check his/her sero status were found to be significantly associated with willingness for PHICT (Table 7, Column 3).

II. Multiple Logistic Regression Analysis of Factors Associated with Willingness for PIHCT

Among all covariates were found statistically significant in univariable logistic analysis listed in table 7, column 3. The only independent correlates for willingness for PIHCT were being older age, and had demand for testing.

Patients who were at older age group had higher odd of willingness for PIHCT (AOR= 4.2; 95% CI=1.6-10.8) than younger age group patients. In addition, patients who reported that they had demand for HIV testing in next 6 months were higher odds of willing for PIHCT (AOR=29.1; 95% CI=13.8-61.3) as shown in table 7, column 4.

Table 7: Univariable and Multiple Logistic Analyses of Factors Associated With Willingness for PIHCT

Variables*	Willing for PIHCT		Crude OR (95% CI)	Adjusted OR (95%CI)
	Yes	No		
Age (years)				
15-24 R	242	49	1.0	1.0
>25	119	9	**2.7 (1.3-5.6)**	**4.2 (1.6-10.8)**
Family monthly income				
No income R	53	8	1.0	1.0
<344	100	5	0.7 (0.3-1.7)	0.8 (0.3-2.6)
≥344	111	24	0.2 (0.1-0.6)	0.4 (0.1-1.4)
I don't know	97	21	0.9(0.3-1.9)	0.9 (0.4-2.3)
Ever HIV tested				
No R	146	34	1.0	1.0
Yes	215	24	**0.5 (0.3-0.8)**	2.01 (0.9-4.2)
Demand for VCT in the next 6 months				
No R	30	43	1.0	1.0
Yes	331	15	**0.0 (0.0-0.1)**	**29.1 (13.8-61.3)**
Agree any one can check his/her HIV sero status				
No R	10.	7	1.0	1.0
Yes	315	51	**0.2 (0.1-0.6**)	4.8 (0.9-25.5)

R= reference category

*= variables found to have statistically significant association in univariable analysis

Summary Result of the FGD

This study was supplemented by focus group discussion (FGD) in order to explore perceived barriers for HIV testing. Four FGD were conducted among patients who were never tested for HIV. Each FGD had eight participants and took on average 40-60 mins.

➢ Knowledge on HIV/AIDS /TB

- ❖ Most of the participants mentioned that HIV/AIDS is a serious illness and it can not be cured with treatment.
- ❖ Almost all of the FGD participants reported that the common modes of HIV transmission are unsafe sexual intercourse, sharing of sharp materials like needles and blood contact. In contrast, most of the participants did not mention mother to child transmission of HIV and blood transfusion as means of HIV transmission.
- ❖ Few participants believed that there are drugs which completely prevent mother to child transmission of HIV
- ❖ Concerning the prevention of HIV, most of the participants were able to mention the commonest methods of HIV prevention namely: abstinence, condom use, staying with one partner faithfully, and not sharing sharp materials with other people.
- ❖ Most of the participants were aware of the association between TB and HIV/AIDS. But only few participants understood that how TB and HIV/AIDS are associated.

➢ Knowledge of, and Attitude towards VCT

- ❖ Most of the participants understood what VCT means, and they defined it as undergoing voluntary HIV counseling and testing to know one sero-status.
- ❖ Most of the participants reported that VCT doesn't have harms but rather benefits.
- ❖ Few participants said that VCT is useful if the result is negative, but it will be of concern if the result is positive.
- ❖ Although most of the participants reported that VCT has benefits, only some were able to list them as:
    - ♦ To know one's HIV sero status
    - ♦ To protect other people, if the result is positive
    - ♦ To care for one self, if the result is positive
    - ♦ To get ART, if the result is positive

➢ Perceived barriers for HIV testing

The perceived barriers for HIV testing mentioned by patients in the focus group discussion were diverse.

- ❖ Most of the participants indicated that not being able to cope with a positive result is the main barrier for HIV testing. The reason they mentioned were that many people consider TB patients as PLWHA and patients also suspect themselves, when they are HIV positive.
- ❖ Stigma and discrimination following the positive result was also reported as the main impediment for HIV testing by many participants.

- Some of the participants mentioned that the following factors as reason for not having been tested for HIV:
  - Lack of risk perception for being HIV infected
  - Lack of provider initiation
  - Perceived lack of good counseling, medical care and treatment.
- Few indicated the reason for not having been tested for HIV was ‘want to complete their TB treatment before going to HIV test. They justified the reason as follow:" if I cured from TB illness after complete treatment course and I am HIV negative, but if I am not cured completely after treatment, and I am HIV positive”.

Discussion

More than two decades after HIV/AIDS was first described, patients continue to present for initial HIV related medical care years after acquiring the virus [42-43].

Over half (51%) of the study subjects were male, 53% were between 15-29 years followed between 30-44 years old. the average age of the participants was 28 years ± 10.3. Forty eight percent of the participants were single, and 45% had secondary and above education.

In this study, 57% sampled TB patients reported to have been tested for HIV. Among those ever tested: 114 (47.7%) of the participants had tested for HIV before being diagnosed for tuberculosis, and the remaining 125 (52.3%) patients were tested during their TB treatment. Among the 419 sampled TB patients, 305(71%) initially didn't know their HIV sero- status before diagnosis of TB. The overall willingness for PIHCT among the study population was 86.2 %.

As documented by several studies and WHO [13, 17, 29, 44], this study also showed that a high prevalence of TB occurred in the young and adult population.

High proportions of TB patients were aware of TB; curability of TB (98.3%) and source of TB from patients (64%). The study as well identified misconceptions regarding source of TB among the TB patients. Cold weather and sexual intercourse were implicated as a source of TB. This finding is similar to finding from study done on community-based study in North West Ethiopia [45]. This gap could be due to unplanned health education at health facilities that may affect TB/HIV/AIDS control programs.

In addition, the limited favorable IEC intervention appears as well to be a likely contributing factor for only 64.7% patients among those aware of availability HIV testing, mentioned health worker/institution as source of information for HIV testing, and most of the participants were not able to list main benefits of HIV testing as observed in FGD.

In this study, all TB patients reported that they have heard of HIV/AIDS. This result is comparable with the results observed among the community (100%) in north Gonder [46], and youth (95.9%) [35] in Addis Ababa. This finding is also comparable with a recent finding from BSS round two that revealed that 98% of study populations were aware of HIV /AIDS [28].

Evaluating findings of the participants' knowledge on mode of HIV transmission and prevention indicated the facts that most of the TB patients had the correct knowledge. On the other hand, still few (4.29%) of the participants had misconception on transmission of HIV/AIDS like shaking hands with, wearing clothes of, and sharing of meal with PLWHA as reported as mode of transmission. Similar findings were observed among TB patients in north Gonder [17]. Misconceptions on HIV transmission and poor knowledge about the disease would cause stigma associated with the disease that have impacts on the control of the epidemic[19, 44].

A recent report from Ethiopia and several African countries suggested that self-risk perception of being HIV infected has major influence on HIV test acceptability [14, 15,37]. A striking finding of this study was that significant proportion of sampled TB patients (61.3%) had no risk perception for HIV infection. This finding is comparable to those in other studies conducted in Ethiopia and elsewhere [1, 14, 28, 46]. A recent Ethiopian BSS indicated that 75% of the study

participants had not risk perception for HIV infection [28]. Our finding is greater than result reported from DebreBarhan, where only 4.5% of youth had HIV risk perception [47] .

