ADDIS ABABA UNIVERSITY
OFFICE OF GRADUATE PROGRAMMS
FACULTY OF SCIENCE
DEPARTMENT OF STATISTICS

KNOWLEDGE, ATTITUDE TOWARDS PRACTICING OF VOLUNTARY HIV COUNSELLING AND TESTING AND THE DETERMINANTS OF VCT UPTAKE: A CASE STUDY IN DEBREBIRHAN TEACHERS TRAINING COLLEGE

ZEYTU GASHAW

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ZEYTU GASHAW

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Name of Candidate: Zeytu Gashaw
Department: Statistics
Faculty: Science

APPROVED BY BOARED OF EXAMINERS

Prof. Eshetu Wencheko ……
Advisor Signature

Dr. Girma Taye ……..
External Examiner Signature

Dr. M.K. Sharma .....
Internal Examiner Signature

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List of Tables

ACRONYMS

AIDS: Acquired Immune Deficiency Syndrome

ART: Antiretroviral Therapy

FHI: Family Health International

HIV: Human Immune Deficiency Virus

MOH: Ministry of Health

NACS: National AIDS Council Secretariat

UNAIDS: United Nations Program on HIV/AIDS

VCT: Voluntary Counselling and Testing

WHO: World Health Organization

PLWHA: People Leaving with HIV/AIDS

NSS: National Sentinel Surveillance

OLS: Ordinary Least Square

PMTCT: Prevention of Mother To Child Transmission

KAB: Knowledge, Attitude and Behavior

VCCT: Voluntary Confidential Counselling and Testing

SNNPR: Southern Nation Nationalities and People's Regional state

TTI: Teachers Training Institute

BCC: Behavioral Change Communication

LL: Log-Likelihood

MLE: Maximum Likelihood Estimation

SPSS: Statistical Packages for Social Sciences

A B S T R A C T

HIV/AIDS is highly affecting the young and economically active segment of the population. Effective behavioral change communication (BCC) strategies need to be designed to rescue the future development force of the nation. Determination of the knowledge and attitude underlying the safe and unsafe behavior is instrumental in facilitating the behavioral change by keeping the leverage of efforts focused to the relevant areas. This study therefore, assessed the knowledge, attitude, and practice of Debre-Birhan Teachers Training College Students about Voluntary HIV Counselling and Testing.

Data on knowledge, attitude, and practice of voluntary counselling, and testing, and socio-demographic variables like age, sex ....etc of students were collected using a structured self administered Amharic version questionnaire. Prior to data collection mass and individual consent was obtained after thorough explanations of the procedure. The data were cleaned, edited and entered into a computer and analyzed by the binary logistic regression model and chi-square one-at-a time association with the application of SPSS for windows version 13.0. A number of potential variables for inclusion in the binary and multivariate analyses are identified. Statistical tests at 0.05 level of significance were employed wherever appropriate. The study showed that overall 192 (82.40%) of the respondents have good knowledge and over 168 (75.68%) have favorable attitude towards Voluntary HIV Counselling and Testing (VCT). Almost 82 (35.19%) of the respondents have taken VCT practically. The majority of respondents 214 (91.85%) did not perceive themselves at risk of HIV infection even if they are indulged in unsafe sexual practice. This paper also seeks to identify the major determinants/factors that motivates students to voluntary HIV counselling and testing (VCT) and to examine how these determinants are associated with VC. The results suggest that Attitude towards VCT, knowledge of HIV transmission and prevention, knowledge of VCT are the only important factors significantly affecting student's practice of HIV testing (VCT) whereas perceived confidentiality of VCT service and site consider as a barrier in VCT uptake of students.

Chapter One

Introduction

1.1 Background of the Problem

It is about a quarter of a century since Human Immune Deficiency Virus (HIV) epidemic has been a menace to this world. Following the reports of the first case in the early 1980s, the spread of HIV/AIDS has increased at alarming rate. Despite the high levels of global responses, more than 20 million people have died since then (UNAIDS/WHO, 2005:1). By the end of 2004, it was estimated that about 40.5 million people were newly infected and 3.1 million people died in HIV/AIDS (UNAIDS, 2005:1).

In fact, all parts of the world are not equally rebuked by this pandemic. There is a considerable regional variation in its distribution. Sub-Saharan Africa is the region where the highest number of victims of HIV/AIDS is found. Although the region accounts only for 10% of the world population, it comprises almost 60% of the victims of HIV/AIDS in the world, having 25.8 million people living with HIV/AIDS. In 2005 an estimated 3.2 million people in the region became newly infected, while 2.4 million died of AIDS. Among the younger generation (15-24 years) the percentage of HIV infected women and men account for 4.6% and 1.7%, respectively (UNAIDS, 2005:17).

Ethiopia is one of the most seriously affected countries within Sub Saharan Africa. In Ethiopia, the highest prevalence of HIV (12.1%) is observed among youth whose age belongs to 15-24 years (Family Health International (FHI), 2004:22). According to the UNAIDS 2004 report, Ethiopia stands fifth, just next to South Africa, Nigeria, Zimbabwe and Tanzania where the highest victims of the disease are found. The 2003 National Sentinel Surveillance (NSS) results document of the Ministry of Health (MOH) report on "AIDS in Ethiopia" indicated that the cumulative number of people living with HIV/AIDS was about 1.5 million out of which about 96,000 are children whose age is below 15 years. The estimated number of new HIV/AIDS cases among the adult population in 2003 was 98,000 (46% male and 54% female) while it is about 25,000 among children. Some 245,000 People Living with HIV/AIDS (PLWHA) were in need of Antiretroviral Treatment (ART) and some 90,000 adults and children had died of AIDS

in 2003. There were also an estimated 593,000 AIDS orphans in the same year (MOH, 2004:11)

The distribution of the number of people living with HIV/AIDS by region in the year 2005 was that in Tigray: 88,000; Amhara: 445,000; Afar: 22,000; Dire Dawa: 15,000; Somali: 29,000; Harari: 5,200; Oromia: 318,000; SNNPR: 176,000; Addis Ababa: 207,000; Benishanguel Gumez: 9,200; Gambela: 5,400. Due to the combined effects of both relatively high HIV prevalence and large population sizes Amhara, Oromia, Addis Ababa and SNNPR accounted for 86.6% of all people living with HIV/AIDS in 2005. Similarly , these four regions share 86.7% of the total estimated HIV positive pregnancies, 85.3% of new infections, 87.9% of new AIDS cases, and 88.2% of AIDS deaths that occurred in Ethiopia in 2005 (MOH, 2006).

The impact of AIDS is multidimensional. It would not only affect health, economy and life expectancy of people living in the country but also it has a great impact on education (People to People, 2005:16). A study conducted by the Ministry of Education of Federal Republic of Ethiopia (2003) indicated that between 1998/99 and 2000/01, there was a 5% increase in death among teachers, some of which might be attributed to AIDS. Moreover, absenteeism of one week in a semester was reported among a third of the teachers due to sickness of the teacher or member of his/her family. Overall, school drop out-rates increased from 1996/97 to 2000/01 possibly due to sickness and death of parents. The same study indicated that orphan students who lost their parents presumably due to AIDS and associated diseases were more likely to drop out of school and repeat classes than their counterparts who were not orphan. Education costs are increasing due to the replacement of non-productive teachers, and premature payment for terminal benefits. These factors are expected to continue adversely to the overall cost and quality of educational services, but cannot be directly and solely attributed to the impact of HIV/AIDS.

In Ethiopia teacher's death is a serious blow at a time when the country is implementing free primary education and expansion of higher education. Since education is a labor intensive service, loss of teachers will have profound drawbacks on the ability of the

country to supply and expand quality education and achieve universal primary education targets. Since the average duration from HIV infection to the full-blown AIDS is about 10 years, most teachers with AIDS were more likely infected as adolescents or young adults; a time when they were still in high school or college. That is why, this study attempts to asses knowledge, attitude and practicing of HIV testing and determinants of VCT uptake in Debre Birhan Teachers Training College.

Nowadays, the seriousness of the problem has been acknowledged in Ethiopia and all the concerned bodies are making efforts to control the spread of the epidemic through different mechanisms of intervention. One of the many different strategies designed for prevention and control of the disease is providing Voluntary HIV Counselling and Testing (VCT) (National AIDS Council Secretariat (NACS): 2000:27). VCT is an internationally recognized, effective and important strategy for both preventive and care studies (FHI, 2002:11: UNAIDS, 2001:11). It is a cost-effective strategy for facilitating behavioral change. It is also an important entry point for care and support for those whose test result become positive. Voluntary HIV Counselling and testing provides people with an opportunity to learn and accept their HIV status in a confidential environment with counselling and referral for on-going emotional support and medical care. People who have tested positive can benefit from earlier and appropriate medical care including ART Treatment and HIV associated illness, social support, and emotional and spiritual care (UNAIDS:2001:4)

In spite of the fact that the level of HIV/AIDS is high in Ethiopia and the roles that VCT can play for the prevention and control of the epidemic, HIV/AIDS testing has been very limited and very few people have ever tested. According to the 2002 Behavioral Sentinel Surveillance result, only 4.6% youth recorded ever having had an HIV test (Ministry of Health (MOH), 2002:25). Moreover, the annual report for the Ethiopian Fiscal year 1998 (Hamle1, 1997-Sene 30,1998E.C) indicated that a total of 564,351 VCT clients received services. Of these, 13.7% were HIV Positive (15.7% among females and 11.6% among males). The annual report also indicated that a total of 52,428 pregnant women were tested for HIV of which 4,172 (8%) tested HIV positive. Of those HIV positive 2,208 (52.9%) of

the pregnant women and 1,341 (32%) of their babies received nevirapine for prevention of mother to child transmission (PMTCT) (MOH, 2006). This is largely due to factors associated with accessibility and acceptability of the service, as well as factors associated with negative outcomes following VCT like stigma and discrimination (Michael Dejene, 2001:1; Fahmi; 2000:17).

In general, the overall condition of VCT in Ethiopia calls for scaled up and coordinated activities to improve the service. It is, therefore, crucial to have data on knowledge, attitude, practice and other issues related to VCT among youth so as to design youth friendly VCT services. Hence, the present study is initiated with the main objectives of assessing Knowledge, Attitude and Practice of Voluntary HIV Counselling and Testing among college students in Debre-Birhan Teachers Training College. The findings of the study could be useful in designing intervention programs that will promote Voluntary HIV Counselling in the fight against HIV/AIDS.

1.2 Objectives of the Study

The main objective of this study is to assess knowledge, attitude towards practicing of Voluntary HIV Counselling and testing and the determinants of VCT uptake for HIV/AIDS among College students in Debre Birhan Teachers Training College. More specifically, the study intends:

1. to examine the students' level of knowledge, attitude towards practice on VCT of HIV/AIDS.
2. to investigate reasons for the students to be tested for HIV voluntarily.
3. to identify the key factor/ determinants of VCT uptake among the students.
4. to answer the question "Do students in teachers training colleges perceive themselves to be at risk of HIV infection?"

1.3 Significance of the Study

Despite the serious impact of HIV/AIDS pandemic on the Education Sector in Ethiopia, very little attention has been given to the areas of Teacher Education College and HIV/AIDS. Teachers are instrumental in imparting knowledge, skills and attitude to

children and adolescents. They can function as role models and advocates for healthy school environment, guide pupils in need of services, resource for accurate information and effective instructors. Since teachers are the main adults other than the family members with whom adolescents and young people interact, it is of great importance they practice safe sex behaviors to enable them to act as good role models for their pupils.

In reducing risk behaviors among individuals at risk of HIV/AIDS, Voluntary Counselling and Testing is found as one of a few potentially effective and affordable methods (Mariano, 2005:2). As a result, HIV Counselling and Testing has great recognition in many developing countries in the era of HIV/AIDS. Currently, a number of countries including Ethiopia are rushing to expand VCT services without strong evidences of their people's attitude and demand for the service. Thus, it appears very rational and timely to study the knowledge, attitude and practice about student-teachers on Voluntary HIV Counselling and Testing at institutions like the Debre Birhan Teachers Training College. Teachers Training College students are an important study target because, after graduation they will be interacting with children and adolescents in school, who have little or no ideals and attitudes formed on sex issues, and voluntary HIV Counselling and Testing (VCT). Such pupils are easy to be influenced by their teachers.

1.4 Definition of Terms

HIV COUNSELLING is defined as a confidential dialogue between a person and a care provider aimed at enabling the person to cope with stress and make personal decision related to HIV/AIDS. The counselling process includes an evaluation of personal risk of HIV transmission and facilitation of preventive behavior.

VOLUNTARY HIV COUNSELLING AND TESTING (VCT) is an HIV intervention that includes both voluntary Pre-test Counselling and Voluntary HIV Testing. If people, on their own free will opt for VCT it provides them with an opportunity to confidentially explore and understand their HIV risks and to learn their HIV test results (UNAIDS, 2000:8). For this particular study the word "HIV Testing" is used interchangeably but equivalently with VCT uptake. Both qualify the practice of HIV testing.

KNOWLEDGE is an internalized learning based on scientific facts, experience and/or traditional beliefs.

ATTITUDES are feelings, opinions or values that an individual holds about a particular issue, problem or concern.

PRACTICE refers to application of rules and knowledge that leads to action. Good practice is an act that is linked to the process of knowledge and technology and is executed is an ethical way.

Source: Nnational Guidelines for Voluntary HIV Counselling and Testing in Ethiopia, October, 2000.

Chapter Two

Literature Review

It has been argued that the limitations of prior studies to explain a great deal of variation in HIV testing behavior are lack of appropriate theories and models. Almost all theories and models that have been used in HIV prevention were derived from socio psychological and concepts of communications (UNAIDS, 1999:73).

The most frequently used theories and models of behavioral change include theories that focus on individual's psychological process, such as attitudes and beliefs, then goes into theories emphasizing social relationships. In the following we review some basic theories and models that are pertinent to the theme of the current study.

2.1 Theories and Models of Sexual Behavioral Change

2.1.1 Focus on Individuals

As HIV transmission is propelled by behavioral factors, theories about how individuals change their behaviors have provided the foundation of most HIV prevention efforts worldwide. These theories have been generally created using cognitive-attitudinal and affective motivational constructs (Kalichman, 1998). Most of the psychological theories and Models have multi dimensional purposes. Only one of the psychological models discussed below, the AIDS Risk Reduction Model, was adapted specifically for AIDS.

THE HEALTH BELIEF MODEL (HBM): This is the most commonly used model and the theory behind it is well known. It was developed in the 1950s, and asserts that health behavior is a function of individual's socio-demographic characteristics, knowledge and attitudes. According to this model a person must hold the following beliefs in order to be able to change behaviors:

1. perceived susceptibility to a particular health problem ("am I at risk for HIV?").
2. perceived seriousness of the condition ("how serious is AIDS; how hard would my life be if I got it?").

3. beliefs in effectiveness of the new behavior (“ condoms are effective against HIV transmission”).
4. cues to action (“ witnessing the death or illness of a close friend or relatives due to AIDS”).
5. perceived benefits of preventive action (“if I start using condom, I can avoid HIV infection”).
6. barriers to taking action (“ I don't like using condoms”).

In this model, promoting action to change behavior include changing individuals personal beliefs.

AIDS RISK REDUCTION MODEL: This model was developed in 1990 (Catania et al.) and derives from the health belief model to describe the process of individuals (or groups) pass through while changing behavior regarding HIV risk. The model identifies three stages involved in reducing risk for HIV transmission, including:

1. behavior labeling
2. commitment to change
3. taking action

In the first stage, knowledge about HIV transmission, perceived HIV susceptibility as well as aversive emotions influence how people perceive AIDS. The commitment to change stage is shaped by four factors: perceptions of enjoyment, self-efficacy, social norms and aversive emotions. In the last stage, aversive emotions, sexual communications help seeking behavior and social factors that affect peoples' decision making process (Catania et al, 1990).

