ASSESSMENT OF UTILIZATION AND DETERMINANTS OF VOLUNTARY COUNSELING AND TESTING FOR HIV IN THE ARMED FORCES OF ETHIOPIA

By
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A Thesis Submitted To the School Of Graduate Studies of Addis Ababa University in Partial Fulfillment of the Requirements for the Degree of Master of Public Health

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ADDIS ABABA October 2006

ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES

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ACKNOWLEDGMENTS

My deepest gratitude goes to my advisor Dr Getnet Mitike AAU-MF, DCH for his continuous and wholehearted enriching support throughout the study period both at his office and in the field through cell phone.

I would like to thank EPHA and CDC-Ethiopia without whose facilitation and financial support, respectively, this study could not have materialized.

I wish to express my appreciation to Joseph Petraglia (Global Health Communication /GHC/, Emory University) who has devoted his time reviewing my thesis work. My appreciation also goes to Dr Tekeste Kebede (CDC-E) for his support in references.

I would like to acknowledge my wife Hidat Kidane and my mother-in-law W/o Letebirhan Asgedom without whose encouragement and supports this study would not have been materialized. I would also like to express my thanks to Ato Neggusu Worku (UNICEF), Ato Sium Mengesha, and Ato Tesfaye G/tinsie for their assistance in equipping me with skills in SPSS program use. I would like to acknowledge Ato Zenebe Aynekulu for his facilitation of class room and teaching aid materials for training of study assistants in Atse Yohannes Secondary School. I also thank W/o Frehiot Hailu (NDFE) and W/t Addisalem Mihret (Zewditu Hospital VCT Center) for their secretarial support.

I would like to pass my heart-felt gratitude to NDFE health department, Northern command, the commanders of the selected division, and commanders of the first, second and eighth regiments who allowed, assisted and facilitated this study to be practical. I would like to extend my appreciation to the supervisor and interviewers for having been responsible and for efficiently filling the questionnaires. Last but not least, I would like to thank all study participants without whom this study was not possible.

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ABBREVIATIONS

AAU Addis Ababa University
AIDS Acquired immunodeficiency syndrome
ANC Antenatal Clinic
ARV Antiretroviral
BSS Behavioral Surveillance Survey
CDC Center for Disease Control
CSW Female Commercial Sex Worker
DCH Department of Community Health
EPHA Ethiopian Public Health Association
ETB Ethiopian Birr
FHI Family Health International
HAPCO HIV/AIDS Prevention and Control Office
HIV Human immunodeficiency virus
MoH Ministry of Health
MTCT Mother To Child Transmission
NDFE National Defense Forces of Ethiopia
PLWHA People living with HIV/AIDS
SNNPR Southern Nations and Nationalities Peoples Region
SPSS Statistical Package for Social Science
SSA Sub Saharan Africa
STD Sexually Transmitted Disease
STI Sexually Transmitted Infection
UNAIDS United Nations Program on HIV/AIDS
WHO World Health Organization
VCT Voluntary counseling and testing

ABSTRACT

Military personnel are among the core groups most at risk to HIV acquisition and transmission because of their occupation and lifestyle. Available data shows that voluntary counseling and testing for HIV uptake was low in the members of Ethiopian army. It is known that VCT for HIV is crucial strategy for HIV prevention. Therefore, identifying rate of VCT and factors correlated with low uptake in the army could intensify the national responses to the HIV pandemic.

A cross-sectional survey was conducted on randomly selected 917 male army members of randomly selected Division of Northern command, deployed in Eastern Tigray about 900km north to Addis Ababa in October 2006. After data was collected, using pre-tested structured and standard questionnaire, cleaned, entered and analyzed using SPSS. Odds ratio with 95 % confidence interval was used to test statistical significance and degree of association.

The median age of respondents was 28(±5.6), with age range from 18-47 years. The majority of participants 567(61.8%) were between 18–29 years of age. Almost 99% of the participants were literate, and 441(48.1%) were ever married and the median age at first marriage was 25 years.

The data showed that 430(46.9%) of all participants were tested for HIV of which 421 were through VCT. The data also revealed that VCT utilization rate in the study subjects was 45.9%. The most common reason for VCT was ‘to know self’, 86.2%. All participants who had VCT were satisfied with the service given. Among 487 HIV non-tested participants the reasons given for non-uptake of VCT were no near by service 38.8%, afraid to get test result 33.9%, fear of stigma 17.7%, and partner and/or self-trust 13.8%.

Using multiple logistic regression analysis, controlling for various demographic characteristics, as well as behavioral, cognitive, social, and VCT service related factors; it was found that soldiers with the following characteristics were most likely to have undergone VCT. Those who discussed HIV/AIDS with in the family, those who ever had sexual contact, those who knew a person infected with HIV or died of AIDS, those who were knowledgeable about the uses of VCT, and those who had non-stigmatizing attitude towards PLWHA. On the other hand it was found that soldiers with the following characteristics were less likely to have undergone VCT: those who were currently not married but living with sexual partner, those who had uncertainty about their HIV status, and those who preferred integrated VCT clinics located in the civilian health institution.

This study shown that rate of VCT utilization in the army is increasing and many variables shown correlation with VCT-uptake. Therefore, we recommend that interventions be aimed at those variables suggesting causation and to scale up VCT services. Furthermore, we recommend that qualitative research be conducted to identify which of these correlations have a causal relationship to VCT-uptake.

INTRODUCTION

The HIV/AIDS pandemic continues to spread worldwide. Today some 39.5 million people are living with the virus, which killed 2.9 million in 2006 alone and over 27.9 million people since the first case of AIDS, 1981. About 4.3 million people newly infected with HIV during 2006[1, 22].

Sub-Sahara Africa (SSA) has just over 10% of the world's population, but is home to more than 63% of all people living with HIV, 24.7 million and remains the hardest-hit. In 2006, an

estimated 2.8 million people in the region became newly infected, while 2.1 million adults and children died of AIDS [22].

Ethiopia, located in SSA, is among most heavily affected countries by the HIV epidemic. About 1.32 million people were living with HIV/AIDS— 686,000 Urban and 634,000 rural. The national HIV prevalence rate is estimated as 3.5% in 2005 [Urban 10.5% and rural 1.9%] [2, 23].

Military personnel are a population group at special risk of exposure to sexually transmitted diseases (STD) including HIV. Available data shows that a significant amount of knowledge amongst the members of Ethiopian army with regards to HIV/AIDS, though it would seem that in practice people are still engaging in multiple sexual partnerships and unprotected sexual behaviors. There was also low uptake of voluntary counseling and testing/VCT/ (16%) [3].

VCT is an essential element in the response to the HIV epidemic. But until recently it has not been a major strategy in developing countries. In Ethiopia client initiated VCT started in 2000 and in the national defense forces of Ethiopia in the early 2003.There were 648 VCT sites nationwide including 10 sites of NDF since 2005 **[4,5,6]**.

Military personnel are among the core groups most at risk to HIV acquisition and transmission because of their occupation and lifestyle [18, 24]. So far, no study has been done to identify factors that may have correlation with low uptake of VCT in the Ethiopian Army. So identifying factors that may have correlation with low uptake of VCT in the army may have some contribution to intensify the responses to HIV/AIDS epidemic countrywide. .

LITERATURE REVIEW

Most HIV infections are in sub-Saharan Africa, yet only a small fraction of Africans knows their HIV status. Voluntary HIV Counseling and Testing (VCT) is an effective method of promoting behavior change, but utilization of VCT is still low in African communities with high rates of HIV (9). A study done in the Ugandan army in 1996 showed notable behavior change among people counseled indicated through increased demand for condoms, peoples willing to educate others and bring them for HIV testing [(8)].

Voluntary counseling and testing for HIV (VCT)

Voluntary Counseling and Testing (VCT) is defined as, "confidential dialogue between a person and a care provider aimed at enabling the person to cope with stress and make personal decisions related to HIV/AIDS. The counseling process includes an evaluation of personal risk of HIV transmission and facilitation of preventive behavior" (WHO 1994). VCT is now acknowledged within the international arena as an effective and pivotal strategy for both HIV/AIDS prevention and care. Research conducted in Kenya, Tanzania and Trinidad by Family Health International in collaboration with UNAIDS and WHO has provided strong evidence to support the theory that VCT is both effective and cost effective as a step in facilitating behavior change [(7)]. Studies in both US and developing world have demonstrated that VCT can lead to self-reported changes in high-risk sexual behavior among both HIV positive and HIV negative people. The study also found that VCT is an important entry for care and support because for example a person could get prophylaxis for opportunistic infections or antiretroviral therapy only after tested for

HIV. These findings have boosted interest and support for VCT as a valuable component of a comprehensive HIV/AIDS prevention program among international organizations.

Factors Affecting VCT Service Utilization

Since 1985, a number of studies done to identify possible factors that impede or facilitate utilization of voluntary counseling and testing for HIV in different population group at different parts of the globe. Some of the identified factors are described below.

Socio-demographic factors

The other reason given was fear of marital discord. A study done to identify factors determining acceptance of VCT among pregnant women attending antenatal clinic at Armed Forces General Hospital Addis Ababa, by Getachew W.2005, showed VCT acceptance was higher among better educated, married, with higher income women and among women whose husbands live at home. The justifications were educated mothers are better in assessing the advantage of testing and may be aware of the benefits of the test and treatment options that reduce mother to child transmission of HIV infection. Married women are more confident that they are at less risk compared to unmarried because of their committed marriage. The presence of husbands at home might help them to discuss the issue of VCT with their husbands. A study done on youth in Jijega town eastern Ethiopia by ZenebuY.2005, showed being female, older youth, educational level of secondary and above and sexually active youth were more likely to be tested. Older and sexually active youth might be involved in high-risk sexual activity than younger and sexually inactive youth and want to know their status. A case-control study conducted in Guraghe zone, western Ethiopia by Wondimagegn G.2004, secondary and above educational status, singleness and non-polygamous union showed statistically significant and positive associations with VCT utilization. As most VCT users came for premarital

HIV test younger age groups were expected to utilize VCT more than older and the situation is consistent with singleness. A national household-based survey of HIV/AIDS that utilized the second-generation surveillance survey approach was conducted during 2002 in South Africa. Using multiple logistic regression analyses, controlling for various demographic characteristics as well as behavioral and contextual factors, it was found that people with the following characteristics were most likely to have undergone VCT: adults aged 25–49 years, those who were highly educated, those who discussed HIV/AIDS prevention with their partners and those who had a friend or relative who was HIV positive. Self-efficacy, proximity to HIV/AIDS and effectiveness of VCT services were the major points mentioned for the use of VCT services [9, 10, 11, 12, 13].

Sexual behavior

Studies showed that effect of past sexual practice has controversial effect on VCT uptake. Condom use and not having previous sexual practice were identified as independent predictor of intention of having VCT. Assuming that practicing one preventive behavior could predict the intention to practice of other preventive behavior and the other reason given was having risk sexual practice was mentioned as one of the reasons for HIV test refusal [9].

A review of articles and abstracts published from 1985 to 1995, which addressed determinants of counseling and testing acceptance, indicated acceptance was generally higher (> 50%) among persons at high risk for acquiring or transmitting the infection (e.g., STD patients, pregnant women at high risk) than among low-risk persons. Factors associated with high acceptance rates included the client's perception of HIV risk, acknowledging risk behaviors; confidentiality protections; presenting counseling and

testing as routine rather than optional; and the provider's belief that counseling and testing will benefit the client [14].

Knowledge, attitude and perception to VCT as HIV prevention strategy

Positive attitude towards VCT, and positive salient belief about benefits of having VCT were significant predictors of having & asking VCT. The reason given was that the individual perception and attitude towards performing VCT could decide to use or not [9]. Women who had better knowledge of VCT and MTCT had significantly higher VCT acceptance than their counterparts did [10]. Participants in a population-based HIV survey conducted in an urban population in Zambia in 1996 were offered VCT and perceived risk of HIV infection had a major influence on VCT readiness among young people, whereas declining general health status, as indicated by self-rated health (possibly perceived as an indicator of AIDS), was most evident among those of older age [7]. In low prevalence settings where peacekeepers do not perceive themselves to be at high risk from HIV infection, uptake of VCT following group information may be high. For instance, 83% of Chinese army recruits said that they would welcome the opportunity to undergo HIV testing. However, peacekeepers from higher prevalence settings unless they are fully aware of the benefits of VCT, have the opportunity for individual counseling and assured of emotional and medical support following VCT, uptake may be lower [15].

Stigma and discrimination towards people living with HIV/AIDS (PLWH)

Many studies revealed that fear of positive result and stigma attached to AIDS is major reasons for not having VCT. Stigma prevents many people from negotiating safer sex, taking an HIV test, disclosing their status to their partners or seeking treatment [1, 16]. Attitude related with stigma and discrimination had shown statistically significant

association with VCT users in a study done in Guraghe zone. This was explained by the fact that such attitudes are deep-rooted among the community and difficult to eliminate at once. To tackle such barriers for VCT utilization besides the multi pronged approaches, HIV VCT is seen as an important way of normalizing intervention breaking the vicious circle of denial, stigma and discrimination [12]. Integrating VCT with HIV programs, which foster a supportive environment for people who test seropositive, considered enhancing acceptance of VCT in military communities [15].

Organization of VTC services

The presence of a national policy to provide HIV testing and counseling in all areas, widely availability of voluntary HIV counseling and testing services, presence of the resources needed (staff, space, systems) to function as planned and provision of quality services are the key indicators to give good VCT services.

Removing barriers to learning one's HIV status: a comparison of testers and non-testers in Sub-Saharan Africa showed testers reported two major reasons for not previously using VCT compared to non-testers ($p<.01$), inconvenience of hours (51% v. 18%) and location (48% v. 20%). Two different studies done one in rural Rakai, Uganda (Nyblade et. al. 2000) and the other in urban Zambia (Fylkesnes 2004), VCT services were offered to all individuals, who could choose to receive the service in their homes or at a nearby clinic results seem dramatic but the urban Zambia results less so. Both studies suggested that the mode of service delivery is a crucial determinant of acceptability, reflecting concerns about confidentiality and perhaps also a general lack of faith in local health service quality [7].