A relatively high prevalence of self reported HIV testing was found in this study, compared to previous studies conducted in Ethiopia. While 57% of sampled TB patients in our study reported as having been tested for HIV, studies done from south west Ethiopia showed that 27% of pregnant women at ANC clinic[36], and community based study in Harar town in 2005 found that 21.9% of the adolescents had been tested for HIV [37]. Recent Ethiopian national BSS showed that fewer than 5 % of individuals aged between 15-49 years [28], and report from study in Gondar indicated that only 6.6% of TB patients in 2004[17] had ever received an HIV test. This is suggesting that more than 9-11 fold increase in HIV testing prevalence.

In addition to the implementation of PIHCT in TB clinics, increased access to ART and HIV testing are likely to be the contributing factors for the relatively high prevalence of testing in this study population[20]. Moreover, high knowledge of TB and HIV association could be the possible explanations for the relatively high prevalence of HIV test.

This may not be sufficient to guarantee HIV testing for many. Since over 40% of the sample of TB patients weren't tested. Our finding is lower than findings from other studies done in several countries. In pilot and clinical trials, when HIV counseling and testing is routinely offered by health providers, the acceptability rate of HIV testing is reported to be satisfactory high, reaching 90 to 100% of patients attending TB clinics in several countries [1,9,21-23]. For instance, 91% of TB patients in Guyana [1], 99% in South Africa [22], and 91% of TB patients in Malawi [9] were accepted and tested for HIV

The relatively new policy of PIHCT was not yet implemented in a uniform way in all health centers in the city. This might be the likely contributing factor for the significant low prevalence of testing among TB patients in this study.

More over, detailed guidelines of the implementation of PIHCT were not introduced until June 2006, and the training of health providers was still ongoing during the study (Personal Communication). Consequently, at the time of our study, there was still some confusion surrounding the detail implementation of PIHCT, including the extent to which routine testing should be provided as opt-out (all patients are automatically tested unless they refuse) or as opt-in (all patients are offered a test, and they must provide explicit informed consent) due to early stage of implementation.

In this study, having been tested for HIV was significantly associated with educational status after controlling for confounding variables. Study participants who had primary education were two times more likely to having been tested for HIV than illiterate/ read and write ones. However, this study did not find the hypothesized association between higher education and HIV testing that had been previously reported in Ethiopia and elsewhere [1, 14,20,38,48].

Higher people's knowledge about the serious health consequences and fear of society's reaction to the disease could lead to decline to accept HIV testing [49]. This reinforce that knowledge alone might not be protective unless behavioral change is attained as shown by several studies [49,50].

The studies of factors influencing HIV testing acceptance have found that socio demographic factors were not associated with HIV test acceptance [51,52]. However, the results of this study

indicated that occupational status appears to be associated with having been tested for HIV. Specifically, being merchant was found to be six times more likely to be tested for HIV in the past than other professionals.

Self-perceived risk of HIV infection was also found to be independently associated with having been tested for HIV. It should be noted that in this study patients who perceived moderate and, high or very high risk of being HIV infected were five and four times more likely to be tested for HIV in the past than those who have no risk perception respectively. This finding in consistent with study conducted in Botswana [20]. This supports the notion that people who take up HIV test represent a selected and motivated population who feels at risk [53].

The most commonly cited perceived barriers for HIV testing among respondents who had not been tested for HIV were self trust, and lack of HIV risk perception. These findings are similar to findings from studies done in Ethiopia and else where in Africa[20,37,49,52] . Our study also found that HIV related stigma and fear of learning the positive result were identified as main barriers for HIV testing in the FGD. This is consistent with the documented role of HIV related stigma and fear of learning the positive result as an impediment to HIV testing in several studies [20,36-38].

Stigma attached to TB/HIV, and the community perceptions of TB patients as PLWHA were also identified as reasons for not having been tested for HIV. This is showed that more effort needs to be made address HIV related stigma that comprise an integral part of ongoing HIV testing. Increasing testing and decreasing stigma with likely work together to reinforce one another, will more testing leading to a reduction in HIV related stigma, which in turn will work to further testing[19,20].

Eighty-six percent of the patients in this study were willing to accept PIHCT. This finding is comparable with the finding from a cross sectional study on TB patients that indicated 88.6% of TB patients were willing to accept client initiated HIV counseling and testing [17]. A similar result was also reported from a population based study on routine testing in Botswana, where 81% of the study participants were extremely or very much in favor of routine HIV test [20].

After adjusted for all independent variables, patients in older age (≥25) were found four times more likely willing for PIHCT than younger age. The possible explanation for this could be the health status of the young people declines is less likely to be found as most HIV infection are rather recent[14]. Patients those had demand for VCT appears to behave higher odd of willingness to accept PIHCT in multiple logistic analysis. However, studies showed that intention and the actual practice of HIV testing did not correlate[15, 54]. For instance, close to 30% of the urban survey participants expressed their readiness, but only 4% of that group accepted VCT in Zambia[15]. This indicates that more effort needs to identify and tackle acceptability barriers in line with the implementation of PIHCT.

HIV testing history was not significantly associated with willingness for PIHCT in contrast to finding previously reported from USA [55].

Strengths and Limitations of the study

Strengths

1. We have tried to standardize the questionnaire based on similar studies
2. Both qualitative and quantitative methods were used to triangulate the findings
3. The study used random sampling technique
4. HIV status wasn't asked, and privacy and confidentiality were assured to maximize validity of self report on HIV testing
5. Survey questions were asked in a culturally sensitive and nonjudgmental manner

Limitations

1. Self report might introduce social desirable response
2. As this study is cross sectional, causality cannot be determined from findings
3. Sampled patients were interviewed from the City, therefore the results may not be generalizable to all TB patients in the country

Conclusion

- Relatively high prevalence of self reported HIV testing was found among sampled TB patients. It may not be sufficient to guarantee HIV testing for many.
- Opt-in continued as an approach rather than opt-out in TB clinic. This might be contributing for low acceptance HIV testing among TB patients.
- There is early evidence of high willingness for PIHCT and moderate acceptance of HIV test in this study. This holds significant promise for the control, prevention and treatment of TB and HIV/AIDS in Ethiopia.
- There are inappropriate self-risk perceptions of HIV infection, and high stigma related to TB and HIV.
- There are still misconceptions about transmission of TB and HIV.
- Providing HIV testing with out active and intensive IEC on TB and HIV was observed in this study. This could lead to avoiding seeing health providers for fear of being tested.
- Lack of self perceived risk of HIV infection, unable to cope with the positive results, and stigma attached to TB and HIV were found to be the main barriers for HIV testing.
- Discrepant rates of HIV counseling and testing, and willingness for PIHCT by demographic characteristics (educational and occupational status etc) were found.
- Being merchant, and had better education status, had moderate or high risk perception and willingness for PIHCT were found more likely to be tested for HIV in the past
- Patients of older age and with demand for HIV testing were found more likely willing for PIHCT.