2.1.2 Social Theories and Models

Overemphasis on individual behavioral change with a focus on the cognitive level has undermined the overall research capacity to understand the complexity of HIV transmission and control activities. On the other hand, focus only on the individual psychological process ignores the interactive relationship of behavior in its social,

cultural, and economic dimension thereby missing the possibility to fully understand crucial determinants of behavioral change (Aggleton, 1996).

SOCIAL INFLUENCE OR SOCIAL INOCULATION MODEL: This educational model is based on the concept that young people engage in behaviors including early sexual activity partly because of general societal influences but more specifically from their peers (Howard, 1990). The model suggests exposing young people to social pressures while teaching them to examine and develop skills to deal with these pressures.

SOCIAL NETWORK THEORY: The social Network Theory looks at social behaviors not as an individual phenomenon but through relationships and appreciates that HIV risk behavior unlike many other health behaviors, involves two-people directly (Morris, 1997). With respect to sexual relationship, social networks focus on both the impact of selective mixing (i.e how different people choose who they mix with), and the variations in partnership patterns (length of partnership). Despite the intricacies of relations and communications within the couple, the smallest unit of the social networks is critical to the understanding of HIV transmission. In this theory, the scope and character of ones broader social network, those who serve as reference people, and who sanction behavior, are key to comprehending individual risk behavior (Auerbach, 1994). One application is the concept of 'bridge populations' that form a link between high and low prevalence groups (Morris, 1997).

The theories and models mentioned above are limited to individualistic and societal approach in general. They fail to consider the roles of environmental, structural and economic issues. But conceptual models related to HIV testing behavior needed to incorporate a range of facts including psychological and socio demographic variables (UNAIDS, 1999:96). Moreover, the major theories and models discussed above have a major contribution towards the understanding of how behavior change occurs to enact some desired action. But none of them could fully explain the problem at hand; that is, how people decide to undergo voluntary HIV counselling and testing.

In view of the above, this research is an attempt to consider the best of what each theory, model and framework contributed to the explanations of VCT.

2.2 **Voluntary HIV Counselling and Testing (VCT)**

An increasing number of people in industrialized countries are receiving their HIV test results as therapeutic options become available to more people. Research has shown many reasons why developing nations should make voluntary counselling and testing (VCT) accessible to their peoples (UNAIDS, 1998). Early detection of the virus enables referral for clinical care and psychological support. Ethically people have a right to know their sero-status in order to protect themselves and others. Knowing their own sero-status and the options can motivate people to change higher risk behaviors (De Zoysa, 1995). Besides, Dezoysa notes that HIV testing and counselling may have an important social impact on people knowing their serostatus sharing it with others and laying the groundwork for changes in social norms about HIV and AIDS. A positive HIV result has also encouraged some people to give personal testimonies in community with the aim to influence individual attitudes, behaviors and social norms. In cultural context where fertility is highly valued, testing and counselling can bring about an important behavioral change alternative to consistent condom use.

2.3 Demographic and Socio-Economic Variables and VCT

Until now, many researchers and annual reports of different countries have focused their attention on profiling the demographic and socio economic characteristics such as age, sex, ethnicity, maritalstatus, education etc… of those who come for VCT in an attempt to identify variables associated with the demand for VCT. According to the 1996 Annual Report of the U.S Department of Health and Human/ Public Health services more than half of all HIV tests at publicly founded sites were performed on women, although more than two thirds of HIV positive test results were for men. For both men and women, the largest proportions of all HIV tests were performed on persons 20 to 29 years of age. The largest proportion of HIV positive test results were for persons 30 to 39 years of age. Among adolescents aged 13 to 19 more females than males were tested and more females were HIV positive, although the percentage of positive test results was higher among men

(0.4%) than among women (0.2%). Moreover, fewer than half of all HIV tests were performed on black or Hispanic persons, but these groups accounted for more than two thirds of all HIV positive test results. This study which is carried out at Bahirdar town concerning VCT has shown that age, marital status, educational attainment, number of lifetime to sexual partner and perceived confidentiality of VCT service come out to be important predictors of the likelihood of HIV testing among the study populations (15-24 years of age). Derejie Tilahun (2006) showed that sex, religion, ethnicity, HIV risk perception, attitude towards VCT and knowledge of HIV/AIDS not to have an impact on HIV testing.

Marital status is another variable that should be considered in the study of HIV counselling and testing. A study in Jamica among university students showed that the odds of HIV testing was 1.5 times higher among married students than not married (Norman, L. R. and Yitades Gebre, 2005; 1:70). In addition to this, education also affects HIV testing through its effect on the extent of knowledge about HIV/AIDS transmission and prevention. Educated people are more likely to have access to many sources of health and HIV related information. Information that is disseminated through schools, printed media, television and radio are more likely to have profound effect on educated audiences rather than non educated audiences. Educated people have also greater incentive to protect their health and insure longevity by gathering or being attentive to information about HIV prevention (Glick and Sahn; 2005:12).

Since different countries have different cultures and beliefs, the intention towards VCT results vary from country to country. In Zambia, women said that it was thought to be shameful to have HIV and if they were known to be sero-positive, they would suffer discrimination. Studies in Kenya have also shown that women may be particularly vulnerable following VCT and in some cases have lost their homes and children or have been beaten or abused by their husbands/partners if their status became known (UNAIDS; 2000).

Until recently, there was a paucity of data indicating that VCT may be important in changing sexual behavior and a cost effective intervention in reducing HIV transmission. Moreover, there are studies available in showing that VCT gives sero positive people earlier access to medical care, preventive therapies and the opportunity to prevent mother-to-child transmission of HIV. There are still several challenges to the establishment and expansion of VCT services such as limited access to VCT, cost of VCT and improving the effectiveness of VCT, publicizing of benefits of VCT. Many of the countries most severely affected by HIV are also among the poorest countries. Establishing VCT services is often not seen as a priority because of cost, lack of laboratory, medical infrastructures and lack of trained staff (UNAIDS, 2000). It still requires reduction of the cost to encourage those who could not afford to pay for the service. 'Free day' programmers in Uganda have resulted in an increase in the utilization of the VCT services (UNAIDS, 1999:6). High costs of VCT as barriers to the service are indicated in the participatory study with young people from Uganda (Nuwaha et al, 2002:626).

2.4 Psychological and System Related Variables and VCT

Studies have shown that, the acceptance and real practice of VCT is influenced by attitudes such as perceived risk of HIV/AIDS, perceived benefits of testing, perceived confidentiality of the service and fear of positive test results. The perception of risk results has been noted to have a bi-directional influence on HIV testing behaviors. It can act either as a facilitator or a deterrent factor to HIV testing.

In some societies, perception of being at risk of HIV was identified as a reason why people are seeking VCT services. Among Americans with a history of high risk behaviors who delayed or did not seek HIV testing, a commonly cited reason is that they did not perceive that they were at risk of HIV infection, suggesting that accurately perceiving for HIV may be a powerful testing motivator. A study of knowledge, attitude, and practice about HIV/AIDS, voluntary counselling and testing among students of Jimma University has shown that the students have high level of knowledge and favorable attitude about the preventive method of HIV/AIDS and VCT. Despite the high level of awareness there was

a high risk sexual practice. Over fifty percent of the study respondents involved in unsafe sexual practice but there are positive attitudes towards VCT services and they do not have risk perception of the result. On the contrary, in a study of voluntary HIV test acceptability in rural Tanzania, the main reason stated for declining an HIV test was the perception of not being at risk from AIDS (Tefera Belachew et al, 2004; Fishbein et al, 1996 cited in Ronald et al, 1999:2317-2330).

Another common correlate of HIV testing is perceived benefits of testing. Studies that are focused on this question tried to look at who come for VCT and more importantly why they do so. Ability to plan for the future is perhaps the main perceived benefit of testing, either because it allows couples to proceed with unprotected sexual intercourse, marriage and pregnancy or allows individuals to prolong their lives in the face of HIV infection (Maman et al, 2001:172). In 1997 among the VCT clients in Uganda, about 24% came to the service to make plan for the future and about 25% to know their sero-status before getting married (UNAIDS, 1999:22). From 345 pregnant women attending antenatal clinics at two health facilities in Lagos, Nigeria almost all the women (96.1%) were living to undergo HIV testing in pregnancy particularly if it would assist preventing transmission of HIV to their babies. Only few would undergo the test if the results would be shared with relatives. Many of the women would still prefer breastfeeding even if they were found to be HIV positive (African Journal of Reproductive Health, 2004).

In addition, knowledge of HIV status has been acknowledged that it increases anxiety without major treatment benefits in low-income countries where Antiretrovil treatment is not universally available (Solomon et al, 2004:16). Thus, fear of positive test result may be reduced if VCT is linked with medical care and effort is made to improve medical services for people with HIV. However, this is very difficult for poor countries like Ethiopia.

There has been a great deal of resistance to VCT in Africa settings for reasons associated with lacking trust on the confidentiality procedures (Solomon et al, 2004:16). People, especially young people, are concerned about their privacy and are fearful that others may find out that they have sought an HIV test. Thus, the youngsters need better facility

for testing. It is clear that, casual observers like neighbors, parents, friends discouraged them from HIV counselling and testing. This has been proved from a study in Kenya and Uganda. Most youth in Kenya would prefer to have an HIV test at hospital, while most youth in Uganda prefer youth centers for the reasons that need confidential service (Horizon, 2001).

2.5 Cognitive Variables and VCT

In developing countries like Ethiopia where VCT is still a new idea, increasing people's knowledge on issues related to voluntary HIV testing so as to develop positive attitude towards it, is found to be an important concern in determining VCT uptake. Literature in this area reveal that the number of people who have visited VCT increases in line with an increased availability of VCT service (Glick and Sahn, 2005:11; Stein and Nyamathi, 2000:350).

In a community based study from South Africa a statistically significant positive association was observed between VCT uptake and attitude towards HIV testing. In that study, those who had been tested showed more positive HIV testing attitude than participants who had not been tested (Kalichman and Simbayi, 2003;79:442-447). Similar observations have also been reported from study done among youth (15-24 years of age) at Bahirdar town in Ethiopia (Derejie Tilahun, 2006). In addition to this, a study on HIV/AIDS Knowledge, Attitudes and Behavior (KAB) in North and South Gonder, Awi and East Gojam in the regional state of Amhara also shows that there is a strong favorable attitude towards the adoption of tests before marriage but a less favorable attitude to have one's blood tested. (Baseline survey report, 2002).

Though, a high level of awareness and acceptance of VCT do not always lead to HIV testing, increasing peoples' awareness and encouraging them for the approval of VCT become a precondition for HIV testing.

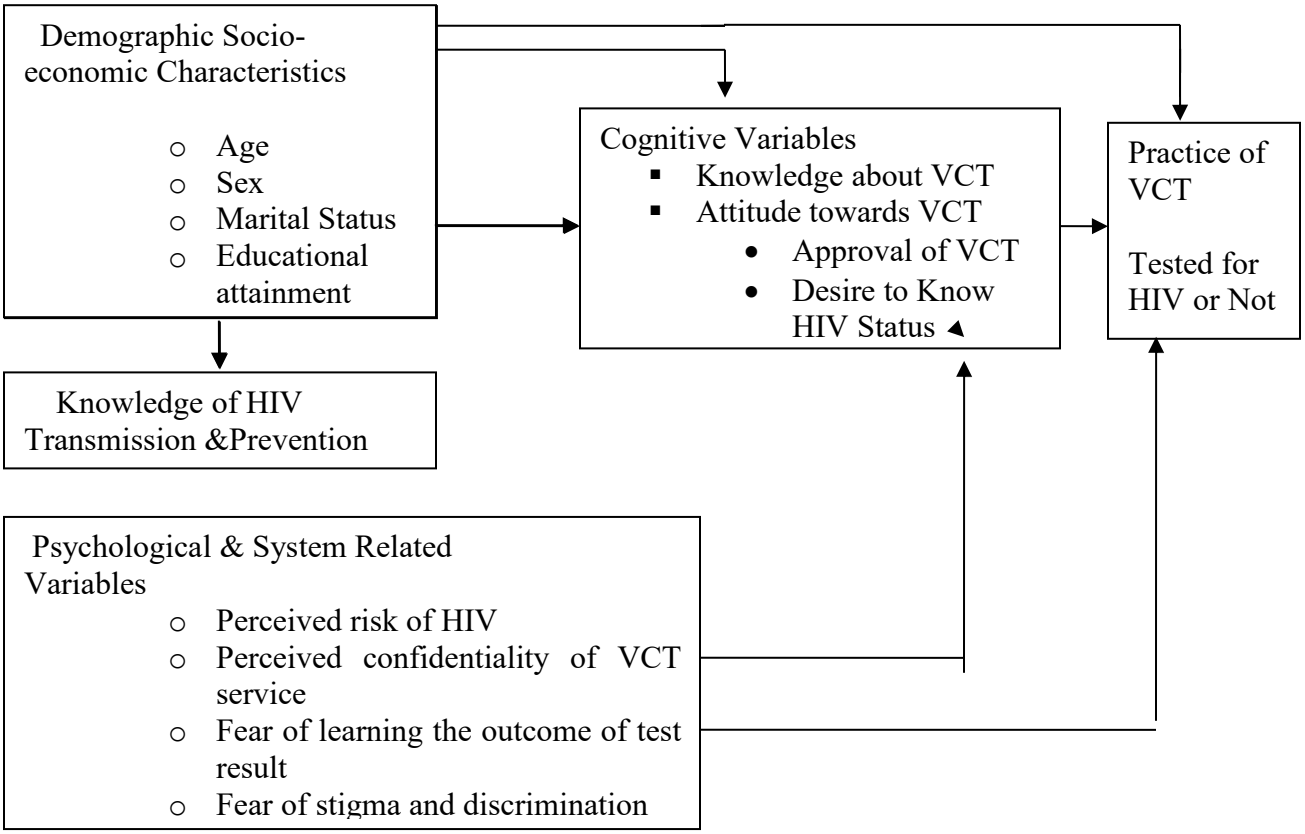
2.6 Knowledge of HIV/AIDS and VCT

Knowledge of HIV prevention was found to be a significant correlate of desire for HIV testing. Strong association of desire for HIV testing with good knowledge of HIV/AIDS infection and prevention has been reported from the analysis of the 1999 Tanzania Reproductive and Health Survey result where men who have no knowledge at all are about 1.5 times less likely to go for AIDS test than those with good knowledge of HIV prevention (Mbago, 2004:13). A similar observation has also been reported from study done among male factory workers in Ethiopia (Tefera Belachew, 1999:57). Good knowledge on HIV/AIDS being a correlate of VCT uptake was also observed in a study among university students in Jamaica. Norman and Yitades Gebre (2005) point out that persons who reported attending an HIV education forum and those who reported knowing someone infected with HIV were more likely to report a previous HIV test than those with no HIV education and awareness. A study on knowledge, attitude and Practice of Voluntary Confidential Counselling and Testing (VCCT) in Guragae Zone, SNNPR, South Ethiopia, has shown that, the general understanding of the community about HIV/AIDS, VCCT and the other preventive strategies was quite high compared to findings of similar studies elsewhere in the country. However, this high level of knowledge did not help to bring the desired change in attitude and practice in some segments of the study community. Presence of certain segments of the community holding negative attitudes may be a barrier to implementation of key intervention strategies like VCCT, and home-based care and support for people living with HIV/AIDS, and consequently need attention in the behavior change communication activities. Regardless of high level of knowledge a certain segment of the community was observed to practice high risk sexual activity (Tefera Belachew, et al, 2004).

2.7 Conceptual Framework of the Review Literature

In examining the knowledge, attitude and practicing of voluntary counselling and testing (VCT) for HIV/AIDS, the following conceptual framework is designed as a summary of review literature based on the theoretical background discussed earlier.