A survey of young people in Nairobi, Kenya, and in Kampala and Masaka, Uganda indicated that real and perceived lack of confidentiality was as much deterrent to using VCT services as affordability [(1)]. A conversation by Colonel Deborah Birx (a physician specialized in internal medicine and immunology) said that, “Keeping VCT clinics freestanding space away from the military hospitals and care, usually accessible to the community increases VCT uptake”. The reason she has given was stigma and being seen walking in to VCT center could be quite stigmatizing to military career [(17)]. The other reason mentioned for possible low uptake of VCT in the military was the perceived danger of dismissal from the army services if tested positive [(16)].

Availability of antiretroviral therapy leads to greater uptake of HIV testing (WHO,"3 by 5" progress report June 2005). A health survey conducted after the introduction of antiretroviral programs in Khayelitsha, South Africa found increased readiness to be tested for HIV than in any of the seven other sites surveyed (WHO, 2003) [(1)].

RATIONALE OF THE STUDY

In peacetime STD infection rates among armed forces are generally two to five times higher than in civilian populations, in time of war even greater. Military personnel are among the core groups most at risk to HIV acquisition and transmission. The possible reasons given for this includes: the posting of military personnel away from their accustomed community or their families for long period of time; the military’s ethos tends to excuse or even encourage risk taking; most personnel are in the age group at greatest risk for HIV infection - the sexually active 15-24 year age group; often have more money in their pockets than local peoples giving the financial means to purchase

sex; and military personnel and camps attract sex-workers and those who deal in illicit drugs [18].

In generalized heterosexual epidemics, such as in Southern and Eastern Africa the armies are expected to have HIV levels comparable to or even lower than the general population [19]. Studies done in the National Defense Forces of Ethiopia revealed that majority of the army were young, unmarried, mobile, started engaging in sexual practice at a young age (19 years and less) and involved in multiple sexual partner relationships. The studies also showed that they had a significant level of awareness about HIV/AIDS and appropriate ways of prevention of sexual transmission of HIV. However, they had high level of stigmatizing and discriminating attitude towards PLWHA, low level of self perceived susceptibility to HIV infection in spite of their involvement in high risk sexual practice, and very few undergone VCT despite high level of willingness to undergo VCT for HIV[3]. These findings suggest that there is big gap between their knowledge about HIV/AIDS and their sexual behavior and utilization of VCT services. So far no study was done to identify factors that have correlation with low VCT uptake in the Army. As VCT is a pivotal strategy to HIV/AIDS prevention, care and support, and treatment activities; identifying magnitude and factors that have correlation with low uptake of VCT in the army may have some contribution to intensify the response to HIV/AIDS epidemic countrywide.

OBJECTIVE OF THE STUDY

GENERAL OBJECTIVE

To determine utilization of VCT and identify factors associated with it in the Ethiopian Army.

SPECIFIC OBJECTIVES

1. To determine VCT utilization rate in the Ethiopian armed forces, and
2. To identify factors those are correlated with VCT utilization among members of the Ethiopian army.

METHODOLOGY

Study area

This is a cross-sectional study conducted in the northern part of Ethiopia; eastern zone of Tigray national regional state at Adigrat, Dukan, Sobia, and Zalanbesa towns. Adigrat, about 900km north to Addis Ababa, is the administrative centre of the eastern zone of Tigray where the study population was deployed. Dukan, Sobia and Zalanbesa were areas where sub units of the study population were taken.

Study Design and Source Population

This is a cross-sectional descriptive quantitative study conducted in randomly selected infantry division of the Northern Command. The source population constitutes all members of the ground forces of Northern Command.

Study Population and Sampling Frame

The study population constitutes members of three randomly selected regiments of the division, including the members of the division head quarter. Sampling frame was a payroll list of these units.

Study Subjects /Units/

Randomly selected individuals of division head quarter; and the three randomly selected regiments of the division were study subjects that were selected with probability proportional to size (PPS).

Inclusion and Exclusion Criteria

Inclusion criteria: Member of the division where the study was conducted, who resided at least for 6 months before the study, age between 18 – 52 years, and male were included

in this study. At least 6 months of residence was considered to minimize the variation in environmental effect. Age between 18 and 52 years was selected because 18 years is the minimum age of recruitment, and age of 52 years was preferred to include more senior officers in the study. Male only was involved in the study because the number of female soldiers in the Army, especially in peripheral areas was very few or nil.

Exclusion criteria: Members of the study population who resided less than 6 months in the Army prior to the study, age less than 18 years and older than 52 years, female, on annual leave, sick and hospitalized were excluded in this study.

Sample Size

To determine sample size for this study 25 % HIV test rate taken from a study conducted to assess condom use for prevention of HIV/AIDS among members of 23rd division [20]. This rate was taken to determine sample size with 4% degree of precision and 95%CI of certainty. Based on these assumptions the sample size calculated using a single population proportion formula.

$$n = \frac{D\,(Z\alpha/2)^2\ P\,(1-P)}{d^2}$$

Where: **n** = Sample size **Zα/2** = 1.96 **d** (degree of precision) = **0.04**

P (assumed prevalence of VCT utilization) = **25%** and **D** (design effect) =**2**

The Sample size was calculated as $n = \frac{1.96 \times 1.96 \times 0.25 \times 0.75}{0.04 \times 0.04} = 450.1875 \approx 451$

We were used a two-stage cluster sampling technique; hence to correct the design effect the value of n was multiplied by two. $n = 2 \times 451 = 902$

Finally 10% non–response rate was considered and that made the total sample size 993: - 902 + 90.2 = 992.2 ≈ 993

Sampling Procedure

Multi-stage cluster sampling technique used to select study units. The Northern command was selected by convenience for logistics reason, while the selection of division was done by cluster random sampling method from all divisions of the Northern Command. Division had the following natural clusters; a division head quarter, five infantry and three mechanized regiments. Two regiments from the five infantry regiments and one regiment from the three mechanized regiments were selected by cluster random sampling method. The division head quarter was taken as a fourth cluster. From these four clusters, 993 male participants were selected by simple random sampling method using random number table with probability proportional to size of the clusters (Annex - III Fig –1).

Data Collection and Measurement Instruments

Variables:-The following variables were used to answer the study questions.

Dependent/Outcome Variable

- **VCT uptake**

Independent/Explanatory Variables

1. **Socio-demographic factors:**
   Age; Marital Status; Ethnic group; Religion; Military rank; Educational level; Military service year; Monthly wage; Family discussion about HIV/AIDS
2. **Behavioral factors**:
   Ever had sex; Number of non-regular non-commercial partner/s; Commercial sex; Unprotected sex with a higher-risk partner; Ever had sexually transmitted infection /STI/; and History of addiction
3. **Cognitive factors**:
   Knowledge about HIV/AIDS and VCT; Perceived susceptibility to HIV/AIDS; Outcome expectancy of using VCT and self-efficacy to use VCT

4. **Service related factors**:

   Accessibility of VCT clinics; Confidentiality of test result; Cost of transportation; How to get permission to go for VCT clinics; Preference of Counselor; Preference of VCT mode and location; and Availability of ART

5. **Social factors**:

   Stigma and discrimination

Recruitment and Training of Interviewers & Supervisor

Ten data collectors and one supervisor recruited and trained for two days. All interviewers were recruited from civilian. The data collectors were 3 degree holders, 3 diploma holders, and 4 degree students (12+3, 12+2, and two12+1). Three of the interviewers had previous experience in data collection. The supervisor was a nurse working in the Northern Command Referral Hospital, which is about 120 km far from the nearest study area, and was member of the army. They were trained on background information about VCT services, general interviewing procedures (chronology & probing), on obtaining consent, maintaining neutrality, privacy issues and personal relation.

Data Collection Instrument

A structured questionnaire was adopted from FHI BSS standardized questionnaire, and from review of different literature done on VCT [3, 11, 12, 25]. These were geared to the Army. The English version of the questionnaire translated to Amharic and back translated to English to conform conceptual equivalence (Annex-IV). The Amharic version questionnaire was pre-tested for clarity, repetition, flow and time required for one respondent. The pre-test done on randomly selected 30 members of Division-G of the Northern Command at Quiha town, which is 132 km away from division. The mean time to collect the data was 25 minutes with a range of 20 to 30 minutes. Some minor

corrections done after the pilot test and the corrected Amharic version questionnaire printed for the survey (Annex-V). All the interviewers and the supervisor participated in the half-day pilot test.

Data Collection

The data was collected from October 2-12, 2006. Discussions were made between the principal investigator and the respective officials at the northern command, division, and selected regiments to determine days and time of data collection, and to assign coordinators who would arrange respondents at the place of data collection. A total of 993 members of the ground forces were selected from the payrolls using random number table applying simple random sampling method and probability proportionate to size technique. Accordingly 320, 300, 300, and 73 study subjects were selected from division head quarter; regiment D_{11}, regiment D_{12} and regiment D_{31}, respectively. Interviewers collected data from the selected study subjects on the working hours. The principal investigator and the supervisor were making spot–check on randomly selected questionnaires for completeness, accuracy and consistency and discussed with the respective interviewer to correct and complete the data on daily basis.

Data Processing, Analysis and Interpretation

All the variables were pre-coded. Data was entered using SPSS version 11. Frequency distribution of variables printed out and checked for outliers and inconsistency. Bivariate analysis of socio-demographic, high-risk sexual behavior, cognitive, and service related variables with VCT-uptake were done and crude Odds ratio with 95% confidence interval computed to assess the presence and degree of association. Multivariate analysis of selected variables that showed significant association with VCT-uptake in the bivariate analysis and other important variables were done using logistic regression to see for

independent association and control for confounders. Adjusted Odds ratio with 95% confidence interval computed to assess the presence and degree of association between dependent and independent variables. Results presented in tables and statements. Finally, the results presented and discussed in relation to other findings from similar studies conducted elsewhere. The information obtained will strengthen the prevention and control of HIV/AIDS in the Ethiopian Army by improving existing VCT services utilization.

Data quality

Research assistants were selected properly and given training. Pre-tested standard structured questionnaire was used to collect data. Study participants were made clear about the objective of this study and interview was done only after verbal consent. During data collection supervisor and investigator were checking for completeness of all questionnaires daily and returned it to the respective data collector to complete it.

Ethical clearance

Ethical Clearance to conduct the study was obtained from the Ethical Clearance Committee of Addis Ababa University, Medical Faculty. Then permission was obtained from head of Health Department of the Federal Ministry of Defense, head of Northern Command health service, commander of Division-D and commanders of the respective Regiments to conduct the study. Clients were asked for willingness to participate in the study and general information including aim of the study was explained to them as shown in the consent form.

RESULTS

Nine hundred and seventeen male army members of division, Northern command of the Ethiopian Army were involved in this multistage cross–sectional study. They were from division head quarter 303(33 %), regiment D_{11} 280(30.5%), regiment D_{12} 267(29.1%), and regiment D_{31} 67(7.3%). The response rate was 92.3% (917/993). Seventy six (7.7%) of the randomly selected study subjects were not able to participate in this study due to military duty and refusal (11 participants were refused to participate).

1. Socio–Demographic Characteristics

The median age with ± 1standard deviation of respondents was 28(±5.6), with age range from 18–47 years. The majority of the participants 567(61.8%) were between 18–29 years of age and 667(72.7%) were followers of Orthodox Christianity. Nine hundred and six (98.8 %) of the participants were literate, and 441(48.1%) were ever married and the median age at first marriage was 25 years. Among 422 currently married participants 64.7% were living with spouse, 32.5% were not living with spouse or any other sexual partner, and 2.8% were living with other sexual partner (Table–1).

The majority of the participants, 660(72 %) stayed at present deployment site for a year or less. In the past 12 months, 583(63.6 %) study subjects were away from their base for a month or more. These indicate that majority of the participants were highly mobile during 12 months before this survey. The mean service year of study participants in the army was eight years with a range from six months to 27 years. Majority of participants 587(64%) were belonging to the category of other ranks (Table–1).

Table-1: Socio–Demographic characteristics of male military personnel, Northern Command, Eastern Tigray, October 2006.

Variable	N = 917	n (%)
Age in years		
19 and less		43(4.7)
20 – 24		159(17.3)
25 – 29		365(39.8)
30 – 34		210(22.9)
35– 39		107(11.7)
40– 44		28(3.1)
45 and above		5(0.5)
Religion		
Orthodox		667(72.7)
Muslim		159(17.3)
Other Christians		84(9.2)
Others		7(0.8)
Ethnicity		
AMHARA		308(33.6)
OROMO		228(24.9)
TIGRAY		172(18.8)
WELAYTA		33(3.6)
GURAGIE		20(2.2)
SIDAMA		17(1.9)
GAMO		17(1.9)
SOMALIA		15(1.6)
HADIA		13(1.4)
BENSHANGUL/GUMZ		12(1.3)
KEFA		9(1.0)
KEMBATA		7(0.8)
OTHERS		66(7.2)
Educational Status		
Illiterate		11(1.2)
1 – 8 grade		566(61.7)
9 – 12 grade		327(35.7)
Above grade 12		13(1.4)
Service Years in year		
less than 5		154(16.8)
5 – 9		598(65.2)
10 and above		165(18.0)
Military Rank		
PVT (privates)		252(27.5)
Other ranks		587(64.0)
Junior Officers		64(7.0)
Senior Officers		14(1.5)
Monthly salary in Birr		
500 – 650		616(67.2)
651 – 800		204(22.2)
801 and above		97(10.6)
Current Marital status		
Married, living with spouse		273 (29.8)
Married, living with other Sexual partner		12 (1.3)
Married, not living with spouse or other sexual partner		137 (14.9)
Not married, living with sexual partner		200 (21.8)
Not married, not living with sexual partner		292 (31.8)
Do not know		3 (0.3)
Discussed about HIV/AIDS with anyone in the family		
Yes		497(54.2)
No		417(45.5)
Do not know		1(0.1)
No response		2(0.2)

2. BEHAVIORAL FACTORS

Sexual Behavior

Eight hundred and seventy seven (95.6 %) of the respondents reported ever had sexual intercourse whereas 40 (4.4 %) never had sex. The majority 780(88.9 %) of the sexually active respondents had had sex and 97(10.6%) had abstained from sex during the past 12 months. Amongst all respondents 433(47.2%) had regular partners, 304(33.2 %) had commercial sexual partners, and 107(11.7 %) had non–regular partners with whom they had sexual relations during the past 12 months. Out of the sexually active 780 respondents, 174(22.3%) reported having more than one sexual partner during the previous 12 months. Amongst 433 married respondents, 46(10.6%) had had extra marital sex during the past 12 months. Concerning condom use, 45(5.8%) of the sexually active respondents were engaged in unprotected sex with high-risk sexual partners during the previous 12 months (Table-2).