Recommendations

- Intensive two stage IEC/BCC (group education followed by individual counseling) on TB/ HIV, and tackling of the testing barriers are critical.
- Because promising results on HIV testing and high willingness for PIHCT were found at early stage of implementation of PIHCT in this study, strengthening and scaling up PIHCT to include all TB patients is highly recommended.
- Opt-out should continue as an approach rather than opt-in in TB clinics.
- More effort is needed to make patients aware of risk behaviors.
- TB clinics are being serving large volumes of patients in the city. Arrangement of patient flow and grouping for appointment, particularly for patients in continuation phase is recommended. This helps to provide quality IEC and PIHCT services.
- Further study might be considered to determine PIHCT acceptability and its correlate factors.

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Annex I- Structured English Version Questionnaire

Addis Ababa University
Faculty Of Medicine, Department Of Community Health

Consent form to certify the respondent agreement for the interview

Assessment Of VCT Utilization, Perceived Barriers For HIV Testing And Willingness For PIHCT Among TB Patients In Addis Ababa

01. Name of treatment center----------
02. Questionnaire identification number ----------

Introduction: my name is ---------- I am a member of the research team of the Addis Ababa University, Addis Ababa Regional Health Bureau and Ethiopian Public Health Association /Center for Diseases Control and Prevention of USA Project. I will request you to listen carefully to what I am going to read about the purpose and general condition of the study and tell me whether you agree or disagree to participate in this study.

Consent form

The purposes of this study are to assess VCT utilization, perceived barriers for HIV testing and willingness to accept PIHCT among TB patients 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; you have the right to participate, or not to participate or refuse to do so at any time during the interview. Your refusal will not have any effect on services that you or any member of your family receives. However, your participation is important to fulfill the study and design appropriate TB/HIV 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.

03. Interviewer who certified that the informed consent has been given verbally from the respondents
- **a.** Name---------- signature----------
- b. Code----------
- **c.** Date----------month----------2006

04. Result
- a. Completed
- b. Respondent not available
- c. Refused
- d. Partially completed
- e. Other (please specify) ----------

05. Checked by: Name ----------Signature---------- Date ----------

NB:
1. No need of cohersing the patients to be included in the study.
2. Please register the age and sex of study subjects who refuse to participate in the study.

Part One: <u>Socio-Demographic Variables</u>

No	Questions	Coding classifications	Remark
101	How old were you at your last birthday?	----------Years (full yrs)	
102	Record sex of the patient	Male ----------1 Female ----------2	
103	What is your religion?	Orthodox ----------1 Muslim----------2 Protestant ----------3 Catholic ----------4 Other (specify) ----------5	
104	To which ethnic group do you belong?	Amhara ----------1 Oromo ----------2 Guarge------ ----------3 Tigray ----------4 Other (specify) ----------5 No response ----------99	
105	What is your current marital status?	Married in union -------1 Never married ----------2 Divorced ----------3 Widowed- ----------4 Unmarried couples ------5 Too young---- ----------6	
106	What is your current educational status?	----------Grade completed Read and write----------1 Illiterate ----------2 No response ----------99	
107	What is your current occupation?	Civil servant ----------1 House wife ----------2 Daily laborer ----------3 Domestic servant-- ----------4 Hotels worker ----------5 Student----------6 Merchant----------7 No job----------8 Others(specify)----------9	
108	What is your family average household income per month?	----------Birr Eth No income --------1 I don't know -----88 No response ------99	
109	What is your family size?	----------in numbers No response ---------99	
110	Do you have any family member treated for tuberculosis?	Yes ----------1 No ----------2 Other----------3 I do not know ----88 No response -------99	

Part Two: Knowledge, attitude, and opinions on TB/HIV/AIDS

NO	QUESTIONS	CODING CLASSIFICATIONS	REMARK
111	Have you ever heard of HIV or the disease called AIDS?	Yes ----------1 No ----------2 I do not know –88 No response ---99	
112	Can HIV be definitely cured?	Yes ----------1 No ----------2 I do not know –-88 No response ---99	
113	How is HIV/AIDS transmitted? **(Multiple response is possible, Needs probing)**	Sexual intercourse----------1 Mother to Child during pregnancy ----------2 Mother to Child during breastfeeding----------3 Transfusion of infected blood ----------4 Sharing of Sharps with someone who is infected(Needles, etc)--------- 5 Shaking hands with a person living with HIV/AIDS----6 Wearing clothes of a person living with HIV/AIDS---7 Sharing a meal with a person living with HIV/AIDS-8 Mosquito bite----------9 Blood contact----------10 Other(Specify) ---------11 I do not know –88 No response ---99	
114	How can people protect themselves from getting HIV/AIDS? **(Multiple response is possible, Needs probing)**	Avoiding Sex (abstinence)-----1 Using a faithful condom every time during sex------2 Staying with only one uninfected partner ----3 Others (specify)----------4 I do not know –88 No response ---99	
115	Do you know any one who is infected with HIV or who has died of AIDS?	Yes ----------1 No ----------2 No response ---99	
116	May a healthy looking person be positive for HIV?	Yes ----------1 No ----------2 I do not know -–88 No response ---99	
117	How do you rate yourself at risk of getting (catching) of HIV?	I am not at risk or low----------1 My risk is moderate----2 My risk is high----3 My risk is very high----4 I do not know -–88 No response ---99	
118	Have you ever been afraid of being infected with TB before the diagnosis of your TB illness?	yes ----------*1* no ----------2 I do not know ---88 no response ----99	

No	Questions	Coding Classifications	Remark
119	do you disclosed your TB illness to others?	Yes ----------1 No ----------2 I do not know –--88 No response ---99	
120	Which is segment of population at risk of getting TB? **(Multiple response is possible, needs probing)**	The poor people-------1 Those who live with TB patients----------2 People living with HIVAIDS-----3 Other (specify)--------4 I do not know –88 No response ---99	
121	From where can some one get TB? **(Multiple response is possible, Needs probing)**	From TB patients------1 Health personnel/health unit------2 Polluted air------3 Contaminated Water------4 Having Sexual intercourse ------5 Evil sprit --------6 Other (specify)--------7 I do not know –88 No response ---99	
122	Do you believe that TB can be cured?	Yes ----------1 No ----------2 Other----------3 I do not know –88 No response ---99	
123	Has the number of TB cases increase after the era of HIV/AIDS?	Increased ----------1 No difference----------2 Decreased----------3 I do not know –88 No response ---99	
124	Do you think control of HIV/AIDS can help control TB?	Yes ----------1 No ----------2 I do not know –88 No response ---99	

Part Three: <u>Knowledge and Utilization Of VCT And Willingness To Accept Provider Initiated HIV Counseling And Testing</u>