Figure 1: Conceptual framework showing the relationship between HIV testing and its determinants variables



According to the above conceptual framework the practicing of VCT is a function of cognitive variable (knowledge and attitude toward VCT) plus psychological and system related as well as socio-demographic variables like age, sex, marital status, educational attainment. The cognitive variables in turn are affected by psychological and system related variables such as perceived risk of HIV fear of learning the outcome of test result, and fear of stigma and discrimination plus knowledge HIV transmission and prevention as well as socio-demographic variables mentioned above. Knowledge of HIV/AIDS, on the other hand, influences the cognitive variables that are influenced by socio-demographic variables.

Chapter Three

Methodology

3.1 Description of the Study Area

This study had been undertaken in the Debre Birhan Teachers Training College, Ethiopia. Debre Birhan is located in North Shoa Zone in the Amhara regional State. It is 130km North West of Addis Ababa, the capital city of Ethiopia. The college is one of the oldest Teachers Training Institutes in the country. From 1964-2002 it served as a training site of primary cycle education teachers (certificate level graduates). The institute was upgraded it to college level for training teachers at diploma level in the field of teacher education. During the time when this study was undertaken the college had student population of 1591 distributed in three batches. The college has 6 departments (Pedagogy, Language, Mathematics, Natural Sciences, Social Sciences and Aesthetics). All currently registered students of the college had equal chance to participate in the study.

3.2 Sample Design and Sampling procedures

Sampling Methods are scientific procedures of selecting those sampling units which would provide the required estimator with associated margins of uncertainty arising from examining only a part not the whole of the population. To sample those respondents from the population the list of students obtained from the registrar office of the college was used as the sampling frame of the study and then stratified the population (the whole students of the college which was existed at the time of data collection) into batch (year of attainment in the college) and determine the sample size from each stratum. Then, select respondents from each stratum by simple random sampling technique.

The main purpose of stratification was to reduce sampling error. Moreover, stratified sampling is a technique which uses any relevant information that might be available, in order to increase efficiency. It involves in the division or stratification of a population by partitioning the sampling frame into non-overlapping and relatively homogenous groups. The division/ stratification were:

Stratum1: 1st year students with population size N_1 and sample size n_1.

Stratum2: 2nd year students with population size N_2 and sample size n_2.

Stratum3: 3rd year students with population size N_3 and sample size n_3.

Let $N = N_1 + N_2 + N_3$ total number of students in the college at the time of data collection and $n = n_1 + n_2 + n_3$ total sample size of students who participated in the study. In order to provide valid estimate of an unknown value along with a measure of reliability, a probability sample was attained through some mechanical operation of randomization. Thus, randomization (simple random sampling) process required a practical physical operation which was exactly or reasonably congruent with a probability model. A table of random numbers was used to select those participants in the study from each stratum.

In the planning of a sample survey, a stage at which a decision must be made about the size of the sample is always reached. Too large a sample implies a waste of resources, and too small a sample diminishes the utility of the results. Therefore, the decision should be made with a minimum cost but the estimate will explain the population characteristics with a high probability.

The sample size, n, is obtained by: $n = \dfrac{n_0}{1 + \dfrac{n_0}{N}}$

where $n_0 = \dfrac{z^2 s^2}{d^2}$

Let Z be the upper $\alpha/2$ point of standard normal distribution, where α=0.05 so that $Z_{\alpha/2} = Z_{0.0025} = 1.96$. Suppose the maximum allowable difference between the maximum likelihood estimate and the unknown population parameter, denoted by d, desired to be 0.04. The specification of d must be small to have a good precision. There are four methods of estimating S^2 for sample size determination: using a small preliminary sample size, n_1, calculate S^2 and then obtain n, using the results of a pilot study or a value from a previous sampling of the same or similar population and guess work about the nature of the population. But, to estimate/ determine S^2 in this study we use results of previous sampling of the same or similar population. A study which was carried out in Bahirdar

town on a target population of youth with age in the range of 15-24 years of age titled to "Knowledge, Attitude and Practice of HIV Counselling and Testing" have shown that the variation within youth on attitude towards VCT was 0.113569 (i.e S^2= 0.113569). It was decided to use S^2= 0.113569 in this study for the sample size determination although admittedly there is not even a single continuous independent variable on the basis of which we could estimate S^2 for the current study.

Hence,
$$n_0 = \frac{z^2 s^2}{d^2}$$
$$= \frac{(1.96)^2 x 0.113569}{(0.04)^2}$$
$$= \frac{0.436}{0.0016}$$
$$= 272.68$$

This leads to a value n_0 approximately 273. Since, $\frac{n_0}{N} = \frac{273}{1591} = 0.1714 > 0.05$

$$n = \frac{n_0}{1 + \frac{n_0}{N}}$$
$$= \frac{273}{1 + \frac{273}{1597}}$$
$$= \frac{273}{1.17138}$$
$$= 233.058$$

The total sample size for this study will be approximately *n*=233.

In stratified sampling after partitioning the population into strata, the first requirement to make decision on the total number, n of the sample students (in this case it was determined to be 233). The next decision will be made on the allocation of the sample to strata. A good allocation is one, where there is reasonable balance between precision and resources. The commonly used methods of sample allocation may include: Equal allocation, Proportional allocation and Optimum allocation. But, when the size of stratum,

N_h, is the only available information and there is difference in size between strata, a proportional allocation would be recommended to be used. With proportional allocation, the sample allocated to each stratum is proportional to the total number of units in the stratum. That is, $n_h \propto N_h$, and from this relation we obtain $n_h = \frac{N_h n}{N}$, $f = \frac{n}{N}$ where f is the sampling fraction. Hence,

$$n_1 = \frac{N_1 n}{N}$$

$$n_1 = \frac{233x360}{1591}$$

$$= 52.721558$$

$$\approx 53$$

$$n_2 = \frac{N_2 n}{N}$$

$$n_2 = \frac{233x634}{1591}$$

$$= 92.8485$$

$$\approx 93$$

$$n_3 = \frac{N_3 n}{N}$$

$$n_3 = \frac{233x597}{1591}$$

$$= 87.4299$$

$$\approx 87$$

This results in a sample of size 53 from 1st year students, 93 from the 2nd year students and 87 from 3rd year students.

3.3 Method of Data Collection

The questionnaire was a preferable method of data collection for this kind of study because of sensitive issues, so that privacy can easily be maintained, distortion of the interviewer and peers can be avoided (Grossman, 1997). The questionnaire designed for this study has four sections focusing on respondents personal life, knowledge of HIV/AIDS transmission and prevention, sexual practice and risk perception and at last knowledge, attitude and practice related to VCT services. The data collection instrument (i.e the questionnaire) is originally prepared in English and then translated into Amharic; the language widely spoken in the regional state of Amhara.

Before the questionnaire was administered, the purpose of the study was discussed with the Dean, and Research and Publication Officer of the College. Having reached an agreement, the date and time of data collection were decided. To avoid gender sensitivity bias, females and males were seated separately in different halls. The data collectors were also assigned in such a way that males will collect data from males and females do the same for female respondents.

On the day of data collection, respondents were seated in rows in the hall assigned before, as if they were in the examination to maintain privacy. A brief orientation was given by the researcher on the purpose of the study and how to respond to the questionnaire. They were also told that individual respondents would not be identified as giving particular answer and confidentiality was guaranteed. After filling out the forms, respondents put their questionnaire in a box prepared for this purpose by themselves such that confidentiality could be maintained.

3.4 Variables in the Study

Variables to be included in the study are selected from some studies and those that are expected to be factors/determinants that affect VCT of students.

3.4.1 The Dependent Variable

The response/dependent variable in the statistical analysis of this study is practice of HIV counselling and testing, is dichotomized as 1 if a student participated in HIV counselling and testing before the date of data collection (those students who have ever been tested) and as 0 if the students does not practice HIV counselling and testing before the date of data collection (those students who have never been tested).

3.4.2 The Independent Variables

Predicting whether an event will or will not occur and identifying the variables in making the prediction is an important step in carrying out the study. The independent variables that are used in the study were classified as demographic, socio-economic covariates and other variables. Variables such as age, sex, etc… are considered as demographic variables, while others like economic status of family considered as socio-economic variables. Moreover, as some studies revealed, most independent variables which is included in this study are expected to show marked differential in the voluntary HIV counselling and testing of individuals. The situation is indicated in Table 3.1 below and conceptual framework (Figure 1).

Table 3.1: Independent variables included in the analysis

Independent variables	Description	Value labels
X1	Age	Ages 15-20 = 0 Ages 21-24 =1 Ages> 24 =2
X2	Sex	Male =0 Female =1
X3	Place of residence (location) usually lived	Urban =0 Rural = 1
X4	Marital status of students	Single =0 Married =1

		Divorced =2 Widowed =3
X5	Educational level (year of attainment)	1st year =0 2nd year =1 3rd year =2
X6	Religion	Orthodox (Christian) =0 Catholic (Christian) =1 Protestant (Christian) =2 Muslim =3 Others =4
X7	Raised by /parent or guardian/	Mother & Father =0 Mother only =1 Father only =2 Sister and/or Brother =3 Other relatives =4
X8	Ethnicity	Amhara =0 Tigrie =1 Oromo =2 Gurage =3 Others =4
X9	Parental Income per month	<250 birr =0 251-500 Birr =1 501-1000 Birr =2 1001-1500 Birr =3 >1500 Birr =4
X10	Mother's Educational level	Illiterate =0 Primary education complete =1 High school complete =2 Graduate from college/university =3
X11	Father's Educational level	Illiterate =0 Primary education complete =1

		High school complete =2 Graduate from college/university =3
X12	Knowledge of VCT -responses obtained to "Have you heard about VCT?" and "Do you know the place where VCT services taken place?". The responses to this question, which is either "Yes" or "No", is used to classify knowledge of VCT of an individuals.	0= Yes 1= No
X13	Attitude towards VCT: For each positive response attitude question was given a score of one point and negative response was given zero point and the total attitude score was calculated. Those who score 60% and above were considered as having favorable attitude for voluntary HIV counselling and testing where as those who score below 60% of the total considered as unfavorable attitude of VCT.	0=Favorable attitude 1= Unfavorable attitude
X14	Perceived risk of HIV infection -the response to the question "do you feel that you are at risk of HIV infection?" is recorded as "yes" and "no". Those who respond "yes" were perceived as if they considered themselves at risk of HIV infection and those whose response is "no" as those	Yes =0 No =1

	who don't consider themselves at risk.	
X15	Perceived confidentiality of HIV testing including place and materials used for testing response obtained to "Do you worry about confidentiality of VCT service when you think of HIV testing?" is used to measure perception of confidentiality. The response to this question, which is either "Yes" or "No", is used to classify perceived confidentiality of VCT services.	Yes =0 No =1
X16	Knowledge of HIV Transmission and Prevention. A 12 item test was used to assess HIV transmission and prevention related knowledge. For each positive response knowledge question was given a score of one point and negative response was given zero point and the total knowledge question was calculated. Those who score 60% and above are labeled as having "good knowledge" of HIV prevention and transmission methods and a sum below 60% was considered as "poor knowledge" of HIV prevention and transmission methods.	0= good knowledge 1= poor knowledge

3.5 Method of Data Analysis

The data that were collected through a structured self administered Amharic version questionnaire were cleaned, edited, and entered into a computer and analyzed using SPSS computer program for windows version 13.0. Statistical tests for significance were carried out wherever appropriate at a 5% level of significance. Descriptive statistical analysis was used to examine the students level of knowledge, attitude and practice on VCT of HIV/AIDS, and to investigate reasons for the students to be tested for HIV voluntarily and to answer the question "Do college students in the Teachers Training College Perceive themselves to be at risk of HIV infection?". To test the net gross and the net effect of each independent variables on the dependent variable both bi-variate and multivariate analysis were applied to identify the key factors /determinants of VCT uptake among the college students. While undertaking bi-variant analysis, the chi- square test was used to identify independent variables that best explain the dependent variables that would be retained for further analysis at the multivariate stage. The main problem with the bi-variate approach is that it ignores the possibility that a collection of variables, each of which weakly associated with the outcome, can become an important predictor of the outcome when taken together (Hosmer and Lemeshow, 1989). Hence, multivariate logistic regression approach that takes into account the drawback mentioned by the bi-variate technique is considered in the analysis. That means, multivariate analysis was used to explore the net effect of all independent variables on the dependent variables by controlling possible intervening variables. To do multivariate analysis, a binary logistic regression model was used (Lerhonen and Pahkinen, 1996).

3.6 The Statistical Model

There are a number of multivariate statistical models that can be used to predict a dependent variable from a set of independent variables. However, some of the models pose difficulties when the dependent variables has two outcomes and the independent variables are a mixture of categorical and continuous variables, because multivariate normality assumption does not hold in such cases. Thus, Logistic Regression model is appropriate and recommended to predict the binary dependent variable (Hosmer and

Lemeshow, 1989; Sharma, 1996). Many categorical response variables have only two categories. Denote a binary response by Y and the two possible outcomes by 1 and 0, or by the generic terminology “success” and “failure”. A binary response is sometimes called a Bernoulli variable. Its distribution is specified by probabilities $P(Y=1) = \pi$ of the success and $P(Y=0) = 1-\pi$ of the failure. For n independent observations on a binary response with parameter π, the number of success has the binomial distribution specified by the indices n and π. The value of π can vary as the value of x of X (multiple explanatory variables) changes, and it can be replaced by the π notation by $\pi(x)$ to reflect its dependence on that value (Agresti, 1996).

3.6.1 The Logistic Regression Model

Binomial (or binary) logistic regression is a form of regression which is used when the dependent variable is dichotomous and the independent variables are of any type. Multinomial logistic regression can handle the case of dependent variables with more than two classes.

Logistic regression can be used to predict a dependent variable on the basis of continuous and/or categorical independent variables and to determine the percent of variance in the dependent variable explained by independent variables to rank the relative importance of independent variables to asses interaction effects and to understand the impact of covariate control variables.

Relationships between $\pi(x)$ and x are usually non-linear rather than linear. In practice, non-linear relationships between $\pi(x)$ and x are often monotonic, with $\pi(x)$ increasing continuously as x increases, or $\pi(x)$ decreasing continuously as x increases. The S-shaped curves are often shapes for the relationships. Logistic regression models are special cases of Generalized Linear Models (GLMs.) for binary data. The random component for the (success, failure) determination is binomial. The link function is the logit transformation $\log [\pi/1-\pi]$ of π, symbolized by logit (π). Logistic regression models are often called logit models (Agresti, 1996).

In logistic regression, it is possible to directly estimate the probability of the occurrence of an event. Let $X^1 = [x_1, x_2, \ldots, x_q]$ be a vector of q independent continuous measurements corresponding to covariates and dummy variables. Let $P(Y=1|x) = \pi(x)$ be the conditional probability of the occurrence of success. The ratio of the success probability p to that of 1-p, given by $\frac{p}{1-p}$, is known as the odds of a success.

In terms of the odds, the logistic model can be written as:

$$\frac{p}{1-p} = \exp(\beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} + \ldots + \beta_q x_{iq}),$$

which means that, $\exp(\beta_j)$, (j=1,2,3,….,q), is the factor by which the odds of occurrence of a success change by a unit increase in the j^{th} independent variable.

3.6.1.1 Estimation of Parameters

For a binary random variable Y assuming values either 0 or 1, the probability, P(Y=1) is given as $P(Y=1) = P = \frac{1}{1+e^{-x'\beta}}$ ……..(1)

$\text{Logit}(p) = \log\left[\frac{p}{1-p}\right] = X'\beta$, where β is a vector of coefficients and X is the vector of independent variables. Since the values of the outcome variable are not available, it is not possible to estimate the parameters directly (Sharma, 1996). Each observation can be considered as an outcome of a Bernouli trial, and hence for the i^{th} observation.