Other Risk Behaviors

Almost half of the participants 432(47.2%) never drunk, 317(34.6%) drunk less than once in a week, 152 (16.6%) drunk at least once in a week, and 16(1.7%) drunk daily alcohol containing drinks during 4 weeks prior to the survey. Concerning drug addiction, 106(11.6%) of the study subjects were reported chewing **'**Khat' in lifetime.

Table-2: Sexual and other behavioral characteristics of male military personnel, Northern Command, Eastern Tigray, October 2006

Variable	n (%)
Ever had sexual intercourse (n = 917)	
Yes	877(95.6)
No	40(4.4)
Age at first intercourse in years (n = 877)[a]	
< 15	18(2.1)
15 – 19	428(48.8)
20 – 24	321(36.6)
≥ 25	110(12.5)
Median age ±SD	19(±3.3)
Range	11 - 41
Had sex with CSW during the last 12 months (n = 917)	
Yes	304(33.2)
No	613(66.8)
Number of NRP had in the last 12 months (n = 917)	
0	810(88.3)
1	77(8.4)
≥ 2	30(3.3)
How often Condom used with CSW during the past 12 months (n = 304)[b]	
Every time	267(87.8)
Almost every time	16(5.3)
Sometimes	16(5.3)
Never	5(1.6)
How often condom used with NRP during the past 12 months (n = 107)[c]	
Every time	86(80.4)
Almost every time	4(3.7)
Sometimes	6(5.6)
Never	11(10.3)
Ever had STI (n = 877)[a]	
Yes	76(8.7)
No	801(91.3)

[a] = the 40 cases that ever had no sexual contact not included

[b] = only cases that had had sexual contact with female commercial sex worker/s/ (CSW) in the past 12months

[c] =only cases that had had sexual contact with female non-regular and non-commercial sexual partner/s/ (NRP) in the past 12months

3. COGNITIVE AND SOCIAL FACTORS

Knowledge and attitude towards HIV/AIDS

All participants had heard of HIV/AIDS. Majority of the participants 665(72.5 %) knew someone who was infected with HIV or died of AIDS. Of those respondents who had first hand knowledge of HIV/AIDS, 50(7.5 %) knew a close relative, 170(25.6%) knew a close friend and 9(1.4 %) knew both a close relative and friend. Knowledge of the three major ways of preventing sexual transmission of HIV (abstaining from sexual intercourse, having one uninfected faithful sexual partner, and consistent and correct condom use) and the three common misconceptions about HIV transmission (can a healthy-looking person have HIV? can a person get HIV from mosquito bites? and can a person get HIV by sharing a meal with someone who is infected?) were used to assess knowledge about HIV/AIDS among participants. Participants who identified correctly both the three major ways of preventing sexual transmission of HIV and who rejected the three major misconceptions were considered as having comprehensive knowledge about HIV/AID [(25)]. Those who had at least one incorrect response were considered as not having comprehensive knowledge. Accordingly, 777(84.7%) participants correctly identified all the three major prevention methods, and 683(74.5 %) rejected the three major misconceptions about mode of HIV transmission. Of all respondents, 64.1% with 95%CI (61.0%, 67.2%) had comprehensive knowledge about HIV/AIDS (Table-3). Using the national HIV/AIDS knowledge measurement method, 66.3% of participants had comprehensive knowledge about HIV/AIDS, which lies in the 95%CI of the above measurement method [(26)].

Of all participants, 71.4% perceived themselves at no risk of infection while 17.8% considered themselves at risk and 9.4% were uncertain about their HIV status (Tab-3). The common reasons given by those who perceived themselves at no risk were: I always use condoms 31.7%, I was tested and know my HIV status 28.1%, and I have abstained sex 7.5%. The common reasons given by those who perceived themselves at risk were: practiced unprotected sex 35.9%, claimed injury with contaminated sharps 21.6%, had sex with commercial sex workers 18.3%, and had multiple sexual partners 17.6%.

Knowledge and attitude towards VCT

All participants have heard of VCT and agreed in its importance. The common sources of information about VCT were 34.2% from health workers, 21.4% from mass media, 15.9% from friends and 11% from peer educator. Among all participants, 74(8.1%) knew the three main uses of VCT: providing entry point for care and support, promoting safe behavior and breaks the vicious circle of stigma. Participants answered correctly all the three major uses of VCT were considered knowledgeable about VCT and non–knowledgeable if failed to mention all the three major uses of VCT (Table-3). About 93% of the study subjects were willing to have VCT. Among 487 non-tested 88.5% were willing to have VCT.

The cognitive factors, perceived outcome expectancy and self-efficacy to have VCT were assessed using a single question for each (Table-3).

Stigma and Discrimination

Of all respondents, 61.9% had at least one stigmatizing attitude towards PLWHA and the remaining 38.1% had no stigmatizing attitude towards PLWHA (Table-3).

Table-3: Knowledge on HIV/AIDS and VCT, and attitude towards PLWHA of male military personnel, Northern Command, Eastern Tigray, October 2006

Variable	N=917	n (%)
Comprehensive knowledge about HIV/AIDS		
Non–knowledgeable		329(35.9)
Knowledgeable		588(64.1)
Knowledge on the uses of VCT		
Non–knowledgeable		843(91.9)
Knowledgeable		74(8.1)
Know anyone who is infected with HIV or died of AIDS		
Yes		665(72.5)
No		248(27.0)
Do not know		4(0.4)
Stigma and Discrimination towards PLWHA		
Stigma Positive		568(61.9)
Stigma Negative		349(38.1)
Perceived susceptibility to HIV/AIDS		
Do you think you might have HIV infection?		
Yes		163(17.8)
No		655(71.4)
May be		86(9.4)
Do not know		13(1.4)
Outcome expectancy of using VCT		
How much true is the following statement to you?'		
If I got HIV test then it would relieve me to know my status.'		
Not at all true		63(6.9)
Barely true		82(8.9)
Some what true		576(62.8)
Very true		193(21.0)
N0 response		3(0.3)
Perceived self-efficacy to use VCT		
How much true is the following statement to you?		
'I am confident that I can get HIV test, even if there is		
Stigmatization to PLWHA in the population'		
Not at all true		80(8.7)
Barely true		48(5.2)
Some what true		630(68.8)
Very true		154(16.8)
No response		5(0.6)

4. VCT SERVICE RELATED FACTORS

The data showed that 430(46.9%) of all participants were tested for HIV of which 421(97.8%) through VCT and 99.3% collected their test result. The data also revealed that VCT utilization rate in the study subjects was 45.9 %(421/917). The most common reason for VCT was ‘to know self’, 86.2%. And 46.5% of those tested were tested in the army health institutions with VCT center, 36.7% were tested in government health institutions having VCT center, and 7.4% were tested on mobile VCT in the army. All participants who had VCT were satisfied with the service given.

Of all participants, 84.6% preferred integrated VCT services; of which 73.3% in the Army and 11.3% in the civilian health institutions. Most of the respondents (74.2%) preferred trained counselor followed by 20.1% physician to get VCT. About 64% respondents preferred confidential linked testing and 33% preferred anonymous testing. Preferred ways to obtain HIV test result were; 88.3% face to face and 11% by secretive letter (Table-4).

Among 487 HIV non-tested participants the multiple responses given for non-uptake of VCT were no near by service 38.8%, afraid to get the test result 33.9%, fear of stigma 17.7%, and partner and/or self-trust 13.8 % (Table-5).

Table-4: VCT service related factors of male military personnel, Northern Command Ethiopian Army, Eastern Tigray, October 2006

Variable	N=917 n (%)
Where do you prefer VCT clinics to be located?	
In the army health institutions	672(73.3)
In the civilian health institutions	104(11.3)
In the army, free standing	61(6.7)
In the civilian, free standing	25(2.7)
Any where	53(5.8)
Do not know	2(0.2)
By whom do you prefer to get VCT for HIV?	
Physician	184(20.1)
Nurse	16(1.7)
Trained counselor	680(74.2)
Religious leader	5(0.5)
Commander of your division	6(0.6)
HIV/AIDS positive people	18(2.0)
Others	8(0.9)
Which methods of testing do you prefer?	
Confidential, linked testing	590(64.3)
Anonymous testing	306(33.4)
Others	21(2.3)
Which way do you prefer to obtain HIV test result?	
Face to face	810(88.3)
Secretive letter	101(11.0)
Others	6(0.6)

Table-5: Reasons for not having VCT among non–users of VCT of male military personnel, Northern Command Ethiopian Army, Eastern Tigray, October 2006

Variable	N=487	n (%)
No near by service		**189(38.8)**
Afraid to get the result		**165(33.9)**
Fear of stigma		**86(17.7)**
Partner and self trust		**67(13.8)**
Do not trust the confidentiality		**28(5.7)**
Fear of job loss		**28(5.7)**
High cost for transportation		**18(3.7)**
No care and support service		**18(3.7)**
Afraid to ask permission for VCT		**17(3.5)**
Have no trust on the counselors		**15(3.1)**
Have no trust on the test kits		**14(2.9)**
No ART service in the Army		**13(2.7)**
Do not know where to get VCT		**13(2.7)**
Other reasons		**15(3.1)**

NB- multiple responses are possible

1. Comparison of Socio-Demographic Factors with VCT-uptake

Comparison of socio-demographic factors with VCT–Uptake revealed the following results. Bivariate analysis showed that respondents who belonged to age group 25-34 years were significantly less likely to have had VCT [COR with 95 %CI = 0.61(0.39,0.94)] though this did not remain significant in the logistic regression [AOR with 95 %CI = 0.63(0.37,1.08)]. Currently not married but living with sexual partner were significantly less likely to have had VCT both in bivariate and multivariate analysis. The study also showed that respondents with educational level of grade1–8 were significantly more likely to have had VCT in the bivariate analysis [OR with 95% CI = 11.58(1.14, 118.02)]; however failed to show significance in the multivariate analysis (Tables-6 and 10).

Respondents who did not discuss about HIV/AIDS with anyone in the family were significantly more likely to have had VCT in the bivariate analysis [COR with 95 %CI = 1.36 (1.04, 1.78)]. In the logistic regression, this changed direction when other variables controlled and those respondents who did not discuss about HIV/AIDS with anyone in the family were significantly less likely to have had VCT [AOR with 95 %CI = 0.72 (0.53, 0.97)] (Tables-6 and Table-10).

Religion, ethnicity, military ranks, service years and monthly salary did not show statistically significant association.

Table-6: Association of Socio–Demographic characteristics with VCT-Uptake of male military personnel, Northern Command, Eastern Tigray, October 2006

Variable	Total N (%)	VCT-Uptake Yes n	VCT-Uptake No n	COR (95%CI)
Age group in years (n=917)				
18 – 24	202(22.0)	104	98	1.00
25 – 34	575(62.7)	271	304	**0.61 (0.39,0.94)***
35 – 47	140(15.3)	55	85	0.73(0.50,1.06)
Religion (n = 917)				
Orthodox	667(72.7)	310	357	1.00
Muslim	159(17.3)	70	89	0.86(0.19,3.89)
Other Christians	84(9.2)	47	37	0.95(0.21,4.40)
Others	7(0.8)	3	4	0.59(0.12,2.80)
Ethnicity				
AMHARA	308(33.6)	150	158	1.00
OROMO	228(24.9)	110	118	0.83(0.48,1.41)
TIGRAY	172(18.8)	68	104	0.84(0.49,1.46)
WELAYTA	33(3.6)	19	14	1.20(0.68,2.13)
GURAGIE	20(2.2)	13	7	0.58(0.25,1.34)
SIDAMA	17(1.9)	11	6	0.42(0.15,1.19)
GAMO	17(1.9)	10	7	0.43(0.14,1.29)
SOMALIA	15(1.6)	4	11	0.55(0.19,1.62)
HADIA	13(1.4)	6	7	2.16(0.62,7.47)
BENSHANGUL/GUMZ	12(1.3)	4	8	0.91(0.28,3.02)
KEFA	9(1.0)	1	8	1.57(0.43,5.72)
KEMBATA	7(0.8)	5	2	6.25(0.74,52.77)
OTHERS	66(7.2)	29	37	0.31(0.06,1.73)
Educational Status (n=917)				
Illiterate	11(1.2)	1	10	1.00
1 – 8 grade	566(61.7)	257	309	**11.58(1.14,118.02) ***
9 – 12 grade	327(35.7)	165	162	1.40(0.47,4.23)
>12 grade	13(1.4)	7	6	1.15(0.38,3.48)
Service Years (n = 917)				
≤ 4	154(16.8)	77	77	1.00
5 – 9	598(65.2)	286	312	0.68(0.44,1.07)
≥ 10	165(18.0)	67	98	0.75(0.53,1.06)
Military Rank (n = 917)				
PVT (privates)	252(27.5)	121	131	1.00
Other ranks	587(64.0)	283	304	0.81(0.27,2.41)
Junior Officers	64(7.0)	20	44	0.81(0.28,2.35)
Higher Officers	14(1.5)	6	8	1.65(0.51,5.39)
Monthly salary in Birr (n = 917)				
500 – 650	616(67.2)	286	330	1.00
651 – 800	204(22.2)	108	96	0.72(0.35,1.46)
≥ 801	97(10.6)	36	61	0.83(0.37,1.86)
Current Marital status (n = 914)[d]				
Married, living with spouse	273 (29.8)	117	156	1.00
Married, living with other Sexual partner	12 (1.3)	4	8	1.03(0.74,1.43)
Married, not living with spouse or other sexual partner	137 (14.9)	76	61	1.54(0.45,5.23)
Not married, living with sexual partner	200 (21.8)	105	95	**0.62(0.41,0.93)***
Not married, not living with sexual partner	292 (31.8)	127	165	0.70(0.49,1.00)
Discussed about HIV/AIDS with anyone in the family (n = 914)[e]				
Yes	497(54.5)	250	247	1.00
No	417(45.5)	178	239	**1.36(1.04,1.78)***

[d] = Three cases responded as 'Do not know' not included in the analysis

[e] = One case responded as 'Do not know' and two cases as 'No response' not included in the analysis

*** = Statistically significant association at p-value < 0.05**

2. Comparison of Behavioral Factors with VCT-Uptake

High-risk behaviors like sex with commercial partner, number of non-regular non-commercial partner, frequency of condom use in high-risk sexual intercourse, past history of STI, and drug abuse ('khat' chewing) did not show statistically significant association with VCT-uptake (Table-7).