No	Questions	Coding Classifications	Remark
125	Have you ever heard of the presence of voluntary counseling and HIV testing?	Yes ----------1 No ----------2 No response ---99	If response No, go to 127
126	If your response to Q125 is yes, where did you get the information? **(Multiple response is possible, Needs probing)**	Health workers----------1 Mass media ----------2 Family member ----------3 friends ----------4 Other(specify)----------5 I do not know –88 No response ---99	
127	Do you agree that any one should check his /her HIV sero-status?	Yes ----------1 No ----------2 Other (specify)----------3 I do not know –88 No response ---99	
128	Do you feel that VCT is important?	Yes ----------1 No ----------2 I do not know –88 No response ---99	If response no ,go to 130
129	What are your reasons for VCT being important? **(Multiple response is possible, Needs probing)**	To know the HIV status ---1 To protect yourself from infection --2 If positive, not to transmit to others-3 If positive, to get care and support-4 If positive, to get ART ---5 To be free from stress------6 Other (specify) --------7 I do not know –88 No response ---99	
130	At which time should one be tested for HIV? **(Multiple response is possible, Needs probing)**	When one is sick ------1 Before marriage ------2 If only has multiple partners ----3 At any time ------4 Other (specify) ------5 I do not know ----88 No responses ------99	
131	Who are the people in need of HIV test? **(Multiple response is possible, Needs probing)**	Female commercial sex workers ---1 Drivers ---------2 People with history of unprotected sex---3 TB patients -----4 Those with multiple partners-----5 Any one sexually active-------6 Those who are sick----------7 Any one at risk--------8 Others (specify)----9 I do not know ----88 No responses ------99	

132	Would you demand for HIV test in the next 6 months?	Yes ----------1 No ----------2 I do not know –88 No response ---99	If response is no, go to Q 136
133	If your response to Q132 is yes, where is your preferred site for HIV testing service?	Your TB treatment center --------1 Government health facilities------2 Private health facilities-----3 Free standing VCT centers --------4 Other (specify)----------5 I do not know ------88 No response ----------99	
134	If your response to Q132 is yes, What is your preferred mode of VCT service?	Confidential linked testing-----1 Anonymous testing--------2 Like other routine test ------3 I do not know ---------88 No response ---------99	
135	If your response to Q132 is yes, If you have to be counseled for VCT, who do you prefer to counsel you?	Your treatment supervisor --------1 Other health worker --------2 Friends ----------3 Other (specify)----------4 I do not know -------88 No response --------99	
136	I don't want to know the result, but have you ever been tested for HIV?	Yes ----------1 No ----------2 No response ---99	If response is no, go to Q 143
137	If your response to Q136 is yes, what was the reason for having the HIV test?	Voluntary testing by your self -----1 Ordered by health worker -----2 Donation of blood -------3 Because of Infected with TB--------4 Others (specify) -------5 I do not know –----88 No response -----99	
138	If your response to Q136 is yes, when did you do your last test for HIV?	Before your illness -------1 After your illness ----------2 Other (specify)----------3 I do not know –88 No response -------99	
139	If your response to Q136 is yes, where did you do your last HIV test?	Your current TB treatment center ------1 Other health facilities------2 Free standing VCT centers---3 Other (specify) ----4 I do not know –88 No response ---------99	
140	If your response to Q136 is yes, please don't tell me the result but did you fget the result?	Yes ---------1 No ---------2 Other (specify) --------3 I do not know ----------88 No response ----------99	

No	Questions	Coding Classifications	Remark
141	If your response to Q136 is yes, have you told the result for your partner?	Yes ---------1 No ----------2 Other (specify) --------3 I do not know ----------88 No response ----------99	For only those patients have partner
142	If your response to Q136 is yes, is your partner tested for HIV?	Yes ----------1 No ----------2 I do not know ----------88 No response ----------99	
143	If your response to Q136 is no, what are your reasons for not to be tested? **(Multiple response is possible, Needs probing)**	Fear of stigma and discrimination follow the positive result----------1 Fear of partner's reaction-----2 Unable to cope with the positive result--3 I am not at risk person for HIV--------4 Health worker did not tell me about VCT----5 Difficult to pay for VCT service-------6 Absence of VCT center in TB treatment center-----7 Belief as Being tested is not useful----8 Not sure of the confidentiality------9 Don't want to know the result--------10 Partner trust----------11 Self trust----------12 Other (specify) ----------13 I do not know ----------88 No response ---------99	
144	If your TB treatment supervisor initiates you for HIV counseling and testing, do you agree to accept it?	Agree to accept ----------1 Disagree to accept ----------2 No response ----------99	if disagree to accept go to 145
145	If your response to Q144 is Disagree, what are your reasons? **(Multiple response is possible, Needs probing)**	Fear of stigma and discrimination follow the positive result----------1 Fear of partner's reaction-----2 Unable to cope with the positive result--3 I am not at risk person for HIV--------4 Health worker did not tell me about VCT----5 Difficult to pay for VCT service-------6 Absence of VCT center in TB treatment center--7 Belief as Being tested is not useful----8 Not sure of the confidentiality------9 Don't want to know the result--------10 Partner trust----------11 Self trust----------12 Other (specify) ----------13 I do not know ----------88 No response ---------99	

That is the end of our interview. Thank you very much for taking time to answer these questions.

Annex II: Structured Amharic Version Questionnaire

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›ScÓ“KG< :: SMe ›- ŸJ' nK SÖÃI” Á"H@Æ::

®3 ðnÅ—'~” Á[ÒÑÖ¨< S[Í cwdu=

G/ S<K< eU ---------- ò`T ----------

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04 ¨<Ö?ƒ

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K/ }ÖÁm¨< ›M}Ñ–U

N/ }ÖÁm¨< ðnÅ— ›ÃÅKU

S/ uŸòM ¾}SKc

W/ K?L "K ÃÑKî ----------

®5 ¾}q××]¨ <eU----------ò`T----------k”----------

Tdcu=Á

- **ÓKcx‹” uSÖÃI KTd}õ U”U ›Ã'ƒ TeÑÅÍ ¨ÃU Ý“ TÉ[Ó ›ÁeðMÓU::**
- **uØ“~ KSd}õ ðnÅ— "MJ'/‹ ¾ÓKcu<” □ÉT@ □“ ï□ ÃS´Ñu<::**

¡õM ›”É - eKTlu^©“ eKQ´v© G<'@□ ¾T>ÁSK¡~ ØÁo-‹::

}.I	ØÁo-‹	SMe K=J'< ¾T>‹K< ´˘´a‹	›e}Á¾ƒ
1®1	ÉT@- e"ƒ '¨< ;	------- ¯Sƒ /uS<K< ¯Sƒ ÃÑKî/	
1®2	¾}ÖÁm¨< ï	¨"É .....1 c?ƒ 2	
1®3	NÃT•ƒ¨< U"É" '¨< ;	*`„Ê¡e.....1 S<eK=U .....2 ýa,e"ƒ .....3 "„K=¡ .....4 K?L "K ÃÑKî.....5	
1®4	wN?[- U"É" '¨< ;	›T^ .....1 *aV.....2 Ñ<^Ñ@ .....3 ƒÓ^Ã.....4 K?L "K ÃÑKî.....5 SMe ¾KU 99	
1®5	u›G<'< ¨pƒ ¾Òw‰ G<'@- "Èƒ '¨< ;	ÁÑu< ..... 1 ÁLÑu< ..... 2 ¾}ó~ ..... 3 vM/T>eƒ ¾V}v†¨< ....4 ÁM}Òu< Ø"Ê‹ .....5 KÒw‰ ÁMÅ[c< 6	
1®6	}U[¨< ¾Ú[c<ƒ Ÿõ}—¨< ¾ƒUl`ƒ Å[Í e"ƒ '¨< ;	_____ ¡õM ÁÖ"kl T"uw" Síõ ¾T>‹M....1 T"uw" Síõ ¾TÃ‹M..2 SMe ¾KU 99	
1®7	u›G<'< ¨pƒ ÁK<uƒ ¾e^ ›Ã'ƒ U"É" '¨<;	¾S"Óeƒ W^}— .....1 ¾u?ƒ Su?ƒ .....2 ¾k" W^}— .....3 ¾u?ƒ W^}—.....4 ¾u<" u?ƒ W^}— .....5 }T].....6 'ÒÈ.....7 e^ ¾K?K¨<.....8 K?L "K ÃÑKî.....9	
1®8	ÖpLL ¾u?}cw- ¾¨` Ñu= e"ƒ '¨< ;	_____¾›=ƒ/w` Ñu= ¾K?K¨< .....1 ›L¨<pU.....88 SMe SMe.....99	
1®9	¾u?}cw- w³ƒ e"ƒ '¨<;	_____lØ` SMe ¾KU 99	
11®	Ÿu?}cw- ¨<eØ u+u= ui V l¡U" ¾¨cÅ ›K ;	›-.....1 ¾KU.....2 K?L "K ÃÑKì<.....3 ›L¨<pU.....88 SMe ¾KU.....99	