$P(Y = y_i) = P^{y_i}(1-P)^{1-y_i}$, assuming the n observations are independent, the likelihood function is

$$L = \prod_{i=1}^{n} P^{y_i}(1-P)^{1-y_i} = \prod_{i=1}^{n} \left(\frac{1}{1+e^{-x'\beta}}\right)^{y_i} \left(\frac{e^{-x'\beta}}{1+e^{-x'\beta}}\right)^{1-y_i} \quad \text{……..(2)}$$

And the log likelihood function is given as

$$LogL = \sum_{i=1}^{n} y_i Log(p) + \sum_{i=1}^{n} (1-y_i) Log(1-p) \text{.....(3)}$$

$$LogL = \sum_{i=1}^{n} y_i Log\left(\frac{1}{1+e^{-x'\beta}}\right) + \sum_{i=1}^{n}(1-y_i)Log\left(\frac{e^{-x'\beta}}{1+e^{-x'\beta}}\right) \text{.....(4)}$$

Hence, by maximizing (4) above we can theoretically estimate the parameter vector β. However, the resulting equations obtained by taking the first order derivatives do not have an analytical solution. Therefore, β will be obtained by maximizing (4) above using numerical iterative technique (Agresti, 1996).

3.6.1.2 Assessing the Goodness of fit of the Model

In practice, any model may not exactly represent the true relationship between π(x) and x. Thus, as the sample size increases, the model-based estimator may not converge exactly to the true value of the probability. As explained above logistic regression model was used for the description and inferences about the effects of predictors on binary responses. There is no guarantee, however, that a particular model of this form is appropriate or that it provides a good fit to the data. So, we need to assess the goodness of fit of the model (Agresti, 1996).

In assessing the goodness of fit of a model, the first step is to check the overall fit of the model to the data. That is, testing the hypothesis

H_0: The hypothesized model fits the data

H_1: The hypothesized model doesn't fit the data

The test statistic is based on the likelihood function L, that is, the probability that the estimated hypothesized model represents the input data, and a good model is one that results in a high likelihood for the observed results. The value of the likelihood when the unknown parameters are replaced by the maximum likelihood estimate can be used to summarize the extent to which the sample data are fitted by the model.

Likelihood is a probability, specifically the probability that the observed values of the dependent may be predicted from the observed values of the independent variables. Like any probability, the likelihood varies between 0 and 1. LL is calculated through iteration,

using maximum likelihood estimation (MLE). Log likelihood is the basis for tests of a logistic model.

The likelihood ratio is a function of log likelihood. It is customary to use -2 times the log likelihood (LL) as an estimate of how well the model fits the data. Because, -2LL has approximately a chi-square distribution with n-k degrees of freedom, where k is the number of parameters in the model. -2LL can be used for assessing the significance of logistic regression, analogous to the use of the sum of squared errors in Ordinary Least Squares (OLS) regression. The -2LL statistics is the likelihood ratio. It is also called goodness of fit, deviance chi-square. It reflects the significance of the unexplained variance in the dependent variable. In SPSS output, this statistic is found in the "-2 log likelihood" column of the "Iteration History" table or the "Likelihood Ratio Tests" table. In general, as the model becomes better, -2LL will decrease in magnitude.

The likelihood ratio test is a test of the significance of the differences between the likelihood ratio (-2LL) for the full model minus the likelihood ratio for a reduced model. When the reduced model is the baseline model with a constant only, the likelihood ratio test tests the significance of a proposed model. The likelihood ratio test appears in the "Model Fitting Information" table in SPSS output.

The likelihood ratio test uses the ratio of the maximized value of the likelihood function for the full model (L_1) over the maximized value of the likelihood function for the simpler model (L_0). The likelihood ratio test statistics is:

$$-2\text{Log}\,(L_0/L_1) = -2[\text{Log}\,(L_0)-\text{Log}\,(L_1)].$$

This log transformation of the likelihood functions yield a chi-squared statistic

The Wald statistic is an alternative test statistic which is commonly used to test the significant of individual logistic regression coefficient for each independent variable (that is, to test the null hypothesis in logistic regression that a particular logit coefficient is zero). In other words, the Wald test is used to test the statistical significance of each coefficient (β) in the model. The value of the Wald statistic is given by

$$Z^2 = W = (\frac{\hat{\beta}}{S.E(\hat{\beta})})^2$$

However, several authors have identified problems with the use of the Wald statistic. The likelihood ratio test is more reliable for small sample sizes than the Wald test (Agresti, 1996).

The goodness of fit of the logistic regression model can also be assessed using a classification table. This method involves the use of the classification table for response variable Y. Classification table are the 2x2 table in the logistic output for dichotomous dependents, or the 2xn table for ordinal and polytomous logistic regression, which tally correct and incorrect estimates. The columns are the two predicted values of the dependent variable, while the rows are the two observed (actual) values of the dependent variable. In a perfect model, all cases will be on the diagonal and the overall percent correct will be 100%. If the logistic model has homoscedaticity (not a logistic regression assumption), the percent correct will be approximately the same for both rows.

Besides this, in order to make the resultant model numerically more stable and easily generalized, the number of independent variables in the model is minimized by selecting those variables that result in a best model within the scientific context of the problem. Hosmer and Lemeshow (1989), explaining the model for selecting important variables, have stated the following: "The more variables included in a model, the greater the estimated standard errors become and the more dependent the model becomes on the observed data."

3.6.1.3 Model Selection

In a situation where there are many predictors it is often helpful to use a model selection procedure to obtain a model that uses a subset of the original predictor variables. In multiple regression and discriminant analysis, there is a problem of identifying subset of independent variables that are good predictors of the dependent variable. We also face this problem in logistic regression analysis.

In model building, it is good to examine several possible models that contain many independent variables and try to choose from among them a subset on the basis of subject matter and parsimony. Statistical software like SPSS uses either backward elimination or stepwise model selection procedures to obtain an optimum logistic model. Stepwise logistic regression, the forward or backward stepwise logistic regression methods utilizes the likelihood ratio test (Chi-square differences) to determine automatically which variables to add or drop from the model.

In backward elimination we start with a model that contains all the predictors and we systematically remove the largest non-significant P-value terms until we are left with a subset that consists of statistically significant terms. This procedure usually returns useful models, or at least gives a good starting place.

On the other hand, stepwise selection starts with no predictors in the model and examines each term that could be possibly added and then adds the most significant predictor, or the predictor with the smallest P-value. In the next stage the procedure adds the next most significant term and checks to see if any previous terms are now non-significant and removes them if they are not significant. This procedure continues until there are no further significant terms to add. So unlike backward elimination, this procedure builds by adding terms.

Stepwise methods do not necessarily identify “best models” at all as they work by fitting an automated model to the current data set, raising the danger of over fitting to noise in the particular data set at hand. Mostly, the final model is the last step model, where adding another variable would not improve the model significantly (Marija J., 1993).

3.6.1.4 Assumptions Concerning to Logistic Regression

Logistic regression is popular in part because it overcomes many of the restrictive assumptions of Ordinary Least Squares (OLS) regression.

1. Logistic regression does not assume a linear relationship between the dependent variable and the independent variables. It may handle nonlinear

effects even when exponential and polynomial terms are not explicitly added as additional independent variables because the logit link function on the left hand side of the logistic regression equation is nonlinear. However, it is also possible and permitted to add explicit interaction and power terms as variables on the right-hand side of the logistic equation, as in Ordinary Least Squares (OLS) regression.

2. The dependent variable need not be normally distributed (but does assume its distribution is within the range of the exponential family of distributions, such as normal, poisson, binomial, gamma).
3. The dependent variable need not be homoscedastic for each level of independent variables; that is, there is no homogeneity of variance assumption.
4. Normally distributed error terms are not assumed.
5. Logistic regression does not require that the independent variables be continuous.
6. Logistic regression does not require that the independent variables be unbounded.

However, other assumptions still apply:

1. Meaningful coding: Logistic coefficients will be difficult to interpret if not coded meaningfully. The convention for binomial logistic regression is to code the value of the dependent variable as 1 and the other class as 0, and to code its expected correlates also as +1 to assure positive correlation. For multinomial logistic regression, the class of greatest interest should be the last class. Logistic regression is predicting the log odds of being in the class of greatest interest.
2. Inclusion of all relevant variables in the regression model: If relevant variables are omitted, the common variance they share with included variables may be wrongly attributed to those variables, or the error term may be inflated.
3. Exclusion of all irrelevant variables: If causally irrelevant variables are included in the model, the common variance they share with included

variables may be wrongly attributed to the irrelevant variables. The longer the correlation of the irrelevant variable(s) with other independents, the greatest the standard errors of the regression coefficients for these independents.

Chapter Four
Data Analysis

4.1 Knowledge of VCT

Respondents were asked whether they have heard of voluntary HIV counselling and testing, and if so, knowledge of the place where they can obtain VCT services and the sources of information on VCT.

Table 4.1. shows the percentage distribution of respondents who have heard of VCT and know the availability of the service in Debre Birehan town, inside the college and any other place where they lived by some selected background characteristics of the respondents.

Table 4.1 Distributions of respondents who have heard of VCT and know the availability of the service site

Demographic and Socio-Economic characteristics		Number and Percentage heard about VCT	Number and % of the respondents who know the place where one can obtain VCT services
Sex	Male	139 (95.86%)	122 (84.14%)
	Female	83 (94.32%)	70 (79.54%)
Age	16-20	149 (94.90%)	130 (82.80%)
	21-24	67 (95.71%)	56 (80%)
	Above 24	6 (100%)	6 (100%)
Marital Status	Single	201 (95.26%)	171 (85.07%)
	Married	20 (95.24%)	20 (95.24%)
	Divorced	1 (100%)	1 (100%)
Religion	Orthodox	191 (95.02%)	168 (83.58%)
	Protestant	9 (100%)	5 (55.56%)
	Catholic	3 (100%)	2 (66.67%)
	Muslim	19 (95%)	17 (85%)
Place of Residence	Urban	147 (98%)	125 (83.33%)
	Rural	75 (90.36%)	67 (80.72%)
Educational	1st year	51 (96.23%)	43 (81.13%)

level	2nd year	92 (98.92%)	79 (84.95%)
	3rd year	79 (90.80%)	70 (80.46%)
Total		222 (95.28%)	192 (82.40 %)

As indicated in Table 4.1, about 95.28% of the respondents said that they have heard about VCT and 82.40% of the respondents know where to obtain VCT services in Debre Birhan town and other area they usually lived.

Overall, knowledge of VCT is high among respondents. There are only minor differences by background characteristics in the awareness of VCT and places to obtain the services if needed.

Respondents who have heard about VCT services were further asked about the major sources of information of which they were aware or know about VCT services. The results about the major sources of information are presented in Table 4.2.

According to the results, out of the total respondents who have heard about VCT services, 51.36% mentioned health personnel as the main sources of information to be informed about VCT. Radio (26.01%), television (12.10%), schools (9.41%) and others like friend, news letters and others written materials (1.36%) are also mentioned as important sources of information about VCT. So, the potential to use health personnel activity to promote VCT service among students.

Table 4.2: Distribution of Respondents who have heard of VCT by main sources of information.

Sources of information	Number	Percent (%)
Radio	57	25.68%
Television	27	12.16%
Schools	21	9.46%
Health Personnel	114	51.35%
Others	3	1.35%
Total	222	100%

4.2 Attitude towards VCT

Respondents who have heard about VCT were also asked about their attitude towards HIV testing. The results are shown in Table 4.3.

Table 4.3: Distribution of the respondents by attitude towards HIV testing

Attitude Indicators	Yes	No	Total
Feel that VCT service is necessary	216 (97.3%)	6 (2.7%)	
Willing to be tested, if made available	186 (83.77%)	36 (16.23%)	
Willing to pay for VCT service	125 (56.31%)	97 (43.69%)	
Willing that partner be tested	210 (94.59%)	12 (5.41%)	
Willing to get married without HIV test	30 (13.51%)	192 (86.49%)	
Worry about the confidentiality of VCT	124 (55.86%)	98 (44.14%)	
Attitude towards VCT (a summary index)			
Favorable	168 (75.68%)		
Unfavorable	54 (24.32%)		

Based on the results, the overwhelming majority (97.3%) of the respondents, who are aware of VCT, believed that VCT is necessary. Further probing question regarding their willingness to use VCT service has revealed that 83.77% show their willingness to use the service if it is made available then.

When those respondents who approved HIV testing were asked about whether they are willing to pay for the service they get, more than half (56.31%) of them replied that they would be willing to pay. According to the data, the majority 94.59% of the respondents were willing that their partners be tested for HIV. Regarding, premarital VCT service, the results show that only 13.51% of the respondents would be willing to be engaged in marriage without premarital HIV testing.

Respondents were also asked whether they do worry about the confidentiality of HIV testing process. Table 4.3 revealed that, for about 44.14% of the respondents confidentiality issue of VCT is not a big deal, while 55.86% declared their lack of confidence on VCT services. Overall, as is indicated in Table 4.3, 75.68% of the respondents had favorable attitude towards VCT of HIV testing.

Respondents who are not willing to be tested for HIV were asked about their reasons why they are not willing to be tested. Various reasons were mentioned for not willing to be tested for HIV and the reasons are given in Table 4.4 below.

Table 4.4: Distribution of main responses mentioned as reasons for not willing to be tested for HIV

Reasons for not willing to be tested for HIV	Number	Percent
Fear of social rejection (if the result becomes HIV positive)	17	47.22%
Fear of being seen by others at the service site	13	36.11%
Don't know	6	16.67%
Total	36	100%

Fear of social rejection, if the result becomes HIV positive, is the major reason sited by 47.22% of those respondents who are not willing to be tested for HIV/AIDS. Fear of being seen by others at the service site is also the other main reason mentioned by 36.11% of non-volunteer respondents.

4.3 HIV testing (VCT) uptake

Respondents who heard of VCT services were also asked whether they have ever been tested for HIV. Their responses to the question "Have you ever been tested for HIV?" are presented in Table 4.5. Almost one–third, 35.19%, of respondents have ever been tested for HIV despite higher level of knowledge and favorable attitude towards VCT among the study population. This indicates that having high level of knowledge and favorable attitude towards HIV testing are not sufficient to have the necessary level of practicing HIV testing. That means, we need to assess other variables that are significant factors to

encourage students to go for HIV testing in addition to knowledge VCT and attitude towards VCT.

Table 4.5: Distribution of respondents by HIV testing experience

Have been tested for HIV	Number	Percent
Yes	82	35.19%
No	151	64.81%
Total	233	100%

The main reasons listed for using VCT service or tested for HIV among students are presented in Table 4.6. The majority of respondents have been tested for HIV to know their health status (for medical check up), which accounts 84.15%. Besides this, some respondents have been tested for HIV to be engaged in marriage and for feeling unhealthy/ when body weight decreases, which accounts for 12.2% and 3.65% respectively.

Table 4.6: Main reasons for being tested among those respondents who have undergone an HIV test

Reasons for being tested for HIV	Number	Percent
To know my health status	69	84.15%
To get married	10	12.20%
When one feels sick or loses body weight	3	3.65%
Total	82	100%

As the information in Table 4.6 indicates that testing for HIV while healthy opens the possibility of using VCT as a preventive measure, and thus needs to be encouraged.

4.4 Perceived Risk of HIV infection

Respondents were also asked whether they consider themselves at risk of HIV infection or not.

Table 4.7: Distribution of respondents whether they consider themselves at risk of HIV infection or not.

Perceived at risk of HIV infection	Number	Percent
Yes	19	8.14%
No	214	91.86%
Total	233	100%

According to the above table 91.86% of the respondents did not consider themselves at risk of HIV infection even if most students are under unsafe sexual behavior as can be seen based on questions of sexual practice and risk perception of questionnaire.

4.5 Bivariate Findings

The bivariate analysis, based on the Pearson's chi-square statistic, provides a preliminary insight into the association/relationship between all selected independent variables and testing of HIV/AIDS (dependent variable). This indicates the existence of significant associations between the independent variables under study and testing of HIV/AIDS. For all independent variables taking one-at-a-time, a test of association was carried out using the Pearson chi-square. High values of Pearson chi-square for a given independent variables indicates that there is strong association between each of the given independent variables and the dependent variable keeping the effect of the other factors constant. That is, testing the hypothesis:

H_o= There is no association between the dependent variables

H_1= There is association between the dependent and the particular independent variable

The decision was based on the Chi-square value, P-value and at 0.05 level of significance.