Those respondents who did not ever have sexual intercourse were found to be less likely to have VCT and the association was statistically significant in the logistic regression [OR with 95% CI = 0.46(0.22, 0.97)]. In the bivariate analysis respondents who did not ever have sexual intercourse showed a positive association with VCT-uptake, but it was not statistically significant [OR with 95% CI = 1.80(0.75, 3.03)] (Table-7 and 10).

Table-7: Association of Sexual Behaviors with VCT-Uptake of male military personnel, Northern Command, Eastern Tigray, October 2006

Variable	Total N (%)	VCT-Uptake Yes N	VCT-Uptake No n	COR(95%CI)
Ever had sexual intercourse (n = 917)				
Yes	877(95.6)	415	462	1.00
No	40(4.4)	15	25	1.50(0.75,3.03)
Age at first intercourse in years (n = 877)				
< 15	18(2.1)	9	9	1.00
15 – 19	428(48.8)	209	219	0.83(0.31,2.26)
20 – 24	321(36.6)	147	174	0.57(0.57,1.33)
≥ 25	110(12.5)	50	60	0.64(0.64,1.52)
Had sex with CSW during the last 12months (n=917)				
Yes	304(33.2)	145	159	1.00
No	613(66.8)	285	328	1.05(0.79,1.40)
Number of NRP had in the last 12 months (n = 917)				
0	810(88.3)	383	427	1.00
1	77(8.4)	36	41	0.65(0.31,1.39)
≥ 2	30(12.2)	11	19	0.66(0.28,1.57)
How often Condom used with CSW during the past 12 months (n = 304)				
Every time	267(87.8)	125	142	1.00
Almost every time	16(5.3)	8	8	0.76(0.13,4.61)
Sometimes	16(5.3)	10	6	0.67 (0.09,5.13)
Never	5(1.6)	2	3	0.40(0.05,3.13)
How often condom used with NRP during the past 12 months (n = 107)				
Every time	86(80.4)	36	50	1.00
Almost every time	4(3.7)	1	3	2.43(0.66,8.93)
Sometimes	6(5.6)	3	3	5.24(0.40,68.71)
Never	11(10.3)	7	4	1.75(0.23,13.16)
Ever had STI (n = 877)				
Yes	76(8.7)	29	47	1.00
No	801(91.3)	386	415	0.66(0.40,1.10)

3. Comparison of Cognitive and Social Factors with VCT-Uptake

No statistically significant association was found in relation to comprehensive knowledge about HIV/AIDS in both bivariate analysis and logistic regression. In the bivariate analysis, those respondents who did not know any HIV infected or died of AIDS person showed statistically significant positive association with VCT-uptake. However, in the logistic regression, the direction changed and respondents that did not know a person infected with HIV or died of AIDS were significantly less likely to have had VCT [AOR with 95%CI=0.69(0.49,0.97)] (Table-8 and 10).

Even though bivariate analysis showed significantly negative association between respondents who were knowledgeable about the uses of VCT and VCT-uptake, after controlling for other factors in logistic regression the direction of association changed and showed significantly positive association [AOR 95%CI=1.87(1.08,3.24)](Tabl-8& 10).

Those respondents who were unsure of their HIV status were less likely to use VCT and the association was statistically significant in both bivariate analysis [COR 95% CI=0.15(0.03, 0.67)] and logistic regression [AOR 95%CI=0.17(0.04, 0.80)] (Tab-8 &10).

Bivariate analysis revealed that those respondents who had low perceived self-efficacy to use VCT were significantly more likely to use VCT. However, this did not remain significant when controlled for other factors (Table-8 and 10).

Respondents who had low perceived outcome expectancy of having VCT were significantly more likely to have undergone VCT in both bivaraite [COR 95% CI=3.04 (1.59, 5.79)] and multivariate [AOR 95%CI=2.50(1.19, 5.25)] analysis (Tab-8 &10).

Stigma and discrimination failed to reveal statistically significant association with VCT–uptake in the bivariate analysis but in the logistic regression those respondents who had no stigmatizing or discriminating attitude towards PLWHA were significantly more likely to have undergone VCT (Table-8 and 10).

Table-8: Association of Knowledge on HIV/AIDS and VCT, and attitude towards PLWHA with VCT-Uptake of Male military personnel, Northern Command, Eastern Tigray, October 2006

Variable	Total	VCT-Uptake		COR (95%CI)
		Yes	No	
	N (%)	n	n	
Comprehensive knowledge about HIV/AIDS (N=917)				
Non–knowledgeable	329(35.9)	146	183	1.00
Knowledgeable	588(64.1)	284	304	0.85(0.65,1.12)
Knowledge on the uses of VCT (N=917)				
Non–knowledgeable	843(91.9)	384	459	1.00
Knowledgeable	74(8.1)	46	28	**0.51(0.30,0.85)***
Know anyone who is infected with HIV or died of AIDS (N=913)				
Yes	665(72.5)	328	337	1.00
No	248(27.0)	101	147	**1.42(1.04,1.92)***
Stigma and Discrimination towards PLWHA (N=917)				
Stigma Positive	568(61.9)	253	315	1.00
Stigma Negative	349(38.1)	177	172	0.78(0.59,1.03)
Perceived susceptibility to HIV/AIDS (N=917)				
Do you think you might have HIV infection?				
Yes	163(17.8)	47	116	1.00
No	655(71.4)	362	293	0.45(0.10,2.10)
May be	86(9.4)	19	67	0.15(0.03,0.67)*
Do not know	13(1.4)	2	11	0.64(0.13,3.15)
Outcome expectancy of using VCT (N=914)d				
How much true is the following statement to you?				
'If I got HIV test then it would relieve me to know my status.'				
Not at all true	63(6.9)	15	48	1.00
Barely true	82(8.9)	47	35	3.04(1.59,5.79)*
Some what true	576(62.8)	274	302	0.71(0.42,1.19)
Very true	193(21.0)	94	99	1.05(0.76,1.45)
Perceived self-efficacy to use VCT (N=912)e				
How much true is the following statement to you?				
'I am confident that I can get HIV test, even if there is stigmatization to PLWHA in the population'				
Not at all true	80(8.7)	27	53	1.00
Barely true	48(5.2)	16	32	1.82(1.04,3.18)*
Some what true	630(68.7)	311	319	1.85(0.94,3.65)
Very true	154(46.8)	74	80	0.95(0.67,1.35)

* = Statistically significant association at p-value < 0.05

[d] = Three cases responded as 'No response' not included in the analysis

[e] = Five case responded as 'No response' not included in the analysis

4. Comparison of Service Related Factors with VCT-Uptake

Both bivariate and multivariate analysis revealed that respondents who preferred VCT clinics located in the civilian health institutions significantly less likely to undergone VCT. Other VCT service related factors revealed no statistically significant association with VCT-Uptake (Table-9).

Table-9: Association of VCT service related factors with VCT-Uptake of Male military personnel, Northern Command Ethiopian Army, Eastern Tigray, October 2006

Variable	VCT-Uptake			
	Total N	Yes n	No n	COR (95%CI)
Where do you prefer VCT clinics to be located?(n=915) [d]				
In the army health institutions	672	331	341	1.00
In the civilian health institutions	104	46	58	**0.45(0.24,0.82)***
In the army, free standing	61	25	36	0.55(0.27,1.10)
In the civilian, free standing	25	11	14	0.62(0.29,1.36)
Any where	53	16	37	0.55(0.21,1.47)
By whom do you prefer to get VCT for HIV?(n=917)				
Physician	184	76	108	1.00
Nurse	16	6	10	0.20(0.03,1.69)
Trained counselor	680	336	344	0.24(0.02,2.44)
Religious leader	5	3	2	0.15(0.02,1.20)
Commander of your division	6	2	4	0.10(0.01,1.50)
HIV/AIDS positive people	18	6	12	0.29(0.02,4.24)
Others	8	1	7	0.29(0.03,2.89)
Which methods of testing do you prefer? (n=917)				
Confidential, linked testing	590	284	306	1.00
Anonymous testing	306	138	168	0.66(0.27,1.62)
Others	21	8	13	0.75(0.30,1.86)
Which way do you prefer to obtain HIV test result? (n=917)				
Face to face	810	394	416	1.00
Secretive letter	101	36	65	0.01(0.00,287.8)
Others	6	-	6	0.01(0.00,495.4)

[d] = Two cases that responded 'Do not know' not included in the analysis

* = Statistically significant association at p-value < 0.05

Multivariate Analysis of the Explanatory Variables with VCT-Uptake

Variables included in the logistic regression model were those showed significant association with VCT-uptake on the bivariate analysis and some selected important variables. In the logistic regression, 889(96.9%) study subjects were included. Among the socio-demographic variables: those who were currently not married but living with sexual partner, and those who discussed HIV/AIDS with a family showed statistically significant association with VCT-uptake. From the behavioral factors, those respondents who had ever had no sexual contact showed statistically significant association with VCT-uptake. Among the cognitive variables: those who knew a person HIV infected or died of AIDS, those who were knowledgeable about the uses of VCT, those who were unsure of their HIV status, and those who had low perceived outcome expectancy showed statistically significant association with VCT–uptake. Moreover, of the social variable those who had non-stigmatizing attitude towards PLWHA showed statistically significant positive association with VCT–uptake. Among VCT service related factors both bivariate and multivariate analysis revealed that respondents who preferred VCT clinics located in the civilian health institutions significantly less likely to undergone VCT (Table-10).

Among variables included in the logistic regression age group, educational status, comprehensive knowledge about HIV/AIDS, and perceived self-efficacy to have VCT failed to reveal statistically significant association with VCT-uptake (Table-10).

Table-10: Comparison of socio-demographic, behavioral and cognitive factors with VCT-Uptake of Male military personnel, Northern Command, Eastern Tigray, October 2006

	VCT - UPTAKE			
	COR(95%CI)	**P value**	**AOR(95%CI)**	**P value**
Age group in years				
18 – 24	1.00		1.00	
25 – 34	**0.61 (0.39,0.94)***	**0.027**	0.63(0.37,1.08)	0.094
35 – 47	0.73(0.50,1.06)	0.095	0.73(0.48,1.12)	0.144
Educational status				
ILLITERATE	1.00		1.00	
Grade 1 – 8	**11.58(1.14,118.02)**	**0.039**	10.61(0.89,126)	0.061
Grade 9 – 12	1.40(0.47,4.23)	0.548	1.53(0.44,5.36)	0.505
Above Grade 12	1.15(0.38,3.48)	0.811	1.41(0.40,4.97)	0.592
Current marital status				
Currently Married, living with spouse	1.00		1.00	
Currently Married living with other sexual partner	1.03(0.74,1.43)	0.879	1.22(0.80,1.86)	0.355
Currently Married, not living with spouse or other sexual partner	1.54(0.45,5.23)	0.489	1.33(0.35,5.03)	0.675
Currently not Married, living with sexual partner	**0.62(0.41,0.93)***	**0.021**	**0.52(0.32,0.84)✠**	**0.008**
Currently not Married, not living with sexual partner	0.70(0.49,1.00)*	**0.027**	0.66(0.44,1.01)	0.056
Discussed about HIV/AIDS with anyone in the family				
Yes	1.00		1.00	
No	**1.36(1.04,1.78)***	**0.022**	**0.72(0.53,0.97)✠**	**0.032**
Ever had sexual intercourse				
Yes	1.00		1.00	
No	1.50(0.75,3.03)	0.226	**0.46(0.22,0.97)✠**	**0.042**
Comprehensive knowledge about HIV/AIDS				
Non-knowledgeable	1.00		1.00	
Knowledgeable	0.85(0.65,1.12)	0.254	1.11(0.82,1.51)	0.500
Knowledge on the uses of VCT				
Non-knowledgeable	1.00		1.00	
Knowledgeable	**0.51(0.30,0.85)***	**0.007**	**1.87(1.08,3.24)✠**	**0.025**
Know anyone who is infected with HIV or died of AIDS.				
Yes	1.00		1.00	
No	**1.42(1.04,1.92)***	**0.021**	**0.69(0.49,0.97)✠**	**0.032**
Stigma and Discrimination towards PLWHA				
Stigma positive	1.00		1.00	
Stigma negative	0.78(0.59,1.03)	0.069	**1.35(1.01,1.82)✠**	**0.047**
Perceived susceptibility to HIV/AIDS				
Yes	1.00		1.00	
No	0.45(0.10,2.10)	0.309	0.51(0.10,2.51)	0.405
May be	**0.15(0.03,0.67)***	**0.013**	**0.17(0.04,0.80)✠**	**0.025**
Do not know	0.64(0.13,3.15)	0.584	0.83(0.16,4.28)	0.819
How much true is the following statement to you? 'If I got HIV test then it would relieve me to know my status.'				
Not at all true	1.00		1.00	
Barely true	**3.04(1.59,5.79)***	**0.001**	**2.50(1.19,5.25)✠**	**0.015**
Some what true	0.71(0.42,1.19)	0.192	0.68(0.37,1.27)	0.229
Very true	1.05(0.76,1.45)	0.785	1.04(0.69,1.58)	0.850
How much true is the following statement to you? 'I am confident that I can get HIV test, even if there is stigmatization towards PLWHA in the population.'				
Not at all true	1.00		1.00	
Barely true	**1.82(1.04,3.18)***	**0.037**	1.25(0.64,2.44)	0.521
Some what true	1.85(0.94,3.65)	0.076	1.40(0.66,2.99)	0.384
Very true	0.95(0.67,1.35)	0.770	0.86(0.55,1.34)	0.498
Where do you prefer VCT clinics to be located?				
In the army health institutions	1.00		1.00	
In the civilian health institutions	**0.45(0.24,0.82)***	**0.009**	**0.44(0.23,0.85)✠**	**0.015**
In the army, free standing	0.55(0.27,1.10)	0.091	0.52(0.24,1.11)	0.091
In the civilian, free standing	0.62(0.29,1.36)	.0.233	0.51(0.22,1.20)	0.124
Any where	0.55(0.21,1.47)	0.234	0.40(0.13,1.20)	0.102

✠_= Statistically significant association with VCT-Uptake at p-value < 0.05 in the multivariate analysis using logistic regression. AOR = Adjusted Odds Ratio

* =Statistically significant association with VCT-Uptake at p-value < 0.05 in the bivariate analysis using crude Odds Ratio (COR). N = 899 cases included in the Regression Model

DISCUSSION

Using multiple logistic regression analysis, controlling for various demographic characteristics, as well as behavioral, cognitive, social, and VCT service related factors; it was found that soldiers with the following characteristics were most likely to have undergone VCT. Those who discussed HIV/AIDS with in the family, those who ever had sexual contact, those who knew a person infected with HIV or died of AIDS, those who were knowledgeable about the uses of VCT, those who had low perceived outcome expectancy, and those who had non-stigmatizing attitude towards PLWHA. On the other hand it was found that soldiers with the following characteristics were less likely to have undergone VCT: those who were currently not married but living with sexual partner, those who had uncertainty about their HIV status, and those who preferred integrated VCT clinics located in the civilian health institution.