¡õM G<K*ƒ* :- eK ›?‹.›Ã.y=/›?Ée "+u= ÁK-*ƒ*" ¨<k*ƒ*&›e}Á¾*ƒ*“ ›SK"Ÿ*ƒ* ¾T>SKŸ~ ØÁo-‹

}.l	ØÁo-‹	SMe K=J'< ¾T>‹K< ˆ˙a‹	›e}Á¾*ƒ*
111	cK ›?‹.›Ã.y=/›?Ée cU}¨< Á¨<nK< ;	›- cU‰KG<.....1 ›McTG<U.....2 ›L¨<pU.....88 SMe ¾KU.....99	
112	¾›?‹.›Ã.y=/›?Ée ui ðªi SÉG'>*ƒ* ÁK¨ ÃSeK- M ;	›-.....1 ¾K¨<U.....2 ›L¨pU.....88 SMe ¾KU.....99	
113	¾›?‹.›Ã.y=/›?Ée ui uU" S"ÑÉ K=}LKõ Ã‹LM ; ***(Ÿ›"É uLÃ SMe Ã‰LM:: › "wu¨<& ¾T>cÖ<ƒ" G<K< SMe ›¡wu¨<)***	uÓw[YÒ Ó"–<'*ƒ*.....1 Ÿ "*ƒ* ¨Å î"e u `Ó´" Ñ>²?.....2 Ÿ "*ƒ* ¨Å MÏ uÖ<*ƒ* SØv*ƒ*.....3 u›?‹.›Ã.y= ¾}uŸK ÅU SkuK.....4 ›?‹.›Ãy=/›?Ée ŸÁ²¨< c¨< Ò` uÒ^ eK U 'Ña‹ SÖkU.....5 ›?‹.›Ãy=/›?Ée ŸÁ²¨< c¨< Ò` Ï K Ï SÚvuØ.....6 ¾›?‹.›Ãy=/›?Ée ui}— Mwf‹ SMue..7 ›?‹.›Ãy=/›?Ée ŸÁ²¨< c¨< Ò` ›wa SSÑw.....8 u¨v *ƒ*"˜.....9 uÅU "¡Ÿ=----------10 *K?L "K ÃÖke.....11* ›L¨<pU.....88 SMe ¾KU.....99	
114	›"É c¨< u›?‹.›Ã.y=/=/›?Ée "Ç¾Á² uU" S"ÑÉ SŸLŸM Ã‹LM; ***(Ÿ›"É uLÃ SMe Ã‰LM:: › "wu¨<& ¾T>cÖ<ƒ" G<K< SMe ›¡wu¨<)***	ŸÓw[eÒ Ó"–<'*ƒ* uSqÖw.....1 Ów[eÒ Ó"–<'*ƒ* uðìS< lØ` ¢"ÊU SÖkU.....2 Ÿui 'í ŸJ'/‹ Ò` ›"É K›"É S¨c"..3 *K?L "K ÃÖke.....4* ›L¨<pU.....88 SMe ¾KU..... 99	
115	Ÿ›?‹.›Ã.y= Ò` ¾T>•`& ›MÁU u›?Ée ui ¾ SS ¨ÃU uui¨< ¾V} c¨< Á¨nK<;	›¨<nKG<.....1 ›L¨pU.....2 SMe ¾KU.....99	
116	Ö?'— ¾T>SeK< c-‹ ¾›?‹.›Ã.y= zÃ[e K=•`v†¨< Ã‹LM;	Ã‹LM.....1 ›Ã‹MU.....2 ›L¨<pU.....88 SMe ¾KU.....99	
117	¾^e- ¾›?‹.›Ã.y= }ÒLÜ'*ƒ* U" ÁIM ÃSeM- M; ?	}ÒLß ›ÃÅKG<U.....1 S"K— }ÒLß ˜.....2 u×U }ÒLß ˜.....3 ÏÓ u×U }ÒLß ˜.....4 ›L¨<pU.....88 SMe ¾KU ...99	
118	ud"v 'k`d/+u= ui Á³KG< ¾T>M eÒ*ƒ* 'u[-*ƒ* ;	›- .....1 ¾K˜U.....2 ›L¨<pU.....88 SMe ¾KU ...99	

}.l	ØÁo-‹	SMe K=J'< ¾T>‹K< ´`´a‹	›e}Á¾ƒ
119	¾d"v 'k`d/+u= ui "ÇKw¨ KK?KA‹ c-‹ Ã"Ñ^K<;	"Ñ^KG<.....1 ›M"Ñ[U.....2 ›L¨<pU.....88 SMe ¾KU ...99	
120	Kd"v 'k`d/+u= ui u}K¾ SMŸ< }ÒLß ¾J' ¾lw[}cu< ¡õM ¾ƒ—¨< ÃJ"M wK¨< ÁU"K< ; ***(Ÿ›"É uLÃ SMe Ã‰LM:: ›□ "wu¨<& ¾T>cÖ<ƒ" G<K< SMe ›¡wu¨<)***	ÅG¨< lw[}cw .....1 Ÿ+u= IS<T" Ò` ¾T>•` c¨<.....2 Ÿ›?‹.›Ã.y=/›?Ée Ò` ›wa ¾T>•` c¨<..3 K?L "K ÃÑKî.....5 ›L¨<pU .....88 SMe ¾KU.....99	
121	›"É c¨< ¾d"v 'k`d ui Ÿ¾ƒ K=Ã²¨< Ã‹LM; ***(Ÿ›"É uLÃ SMe Ã‰LM:: ›□ "wu¨<& ¾T>cÖ<ƒ" G<K< SMe ›¡wu¨<)***	Ÿ+u ui}—.....1 ŸÖ?" vKS<Á-‹ / }sTƒ.....2 Ÿ}uŸK ›¾`.....3 Ÿ}uŸK ¨<H.....4 ŸÓw` YÒ Ó"–<'ƒ.....5 Ÿ Ÿ<e S"ðe.....6 K?L "K ÃÓKì<.....7 ›L¨<pU.....88 SMe ¾KU.....99	
122	¾d"v 'k`d/+u= ul¡U" K=É"/K=ð¨e Ã‹LM;	›-..... 1 ›Ãð¨eU.....2 K?L "K ÃÓKì< ....3 ›L¨pU.....88 SMe ¾KU.....99	
123	¾›?‹.›Ã.y=/›?Ée ui Ÿ}Ÿc} ¨Ç=l ¾d"v 'k`d/+u= ui ¾ÚS[ÃSeM- M;	ÚUbM.....1 M¿'ƒ ¾K¨<U.....2 k"dDM.....3 ›L¨<pU.....88 ULi ¾KU.....99	
124	¾›?‹.›Ã.y=/›?Ée Sq×Ö` ¾d"v 'k`d/+u=" KSq×Ö` ¾T>[Ç ÃSeK- M;	Ã[ÇM.....1 ›Ã[Ç¨<U.....2 ›L¨<pU.....88 SMe ¾KU.....99	