Table 4.8 Bivariate association between Testing of HIV/AIDS and selected independent variables

Independent variables	Description	d.f	Chi-Square Value	Sig. (p-value)
X1	Perceived confidentiality of HIIV testing service	1	0.003	0.535
X2	Knowledge about HIV transmission and prevention	1	12.534	0.00
X3	Perceived risk of HIV infection	1	0.269	0.408
X4	Attitude towards VCT	1	41.152	0.00
X5	Knowledge of VCT	1	15.325	0.00
X6	Father's education level	3	1.793	0.616
X7	Mother's education level	3	1.814	0.612
X8	Parental income per month	4	2.263	0.668
X9	Ethnicity	1	1.320	0.284
X10	Raised by/guardian/	4	1.082	0.897
X11	Religion	3	0.296	0.961
X12	Educational level	2	1.242	0.537
X13	Marital status	2	5.356	0.069
X14	Place of residence	1	0.169	0.393
X15	Sex	1	2.911	0.059
X16	Age	2	1.925	0.382

The above binary findings show that HIV testing is strongly associated with attitude towards VCT, knowledge about HIV transmission and prevention and knowledge about VCT. Other independent variables included in this study like perceived confidentiality of HIV testing services, perceived the risk of HIV infection, religion, place of residence, father's educational level, mother's educational level, parental income per month, ethnicity, raised by, educational level (year of attainment), marital status, sex and age have no significance association with HIV testing.

4.6 Multivariate Findings

The main problem with the bi-variate approach is that it ignores the possibility that a collection of variables, each of which could be weakly associated with the outcome, can become an important predictor of the outcome when taken together (Hosmer and Lemeshow, 1989). Hence, logistic regression approach that takes into account the drawback mentioned by the bi-variate technique is considered in this analysis. The dependent variable is "The probability of testing HIV/AIDS", which is a binary or dichotomous (with two outcomes) discrete variable and is represented by "Y". The value label of the variable is "1" if the students' uptake HIV testing before the survey period and 0 otherwise. Therefore, the following equation (after logit transformation is made) is fitted.

$$\text{Logit}(Y) = \beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} + \ldots + \beta_{16} x_{i16}, \quad i = 1,2,\ldots\ldots, n$$

where $\beta_0, \beta_1, \beta_2, \ldots, \beta_{16}$ are parameters to be estimated using the maximum likelihood method in the logistic regression by defining the likelihood function.

$x_{i1}, x_{i2}, \ldots, x_{i6}$ are socio- economic, demographic, and other covariates and n represents the number of sample observations which is equal to $n = 233$.

To start with, the logistic regression of Y on the dependent variables using "STEPWISE (LIKELIHOOD RATIO)" was run. These procedures revealed that the variables "attitude of VCT", "knowledge of HIV transmission, and prevention" and "perceived confidentiality of VCT service" are important predictors of VCT. The remaining independent variables were found to be non-significant in affecting VCT of students. Results obtained by the procedures of STEPWISE (LIKELIHOOD RATIO) are shown in Table 4.10 below. The final (optimal) logistic regression model includes only the above significant variables.

Table 4.9 Categorical Variables Coding

		Frequency	Parameter coding			
			(1)	(2)	(3)	(4)
Parental Income per month	<250	103	1.000	.000	.000	.000
	251-500	74	.000	1.000	.000	.000
	501-1000	37	.000	.000	1.000	.000
	1001-1500	10	.000	.000	.000	1.000
	>1500	9	.000	.000	.000	.000
Raised by /guardian/	Mother & Father	183	1.000	.000	.000	.000
	Mother Only	32	.000	1.000	.000	.000
	Father Only	5	.000	.000	1.000	.000
	Sister and/ or Brother	4	.000	.000	.000	1.000
	Other relatives	9	.000	.000	.000	.000
Father's Educational Level	Illiterate	95	1.000	.000	.000	
	Primary Education complete	70	.000	1.000	.000	
	High school complete	42	.000	.000	1.000	
	Graduate from college/university	26	.000	.000	.000	
Mother's Educational Level	Illiterate	140	1.000	.000	.000	
	Primary educational complete	63	.000	1.000	.000	
	High School	19	.000	.000	1.000	
	Graduate from college/ university	11	.000	.000	.000	
Religion	Orthodox	207	1.000	.000	.000	
	Catholic	3	.000	1.000	.000	
	Protestant	6	.000	.000	1.000	
	Muslim	17	.000	.000	.000	
Age	16-20	160	1.000	.000		
	21-24	68	.000	1.000		
	>24	5	.000	.000		
Marital Status	Single	211	1.000	.000		
	Married	21	.000	1.000		
	Divorced	1	.000	.000		
Educational level	1st year student	53	1.000	.000		
	2nd year student	93	.000	1.000		
	3rd year student	87	.000	.000		
SEX	Male	145	1.000			
	Female	88	.000			
Place of Residence	Rural	84	1.000			
	Urban	149	.000			
Knowledge of HIV Transmission and Prevention	Good Knowledge	212	1.000			
	Poor Knowledge	21	.000			

Perceived Confidentiality of HIV testing	Yes	133	1.000				
	No	100	.000				
Perceived risk of HIV infection	Yes	17	1.000				
	No	216	.000				
Attitude towards VCT	Favorable attitude	160	1.000				
	Unfavorable attitude	73	.000				
Knowledge of VCT	Yes	203	1.000				
	No	30	.000				
Ethinicity of students	Amhara	230	1.000				
	Oromo	3	.000				

Based on these coding schemes the logistic regression coefficients can be estimated using the maximum likelihood estimation method. This will be done using the SPSS package.

Table 4.10 Estimates for the final Logistic Regression Model.

Variables	Sub-groups	$\hat{\beta}$	S.E($\hat{\beta}$)	Wald	DF	Sig.	Exp[$\hat{\beta}$]
Attitude of VCT	0= Favorable attitude	3.91	0.566	31.744	1	0.00	24.305
	1= Unfavorable attitude (Ref)	-	-	-	-	-	-
Perceived Confidentiality of VCT service	0= Yes	-0.798	0.351	5.084	1	0.024	0.453
	1= No (Ref)	-	-	-	-	-	-
Knowledge of HIV transmission and prevention	0=Good knowledge	21.097	8005.181	0.00	1	0.998	14531347.778
	1=poor knowledge	-	-	-	-	-	-
Constant		-23.598	8005.181	0.00	1	0.998	0.000

*Ref indicates that the reference category.

Variables in the Equation

Variable entered in step 1: Attitude towards VCT; Variable entered in step 2: Knowledge about HIV transmission and prevention; Variable entered in step 3: Perceived confidentiality of VCT services.

$$\text{Logit}(Y_i) = -23.598 + 3.191X_{i1} + 21.097\,X_{i2} - 0.792X_{i3}$$

The likelihood ratio test criterion is used to select and remove variables at each step of the procedures. The 0.05 level of significance is set for entry of variables and in the model. The reference category is the last category of all independent variables.

Table 4.10 above contains the estimated coefficients (under the column heading $\hat{\beta}$). The standard errors of the estimates help in computing the Wald statistics that is the square of the ratio of the coefficient to its standard error, is given in the column Wald and it has a chi-square distribution with one degree of freedom. The significance of the Wald statistics (under the column with heading Sig.) indicates the importance of the predictor variable in the model. High values of the Wald statistics show that the corresponding predictor variable is significant.

It is probably easier to use the multiplicative form of the equation using Exp($\hat{\beta}$), which is given in the last column of the table. These are also called the odds multipliers or odd ratios. Interest is in coefficients that differ from one. Values greater than one indicates that the variable in question is a significant factor contributing to increase the number of students in VCT uptake and values less than one (i.e between 0 and 1) indicate a factor contributing to decrease the number of students in VCT uptake. Effectively the odds for the base category are set to one, is a factor by which the number of students in HIV testing changes. As we can see from Table 4.10 the values of odd ratio FOR attitude towards VCT and knowledge of HIV transmission and prevention are very large. That means, these variables are factors that contribute to increasing the number of students in the participants of VCT services. But, Exp ($\hat{\beta}$) values of perceived confidentiality of VCT services are very small or less than one, that these variables indicate a cause of decrement in VCT uptake.

Before applying the fitted models for the designed purpose it has to be assessed and diagnosed for all possible inadequacies. One way of assessing the goodness of a fitted model is to see how well the model classifies the observed data.

Table 4.11 Classification information

Observed	Predicted		
	No	Yes	Percent correct
No	123	28	81.5
Yes	23	59	72.0
Overall percentage	62.7	37.3	78.1

As shown in Table 4.11 above, the fitted model has an overall predictive accuracy is 78.1% and this may ordinarily to be considered adequate.

The Chi-square goodness of fit test of the fitted model is another way of assessing the goodness of fit of the model. To measure how well the estimated model fits the data, -2LL is used. A good model is one that results in a high likelihood.

Table 4.12. Values of statistics that can be used for checking the goodness of fit.

-2LL (Constant-only model)	300.877
-2LL (Fitted model)	201.599
Model chi-square	99.278
Degrees of freedom	31
Significance level	0.00

-2LL for the model with constant only and for the fitted model are given. The table also contains the model chi-square, which is the difference between -2LL for the model with constant only and -2LL for the fitted model. The model chi-square is a statistic that is used to test the null hypothesis that the coefficients for all the terms in the fitted model are zero. The degree of freedom for the model chi-square is the difference between the numbers of parameters in the two models.

The Hosmer-Lemeshow test is also another way of assessing goodness of fit of the model

Table 4.13 Hosmer-Lemeshow Test

Chi-square value	DF	Significance level
1.464	3	0.036

As we can see from Table 4.13, we do not reject H_0 at $\alpha=0.05$ level of significance. This shows that there is no sufficient evidence to reject the null hypothesis and it confirms that our model has a good fit.

By using the classification table, chi-square goodness of fit test and Hosmer-Lemeshow test we can say the fitted model is statistically satisfactory.

4.7 Interpretation of Results/ Discussion

The study has provided an insight into the knowledge, attitude and practices on voluntary HIV counselling and testing among students in Debre Birhan Teachers Training College. According to the result, about 95.28% of the respondents know about VCT and 82.4% of them know the place where one can get VCT service in Debre-Birhan town and/or the place where they usually lived. Though the present study shows a little increment in the proportion of youth who are aware of VCT, a similar result was observed in the study conducted in Bahir Dar town one year ago. A study by Derejie Tilahun, 2006 which was conducted in Bahir Dar town also indicated that, 90% of the respondents were aware of VCT and 80% of them knew the availability of the VCT service around. The increment in the level of knowledge and attitude in the Debre Birhan case would not be surprising given the efforts exerted to fight against the spread of HIV/AIDS pandemic.

Unlike other studies, this study revealed that the major source of information about VCT were health professional 114 (51.35%), radio 57 (25.68%) and television 27 (12.16%). But, the study which was carried out in Bahir Dar town showed that the major sources of information about VCT were the mass media: radio 77.4% and television 10.7%.

Nearly all 216 (97.3%) of the respondents felt that VCT services are necessary while 186 (83.77%) of them were willing to have HIV test if the service is made available. If there

were a positive correlation between knowledge, attitude and practice of HIV testing, there would be great contribution in the prevention and control of HVI/AIDS.

Studies conducted on young people under different prevailing conditions found out different barriers to HIV testing. It is clear that, casual observers like neighbors, parents, friends discouraged them from HIV counselling and testing. This has been proved from a study in Kenya and Uganda. Most youth in Kenya would prefer to have an HIV test at hospital, while most youth in Uganda prefer youth centers for the reasons that need confidential service (Horizon, 2001). In addition to external barriers that affect youth in HIV testing create reasons by themselves for not practicing HIV testing, for instance, in Kenya from the total respondents 44% believe that they do not feel any risk of HIV infection and 13% said that the cost of the service unable to afford. Similarly, in Uganda, from the total respondents 39% said that feel free from the risk of HIV infection and some others (28%) said that fears of positive result (Horizon, 2001). But, in this study the major reasons mentioned frequently by the significant number of those participants that have no willingness to have HIV test for fear of stigma and social rejection being identified HIV positive and for fear of learning the outcome of HIV status.The most commonly reported reasons by tested respondents for getting an HIV test are, to know their health status and plan for marriage. Each accounted for 84.15% and 12.2%, respectively. Body weight loss and/or feeling being at risk of HIV infection (3.65%) were also mentioned by some participants as encouraging factors for HIV testing. This results are almost similar results to studies which were done elsewhere across the country.

The logistic regression analysis indicates that many factors affect HIV testing of students. The results given above for the logistic regression model in Table 4.10 can be used for further discussion and interpretation.

The results, both bivariate and logistic regression findings suggest that attitude towards VCT, knowledge of VCT, and knowledge of HIV transmission and prevention are the major determinant factors of HIV testing of students. Moreover, an important relationship was observed between HIV testing, and perceived confidentiality of VCT service and site.

These clearly indicate that confidentiality of VCT services and site is vital as far as VCT uptake among students is concerned.

Moreover, as we can see from Table 4.10 the values of odd ratio [Exp ($\hat{\beta}$)] in attitude towards VCT and knowledge of HIV transmission and prevention are very large. That means, these are factors that contribute to increasing the number of students in HIV testing, for instance, the odds ratio [Exp ($\hat{\beta}$)] of knowledge of HIV transmission and prevention very large (145314726.788). This indicates that when the value of an independent variable increases by one unit the number of students in HIV testing increases by 145314726.788 factor. This shows that creating awareness among students about the knowledge of HIV transmission and prevention play a vital role. Similarly, the odds ratio of attitude towards VCT is very large (24.305). However, the value for perceived confidentiality of VCT services is very small, indicating a decrease in the number of students in HIV testing. It decreases by a factor of 0.453 when students have no confidence in the VCT services.

Chapter Five
Conclusions and Recommendation

5.1 Conclusions

In general the descriptive analysis reveals that regardless of the high level of knowledge and favorable attitude on voluntary HIV counselling and testing (VCT), there are still high barriers to practice voluntary HIV counselling and testing (VCT). That means high level of knowledge and favorable attitude might not be enough to bring students to benefit from the use of VCT. Other structural (enabling factors) and social factors (reinforcing factors) need to be considered.

In addition to the above variables, there are also other factors which are expected to encourage students towards VCT uptake. These include age, sex, residence, marital status, educational level, religion, guardian, ethnicity, monthly parental income, mother's educational level, father's educational level, perceived confidentiality of VCT services, perceived at risk of HIV infection and knowledge of HIV transmission and prevention are well considered in the study.

The analysis revealed that only knowledge of VCT, attitude towards VCT, and knowledge of HIV transmission and prevention variables are strongly associated with voluntary HIV counselling and testing whereas those other considered are not significant to VCT uptake.

Although the bi-variate analysis shows knowledge of VCT, attitude towards VCT, and knowledge of HIV transmission and prevention are strongly associated with VCT uptake, multivariate analysis (logistic regression model) fits the model by using only attitude towards VCT, and knowledge of HIV transmission and prevention and perceived confidentiality of VCT services.

As we can see from Table 4.10 the values of odd ratio Exp($\hat{\beta}$) in attitude towards VCT, and knowledge of HIV transmission and prevention are very large. That means those

variables are major factors that increase the number of students in VCT uptake. Helping students to develop their knowledge of HIV transmission and prevention and attitude towards VCT play a vital role for to come up students for VCT uptake.