The study showed that 45.9% of male military members of the division had voluntary counseling and testing for HIV. The finding that 45.9% rate of VCT-uptake in this study is much higher than the BSS round one report, 15.6%, on the Ground forces in 2002 [(3)]. Our finding is also higher than the VCT-uptake report (25.6%) of a study done to assess condom use in another division of the Northern command, eastern Tigray, in 2005 [(20)]. Surprisingly, our finding is almost equal to the finding of BSS round two on the Ground forces, 45.8% (unpublished document) [(21)]. This finding can go with the wider promotion and growing availability of both integrated and mobile VCT centers in the army as well as in the civilian health facilities. It could also be explained by the rising antiretroviral therapy availability in the Army. Additionally, as seen from this study compared to some five years back, decreasing negative attitude towards PLWHA could have some

contribution to the increased rate of VCT-uptake. In our study, 61.9% of the respondents had at least one stigmatizing attitude towards PLWHA compared to the report of BSS Ethiopia 2002 on Ground forces, 93.3% [3]. According to the report of UNAIDS AIDS epidemic report of 2005 availability of ART leads to greater uptake of HIV test and contrary to this stigma attached to AIDS is a major reason for not having VCT [1, 16]. Though this rate is higher compared to previous study reports of the army, it is still unsatisfactory compared with the burden of HIV/AIDS and the palliative management available for PLWHA.

Among the socio-demographic factors, respondents who were currently not married but living with sexual partner could be involved in high-risk sexual practice in the past and might be afraid of HIV positive test result. As a result, they might have declined from having VCT compared with the other current marital status categories. There are reports that decliners of HIV testing being more likely to be HIV positive than accepters of testing [9, 14, 15]. On the other hand, currently married respondents could have more chance to have VCT as a prerequisite for marriage, or they might discuss with their spouse about VCT and that might have increased their self-efficacy to have VCT. This finding is consistent with a study done on acceptance of VCT among ANC attendants at Armed Forces General Hospital in 2005. The study reported high rate of acceptance of VCT among pregnant mothers who were married and inhabit together with their husbands compared to their counterparts. [10]

Discussion with anyone in the family also showed statistically significant and positive association with VCT-Uptake. Open communication in the family might reduce their fear

of positive test result and fear of stigma and discrimination. Thus, this might possibly increased their self-efficacy to have VCT compared to non-discussants. This finding is consistent with most studies done on VCT-Uptake. A national household-based survey of HIV/AIDS that utilized the second-generation surveillance survey approach conducted during 2002 in South Africa reported that those who discussed about HIV/AIDS prevention with their partner were most likely to have undergone VCT [13, 27]. In contrary to this, those who discussed about HIV/AIDS with their family might be because of their prior VCT-uptake.

Out of all respondents, 40(4.4%) ever had no sex. Those respondents who did not ever have sex were found to be less likely to have VCT and the association was statistically significant in the logistic regression. This could be explained as respondents who ever had no sexual intercourse may not consider that undergoing for VCT is basic for them. Studies showed that effect of past sexual practice has controversial effect on VCT-uptake. A master thesis on factors related to VCT among 15 – 49 years in urban community of Ethiopia shown that condom use and not having previous sexual practice were independent predictor of intention of having VCT [9]. In contrary to this a review of articles and abstracts published from 1985 to 1995, which addressed determinants of counseling and testing acceptance, indicated acceptance was generally higher (> 50%) among persons at high risk for acquiring or transmitting the infection (e.g., STD patients, pregnant women at high risk) than among low-risk persons [14].

Our study also revealed that those who knew HIV infected person or who died of AIDS were more likely to have undergone VCT compared with their counterparts did. This might

have increased their knowledge about the burden of HIV/AIDS and advantage of early detection of the disease compared to those who did not know HIV infected person or who died of AIDS. On the other hand, this might also be a motivational rather than a cognitive issue and might be raised their self-efficacy to have undergone VCT. This finding is also consistent with the finding of the national survey of HIV/AIDS during 2002 in South Africa [13].

Both bivariate analysis and logistic regression revealed that those who were unsure of their HIV status were less likely to have undergone VCT. As many studies done on VCT acceptance those people who were not sure of their HIV status might have been involved in high-risk behaviors that exposed them to HIV in the past. Thus, they might be afraid of undergoing VCT due to fear of positive test result. This finding goes with many other studies [7, 15]. Another study done in an obstetric setting in the USA indicated that self-perceived risk correlates with testing behavior. The client's perception of HIV risk and acknowledging risk behaviors were some of the factors mentioned that had association with high acceptance rates of VCT [14].

Knowledge about the uses of voluntary counseling and testing for HIV also showed statistically significant and positive association with VCT-uptake in the multivariate analysis. Those knowledgeable about the uses of VCT were more likely to undergone VCT more than two times higher than non-knowledgeable about its uses. This could be due to their knowledge on the benefits of having VCT whatever the test outcome might be. A study done to assess factors determining acceptance of voluntary HIV testing among pregnant women attending antenatal clinic at Armed Forces General Hospital

indicated that women who had better knowledge of VCT and MTCT had significantly higher VCT acceptance than their counterparts did [10]. In contrast to this, their knowledge about the purpose of VCT might come secondary to their prior VCT utilization. This might be evidence for how quality VCT service is useful to develop positive attitude towards VCT-uptake.

Respondents who had low perceived outcome expectancy of having VCT were more likely to have undergone VCT in both bivaraite and multivariate analysis. This finding is actually opposite to what is expected to happen. This could be explained by misunderstanding among respondents about the graded options put to assess outcome expectancy. It is natural that most people try to perform things that they assume might have good outcome.

Of all respondents, 61.9% had at least one stigmatizing attitude towards PLWHA and the remaining 38.1% had no stigmatizing attitude towards PLWHA. This result shows that there is substantial reduction on the level of stigma in the army as compared to the BSS Ethiopia one report, 93.3% of the ground forces were had at least one stigmatizing attitude [3]. This finding could be explained by growing rate of VCT-uptake and comprehensive knowledge about HIV/AID. Our study revealed that the chance of being tested for HIV was 39% higher among respondents who had no stigmatizing attitude towards PLWHA compared to those respondents who had at least one stigmatizing attitude towards PLWHA. As this is a cross-sectional study, it is difficult to explain

which comes first. However, many studies revealed that fear of positive result and stigma attached to AIDS is a major reason for not having VCT [1, 12, 16, 17].

Regarding preference of VCT clinics location, our study revealed that respondents who preferred integrated VCT clinics located in the civilian society were found to be less likely to undergone VCT compared to their counterparts both in the bivariate and multivariate analysis. This could be explained as those who preferred civilian integrated VCT clinics could be afraid of stigma, doubt the confidentiality of VCT or fear not to loss job to undergo VCT in the army VCT clinics. This finding goes with other studies findings [17].It could also be as a result of inability to get civilian integrated VCT clinics near their camps.

Regarding preference of VCT model, counselor qualification, and method of receiving HIV test result showed no significant difference between tested and not tested respondents. Majority of the respondents preferred confidential testing; trained counselor; integrated VCT and face-to-face method of obtaining test result.

Some of the common reasons given for unmet need, by non-VCT users were; no near by VCT service, afraid to get the result, fear of stigma, partner and self trust, do not trust the confidentiality, fear of job loss, high cost for transportation, no care and support service in the army, and afraid to ask permission to go for VCT.

STRENGTH AND LIMITATION

Strengths

1. Study subjects selected randomly
2. Large number of study units included to increase the precision
3. Regular daily supervision of interviewers and checking of the completeness and accuracy of data was carried out to ensure quality by supervisor and investigator
4. Multivariate analysis using logistic regression model was performed to control for possible confounding effect of certain variables

Limitations

1. As any cross-sectional study, cause and effect relationship was not possible to establish for the factors dealt in the study: for example VCT-uptake with discussion about HIV/AIDS in a family, VCT-uptake with knowledge about the uses of VCT
2. The factors expected to determine VCT-uptake in our study may not be exhaustive
3. Our study not supported by Qualitative study

Conclusion

1. The finding of this study indicated that rate of VCT utilization in the study population was 45.9% and it is higher than previous study reports of the Army.
2. Factors significantly influencing VCT-Uptake in the study population were: current marital status of not married but living with sexual partner, discussion about HIV/AIDS in a family, ever had no sexual contact, proximity to HIV/AIDS, uncertainty about once own HIV status, low perceived outcome expectancy, knowledgeable on the uses of VCT, non-stigmatizing attitude towards PLWHA, and preference of integrated VCT clinics located in the civilian society.
3. Some of the common reasons given for unmet need, by non-VCT users were: inaccessibility of service, afraid to get the result, fear of stigma, partner and/or self trust, do not trust the confidentiality, fear of job loss (job insecurity), high cost for transportation, no care and support service in the army, and afraid to ask permission for VCT.

Recommendations

1. Scale up the number of both fixed and mobile VCT clinics in the army as well as in civilian health services,
2. This study has shown that many variables are correlated to VCT-uptake. We recommend that intervention be aimed at those variables showed correlation with VCT-uptake such as:
    - Those who were currently not married but living with sexual partner /making VCT/PMTCT/ART services accessible and available for free to partner's of the army members that are living together/,
    - discussion about HIV/AIDS in a family,
    - ever had no sexual contact /encourage abstinence and delay in initiation of sex/,
    - proximity to HIV/AIDS /encourage army members that are living with HIV/AIDS to share their experience in their unit/,
    - uncertainty about once own HIV status, knowledge on the uses of VCT, and non-stigmatizing attitude towards PLWHA /scale up the behavioral change communication intervention using MARCH approach to all units of the army/
3. Furthermore, we recommend that qualitative research be conducted to identify which of these correlations have a causal relationship to VCT-uptake.
4. Strengthen Civil-Military Alliance(CMA) to Combat HIV/AIDS and have a referral system to those who leave the army and join their respective communities
5. Strengthen and upgrade Provider Initiated HIV Counseling and Testing (PIHCT).
6. Integrate VCT services with other services like STI, TB, ART, and PMTCT.

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ANNEXE-I - Operational Definitions

Anonymous HIV Testing - clients' identifying information is not linked to testing information

"Commercial" partners - partners with whom you had sex in exchange for money

Confidential HIV Testing - client's identifying information is linked to testing information

Comprehensive knowledge about HIV/AIDS- Respondents were considered to have comprehensive knowledge about HIV/AIDS if they were both knowledgeable about the three HIV/AIDS prevention methods and had no incorrect beliefs about HIV/AIDS transmission

Discrimination- to make a distinction or to give unfair treatment on the basis of a person's actual or assumed HIV positive status

Junior Officers - Officers with ranks of second lieutenant, lieutenant and captain

Knowledge about HIV prevention- respondents were considered to be knowledgeable about HIV prevention if they were correctly identified the three main ways to prevent HIV transmission: abstinence, faithful to one uninfected partner, and condom use

Knowledgeable about VCT- respondents were considered to be knowledgeable about VCT if they were correctly identified the three main uses of VCT for HIV: providing entry point for care and support, promoting safe behavior, and break the vicious circle of stigma

Misconception-Respondents were considered to have misconception about HIV/AIDS transmission if they agreed incorrectly to the following three statements about HIV/AIDS: a mosquito bite can transmit HIV, sharing meal with someone who is HIV positive can transmit HIV, and a healthy-looking person cannot be infected with HIV

"Non-regular" partners -Sexual partners that you are not married to and have never lived with and did not pay; do not include current spouse(s) or live-in sexual partner(s)

Other Ranks - have rank other than officer (Lance-corporals, Corporals, and Sergeants)