¡õM -3 uðnÅ˜ƒ LÃ ¾}SW[} ¾›?‹›Ã.y= U`U^“ U¡` ›ÑMÓKAƒ ›ÖnkU& ‹Óa‹“ KTÉ[Ó ðnÅ˜ƒ” ¾T>SKŸ~ ØÁo-‹

}.l	ØÁo-‹	SMe K=J'< ¾T>‹K< ˆ`´a‹	›e}Á¾ƒ
125	uðnÅ˜ƒ LÃ ¾}SW[} ¾›?‹›Ã.y= U¡`“ U`U^ ›ÑMÓKAƒ S•\" cU}¨< Á¨<nK<;	cT‹KG<.....1 ›McTG<U.....2 SMe ¾KU.....99	SMc< ›McTG<U ŸJ' ¨Å lØ` 127 H>É
126	KlØ` 125 SMc< cU†KG< ŸJ' S[Í¨<" Ÿ¾ƒ ’¨< ÁÑ–ƒ; ***(Ÿ›”É uLÃ SMe Ã‰LM:: ›□ ”wu¨<& ¾T>cÖ<ƒ” G<K< SMe ›¡wu¨<)***	ŸÖ?“ vKS<Á-‹/}sTƒ.....1 w²<G” SÑ“—.....2 Ÿu?}cw .....3 ŸÕÅ—.....4 K?L "K ÃÖke.....5 ›L¨<pU.....88 SMe ¾KU.....99	
127	T”—¨<U c¨< ¾›?‹›Ã.y= U`U^ TÉ[Ó ›Kuƒ wK¨< ÃeTTK<;	›-.....1 ›MeTTU.....2 K?L "K ÃÖke.....3 ›L¨<pU.....88 SMe ¾KU.....99	
128	uðnÅ˜ƒ LÃ ¾}SW[} ¾›?‹›Ã.y= U¡` “ U`S^ ›ÑMÓKAƒ ÖnT> ’¨< wK¨< ÁevK<;	›-.....1 ›ÃÖpUU.....2 ›L¨<pU.....88 SMe ¾KU.....99	SMc< ›ÃÖpUU ŸJ' ¨Å lØ` 130 H>É
129	ulØ` 128 SMe- ›- ŸJ' ÖmT@¨< U”É” ’¨<; ***(Ÿ›”É uLÃ SMe Ã‰LM:: ›□ ”wu¨<& ¾T>cÖ<ƒ” G<K< SMe ›¡wu¨<)***	□^e” KT¨p .....1 □^e” Ÿui□¨< KSŸLŸM.....2 ui□ Ÿ›Kw” ¨Å K?L LKTe}LKõ .....3 ui□ Ÿ›Kw” □”¡w"u?“ ÉÒõ KTÓ–ƒ.....4 ui□ Ÿ›Kw” ¾°ÉT@ T^²T>Á KS¨<cÉ.....5 Ÿß”kƒ KSÑKÑM--------6 K?L "K ÃÖke.....7 ›L¨<pS .....88 SMe ¾KU 99	
130	›”É c¨< ¾›?‹›Ã.y= U`S^ TÉ[Ó ÁKuƒ S† ’¨<; ***(Ÿ›”É uLÃ SMe Ã‰LM:: ›□ ”wu¨<& ¾T>cÖ<ƒ” G<K< SMe ›¡wu¨<)***	c=□SU .....1 ŸÒw‰ uòƒ .....2 Ÿ›”É uLÃ ÕÅ— c=•[¨<.....3 uT”—¨<U Ñ>²? .....4 K?L "K ÃÖke.....5 ›L¨<pU .....88 SMe ¾KU.....99	
131	uðnÅ˜ƒ LÃ ¾}SW[ƒ ¾›?‹›Ã.y= U`S^“ U¡` ›ÑMÓKAƒ ¾T>ÁeðMÑ¨< KT” ’¨< ÃLK<; ***(Ÿ›”É uLÃ SMe Ã‰LM:: ›□ ”wu¨<& ¾T>cÖ<ƒ” G<K< SMe ›¡wu¨<)***	Kc?ƒ ›Ç]-‹ .....1 Kjôa‹ .....2 ÁK¢”ÊU ¾Ów[YÒ Ó”–<’ƒ ›Å[Ñ/‹.....3 K+u= IS<T”.....4 Ÿ›”É uLÃ ¾ÕÅ— ÁK¨<.....5 ¾Ów[YÒ Ó”–<’ƒ TÉ[Ñ ¾ËS[/‹.....6 K□SS< c-‹.....7 T”—¨<U c¨< K›?‹›Ã.y= }ÒLß ¾J' c¨<..8 K?L "K ÃÖke.....9 ›L¨<pU .....88 SMe ¾KU.....99	
132	uT>kÖK¨< 6 ¨` ¨eØ ¾›?‹›Ã.y= U¡` “ U`S^ ›ÑMÓKAƒ KTÓ–ƒ ÃðMÒKA ;	□ðMÒKG<.....1 ›MðMÓU**……..**2 ›L¨<pU.....88	SMe ›MðMÓU ŸJ' ¨Å lØ` 136 H>É