Finally we can conclude that three factors “knowledge of VCT”, “attitude towards VCT” and “knowledge of HIV transmission and prevention” are found to be the major factors of VCT uptake. Perceived confidentiality of VCT services is a barrier against VCT uptake. So, all concerned organizations, institutions or any individual that will have a great interest to increase number of students to use VCT services need to focus on knowledge of VCT, attitude towards VCT, and knowledge of HIV transmission and prevention. The researcher belives that there could be other variables other than the above mention ones, which might be a major factor to encourage students in VCT uptake. This issue can be undertaken by the future researchers who are eager to find out other determinants of VCT uptake.

5.2 Recommendation

A strong behavioral change communication (BCC) based two-way communication strategies including continuous discussions, individual counselling, dialogues, panel discussions, and persuasions, students support group discussions with active involvement of the grass root community, student based organization like anti AIDS club outside and inside of the college and the participation of other opinion leaders are very important to reduce stigma and discrimination in order to increase the number of students who use voluntary HIV counselling and testing services.

A well equipped counselling service is necessary. It needs to have professional persons who are experienced in guiding and counselling students. Voluntary HIV testing service also needed and must be available on the college campus. The cost of the service at the same time needs to be decrease in relation to others. It might be desirable, if the students would have got free service in voluntary HIV counselling and testing. This is because most of the students have favorable attitude towards VCT but they could not afford the money for the service.

Care and support organization /clubs are needed for those victims whose test results are positive to make students active participants in the teaching-learning process without considering themselves as infected students, to consider themselves as healthy students, to develop their mission and plan for their future career.

REFERENCES

Agresti, A. (1996), An Introduction to Categorical Data Analysis. New York, Wiley

Aggleton, P. Global priorities for HIV/AIDS Intrevention research. International Journal of STD & AIDS. 1996:7 (suppl 2):13-26.

African Journal of Reproductive Health. Voluntary Counselling and Testing (VCT) for Human Immunodefficiency Virus: A Study on Acceptability by Nigerian Women Attending Antenatal Clinics, Vol.8, No.2 (2004)

Auerbach, J.and Brodil, K. (1994). AIDS and Behavior: An Integrated Approach. National Academy Press,1994;2101 Constitution Ave. NW 20418.

Baseline Survey Report/Ethiopia: HIV/AIDS Knowledge, Attitudes and Behavior (KAB) in North and South Gonder, Awi and East Gojam, June-September 2002.

Catania, JA, Kegeles SM, Cates TJ (1990). Towards un understanding of risk behavior :an AIDS Reduction Model. Health education Quarterly 1990; 17:53-72

Derejie Tilahun (2006). Knowledge, Attitude and Practice of Voluntary HIV Counselling and Testing in Bahirdar town, North West Ethiopia, M.Sc Thesis, Addis Ababa University

De Zoysa, I. and Philips, K. (1995). Role of HIV Counselling and Testing in Changing Risk Behavior in Developing Countries. AIDS 1995,9 (suppl A): S95-S101.

Fahmi Muhammed (2000). Factor Related to Voluntary HIV Counselling and Testing among 15-49 years urban community of Ethiopia, Mph Thesis, Addis Ababa University.

Family Health International (2005). HIV Counselling and Testing for youth. A manual for providers, FHI 2005, Youth Net.

Fishbein, M. and Hohnson, W.(1996). The AIDS Community Demonstration Projects (ACDP): a successful multisite community-level behavior intervention. 11th international conference on AIDS Vancouver 1996 (Mo.D.580).

Glick, P. and Sahn, ED (2005). Changes in HIV/AIDS Knowledge and Testing Behavior in Africa : How Much And For Whom? Cornell University Press

Grossman (1997). The Measurement of HIV Risk Behaviors for Treatment research Studies. National Instrument of Health and Drug Abuse Workshop Summary.

Horizon. (2001). HIV Counselling and Testing Among Youth Ages 14-21 Results from an Exploratory Study in Nairobi, Kenya, and Kampala and Masaka, Uganda. Horizon Program, International Center for Research on Women Population Council.

Hosmer, D.W. and Lemeshow, S. (1989). Applied Logistic Regression. John and Sons, Inc.

Howard, M. and McCabe, J. (1990). Helping teenagers postpone sexual involvement. Family Planning perspectives 1990; 22:21-26

Journal of the Ethiopian Statistical Association (2002). Vol.12: 19-38.

Kalichman, S. (1998). Preventing AIDS: A sourcebook for behavioral interventions. 1998 Lawrence Erlbaum Associates Inc. Publishers. 10 Industrial Ave. Mahawah, NJ 07430.

Kalichman, S. C and L. C Simbayi (2003). HIV Testing Attitudes, AIDS Stigma, and Lisa Voluntary HIV Counselling and Testing in a Black Township in Cape Town. South Africa, Sex. Transm. Inf.2003; 79; 442-447 (also available at http://www.bmjjournals.com/cgi/reprintfom)

Lerthnen R. and Erkki J.P. (1995). Practical methods for designs and analysis of complex Surveys. New York, Plenum press.

Marija J. Norusis (1993), SPSS guide to data analysis release 4.0.

Mariano, E. (2005). Clients Perceptions of HIV/AIDS voluntary Counselling and Testing (VCT) in Mozambique. Training in Sexual Health Research,Geneva 2005.

Mbago, M. (2004). Socio-demographic Correlates of Desire for HIV Testing in Tanzania. Sexual health, 2004; 1:13-21

Menard, Scott (1995). Thousand Oaks, CA: Sage Publications. Quantitative Application in the Social Sciences, No. 106. First Edition.

Michael Dejene (2001). Study on Factors Affecting Accessibility and Acceptability of Voluntary Counselling and Testing service for HIV/AIDS in Bahirdar Town, North-west Ethiopia.

Ministry of Health (2002). HIV/AIDS Behavioral Surveilance Survey (BSS), Ethiopia. Round one.

Ministry of Health (2004). AIDS in Ethiopia; Disease Prevention and Control Department. 5th edition: Addis Ababa Ethiopia.

Ministry of Health (2006). AIDS in Ethiopia; Disease Prevention and Control Department. 6th edition: Addis Ababa Ethiopia.

Morris M. (1997). Sexual networks and HIV/AIDS 1997; 11(suppl.A): S209-S216

National AIDS Council Secretariat (2000). National Guidelines for Voluntary HIV Counselling and Testing in Ethiopia. Addis Ababa, Ethiopia

Norman, L R. and Yitades Gebre (2005). Prevalence and Correlates of HIV Testing: An Analysis of University Students in Jamaica. Medes cape General Medicine. 2005;7(1):70

Nuwaha, F. Kabatesi, D. Muganwa. M. and Whalen CC. (2002). Factors Influencing Accessibility of VCT for HIV in Busneny District of Uganda. East Africa Medical Journal 2002; 79 (12) 626-632.

People to People (2005). Horn of Africa. Journal of AIDS 2005; Vol. 1 Issue 1.

Sharma, S. (1996). Applied Multivariate Techniques. John Wiley and Sons, Inc.

Solomon V., Van Rooyen, H., Griesel, R., Gray, D., Stein, J. and .Nott , V.(2004). Critical Review and Analysis of Voluntary Counselling and Testing Literature in Africa. University of KWZALU-NATAL; April 2004.

Stein, JA. and Nyamathi, A. (2000). Gender Differences in Behavioral and Psychological Predictors of HIV Testing and Return for Test Results in A High-Risk Population. AIDS Care.2000; 12:343-356

Tefera Sahlu, Kassa Agonafir, Tsegaye Gebremariam, Dorly,H. Spijkerman, Z., Coutinho, J. and Fontanet, R. (1999). Sexual Behavior, Perception of Risk of HIV Infection and Factors Associated With Attending HIV Post-test Counselling in Ethiopia. Ethiopian Medical Journal, 1999;37:55-64

Tefera Belachew, Challi Jira, and Yoseph Mamo (2004) Knowledge, Attitude and Practice about HIV/AIDS, Voluntary Counselling and Testing Among Students of Jimma University, Jimma Zone, South West Ethiopia. Ethiop J Health Sci. Vol.14, Special Issue July 2004.

Tefera Belachew, Challi Jira, and Kora Tushune (2005) Knowledge, Attitude and Practice of Voluntary Confidential Counselling and Testing in Guragae Zone, SNNPR, South Ethiopia. Ethiop J Health Sci. vol.15, No 2 July 2005.

United Nations Programs on HIV/AIDS. Knowledge is Power: Voluntary HIV Counselling and testing in Uganda. A case Study, UNAIDS Best practice collection, June, 1999.

United Nations Programs on HIV/AIDS. Report on the Global HIV/AIDS epidemic June 1998, Joint United Nations Programme on HIV/AIDS; World Health Organization 1998.

United Nations Programs on HIV/AIDS; Sexual Behavior change for HIV: Where have Theories taken us? Geneva, Switherland, 1999.

United Nations Programs on HIV/AIDS. The Impact of voluntary and testing. A Global Review of the Benefits and Challenges, Geneva Switzerland, 2001.

United Nations Programs on HIV/AIDS. Report on the Global AIDS Epidemic, 4th Global Reports, Geneva, Switzerland, 2001.

United Nations Programs on HIV/AIDS. Voluntary Counselling and Testing (VCT), UNAIDS Techinical update, 2000.

United Nations Programs on HIV/AIDS/World Health Organization. AIDS Epidemic update, Special reports on HIV Prevention. Dec.2005.

United States Department of Health and Human Services. HIV Counselling and Testing in Publicly Founded Sites, Annual Report,1996.

Valdiserri,RO., Holtgrave ,DR. and West,GR. Promoting Early HIV Diagnosis and Entry into Care, AIDS 1999,13:2317-2330

World Health Organization). Voluntary HIV counselling and Testing. Manual for Training of trainers , Part 1. WHO Regional office for South-East Asia, 2004.

Appendix A

Correlation Matrix

		Constant	athi.vct(1)	Constant	athi.vct(1)	Kn.HIV.TP(1)	pR.CONF(1)
Step 1	Constant	1.000	-.956				
	athi.vct(1)	-.956	1.000				
Step 2	Constant			1.000	.000	-1.000	
	athi.vct(1)			.000	1.000	.000	
	Kn.HIV.TP(1)			-1.000	.000	1.000	
Step 3	Constant			1.000	.000	-1.000	.000
	athi.vct(1)			.000	1.000	.000	-.275
	pR.CONF(1)			.000	-.275	.000	1.000
	Kn.HIV.TP(1)			-1.000	.000	1.000	.000

Model if Term Removed

Variable		Model Log Likelihood	Change in -2 Log Likelihood	df	Sig. of the Change
Step 1	athi.vct	-151.132	49.546	1	.000
Step 2	athi.vct	-141.466	52.451	1	.000
	Kn.HIV.TP	-126.359	22.236	1	.000
Step 3	athi.vct	-141.428	57.671	1	.000
	pR.CONF	-115.240	5.296	1	.021
	Kn.HIV.TP	-124.952	24.718	1	.000

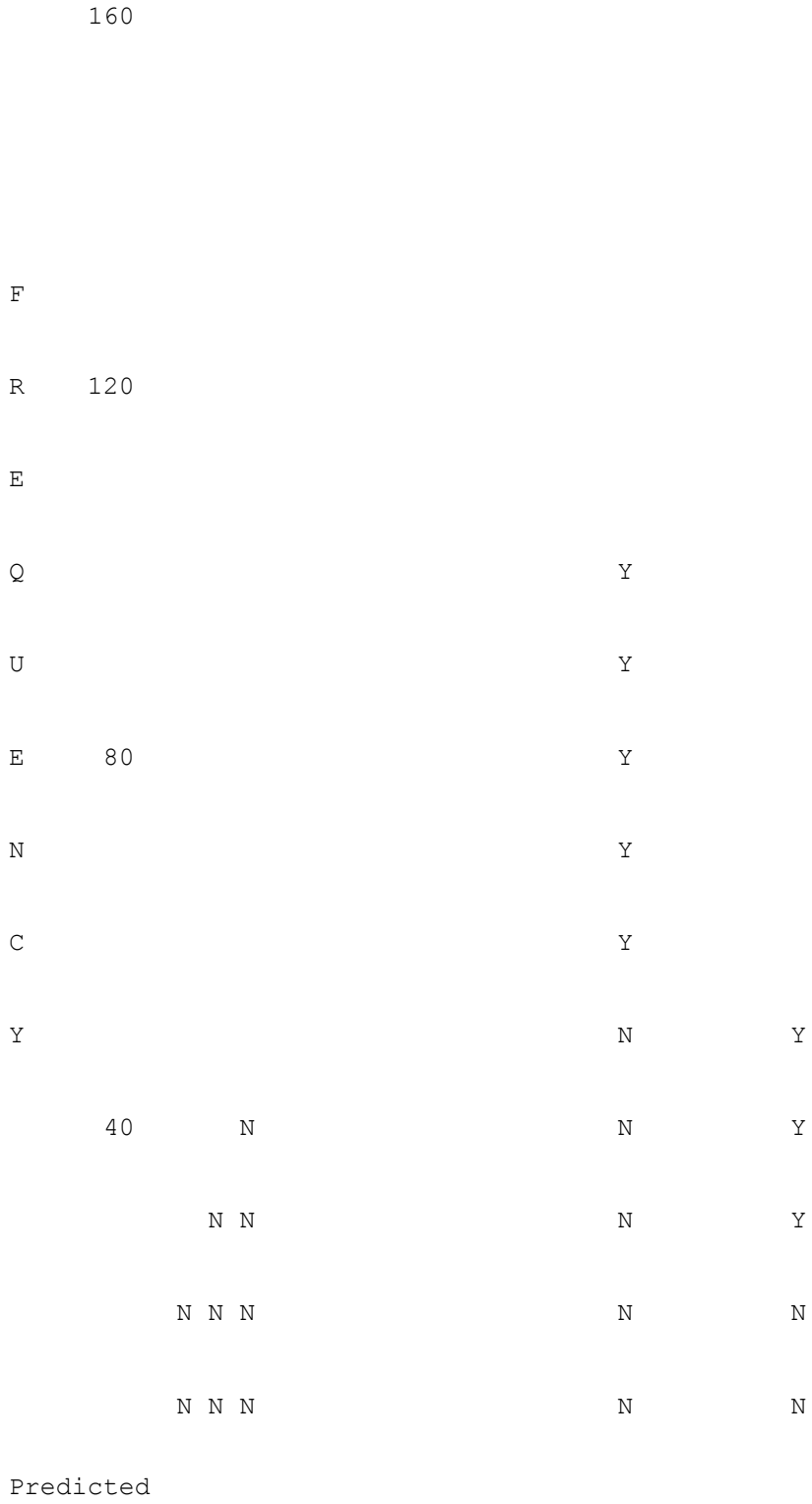
Contingency Table for Hosmer and Lemeshow Test

		Testing of HIV/AIDS = No		Testing of HIV/AIDS = Yes		
		Observed	Expected	Observed	Expected	Total
Step 1	1	69	69.000	4	4.000	73
	2	82	82.000	78	78.000	160
Step 2	1	21	21.000	0	.000	21
	2	63	63.000	4	4.000	67
	3	67	67.000	78	78.000	145
Step 3	1	21	21.000	0	.000	21
	2	27	26.033	0	.967	27
	3	36	36.967	4	3.033	40
	4	50	50.967	47	46.033	97
	5	17	16.033	31	31.967	48