"Regular" partners - spouse(s) or live-in sexual partners

Senior Officer - Officers, with ranks of major, lieutenant- colonel and colonel

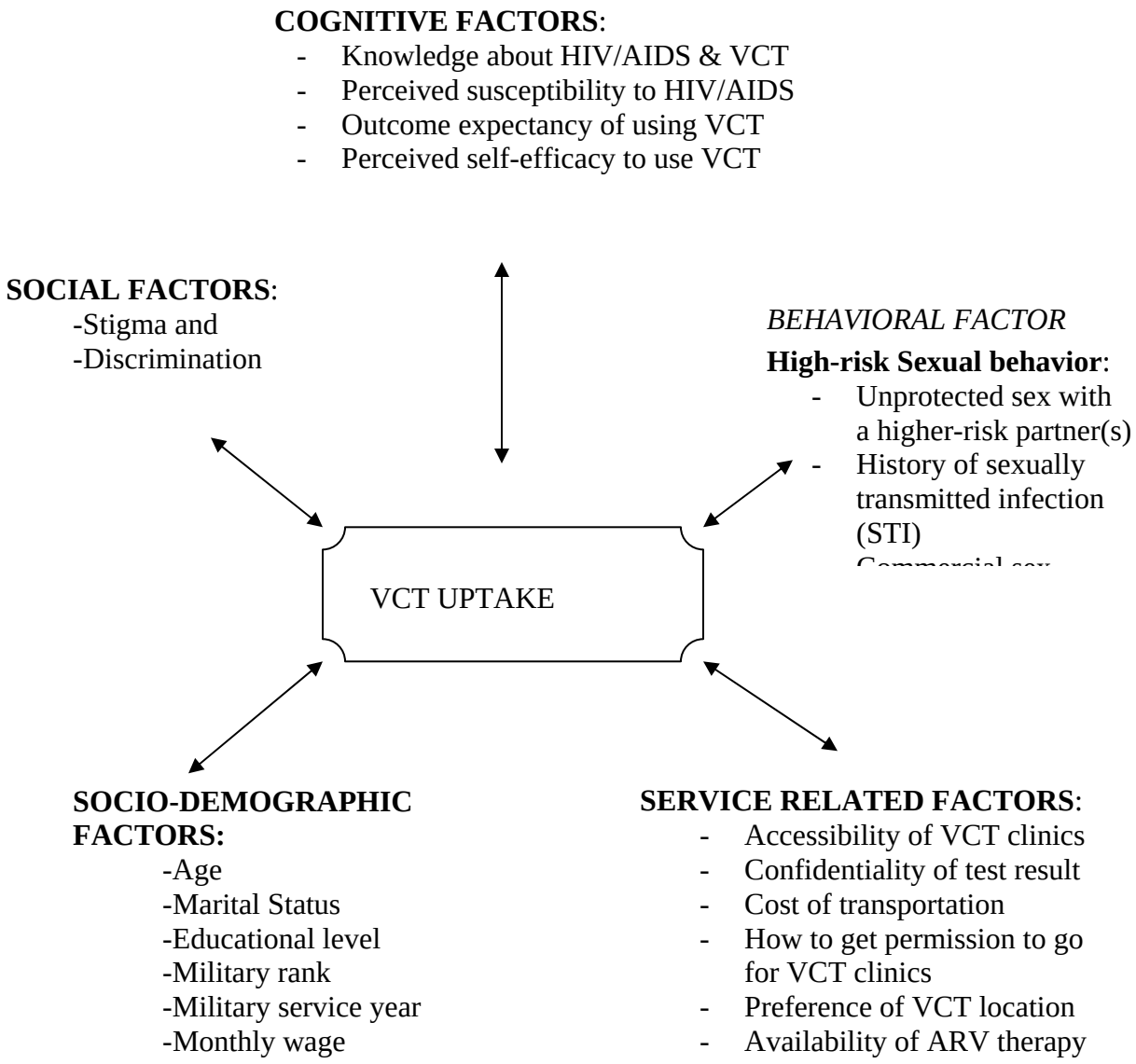
Stigma –negative feeling towards people with HIV/AIDS, intention to avoid people living with HIV/AIDS from social relationship

Stigma and Discrimination Negative- individuals who answered correctly all the 7 stigma and discrimination questions (Q501 – Q505, Q507 and Q509)

Stigma and Discrimination Positive- individuals with at least one stigmatizing or discriminating response

VCT uptake – respondents who used voluntary counseling and testing for HIV

ANNEXE-II- Conceptual Framework



ANNEXE-III- Schematic Presentation of Sampling Procedure of Study Subjects

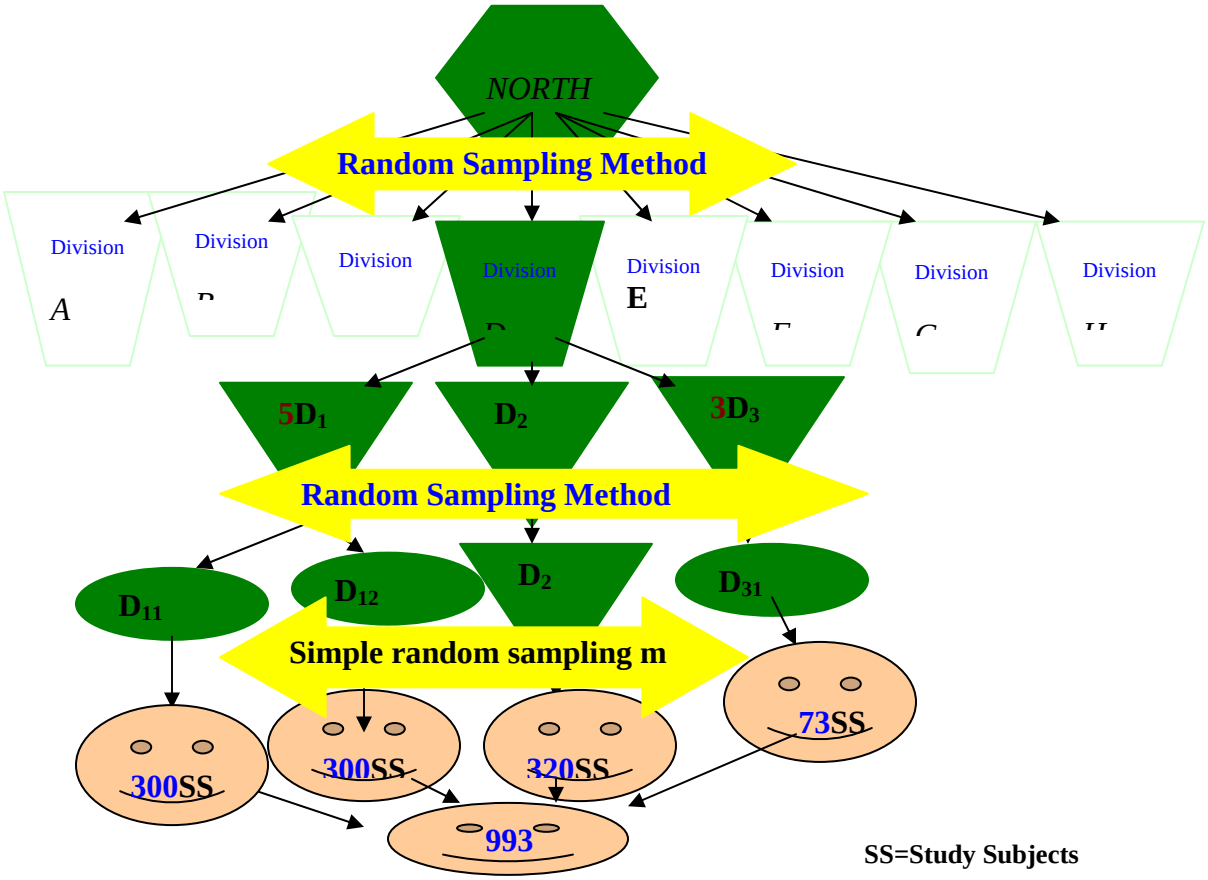


Figure 1. Schematic presentation of sampling procedure of study subjects, Northern Command, October 2006.

ANNEX-IV- English Version Structured Standardized Questionnaire

Addis Ababa University

Faculty of Medicine

Department of community health

Questionnaire for data collection to determine uptake and determinants of voluntary counseling and testing for HIV *in male military personnel 0f* Northern Command of National Defense Forces of Ethiopia, Eastern Tigray, October 2006

Ser. No_____
Time at the beginning of interview _____
001 Questionnaire Identification Number |___|___|___|

002 Command - North Command

003 Division -D

004 Unit- 1= **D_2** 2= **D_{11}** 3= **D_{12}** 4= **D_{31}**

005 Study participant 1= **VCT users** 2= **Non-VCT users**

Introduction: "My name is _____. I'm working for the National Defense Forces of Ethiopia Department of Health. We are here interviewing soldiers, like you; in the Division D in order to determine utilization rate of voluntary counseling and testing for HIV (VCT) and factors affecting VCT utilization in the army. The purpose of the study is to generate information necessary for the planning of appropriate interventions for effective HIV prevention through quality VCT service provision to the Army.

CONSENT FORM

Confidentiality and consent: "I'm going to ask you some very personal questions that some people find difficult to answer. Your answers are completely confidential. Your name will not be written on this form, and will never be used in connection with any of the information you tell me. You do not have to answer any questions that you do not want to answer, and you may end this interview at any time you want to. However, your honest answers to these questions will help us better understand what people think, say and do about certain kinds of behaviors. We would greatly appreciate your help in responding to this survey. The survey will take about XX minutes to ask the questions. Would you be willing to participate?"

1. If YES- proceed to the interview
2. If No- thank the participant and stop the interview.

_____

(Signature of interviewer certifying that informed consent has been given verbally by respondent)

Interviewer visit

	Visit 1	Visit 2	Visit 3
Date			
Interviewer			
Result			

006 Result Code **1. Completed 2. Respondent not available 3. Refused 4. Partially completed 5.Other_____**

Interviewer Name _____ Signature _____

Checked by supervisor: Name_____Signature_____

Date____/____/_____

Questionnaire has the following parts:

SECTION	TITLE	NUMBER OF QUESTIONS
0	Questionnaire identification data	06
1	Background characteristics	16
2	Sexual history and condom	08
3	Knowledge and attitudes towards HIV/AIDS	22
4	Knowledge, attitudes, practice and perception towards VCT and VCT service related issues	24
5	stigma and discrimination	09
	TOTAL NUMBER OF QUESTIONS	**85**

Section-1: Socio-Demographic characteristics

No.	*Questions and filters*	Coding categories	Skip to
Q 101	How old were you at your last birthday?	AGE IN COMPLETED YEARS [__|__] DON'T KNOW 88 NO RESPONSE 99	
Q102	What religion are you? **READ OUT** ***CIRCLE ONE***	ORTHODOX 1 CATHOLIC 2 PROTESTANT 3 MUSLIM 4 NO RELIGION 5 OTHERS (SPECIFY)_____6 DON'T KNOW 88 NO RESPONSE 99	
Q103	To which ethnic group do you belong?	Amhara 1 Oromo 2 Tigray 3 SNNP 4 Others, specify _____ 5 No response 99	
Q104	Have you ever attended school?	YES 1 NO 2 NO RESPONSE 99	→ **Q106**
Q105	What is the highest level of education you completed? **CIRCLE ONE**	Read and write 1 Grade 1-4 2 Grade 5-8 3 Grade 9-10 4 Grade 11-12 5 Above grade 12 6 NO RESPONSE 99	
Q106	Have you **ever** been married?	YES 1 NO 2 NO RESPONSE 99	→**Q108**
Q107	How old were you when you **first** married?	Age in years [__|__] DON'T KNOW 88 NO RESPONSE 99	
Q108	Are you ***currently*** married or living with a woman with whom you have a sexual relationship? *** Read out** *** Circle one**	Currently married, living with spouse 1 Currently married, living with other sexual partner 2 Currently married, not living with spouse or any other sexual partner 3 Not married, living with sexual partner 4 Not married, not living with sexual partner 5 Don't Know 88 NO RESPONSE 99	
Q109	How long have you served in the army?	Nº. OF YEARS SERVED [__|__] ***LESS THAN ONE YEAR 00*** DON'T KNOW 88 NO RESPONSE 99	

No.	*Questions and filters*	Coding categories	Skip to
Q110	What is your present military rank? • **Other ranks** – L/C Cpl., Cpl., Sgt. • **Junior officer** - 2nd Lt., Lt., Capt. • **Senior officer** - From major to general	Private soldier 1 Other ranks 2 Junior officer 3 Senior officer 4	
Q111	What is your present military position?	No responsibility 1 Squad leader 2 Platoon leader 3 Company command or staff 4 Regiment command or staff 5 Division command or staff 6 Team leader 7 Others, specify_____8 Don't Know 88 No Response 99	
Q112	How long have you stayed at this deployment site?	NO.OF YEARS [__|__] **LESS THAN 1 YEAR 00** DON'T KNOW 88 NO RESPONSE 99	
Q113	In the last 12 months have you been away from your unit for vacation or other purpose for more than one month?	YES 1 NO 2 DON'T KNOW 88 NO RESPONSE 99	
Q114	How much did you earn monthly in Ethiopian Birr?	BIRR [__|__] DON'T KNOW 88 NO RESPONSE 99	
Q115	During the last 4 weeks how often have you had drinks containing alcohol? Would you say …..**READ OUT CIRCLE ONE**	Every day 1 At least once a week 2 Less than once a week 3 Never 4 DON'T KNOW 88 NO RESPONSE 99	
Q116	Some people have tried a range of different types of drugs. Which of the following, if any, have you tried? **READ LIST**	Yes No No response Chat ……1..…2 ……99 Shisha/Gaya… 1.… 2 …….99 Hashish ……1… .2 ……99 Benzene… 1.… 2 ……99 Cocaine. ……1…. 2 …….99	

Section-2: Sexual history and Condom use

No.	Questions and filters	Coding categories	Skip to
Q201	Have you ***ever*** had sexual intercourse? [**For the purposes of this survey, "sexual intercourse," is defined as vaginal sex.**]	YES 1 NO 2 NO RESPONSE 99	→Q301
Q202	At what age did you first have sexual intercourse? **PROBE**	AGE IN YEARS [__|__] DON'T KNOW 88 NO RESPONSE 99	
Q203	Have you had sexual intercourse in the last 12 months?	YES 1 NO 2 NO RESPONSE 99	→Q208
Q204	Think about the female sexual partners you've had in the last 12 months. **How many were:** - Your spouse(s) or live-in sexual partners **(*"regular" partners)*** - ***"Commercial"*** (partners with whom you had sex in exchange for money) - Sexual partners that you are not married to and have never lived with and did not pay **(*"non-regular" partners*)** –DO NOT INCLUDE CURRENT SPOUSE (S) OR LIVE-IN SEXUAL PARTNER (S)	**REGULAR** [__|__] DON'T KNOW 88 NO RESPONSE 99 **COMMERCIAL** [__|__] DON'T KNOW 88 NO RESPONSE 99 **NON-REGULAR** [__|__] DON'T KNOW 88 NO RESPONSE 99	
Q205	With what frequency did you use a condom with your recent regular partner during the past 12 months?	EVERY TIME 1 ALMOST EVERY TIME 2 SOMETIMES 3 NEVER 4 DON'T KNOW 88 NO RESPONSE 99	
Q206	With what frequency did you and all of your commercial partner(s) use a condom during the past 12 months?	EVERY TIME 1 ALMOST EVERY TIME 2 SOMETIMES 3 NEVER 4 DON'T KNOW 88 NO RESPONSE 99	
Q207	With what frequency did you and all of your non-regular, non-commercial partner(s) use a condom during the past 12 months? ASK MOST RECENT AND THEN ALL	EVERY TIME 1 ALMOST EVERY TIME 2 SOMETIMES 3 NEVER 4 DON'T KNOW 88 NO RESPONSE 99	
Q208	Have you ever had any STI?	Yes 1 No 2 No response 99	