		SMe ¾KU.....99	
133	KlØ` 132 SMe- ðMÒKG< ŸJ': K›?‹›Ã.y= U`S^“ U¡` ›MÓKAƒ KTÓ–ƒ ¾T>S`Ö<ƒ x ¾ƒ '¨<;	¾+u= ¾l¡U“ T°ŸM.....1 ¾S”Óeƒ ¾Ö?“ É`Ïƒ.....2 ¾ÓM ¾Ö?“ É`Ïƒ.....3 ¾›?‹›Ã.y= U`S^“ U¡` ›ÑMÑKAƒ w‰ ¾T>cÖ<ƒ T°ŸMƒ....4 K?L "K ÃÖke.....5 ›L¨<pU.....88 SMe ¾KU.....99	
134	KlØ` 132 SMe- ðMÒKG< ŸJ': ¾›?‹›Ã.y= U`S^“ U¡` ¾›ÑMÓKAƒ ›c×Ø” u}SKŸ} ¾ƒ—¨<” ›c^` ÃS`×K<;	eU }Öpf uT>eÖ=` ¾T>Á´uƒ U`U`.....1 eU ¾TÃÑMì<uƒ U`U`.....2 M¡ ”ÅK?KA‹ ¾U`U` ›Ã'ƒ.....3 ›L¨<pU.....88 SMe ¾KU.....99	
135	KlØ` 132 SMe- ðMÒKG< ŸJ': K›?‹›Ã.y= U`S^“ U¡` ›T"] ”Ç=J”- ¾T>S`Ö<ƒ T” '¨<;	¾+u= l¡U“-” ¾T>Ÿ}KA-ƒ ¾Ö?“ vKS<Á....1 K?L ¾Ö?“ vKS<Á.....2 ÕÅ—-.....3 K?L "K ÃÖke.....4 ›L¨<pU.....88 SMe ¾KU.....99	
136	¾U`U^¨<” ¨<Ö?ƒ T¨p ›MðKÑU: 'Ñ` Ó” ¾›?‹›Ã.y= U`S^ ›É`Ñ¨< Á¨<nK<;	}S`U_ ›¬nKG<.....1 }S`U_ ›L¨<pU.....2 SMe ¾KU.....99	SMe }S`U_ ›L¨<pU ŸJ' ¨Á lØ` 143 H>É
137	KlØ` 136 SMe- ›- ŸJ': uU” U¡”Áƒ 'u` ¾›?‹›Ã.y= U`S^ ÁÅ[Ñ<ƒ;	u^c? õLÔƒ“ ØÁo.....1 uÖ?“ vKS<Á ƒ°³´ .....2 ¾ÅU MÑd KTÉ[Ó.....3 u+u= ui eK SS< .....4 K?L "K ÃÖke.....5 SMe ¾KU.....99	
138	KlØ` 136 SMe- ›- ŸJ': ¾SÚ[h¨<” ¾›?‹›Ã.y= U`S^ ÁÅ[Ñ<ƒ SŠ '¨<;	u+y= ui ŸS ST@ uòƒ.....1 u+y= ui Ÿ SUŸ< u L .....2 K?L "K ÃÖke.....3 ›L¨<pU.....88 SMe ¾KU.....99	
139	KlØ` 136 SMe- ›- ŸJ': ¾›?‹›Ã.y= U`S^ ¾ƒ 'u` ÁÅ[Ñ<ƒ;	¾+u= l¡U“ uT>Ÿ}K<uƒ ¾Ö?“ É`Ïƒ.....1 K?L ¾Ö?“ É`Ïƒ.....2 K›?‹›Ã.y= U`S^ ›ÑMÓKAƒ w‰ ¾T>cÖ<ƒ É`Ïƒ.....3 K?L "K ÃÖke.....4 ›L¨pU.....88 SMe ¾KU.....99	
140	KlØ` 136 SMe- ›- ŸJ': ¾U`U^¨< ¨<Ö?ƒ T¨p ›MðKÑU: 'Ñ` Ó” ¾›?‹›Ã.y= U`S^ ¨<Ö?ƒ-” ›¨<kªM?	›¨<mKG<.....1 ¨<Ö?ƒ ›L¨<pU.....2 K?L "K ÃÖke.....3 ›L¨pU.....88 SMe ¾KU.....99	
141	KlØ` 136 SMe- ›- ŸJ': ¾›?‹›Ã.y= U`S^ ¨<Ö?~” KÕÅ—- 'Ó[ªM;	›-.....1 ›M}“Ñ`Ÿ<U.....2 K?L "K ÃÓKì<...3 SMe ¾KU.....99	

}.l	ØÁo-‹	SMe K=J'< ¾T>‹K< ˆ˙a‹	›e}Á¾ƒ
142	KlØ` 136 SMe • ›- ŸJ' ÕÅ—¨< ¾›?‹.›Ã.y= U`S^ ›É`ÑªM;	›-.....1 ›LÅ[ÑU/‹U....2 ›L¨<pU .....88 SMe ¾KU.....99	
143	KlØ` 136 SMe- }S`U_ ›L¨<pU ŸJ'& uU" U¡"Áƒ ¨"< ¾›?‹.›Ã.y= ÁLÅ[Ñ<ƒ ; ***(Ÿ›"É uLÃ SMe Ã‰LM:: ›□ "wu¨<& ¾T>cÖ<ƒ" G<K< SMe ›¡wu¨<)***	›ÉKA" SÑKM uSõ^ƒ.....1 zÃ[c< u=•`w˜ ¾ÕÅ— I× uSõ^ƒ.....2 ¨<Ö?ƒ KSkuM eKUð^ .....3 ›?‹.›Ã.y= ÃÃ²—M wÂ eKTLew.....4 ¾Ö?" vKS<Á-‹ ¾›?‹.›Ã.y= U`S^ □"ÇÅ^Ñ eLM'Ñ\˜.....5 ¾›?‹.›Ã.y= U`S^ ªÒ S¡ðM eKTM‹M.....6 u+y= ¾I¡U" T°ŸM ¾›?‹.›Ã.y= U`S^" U¡` ›ÑMÓKAƒ eKK?K.....7 SS`S` ØpU ›K¨< wÂ cKTLU" .....8 T>eÖ=^©'~" SÖul" eKUÖ^Ö`.....9 ¨<Ö?~" TK¨p eLTMðMÓ.....1® uÕÅ—Â cKTU".....11 u□^c eKTU".....12? K?L "K ÃÖke.....13 ›L¨<pU.....88 SMe ¾KU.....99	

144	¾+u= I¡U" ¡ƒƒM ¾T>ÁÅ[ÑK¨< ¾Ö?" vKS<Á ¾›?‹.›Ã.y= U¡`" U`S^ □"Ç=ÁÅ`Ñ< u=Á'ec-ƒ U`S^ KTÉ[Ó ÃeTTK<;	□eTTKG<..... 1 ›MeTTU..... 2 SMe ¾KU..... 99	SMe ›MeTTU ŸJ' ¨Å lØ` 145 H>É
145	KØÁo 144 SMe- ›MeTTU ŸJ' U¡"Áƒ-U"É" '¨< ; ***(Ÿ›"É uLÃ SMe Ã‰LM:: ›□ "wu¨<& ¾T>cÖ<ƒ" G<K< SMe ›¡wu¨<)***	›ÉKA" SÑKM uSõ^ƒ.....1 zÃ[c< u=•`w˜ ¾ÕÅ— I× uSõ^ƒ.....2 ¨<Ö?ƒ KSkuM eKUð^ .....3 ›?‹.›Ã.y= ÃÃ²—M wÂ eKTLew.....4 ¾Ö?" vKS<Á-‹ ¾›?‹.›Ã.y= U`S^ eLM'Ñ\˜..5 ¾›?‹.›Ã.y= U`S^ ªÒ S¡ðM eKTM‹M.....6 u+u= ¾I¡U" T°ŸM ¾›?‹.›Ã.y= U`S^" U¡` ›ÑMÓKAƒ eKK?K.....7 SS`S` ØpU ›K¨< wÂ cKTLU" .....8 T>eÖ=^©'~" SÖul" eKUÖ^Ö`.....9 ¨<Ö?~" TK¨p eLTMðMÓ.....1® ÕÅ—Â" □^c? cKTU".....11 K?L "K ÃÖke.....12 ›L¨<pU.....88 SMe ¾KU.....99	

nK SÖÃl" □²=I LÃ □"Ú`dK"::nK SÖÃl" KTÉ[Ó eK}vu\" ŸMw ›ScÓ"KG<::

Annex III: Semi-Structured FDG Questionnaire

Theme 1 Introduction

My name is _____and my colleague besides me is called----------. I am a member of the research team of Addis Ababa University, AARHB and EPHA/CDC.
Today we would like to ask you a few questions about your experience, knowledge, and beliefs about voluntary counseling and testing for HIV. We would like to tape record our discussion with you-this will ensure that we correctly represent you views. May we have your permission to do this? What you say here today is confidential and will be used only to help us plan together in developing an integrated HIV/TB service.
First I have a couple of requests. One is that you speak up so that all can hear. Second, please say exactly what you think. We are just as interested in hearing your experience, knowledge, and beliefs.