Variables not in the equation

Variables	score	DF	Sig.
Age	2.242	2	0.326
Age (1)	1.225	1	0.268
Age (2)	0.560	1	0.454
Sex (1)	0.567	1	0.452
Resi (1)	0.096	1	0.756
Martal	3.382	2	0.184
Marital (1)	1.775	1	0.183
Marital (2)	2.578	1	0.108
Edu	2.575	2	0.276
Edu (1)	0.275	1	0.600
Edu (2)	2.545	1	0.111
Relig	0.381	3	0.944
Relig (1)	0.006	1	0.936
Relig (2)	0.366	1	0.545
Relig (3)	0.016	1	0.899
Rased	1.625	4	0.804
Rased (1)	0.214	1	0.644
Rased (2)	0.234	1	0.628
Rased (3)	0.278	1	0.598
Rased (4)	0.572	1	0.449
Ethinicity (1)	1.590	1	0.207
P.en	5.332	4	0.255
P.en (1)	0.382	1	0.536
P.en (2)	0.467	1	0.494
P.en (3)	1.925	1	0.165
P.en (4)	2.075	1	0.150
Mo.edu	0.635	3	0.888
Mo.edu (1)	0.347	1	0.556
Mo.edu (2)	0.028	1	0.866
Mo.edu (3)	0.477	1	0.490
Fath.edu	3.287	3	0.349
Fath.edu (1)	2.225	1	0.136
Fath.edu (2)	1.807	1	0.179
Fath.edu (3)	0.130	1	0.719
Kn.vct (1)	0.731	1	0.392
PR.HIV (1)	0.845	1	0.358
Overall statistics	19.811	28	0.871

Observed Groups and Predicted Probabilities



```
 Prob:   0          .25          .5          .75          1

Group:  NNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNYYYYYYYYYYYYYYYYYYYYYYYYYYYYYY

         Predicted Probability is of Membership for Yes
         The Cut Value is .50
         Symbols: N - No
                  Y - Yes
         Each Symbol Represents 10 Cases.
```

Case Processing Summary

		Number of respondents	Marginal percentage
Testing of HIV/AIDS	Yes	151	64.8%
	No	82	35.2%
Age	16-20	160	68.7%
	21-24	68	29.2%
	>24	5	2.1%
Sex	Male	145	62.2%
	Female	88	37.8%
Residence	Rural	149	63.9%
	Urban	84	36.1%
Marital status	Single	211	90.6%
	Married	21	9.0%
	Divorced	1	0.4%
Educational level	1st year students	53	22.7%
	2nd year students	93	39.9%
	3rd year students	87	37.3%
Religion	Orthodox	207	5%
	Catholic	3	1.3%
	Protestant	6	5%
	Muslim	17	7.3%
Raised by/guardian/	Mother and Father	183	78.5%
	Mother only	32	13.7%
	Father only	5	2.1%
	Brother and/or Sister	4	1.7%
	Other relatives	9	3.9%
ethnicity	Amhara	230	98.7%
	Oromo	3	1.3%
Parental income per monthly	<250	103	44.2%
	251-500	74	31.8%
	501-1000	37	15.9%
	1001-1500	10	4.3%
	>1500	9	3.9%
Mother's educational level	Illiterate	140	60.1%
	Primary education complete	63	27.0%
	High school complete	19	8.2%
	Graduate from college/university	11	4.7%
Father's educational level	Illiterate	95	40.8%
	Primary education complete	70	30.0%
	High school complete	42	18.0%

	Graduate from college/university	26	11.2%
Knowledge of VCT	Yes	203	87.1%
	NO	30	12.9%
Attitude towards VCT	Favorable	160	68.7%
	Unfavorable	73	31.3%
Perceived at risk of HIV infection	Yes	17	7.3%
	No	216	92.7%
Perceived confidentiality of HIV testing services	Yes	133	57.1%
	No	100	42.9%
Knowledge of HIV transmission and prevention	Good knowledge	212	91.0%
	Poor knowledge	21	9.0%
Valid		233	100%

Appendix B
ADDIS ABABA UNIVERSITY
OFFICE OF GRADUATE PROGRAMS
DEPARTMENT OF STATISTICS

The main purpose of this study is to generate some information from Debre Birhan Teacher's Training College students about Knowledge, Attitude, and Practice of Voluntary HIV Counselling and Testing (VCT).

The questionnaire involves various intimate and private life questions but the information given by you is very essential to the successful completion of this study. I, therefore, request you kindly respond to the questionnaire as accurately and carefully as much as possible.

Regarding confidentiality, the whole process of questionnaire administration is set up in such a way that secrecy is maintained. In addition to this, all your responses will remain confidential and will not affect you in any way. To assure this, you are not expected to write your name anywhere in the questionnaire. To indicate your response please put " "

Mark or write your response in the space provided for the questions that require written responses.

This questionnaire has four sections:

Section1: About yourself.

Section2: Questions on knowledge HIV/AIDS transmission and prevention.

Section3: Questions on sexual practice and risk perception.

Section4: Questions on knowledge, attitude and practice in related to VCT services.

Section1: About Yourself

1.1 Sex Male ☐ Female ☐

1.2 How old are you? (Age in completed years)_

1.3Year of study 1st year ☐ 2nd year ☐ 3rd year ☐

1.4 Where did you usually live? Urban area ☐ rural area ☐

1.5 Marital Status: Single ☐ Married ☐ Divorced ☐ Widowed ☐

1.6 Religion: Orthodox ☐ Muslim ☐ Catholic ☐ Protestant ☐

Others (Specify)_____

1.7To which ethnic group do you belong? Amhara ☐ Guragia ☐ Tigrie ☐ Oromo ☐ Others (Specify)_____

1.8The person who raised you?

Both mother and father ☐ Mother only ☐

Father only ☐

Brother and/or Sister ☐ Other relative _☐

1.9 Average monthly income of your parents (salary and other sources)

<250birr ☐ 501-1000birr ☐

251-500birr ☐ 1001-1500birr ☐ >1500birr ☐

1.10 Educational level of your mother:

Illiterate ☐ High school (9-12) ☐

Primary (1-8) ☐ Above ☐

1.11 Educational level of your father:

Illiterate ☐ High school (9-12) ☐

Primary (1-8) ☐ Above ☐

Section2: Questions on Knowledge HIV/AIDS transmission and Prevention. Circle out your choices.

2.1 Do you think that an individual can protect his or herself from HIV/AIDS virus by not having sexual intercourse? 1. Yes 2.No 3. I don't know

2.2 Do you think that staying with only one uninfected faithful partner protects people from HIV infection?

1. Yes 2.No 3. I don't know

2.3 Do you think that condom we reduces the chance the of being infected with HIV virus through sexual intercourse?

1. Yes 2.No 3. I don't know

2.4 Do you think that people can get infected by HIV/AIDS by sharing kitchen utensils or bathroom with someone having HIV/AIDS?

1. Yes 2.No 3. I don't know

2.5 Can AIDS virus be transmitted from infected mother to her newborn child through breastfeeding?

1. Yes 2.No 3. I don't know

2.6 Do you think that using unsterilized surgical, sharing toothbrush and razors instrument transmit HIV/AIDS Virus?

1. Yes 2.No 3. I don't know

2.7 Can a person get HIV by having a meal with someone who is infected?

1. Yes 2.No 3. I don't know

2.8 Do you think that a healthy looking person can be a carrier of HIV?

1. Yes 2.No 3. I don't know

2.9 Can washing after sex helps people to protect against AIDS?

1. Yes 2.No 3. I don't know

2.10 Can mosquito transmit HIV/AIDS virus?

1. Yes 2.No 3. I don't know

2.11 Can unsafe abortion expose a woman for HIV/AIDS infection?

1. Yes 2.No 3. I don't know

2.12 Do you think that HIV infected persons may not show sign of the disease for many years? 1. Yes 2.No 3. I don't know

Section3: Questions on sexual practice and risk perception. Circle your choices.

3.1 Have you ever had sexual intercourse?

1. Yes 2.No (end)

3.2 How old were you when you begin sexual intercourse? ----------years

3.3 With whom you made sexual intercourse for the first time? 1. wife/husband 2.boy/girl friend 3.unknown person 4.sex-workers

3.4 Do you have a girl/ boy friend?

1. Yes 2.No

3.5 Do you ever had sex with person other than regular partner?

1. Yes 2. No (skipped 3.4)

3.6 How often have you used condoms when you have had sexual intercourse with persons other than regular partner?

1. Always 2. Sometimes 3. Never

3.7 Do you feel that you are at risk of HIV infection?

1. Yes 2.No 3. I don't know

3.8 Have you ever taken action to avoid exposure to HIV infection?

1. Yes 2.No

3.9 If "Yes" what types of behavioral change have you made to avoid risk of HIV? (Circle all that applies).

1. Abstain from sex
2. Use condom
3. Avoid sharing sharp objectives
4. Avoid unsafe injection
5. Avoid Alcohol and chat

Section4: Question on Knowledge, Attitude and Practice related to VCT service. Circle your choices.

4.1 Have you heard about voluntary HIV counselling and testing?

1. Yes 2. No (end)

4.2 Where did you get the information about VCT service?

1. Radio 4. Friends
2. Television 5. Neighbors
3. Health professional 6.School 7. Other (specify)

4.3 Do you know where the VCT service is delivered?

1. Yes 2. No (end)

4.4 Would you mention some of the sites where the service is delivered? (Circle all that applies). 1. Hospital 4. Red Cross

2. Health center 5. NGO setting lab.
3. Private clinic 6. Other (specify)

4.5 Do you feel that getting HIV blood test is necessary?

1. Yes 2. No (end)

4.6 What is your reason for thinking that VCT is necessary?

1. To know HIV status
2. To avoid risky behavior
3. To get early access to personal and medical care (if positive)
4. To take care for partner (if positive)

4.7 When do you think that one has to be tested?

1. at any time 4.When body weight loss is observed
2. Before marriage 5. If one has multiple sexual partners
3. When feel sick 6.others (specify)————————

4.8 Would you be willing to have test right now if made available

1. Yes 2.No 3. I don't know

4.9 If your answer in question 4.8 above is no what is your reasons for not willing to be tested for HIV

1. Fear of social rejection (if the result becomes HIV positive)
2. Fear of being seen by others at the service site
3. Don't know

4.9 Would you be willing to pay for the service?

1. Yes 2.No (end)

4.10 How much could you afford to pay for the service?_____In birr

4.11 would you prefer to abstain from sex until you marry rather than using condom?

1. Yes 2.No 3. I don't prefer

4.12 Do you believe that knowing one's status of HIV through VCT is preferable than not knowing?

1. Yes 2.No 3. I don't believe

4.13 Do you feel that HIV test result must be given to each individual regardless of the reason for the test?

1. Yes 2. I don't have such kind of feeling

4.14 Do you have an intension/program to perform VCT in the future?

1. Yes 2. I don't have any intension/program

4.15 Are you willing that your partner be tested for HIV?

1. Yes 2.No

4.16 What is your reason for being willing that your partner be tested for HIV?

1. To knows the health status of both of us 3. Others (specify) _____
2. To get married with confidence

4.17 Are you willing to get married without premarital voluntary HIV testing and counselling?

1. Yes 2.No 3. I don't know

4.18 Do you think that getting tested for HIV helps people to feel better?

1. Yes 2.No

4.19 Do you worry about the confidentiality matters of VCT service when you think of HIV testing?

1. Yes 2.No

4.20 Have you ever been tested for HIV voluntarily?

1. Yes 2.No

4.21 What is your main reason to be tested?

1. To get married 2. To know about my health status
3. My body weight has been decreasing
4. I feel sick or unhealthy 5. Others (specify) _____

4.22 How long did it take you to obtain the test result after you had given a sample for testing?_____ Minutes/Hours/ Days/ weeks.

4.23 In your case was arriving at the decision to be tested difficult?

1. Yes 2.No 3. I don't remember

4.24 If "No" what was your reason for not telling others about your decision to be tested?

1. Fear of social rejection (if the result becomes HIV positive)
2. Fear of outcome of the result 3. I don't know

THANK YOU

Appendix C

በአዲስ አበባ ዩኒቨርሲቲ
የድህረ-ምረቃ መርሀ- ግብር
የስ�ቲስቲክስ ት/ክፍል

የዚህ ጥናት ዋና ዓላማ በደብረ-ብርሀን መምህራን ትምህርት ኮሌጅ ተማሪዎች ላይ የኤች አይ ቪ/ኤድስ በበጎ ፈቃደኝነት ላይ የተመሰረተ የደም ምርምራን በተመለከተ ያላቸውን �ውቀት፤ አመለካከትና ተግባራዊ የማድረጋቸውን ግንዛቤ ማጥናት ነው፡፡

ይህ መጠይቅ የተማሪዎችን ግላዊ አኗኗርን የተመለከተ ጥያቄዎችን የያዘ መሆኑ ይ�ወቃል፡፡ ነገር ግን በአንተ/በአንቺ የሚሰጠኝ መረጃ ጥናቱን በሚገባ ለማጠናቀቅ ከፍተኛ ጠቀሜ� አለው፡፡ ስለዚህ መጠይቁን በተቻለ መጠን በትክክልና በጥንቃቄ �ንድትሞሉልኝ በትህትና �ጠይቃለሁ፡፡

አስተማማኝነቱን በተመለከተ በመጠየቁ ላይ የምትሞሏቸውን ነገሮች በሙሉ ሚስጥራዊነ�ቸው የተጠበቀ ከመሆኑም በላይ መጠይቁ ላይ ያሉትን ጥያቄዎች

በመሙላትህ/ሽ በምንም ዓይነት መልኩ አንተን/አንቺን ተጠያቂ የሚያደርግህ/ሽ ነገር የለም። ይህንንም ለማረጋገጥ በመጠይቁ ላይ ሥምህን/ሥምሽን መሙላት አያስፈልግም።

በቅድሚያ ለም�ደርጉልኝ ማንኛዉም ትብብር ከልብ አመሰግናለሁ።
መጠይቁ አራት አይነት ክፍሎች አሉት።

ክፍል አንድ:- ግላዊ መረጃዎችን በተመለከተ

1.1 ፆ�: ወንድ□ ሴት□
1.2 �ድሜህ/ሽ ስንት ነው: ----------
1.3 በኮሎጁ ውስጥ የስንተኛ ዓመት ተማሪ ነህ/ሽ? 1ኛ□ 2ኛ□ 3ኛ□
1.4 ከዚህ በፊት የኖሩበት አካባቢ: ከተማ□ ገጠር□
1.5 የጋብቻ ሁኔ�: ያገባ□ ያላገባ□ የተለያየ□ የሞተበት□
1.6 ሀይማኖት: ኦርቶዶክስ□ �ስልምና□ ካቶሊክ□ ፕሮቴስ�ንት□ ሌሎች (ካለ ይጠቀስ)----------
1.7 ብሄር: አማራ□ ኦሮሞ□ ጉራጌ□ ትግሬ□ ሌላ(ካለ ይጠቀስ)----------
1.8 ያስተዳደግህ/ሽ ሁኔ�: ከ�ናትና ከአባት ጋር□ ከአባት ጋር ብቻ□ ከ�ናት ጋር ብቻ□ ከወንድምና ከ�ህትጋር□ ከወንድም ጋር□ ከ�ህትጋር□ ከሌላ ጋር□
1.9 የቤተሰብዎ ወርሃዊ ገቢ: ከ250 ብር በ�ች □ ከ251-500ብር □ 501-1000ብር□ 1001-1500ብር□ 1500ብር በላይ□
1.10 የ�ናትህ/ሽ የትምህርት ደረጃ: ያልተማረች□ አንደኛ ደረጃ ትምህርት ያጠናቀቀች □ የሁለተኛ ደረጃ ትምህርት ያጠናቀቀች □ የከፍተኛ ደረጃ ትምህርት ያጠናቀቀች(ሰርተፊኬት፤ ዲፕሎማ፤ ዲግሪና ከዚያ በላይ)□
1.11 የአባትህ/ሽ የትምህርት ደረጃ: ያልተማረ□ አንደኛ ደረጃ ትምህርት ያጠናቀቀ □ የሁለተኛ ደረጃ ትምህርት ያጠናቀቀ □ የከፍተኛ ደረጃ ትምህርት ያጠናቀቀ (ሰርተፊኬት፤ ዲፕሎማ፤ ዲግሪና ከዚያ በላይ)□

ክፍል ሁለት:- ኤች አይ ቪ/ኤድስን በመከላከልና መተላለፊያ መንገዶችን በተመለከተ ያለህን/ሽን �ውቀት በተመለከተ ትክክለኛውን ምርጫ ክበብ/ቢ።