Section-3: Knowledge and Attitudes towards HIV/AIDS

No.	Questions and filters	Coding categories	Skip to
Q301	Have you ever heard of HIV or the disease called AIDS?	YES 1 NO 2 NO RESPONSE 99	→ Q401
Q302a	Do you know anyone who is infected with HIV or who has died of AIDS?	YES 1 NO 2 DON'T KNOW 88 NO RESPONSE 99	→Q303 →Q303
Q302b	Do you have a close relative or close friend who is infected with HIV or has died of AIDS?	YES, A CLOSE RELATIVE 1 **YES, A CLOSE FRIEND 2** YES, BOTH 3 NO 4 NO RESPONSE 99	
Q303	Can people protect themselves from the HIV virus that causes AIDS by using a condom correctly every time they have sex?	YES 1 NO 2 DON'T KNOW 88 NO RESPONSE 99	
Q304	Can a person get the HIV from mosquito bites?	YES 1 NO 2 DON'T KNOW 88 NO RESPONSE 99	
Q305	Can people protect themselves from HIV by having one uninfected faithful sex partner? (**Excluding other transmission routes i.e. blood transfusion, contaminated sharp instruments**)	YES 1 NO 2 DON'T KNOW 88 NO RESPONSE 99	
Q306	Can people protect themselves from HIV by abstaining from sexual intercourse? **(Excluding other transmission routes i.e. blood transfusion, contaminated sharp instruments)**	YES 1 NO 2 DON'T KNOW 88 NO RESPONSE 99	
Q307	Can a person get HIV by sharing a meal with someone who is infected?	YES 1 NO 2 DON'T KNOW 88 NO RESPONSE 99	
Q308	Can a person get HIV by getting injections with a needle that was already used by someone else?	YES 1 NO 2 DON'T KNOW 88 NO RESPONSE 99	
Q309	Do you think that a healthy-looking person can be infected with HIV, the virus that causes AIDS?	YES 1 NO 2 DON'T KNOW 88 NO RESPONSE 99	
Q310	Can a person get HIV from eating raw meat prepared by a person infected by HIV?	YES 1 NO 2 DON'T KNOW 88 NO RESPONSE 99	

Section-3: Knowledge and Attitudes towards HIV/AIDS ***cont***

No.	Questions and filters	Coding categories	Skip to
Q311	Do you think drinking hard licker and eating hot pepper prevents HIV/AIDS?	YES 1 NO 2 DON'T KNOW 88 NO RESPONSE 99	
Q312	Do you think you might be infected by HIV?	Yes 1 No 2 May be 3 DON'T KNOW 88 No response 99	→**Q314**
Q313	If yes, for Q312 why at risk?	More than one sexual partner 1 Have had sex without condom 2 Have had sexual intercourse with CSW 3 Injuries with contaminated sharps 4 Blood transfusion 5 Others (specify) _____6 DON'T KNOW 88 NO RESPONSE 99	
Q314	If No, for Q312 why not at risk?	Have never made sexual intercourse 1 I have abstained from sex 2 One faithful partner 3 Did not share injection 4 I always use condom 5 Because I was tested and know my status 6 Others (specify) _____6 DON'T KNOW 88 NO RESPONSE 99	
Q315	How can a person find out if he/she has HIV/AIDS? (Multiple response is possible, Probing is needed)	Simply by looking 1 By physical examination, of health personnel 2 By going to Traditional healer/wizard 3 By going to counseling/testing service 4 Other (specify)_____ ___5 DON'T KNOW 88 NO RESPONSE 99	
Q316	Can a pregnant woman infected with HIV or AIDS transmit the virus to her unborn child?	Yes 1 No 2 I do not know 88 No response 99	
Q317	Can a woman with HIV/AIDS transmit the virus to her newborn child through breast-feeding?	Yes 1 No 2 I do not know 88 No response 99	
Q318a	In the past 12 months, other than in a peer education group, have you discussed HIV/AIDS with other soldiers in your unit?	YES 1 NO 2 DON'T REMEMBER 88 NO RESPONSE 99	
Q318b	In the past 12 months, other than your regular partner, have you discussed HIV/AIDS with anyone in your family?	YES 1 NO 2 DON'T REMEMBER 88 NO RESPONSE 99	
Q318c	In the past 12 months, have you discussed HIV/AIDS with anyone else?	YES 1 NO 2 DON'T REMEMBER 88 NO RESPONSE 99	→**Q318d** →**Q401** →**Q401** →**Q401**
Q318d		YES NO 1. A health care worker 1 2 2. A religious leader 1 2 3. An officer 1 2 4. Someone from the community around base 1 2 5. Specify_____1 2	

Section-4: knowledge, Attitude and Practice of VCT & service related issues

No.	Questions and filters	Coding categories	Skip to
Q401	Have you ever heard of Voluntary Counseling and Testing for HIV?	Yes 1 No 2	 →Q501
Q402	If yes from where did you get this information? (**Multiple response is possible**)	Friends 1 Peer educators 2 Family 3 Anti-AIDS club 4 Mass media 5 Health workers 6 Newsletter ('Wegagen') 7 Others (Specify)_____ 8	
Q403	Is VCT important?	Yes 1 No 2 DON'T KNOW 88 NO RESPONSE 99	 →Q405 →Q405
Q404	If yes what are the uses of VCT? (**Multiple response is possible**)	Providing entry point for care and support 1 Promoting safe behavior 2 Break the vicious circle of stigma 3 Others (specify)_____4 DON'T KNOW 88 NO RESPONSE 99	
Q405	Who do you think benefit by using VCT? (**Multiple response is possible**)	HIV positive person 1 HIV negative person 2 Both HIV positive and negative 3 Don't know 88 No response 99	
Q406	Generally, who should go for an HIV/AIDS test? (**Multiple response is possible**)	Yes No DN NR 1. Sex workers 1 2 88 99 2. Clients of sex workers 1 2 88 99 3. Soldiers 1 2 88 99 4. Drivers, Traveling sales persons 1 2 88 99 5. Those with multiple partners 1 2 88 99 6. Those who are sick 1 2 88 99 7. Any one sexually active 1 2 88 99 8 Any one at risk 1 2 88 99 9. Any one 1 2 88 99	
Q407	Under what circumstances do you think a person should test for HIV?	Any time 1 During illness 2 Before Marriage 3 During travel to abroad 4 During Recruitment 5 Before and during Pregnancy 6 During Problem 7 Others (specify) _ _____ ____8 Do not know 88 No response 99	

Section-4: knowledge, Attitude, and Practice of VCT & service related issues *cont*

No.	Questions and filters	Coding categories	Skip to

Q408	Where do you prefer VCT services be delivered?	In the army health institutions 1 In the civilian health institutions 2 In the army, free standing 3 In the civilian, free standing 4 Any where 5 Others (specify)_____6 Don't know 88 No response 99	
Q409	By whom do you prefer to get VCT for HIV?	Physician (Doctor) 1 Nurse 2 Trained counselor 3 Religious leader 4 Commander of your Division 5 HIV/AIDS positive people 6 No need of counselor 7 Others (specify)_____ 8 Don't know 88 No response 99	
Q410	(Please do not tell me the result) Have you ever had HIV test?	Yes 1 No 2 No response 99	 →Q419
Q411	If yes to Q 410 what was the reason for having HIV test? **(Only for tested)**	Voluntarily 1 Ordered by health worker 2 Required for visa 3 Required for recruitment 4 Others (specify)_____ 5	→Q412 →Q413 →Q413 →Q413 →Q413
Q412	If Voluntarily, what was the reason? **(Only for tested)**	To know self 1 To plan for future 2 Marriage 3 Blood donation 4 Treatment 6 Others (specify)_____ 7	
Q413	(Please do not tell me the result) Did you find the result? **(Only for tested)**	Yes 1 No 2 No response 99	
Q414	(Please do not tell me the result) Where were you tested? **(Only for tested)**	Army Health institution having VCT center 1 Gov't Health institution having VCT center 2 NGOs Health institution having VCT center 3 Privet Health institution having VCT center 4 Mobile VCT of the Army 5 Others (specify)_____ 6 Do not know 88 No response 99	
Q415	Were you satisfied with the service? **(Only for tested)**	Yes 1 No 2 No response 99	→Q416 →Q417

Section-4: knowledge, Attitude, and Practice of VCT & service related issues *cont.*			
No.	**Questions and filters**	**Coding categories**	**Skip to**

Q416	If yes, for Q415 what was the reason? **(Only for tested)** (**Multiple response is possible**)	Warm reception 1 Quick service 2 Confidentiality 3 Privacy 4 Free service 5 Youth friendly 6 Professionalism of health care worker 7 Referral for care and support 8 Others (specify)_____9	
Q417	If No, for Q415 what was the reason? **(Only for tested)** (**Multiple response is possible**)	No Warm reception 1 Long waiting time 2 Lack of Confidentiality 3 Lack of Privacy 4 Counseling given was not clear 5 No Referral for care and support 6 Not Youth friendly 7 Distant VCT service site 8 Others (specify) _____9	
Q418	How long in time did it take to get your result? **(Only for tested)**	_____ Hours Do not know 88 No response 99	
Q419	If no to Q 410**,** what is/are the reason(s) you did not have VCT before? **(Only for untested)** [**MORE THAN ONE ANSWER POSSIBLE**]	Yes No DN NR 1. No near by service 1 2 88 99 2. Fear for stigma 1 2 88 99 3. Do not trust the confidentiality 1 2 88 99 4. No ART service in the Army 1 2 88 99 5. High cost for transportation 1 2 88 99 6. Afraid to ask permission for VCT 1 2 88 99 7. Afraid to get the result 1 2 88 99 8. Partner and self trust 1 2 88 99 9. Fear for job loss 1 2 88 99 10. No care and support service 1 2 88 99 11. Have no trust on the counselors 1 2 88 99 12. Have no trust on the test kits 1 2 88 99 13. Do not know where to get 1 2 88 99 14. Others (specify)_____	
Q420	Do you have the desire to have VCT whether you did or didn't have it before?	Yes 1 No 2 No response 99	→Q423
Q421	Which method of testing do you prefer if both methods are available?	Confidential, linked testing 1 Anonymous testing 2 Others (specify)_____ 3	
Q422	Which way do you prefer to obtain the HIV test result?	Face to face1 Secretive letter2 Partner 3 Relative4 Others (specify) _____ 5 Do not know 88 No response 99	
Q423	**How much true is the following statement to you? 'If I got HIV test then it would relieve me to know my status.'**	Not at all true 1 Barely true 2 Some what true 3 Very true 4 No response 99	
Q424	**How much true is the following statement to you? 'I am confident that I can get HIV test, even if there is stigma to HIV/AIDS patients in the population'**	Not at all true 1 Barely true 2 Some what true 3 Very true 4 No response 99	

Section-5: Stigma and Discrimination

No.	Questions and filters	Coding categories	Skip to

Q501	Do you think people living with HIV/AIDS should be quarantined?	YES 1 NO 2 NO OPINION 3 NO RESPONSE 99	
Q502	Would you be willing to share a meal with a person you knew had HIV or AIDS?	YES 1 NO 2 DON'T KNOW 88 NO RESPONSE 99	
Q503	If a male relative of yours became ill With HIV, the virus that causes AIDS, would you be willing to care for him in your household?	YES 1 NO 2 DON'T KNOW 88 NO RESPONSE 99	
Q504	If a female relative of yours became ill With HIV, the virus that causes AIDS, would you be willing to care for her in your household?	YES 1 NO 2 DON'T KNOW 88 NO RESPONSE 99	
Q505	If an army officer has HIV but is not sick, should he or she be allowed to continue to work?	YES 1 NO 2 DON'T KNOW 88 NO RESPONSE 99	
Q506	If a soldier has HIV but is not sick, should he or she be allowed to continue to work?	YES 1 NO 2 DON'T KNOW 88 NO RESPONSE 99	
Q507	If you knew a shopkeeper or food seller had the HIV virus, would you buy food from them?	YES 1 NO 2 DON'T KNOW 88 NO RESPONSE 99	
Q508	If you knew a person who prepares food for you had HIV, would you be willing to eat the food?	YES 1 NO 2 DON'T KNOW 88 NO RESPONSE 99	
Q509	If a member of your family became ill with HIV, the virus that causes AIDS, would you want it to remain secret?	YES 1 NO 2 DON'T KNOW 88 NO RESPONSE 99	

That is the end of our questionnaire. Thank you very much for taking time to answer these questions. We appreciate your help.