Now, to get started, perhaps it would be best to go around the table or mat one at a time. Please introduce yourself, and share a little about your occupation.

THEME 2 Warm up questions

Next we'd like you to hear a little about your experiences or knowledge about HIV/AIDS

1) Tell us what is HIV/AIDS?
2) We would like you to tell us how people get HIV/AIDS?

    Probes (Would you explain further? Would you give me an example? Has anyone else had similar experiences? Is there any thing else?)

THEME 3 Voluntary Counseling and testing service

Now we would like to ask you about VoluntaryCounseling and Testing (VCT) service.

a) What do you know about testing and counseling for HIV?
b) What are the benefits and the harms of VCT?
c) Why do TB patients not use HIV testing and counseling?
d) Do you agree to accept counseling and testing for HIV, if your health worker or TB treatment supervisor initiate you? Why? Why not?

THEME 4: TB and HIV Association

Now we would like to ask you about TB and HIV/AIDS association

I. Do you think TB and HIV/AIDS have an association? How?

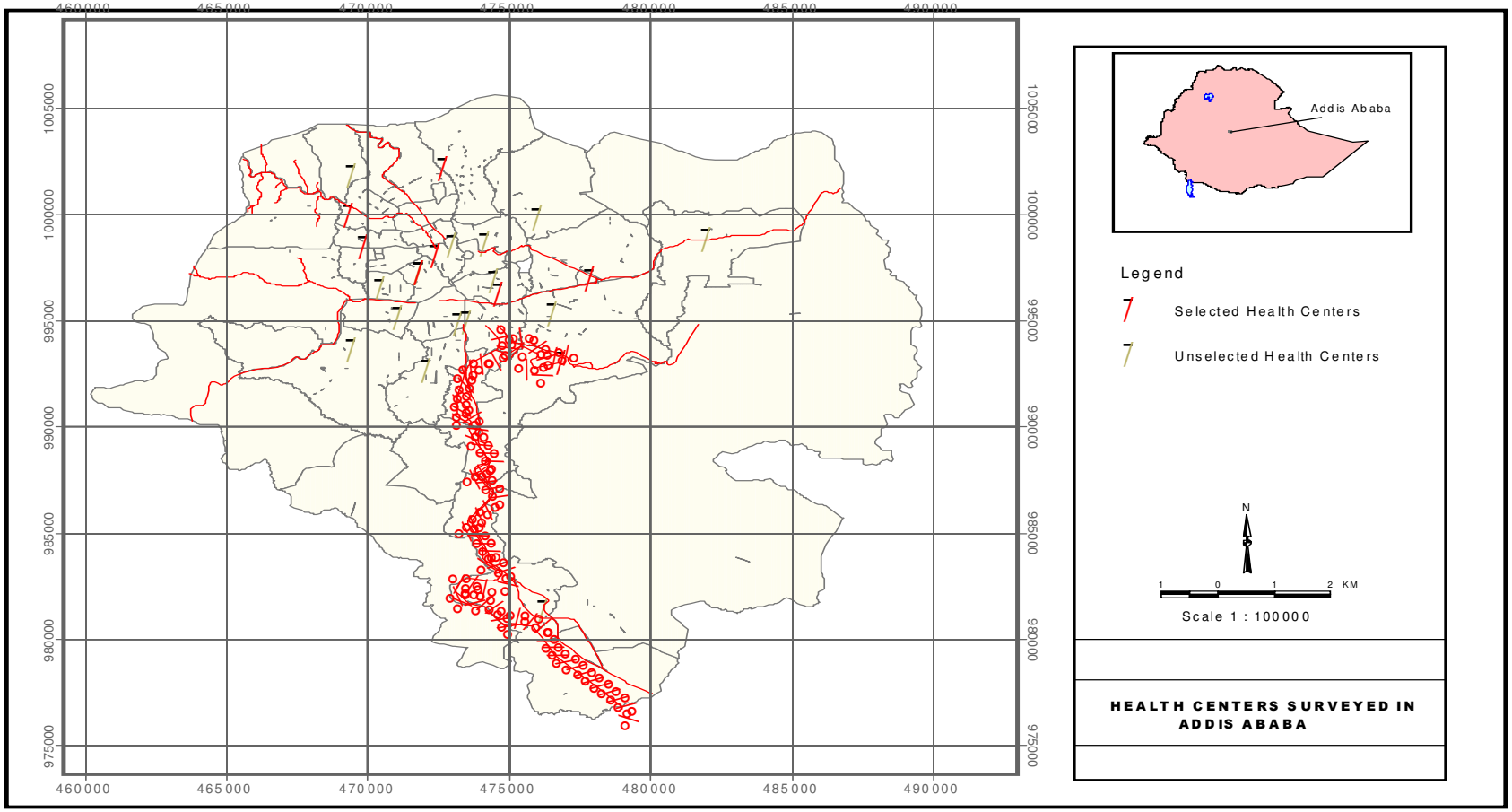
At this point, is there any thing we have forget to ask or any thing you would like to mention before we finish up this session?

We would like to thank each of you for your time and we do appreciate all your comments.

Annex IV: **FGD Participants Profile**

Age group	**Sex**	**No ppt**	**Place**	**Total time**	**Date in EC**
19-43	M	8	Yeka HC	60 minutes	27/10/98EC
19-35	F	8	Yeka HC	40 minutes	27/10/98EC
20-32	F	8	Bole HC	45 minutes	29/10/98EC
19-34	M	8	Bole HC	50 minutes	29/10/98EC

Annex V: Fig II-Map of the Study Area



Annex VI: The Number of TB Patients Load in Health Centers in 1997EC

	Name of HC	No of TB patients	TB patients load category
1	**Bole HC**	962	**High***
2	**Addisketema**	610	**High**
3	**Woreda 7**	428	**Low****
4	Akaki HC	309	Low
5	Kaliti	321	Low
6	**Arada**	650	**High**
7	Gulele	655	High
8	**Kebena**	233	**Low**
9	**Sheromedia**	589	**High**
10	Selam	235	Low
11	Ledat	191	Low
12	Teklehaymanot	704	High
13	Woreda 4	446	Low
14	Woreda 24	631	High
15	Woreda 23	342	Low
16	Woreda 19	796	High
17	Kolfe	810	High
18	**Yeka**	490	**Low**
19	Kotebe	632	High
20	Entoto	479	Low
21	Kirkos	519	High
22	Meshualekia	381	Low
23	**Cazanches**	404	**Low**
24	Awelia	62	Low
	Total patients	11,879	**=Low (<495)
	Mean	494.96	*==High(>495)