2.1. የግብረ-ስጋ ግንኙነት ባለማድረግ ራስህን/ሽን ከኤች አይ ቪ/ኤድስ መከላከል በርግጠኝነት ይቻላልን? 1. ይቻላል 2. አይቻልም 3. አላውቅም
2.2. ከኤች አይ ቪ/ኤድስ ነጻና �ማኝ ከሆነ ሰዉ ጋር ብቻ በመኖር ኤች አይ ቪ/ኤድስን መከላከል ይቻላልን? 1. ይቻላል 2. አይቻልም 3. አላውቅም
2.3. የግብረ-ስጋ ግንኙነት በሚደረግበት ጊዜ በኮንዶም መጠቀም በኤች አይ ቪ/ኤድስ የመያዝ �ድልን ይቀንሰዋልን? 1. ይቻላል 2. አይቻልም 3. አላውቅም
2.4 በኤች አይ ቪ/ኤድስ ከተያዘ ሰው ጋር የቤት �ቃዎችንና የመዋኛ ቦ�ን በጋራ መጠቀም ኤች አይ ቪ/ኤድስ ያስተላልፋል ብለው ይስባሉ? 1. አዎ ያስተላልፋል 2. አያስተላልፍም 3. አላውቀውም
2.5. ኤች አይ ቪ/ኤድስ ከ�ናት ወደ ልጅ በጡት ማጥባት ሊተላለፍ ይችላልን? 1. አዎ ይተላለፋል 2. አይተላለፍም 3. አላወቅም
2.6. ያልተቀቀለ መርፌ፤የጥርስ ቡሩሽ፤ምላጭ፤ወ.ዘ.ተ አብሮ በመጠቀም ኤች አይ ቪ/ኤድስ ሊተላለፍ ይችላልን? 1. አዎ ይተላለፋል 2. አይተላለፍም 3. አላወቅም
2.7. በኤች አይ ቪ/ኤድስ ከተያዘ ሰው ጋር አብሮ የተመገብ በበሽ�ው ሊያዝ ይችላል? 1. አዎ ይያዛል 2. አይያዝም 3. አላወቅም
2.8. ጤነኛ መስሎ የሚ�ይ ሰው ኤች አይ ቪ ቫይረስ ተሸካሚ ሊሆን ይችላልን? 1. አዎ 2.አይችልም 3.አላውቅም
2.9. የግብረ-ስጋ ግንኙነት ካደረጉ በኋላ መ�ጠብ በኤች አይ ቪ/ኤድስ መያዝን ሊከላከል ይችላልን? 1. አዎ 2.አይችልም 3.አላውቅም

2.10. በወባ ትንኝና በሌሎች ነፍሳት መነከስ በኤች አይ ቪ/ኤድስ መያዝን ሊያስከትል ይችላልን? 1. አዎ 2.አይችልም 3.አላውቅም

2.11. ጥንቃቄ የጎደለው ወርጃ ለኤች አይ ቪ ቫይረስ ያጋልጣልን? 1. አዎ 2.አይችልም 3.አላውቅም

2.12. በኤች አይ ቪ ቫይረስ የተጠቃ ሰው ለብዙ ዓመት የበሽ◌ው ምልክት ላይ◌ይበት ይችላልን?1. አዎ 2.አይችልም 3.አላውቅም

<u>ክፍል ሦስት</u>:- ከዚህ በ◌ች ስለስነ-ጸ◌ና የአደጋ ተጋላጭነት የተመለከቱ የተለያዩ ጥያቄዎች ቀርበዋል። ስለሆነም የርስዎን ትክክለኛ ◌ሳቤ ከተሰጡት አማራጮች አንዱን ይምረጡ።

3.1 የግብረ-ስጋ ግንኙነት አድርገህ ◌ዉቃለህ/ህ?

1. አዎ 2. አላዉቅም (3.2 ◌ና 3.3 ይዘለል)

3.2 የ3.1 መልስህ «አዎ» ከሆነ በስንት አመትህ/ሽ የግብረ-ስጋ ግንኙነት አደረግህ? ----------ዓመት

3.3 ለመጀመሪያ ጊዜ የግብረ-ስጋ ግንኙነት ያደረግኸው/ሽው ከማን ጋር ነው?

1. ከባለቤቴ ጋር 2.ከጓደኛዬ ጋር 3.ከማላውቀው ሰው ጋር

4.ከሴተኛ አዳሪዎች ጋር

3.4 የሴት/የወንድ ጓደኛ አለህ/ሽ? 1. አለኝ 2.የለኝም 3.አይመለከተኝም

3.5 የ3.4 መልስ «አዎ» ከሆነ ከቋሚ የሴት/ወንድ ጓደኛህ/ሽ ውጭ ከሌላ ሰው ጋር የግብረ-ስጋ ግንኙነት አድርገህ/ሽ ◌ውቃለህ/ሽን? 1.አዎ 2.አላውቅም 3.አይመለከተኝም

3.6 የ3.5 መልስ «አዎ» ከሆነ ከሴት/ወንድ ጓደኛህ/ሽ ውጭ የግብረ-ስጋ ግንኙነት በም◌ደርግበት/በም◌ደርጊበት ጊዜ ምን ያህል ጊዜ ኮንዶም ተጠቅመህ/ሽ ◌ውቃለህ/ሽ? 1.ሁልጊዜ 2.አልፎ አልፎ 3. ተጠቅሜ አላውቅም

3.7 በኤች አይ ቪ/ኤድስ በሽ◌ ተጠቅቻለሁ/ተጋልጫለሁ ብለህ/ሽ ◌ስባለህ/◌ስቢያለሽ? 1.አዎ 2.አላውቅም

3.8 በኤች አይ ቪ/ኤድስ በሽ◌ ላለመጠቃት፤መተላለፊያ መንገዶችን ለማስወገድ/ለመከላከል ◌ርምጃ ወስደህ ◌ወቃለህ/ህ? 1.አዎ 2.አላውቅም 3.አይመለከተኝም

3.9 የ3.8 መልስህ አዎ ከሆነ ምን ዓይነት የመከላከያ ◌ርምጃ ወስደህ ◌ውቃለህ/ ሽ?

1. ከግብረ-ስጋ ግንኙነት በመቆጠብ
2. ኮንዶም በመጠቀም
3. ሹልና ስለ◌ም ነገሮችን ከሌላ ሰው ጋር መዋዋስን በመተው
4. ጥንቃቄ በጎደለው መርፌ ባለመወጋት
5. አልኮል፤ ጫትና የመሳሰሉ አደንዛዥ ነገሮችን በመተው

ክፍል አራት:- በዚህ ክፍል ውስጥ የኤች አይ ቪ/ኤድስ ቫይረስን በበጎ ፈቃደኝነት ለይ የተመሰረተ የደም ምርመራና የምክር አገልግሎትን በተመለከተ ያለህን/ሽን ◌ውቀት፤ አመለካከትና ተግባራዊ የማድረግህን/ሽን ክህሎት የሚመለከቱ ጥያቄዎች ሲሆኑ ጥያቄውን በደንብ ካነበበህ/ሽ በኋላ ለጥያቄው ትክክለኛው ግንዛቤዬ ነው ብለህ/ሽ የም◌ስበውን/ም◌ስቢዉን መልስ ምረጥ/ጭ።

4.1 በበጎ ፍቃደኝነት ላይ የተመሰረተን የኤች አይ ቪ/ኤድስ ቫይረስን ምርመራና የምክር አገልግሎትን ሰምተህ/ሽ ◌ወቃለህ/ሽ?1.አዎ 2.አላውቅም

4.2 ለ4.1ጥያቄ መልስህሽ «አዎ» ከሆነ የምርመራና የምክር አገልግሎቱን የሰማኸው/ሽው ከየት ነው? 1.ከራዲዮ 2.ከቴሌቪዥን 3.ከጤና ባለሙያ 4.ከጓደኛ 5.ከጎረቤት 6.ከት/ቤት 7.ሌላ ካለይጠቀስ----------

4.3 የኤች አይ ቪ/ኤድስ ቫይረስን የምርመራና የምክር አገልግሎት የት ◌ንደሚሰጥ ◌ውቃለህ/ሽን? 1.አዎ 2. አላውቅም

4.4 የ4.3 መልስህ «አዎ» ከሆነ የት ማግኘት ◌ንደምትችል ከሚከተሉት ውስጥ መርጠህ ክበብ/ቢ።(ከአንድ በላይ መምረጥ ይቻላል)
1.ሆስፒ◌ል 2.ጤና ጣቢያ 3.ግል ክሊኒክ 4.ቀይ መስቀል
5.መንግስ◌ዊ ባልሆኑ ድርጅቶች በሚሰጠው ላቦራቶሪ ዉስጥ 6.ሌላ ካለይጠቀስ---------

4.5 የኤች አይ ቪ/ኤድስ ቫይረስ የደም ምርመራ ማድረግ አስፈላጊ ነው ብለህ/ሽ ◌ስባለህ/ሽን?1. አዎ 2.አያስፈልግም

4.6 የ4.5 መልስህ «አዎ» ከሆነ የደም ምርመራ ማድረገህ/ሽ ለምን አስፈለገህ/ሽ?
1. የጤንነት ሁኔ◌ዬን ለማወቅ
2.መጥፎ ባህሪዬን ለማስወገድ
3.በወቅቱ የህክምና አገልግሎት ለማግኘት(በበሽ◌ው ከተያዝኩ)
4.አብሮኝ ለሚኖር ሰው ለመጠንቀቅ(በደሜ ውስጥ ከተገኘ)
5.ጋብቻ ለመፈጸም

4.7 መመርመር አለብኝ ብለህ/ሽ የም◌ስበው/ቢው መቼ ነው?1.በማንኛውም ጊዜ 2.ከጋብቻ በፊት 3.በሽ◌ ሲሰማኝ 4. የሰውነት ክብደቴ በሚቀንስበት ጊዜ 5.ከብዙ ሰው ጋር የግብረ-ስጋ ግኑኝነት ካደረግሁ በኋላ 6.ሌላ ካለይጠቀስ----------

4.8 በአሁኑ ሰዓት የደም ምርመራ ◌ንድ◌ደርግ ቢመቻቹልህ ለማድረግ ፍቃደኛ ነህ/ሽን? 1.አዎ 2.የማድረግ ፍላጎት የለኝም 3.ምን ◌ንደምወስን አላውቅም

4.9 የ4.8 መልስ የማድረግ ፍላጎቱ የለኝም ከሆነ ላለመመርመር ያነሳሳህ/ሽ ምክንያት ምንድን ነው? 1. ውጤቱ ፖዝቲቭ ከሆነ የህበረተሰቡን አድሎና ማግለል ስለምፈራ 2. መመርመሪያ ቦ◌ው ጋር በሰዎች ስለምፈራ 3 አላውቅም

4.10. በፍቃደኝነት ላይ የተመሰረተ የደም ምርመራና የምክር አገልግሎት ለማድረግ የመክፈል ፍላጎት/አቅም አለህ/አለሽን?
1.አዎ 2.የመክፈል ፍላጎትም ሆነ አቅም የለኝም

4.11 የ4.10 መልስህ «አዎ» ከሆነ አስከም ያህል ድረስ የመክፈል ዓቅም አለህ/ሽ? ----------ብር

4.12 ኮንዶም ከመጠቀም ይልቅ ◌ስከ ጋብቻ ድረስ ከግብረ-ስጋ ግንኙነት መቆጠብን ትመርጣለህ/ሽን? 1.አዎ 2.መቆጠብን አልመርጥም

4.13 በበጎ ፈቃደኝነት ላይ የተመሰረተ የደም ምርመራ በማድረግ የጤናህን/ሽን ሁኔ◌ ማወቅ ካለማወቅ ትመርጣለህ/ሽን? 1.አዎ 2.ማወቅ አልፈልግም

4.14 ለመመርመር ያለውን ምክንያት ተመርኩዞ የኤች አይ ቪ ቫይረስ የምርመራ ውጤት ለ◌ያንዳንዱ ግለሰብ ሊሰጠው ይገባል የሚል አስተሳሰብ አለህ/ሽን? 1.አዎ 2.የለኝም

4.15 ወደፊት በበጎ ፈቃደኝነት ላይ የተመሰረተ የኤች አይ ቪ ቫይረስ የደም ምርመራና የምክር አገልግሎት የማድረግ ፍላጎት/ዕቅድ አለህ/አለሽን? 1.አዎ 2.የለኝም

4.16 ከሴት/ወንድ ጓደኛህ/ሽ ጋር የመመርመር ፍላጎት አለህ/ሽን?1.አዎ 2.የለኝም

4.17 የ4.16 መልስ «አዎ» ከሆነ አብረህ/ሽ ለመመርመር የፈለግኸው/ሽው በምን ምክንያት ነው? 1.የሁለ◌ችንንም የጤንነት ሁኔ◌ ለማወቅ
2.በአስተማማኝነት ሁኔ◌ ለመጋባት(ጋብቻ ለመፈጸም)
3. ሌላ ካለ ይጠቀስ

4.18 ከጋብቻ በፊት በፈቃደኝነት ላይ የተመሰረተ የደም ምርመራና የምክር አገልግሎት ሳተደርግ/ጊ የማግባት ◌ቅድ አለህን/ሽን? 1.አዎ 2.የለኝም
3.የምወስነውን አላወቅም

4.19 የደም ምርመራና የምክር አገልግሎት ማድረግ ሰዎች ጥሩ ራዕይ ◌ንዲኖራቸው ይረዳቸዋል ብለህ/ሽ ◌ስባለህ/ሽን? 1.አዎ 2.አላስብም

4.20 የደም ምርመራ ለማድረግ በም◌ስብበት ጊዜ የምርመራ አገልግሎት መስጫ መሳሪያውን/ቦ◌ውን አስተማማኝነቱን ተጠራጥረህ ◌ውቃለህ/ሽን? 1.አዎ 2.አላውቅም

4.21 በፍቃደኝነት ላይ የተመሰረተ የደም ምርመራ አድርገህ ◌ውቃለህ/ሽን? 1.አዎ 2.አላውቅም

4.22 የ4.21 መልስ «አዎ» ከሆነ ለመመርመር ያነሳሳህ/ሽ ምክንያት ምን ነበር? 1.ለማግባት ወስኜ ነበር 2.የጤንነት ሁኔ◆ዬን ማወቅ ስለነበረብኝ 3. የሰውነት ክብደቱ ◆የቀነሰ ስለነበር 4.ጤንነት ስለማይሰማኝ
5.ሌላ ካለ ይጠቀስ----------

4.23 የደም ናሙናህ/ሽን ከሰጠህ በኋላ ዉጤቱን በምን ያህል ጊዜ ዉስጥ ዉጤቱን ማወቅ ትፈልጋህ?----------በደቂቃ/በሰዓት/ በሳምንት/ በወራት/ በዓመ◆ት ይገለጽ::

4.24 በአንተ/ቺ ጉዳይ ለመመርመር መወሰን ከብዶህ/ሽ ያውቃልን? 1.አዎ 2.አላውቅም 3.አላስ◆ውስም

4.25 የ4.24 መልስ «አዎ» ከሆነ ለሌላ ሰው ያላማከርከው/ሽው ለምንድን ነው?

1. **በደሜ ውስጥ ቫይረሱ ከተገኘ በህብረተሰቡ ማግለልን በመፍራት**
2. **ውጤቱን በመፍራት**
3. **ለምን ◆ንደማደርግ አላውቅም**

ስለትብብርዎ ከልብ አመሰግናለሁ::

DECLARATION

I, the undersigned, declare that the thesis is my original work, has not been presented for degrees in any other University and all sources of material used for the thesis have been duly acknowledged

Name: Zeytu Gashaw

Signature: ……

Place : Faculty of Science, Addis Ababa University

Date: January, 2007

This thesis has been submitted for examination with my approval as a University advisor.

……..

Professor Eshetu Wencheko