ANNEX-V- <u>Amharic Version of Structured Standardized Questionnaire</u>

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¡õM **1 :** Sc[© ¾ÓM S[Í-‹			
}.l.	*ØÁo-‹*	›T^ß SMf‹" ¢É	ÄKõ
Ø101	vKð¬ MÅƒl ÉT@l e"ƒ 'u`;	ÉT@ u›Sƒ [__|__] ›L¬pU 88 SMe ¾K˜U 99	
Ø102	GÃT•ƒl ¾ƒ—¬ '¬; *U`Ý¬ Ã'uw*	*`„Êje 1 Ÿ„K=¡ 2 ýa+e "ƒ 3 S<eK=U 4 GÃT•ƒ ¾K˜U 5 K?L (ÃÑKî)_____6 ›L¬pU 88 SMe ¾K˜U 99	

Ø103	wH@a ¾ƒ—¬ ’¬;	›T^ 1 *aV 2 ƒÓ^Ã 3 Åu<w l´x‹ 4 K?L(¾ÑKî) _____ 5 SMe ¾K˜U 99	
Ø104	ƒUl`ƒ }U[¬ Á¬nK<;	›- 1 ¾KU 2 SMe ¾K˜U 99	→Ø106
Ø105	¾ƒUl`ƒ Å[Í (ÁÖ“klƒ ¾¡õM); ›”Æ” Á¡wu<	T”uw“ Síõ 1 1–-4– ¡õM 2 5–-8– ¡õM 3 9–-10–¡õM 4 11–-12– ¡õM 5 Ÿ12– ¡õM uLÃ 6 SMe ¾K˜U 99	
Ø106	ƒÇ` ›É`Ñ¬ Á¬nK<?	›- 1 ¾KU 2 SMe ¾K˜U 99	→Ø108
Ø107	SËS]Á ƒÇ` c=ÁÅ`Ñ< ÉT@- e”ƒ ’u`;	ÉT@ u›Sƒ [__|__] ›L¬pU 88 SMe ¾K˜U 99	
Ø108	›G<” ÁK<uƒ ¾ƒÇ` G<’@ Ã’uw ›”Æ” Á¡wu<ƒ	›G<” uƒÇ` ÁK<“ ŸvKu? †¬ Ò` ›w[¬ ÁK< **1** ›G<” uƒÇ` ÁK<“ ’Ñ` Ó” ŸK?L c?ƒ Ò` ›w[¬ÁK< 2 ›G<” uƒÇ` ÁK<“ ’Ñ` Ó” ŸvKu? †¬U J’ ŸK?L c?ƒ Ò` ›w[¬ ¾TÃ•\---------- -----3 ÁLÑv ’Ñ` Ó” ŸÓw[eÒ ÕÅ— Ò` ¾T>•` **4** ÁLÑv“ ¾Ów[eÒ ÕÅ—U ¾K?K¬ **5** ›L¬pU **88** SMe ¾K˜U **99**	
Ø109	uc^©~ ¬eØ KU”ÁIM Ñ>²? ›ÑKÑK<;	ÁÑKÑK<uƒ ›Sƒl ƒ w³ƒ [__|__] Ÿ›”É ›Sƒ u ‹ **00** ›L¬pU 88 SMe ¾K˜U 99	
Ø110	›G<” ÁKAƒ ¨ Å^© T [Ó U”É’¬; • vKK?L T°[Ó}— – U/0/›, 0/›,$///›. • Ì’>¾` S¢”” – U/S/›, S/›, hUuM. • Ÿõ}— S¢”” – ŸhKn eŸ Ë’^M	}^¨ Å` 1 vKK?L T°[Ó}— 2 Ì’>¾` S¢”” 3 Ÿõ}— S¢”” 4	

¡õM **1:** Sc[© ¾ÓM S[Í-‹			
}.l.	*ØÁo-‹*	›T^ß SMf‹“ ¢É	ÃKõ
Ø111	›G<” u¡õKA ¬eØ ÁKAƒ GLò’ƒ U”É’¬;	}^ ›vM 1 Ò” S] 2 ÃM S] 3 Â’>ƒ ›³» ¨ÃU ›vM 4 [ÍS”ƒ ›³» ¨ÃU ›vM 5 ¡õKÙ` ›³» ¨ÃU ›vM 6 +U S] 7 K?L(ÃÑKî)_____8 ›L¬pU 88 SMe ¾K˜U 99	
Ø112	²=I ›Ÿvu= KU”ÁIM Ñ>²? q¿;	¾q¿uƒ Ñ>²? u›Sƒ [__|__] Ÿ›”É ›Sƒ u ‹ **00** ›L¬pU 88 SMe ¾K˜U 99	

Ø113	vKñƒ 12 ¨^ƒ K [õƒ ¨ÃU KK?L Ñ<ÇÃ Ÿ¡õKA K¨` ¨ÃU Ÿ²=Á uLÃ `k¨< H@Å¨< 'u`;	›- 1 ¾KU 2 ›L¬pU 88 SMe ¾K˜U 99	
Ø114	¨`G© ÅVµ U" ÁIM '¬;	u›=ƒÄâ=Á w` [_____] ›L¬pU 88 SMe ¾K˜U 99	
Ø115	VKñƒ 4 dU" ƒ U"ÁIM Ñ>²? ›M¢M'ƒ ÁK¬ SÖØ ÖÖ<; ›T^ß SMf‡ Ã'uu< ›"É SMe Ã¡uu<	u¾k'< 1 udU"ƒ u=Á"e ›"É Ñ>²? 2 udU"ƒ Ÿ›"É Ñ>² Á'c ?3 U"U ›MÖ×U 4 ›L¬pU 88 SMe ¾K˜U 99	
Ø116	›"Ç"É c-‹ ¾}KÁ¿ ›Å"³» °ï‹" ÃÖkTK<:: `f ŸT>Ÿ}K<ƒ ¾ƒ™‡" V¡[¬ Á¬nK<; ›T^ß SMf‡ Ã'uu<	›- ¾KU SMe ¾K˜U Ýƒ ……1.…2 ……99 g=h/ÒÁ… 1.… 2 ……99 Gii… …1… .2 ……99 u?"²=M … 1.… 2 ……99 ¢Ÿ?" …. …1…. 2 …… .99	

¡õM **2 :** ¾Ów[eÒ Ó'<˜'ƒ" " ¾¢"ÊU ›ÖnkU" ¾T>SKŸ~ ØÁo-‹			
}.l.	*ØÁo-‹*	›T^ß SMf‹" ¢É	*ÃKõ*
Ø201	Ÿ}ðÖ\ Ÿc?ƒÒ` ¾Ów[eÒ Ó'<˜'ƒ ›É`Ñ¬ Á¬nK<;	›- 1 ¾KU 2 SMe ¾K˜U 99	→**Ø301**
Ø202	SËS]Á Ÿc?ƒÒ` ¾Ów[eÒ Ó'<˜'ƒ c=ÁÅ`Ñ< °ÉT@- e"ƒ 'u`; uT¬××ƒ ÃÖÃl	°ÉT@ u›Sƒ [____] ›L¬pU 88 SMe ¾K˜U 99	
Ø203	vKð¬ 12¨` Ÿc?ƒÒ` ¾Ów[eÒ Ó'<˜'ƒ ðîSªM;	›- 1 ¾KU 2 SMe ¾K˜U 99	→Ø **208**

¡õM **2 :** ¾Ów[eÒ Ó'<˜'ƒ" " ¾¢"ÊU ›ÖnkU" ¾T>SKŸ~ ØÁo-‹			
}.l.	*ØÁo-‹*	›T^ß SMf‹" ¢É	*ÃKõ*
Ø204	vKð¬ 12¨` eK'u\ƒ c?ƒ ¾Ów[eÒ ÕÅ™Œ Áeu<:: U"ÁIM 'u\: ❖ sT> c?ƒ ¾Ów[eÒ ÕÅ™(T>eƒ ¨ÃU "ÅT>eƒ ›w[ªƒ ¾T>•\) ❖ c??}— ›Ç] (Ñ"²w ŸõKªƒ ¾Ów[eÒ Ó'<˜'ƒ ¾T>ðîS<vƒ c?ƒ ÕÅ™) ❖ sT> ¨ÃU c??}— ›Ç] ÁMJ'‹ c?ƒ ¾Ów[eÒ ÕÅ™(vÒ×T> ÁÑšƒ)	sT> [____] ›Le ¬eU 88 SMe ¾K˜U 99 C?}— ›Ç] [____] ›Le ¨<eU 88 SMe ¾K˜U 99 sT> ÁMJ'‹ [____] ›Le ¬eU 88 SMe ¾K˜U 99	

Ø205	vKð¬ 12¨` ›G<" ›w[ªƒ ŸLDƒ sT> c?ƒ ÕÅ—-Ò` ¾¢"ÊU ›ÖnkV "Èƒ 'u`;	G<MÑ>²? ÖkTKG< 1 u›w³—¬ ÖkTKG< 2 ›Mö›Mö ÖkTKG< 3 ðîV ›MÖkUU 4 ›L¬pU 88 SMe ¾K˜U 99	
Ø206	vKð¬ 12¨` ¾Ów[eÒ Ó"–<'ƒ ŸÅ[Õ†¬ c?}— ›Ç] c?ƒ ÕÅ—-/Œ Ò` ¾¢"ÊU ›ÖnkV "Èƒ 'u`;	G<MÑ>²? ÖkTKG< 1 u›w³—¬ ÖkTKG< 2 ›Mö›Mö ÖkTKG< 3 ðîV ›MÖkUU 4 ›L¬pU 88 SMe ¾K˜U 99	
Ø207	vKð¬ 12¨` vÒ×T> ŸÑšƒ/†¬ ¾Ów[eÒ c?ƒ ÕÅ—-/Œ Ò` ¾¢"ÊU ›ÖnkV "Èƒ 'u`;  SËS]Á ¾p`u<" uSkÖM ¾S~" ÃÖÃs†¬	G<MÑ>²? ÖkTKG< 1 u›w³—¬ ÖkTKG< 2 ›Mö›Mö ÖkTKG< 3 ðîV ›MÖkUU 4 ›L¬pU 88 SMe ¾K˜U 99	
Ø208	u›vK²` ui }Ã²¬ Á¬nK<;	›- 1 ¾KU 2 SMe ¾K˜U 99	

¡õM **3** – eK ›?‹›Ã. y=/›?Ée ¬kƒ " Ó"³u? ¾T>SKŸ~ ØÁo-‹			
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Ø 301	eK›?‹›Ã.y= ¨ÃU ›?Ée cU}¬ Á¬nK<;	›- 1 ¾KU 2 SMe ¾K˜U 99	→ **Ø401**
Ø302G	u›?‹›Ã.y= ¾}Á² c¬ ¨ÃU u›?Ée ¾V} c¬ Á¬nK<;	›- 1 ¾KU 2 ›L¬pU 88 SMe ¾K˜U 99	→ **Ø 303** → **Ø 303**
Ø302K	u›?‹›Ã.y= ¾}Á² ¨ÃU u›?Ée ¾V} ¾p`w ²SÉ ¨ÃU ¾p`w ÕÅ— ›KAƒ;	›-: ¾p`w ²SÉ 1 ›-: ¾p`w ÕÅ— 2 ›-: G<K~U 3 ¾KU 3 SMe ¾K˜U 99	
Ø303	W-‹ G<M Ñ>²? ¾Ów[eÒ Ó'<˜'ƒ c=ðîS< ¢"ÊU uƒ¡¡M Ÿ}ÖkS< ›?Ée" ŸT>ÁS×¬ ›?‹›Ã.y= zÃ[e K=ŸLŸK< Ã‹LK<;	›- 1 ¾KU 2 ›L¬pU 88 SMe ¾K˜U 99	
Ø304	›"É c¬ u-v ƒ"˜ "¡h u›?‹›Ã.y=. K=Á´ Ã‹LM;	›- 1 ¾KU 2 ›L¬pU 88 SMe ¾K˜U 99	

¡õM **3 :** eK ›?‹›Ã. y=/›?Ée ¬kƒ " Ó"³u? ¾T>SKŸ~ ØÁo-‹ *cont*			
}.I.	*ØÁo-‹*	›T^ß SMf‹" ¢Ê	ÃKõ
Ø304	›"É c¬ u-v ƒ"˜ "¡h u›?‹›Ã.y=. K=Á´ Ã‹LM;	›- 1 ¾KU 2 ›L¬pU 88 SMe ¾K˜U 99	
Ø 305	W-‹ Ÿ›?‹›Ã.y=. 'í ¾J' T˜›"É ¾¡ ÕÅ— u=•^†¬ ^d†¬" Ÿ›?‹›Ã.y=. K=ŸLŸK< Ã‹LK<; (ŸK?KA‹ S}LKòÁ S"ÑÊ‹ Ÿ}Ö'kl)	›- 1 ¾KU 2 ›L¬pU 88 SMe ¾K˜U 99	
Ø 306	W-‹ ŸÓw[eÒ Ó'<˜'ƒ uS kw ^d†¬" Ÿ›?‹›Ã.y=. K=ŸLŸK< Ã‹LK<; (ŸK?KA‹ S}LKòÁ S"ÑÊ‹ Ÿ}Ö'kl)	›- 1 ¾KU 2 ›L¬pU 88 SMe ¾K˜U 99	

Ø 307	u›?‹.›Ã.y=. Ÿ}Á² c¬ Ò` ›wa UÓw uSwL*ƒ* ›?‹.›Ã.y=. K=}LKõ Ã‹LM;	›- 1 ¾KU 2 ›L¬pU 88 SMe ¾K˜U 99	
Ø 308	W-‹ K?KA‹ c-‹ u}ÖkS<u*ƒ* S`ô u=ÖkS< u›?‹.›Ã.y=. K=Á²< Ã‹LK<;	›- 1 ¾KU 2 ›L¬pU 88 SMe ¾K˜U 99	
Ø 309	Ö?'— ¾T>SeK< c-‹ u›?‹.›Ã.y=. (›?Ée uT>ÁS×¬ zÃ[e) K=Á²< "ÅT>‹K< Á¬nK<;	›- 1 ¾KU 2 ›L¬pU 88 SMe ¾K˜U 99	
Ø 310	u›?‹.›Ã.y=. ¾}Á² c¬ Á²ÒË¬" /Ÿ*ƒ*ö Á²ÒÍ¬"/ Ø_ eÒ uSwL*ƒ* u›?‹.›Ã.y=. K=Á²< Ã‹LK<;	›- 1 ¾KU 2 ›L¬pU 88 SMe ¾K˜U 99	
Ø 311	›[o uSÖ×*ƒ*" u`u_ uSwL*ƒ* /¾T>ÁnØM UÓw/ ›?‹.›Ã.y=." SŸLŸM ¾T>‰M ¾SeKA M;	›- 1 ¾KU 2 ›L¬pU 88 SMe ¾K˜U 99	
Ø 312	u›?‹.›Ã.y=. }Ã¹KG< wK¬ ÁevK<;	›- 1 ¾KU 2 U"Mv*ƒ* 3 ›L¬pU 88 SMe ¾K˜U 99	→Ø 314
Ø 313	KØ312 SMc< ›- ŸJ': KU" ^f" Ö[Ö\;	Ÿ›"É uLÃ ¾Ów[eÒ ÕÅ— 'u[˜ 1 ÁK¢"ÊU ¾Ów[eÒ Ó'<˜"*ƒ* ›É`Ñ@ 'u` 2 Ÿc?}— ›Ç] Ò` ¾Ów[eÒ Ó'<˜"*ƒ* ðîT@ 'u` 3 K?KA‹ c-‹ u}ÖkS<u*ƒ* eK T 'Ñ` ›ÅÒ Å`fw˜ 'u` 4 ÅU }cØ„˜ 'u` 5 eK}S[S`Ÿ< 6 K?L(ÃÖke) _____7 ›L¬pU 88 SMe ¾K˜U 99	
Ø 314	KØ312 SMc< ¾KU ŸJ': KU" ^f" ›MÖ[Ö\U;	¾Ów[eÒ Ó'<˜"*ƒ* ›É`Ñ@ ›L¬pU 1 ŸÓw[eÒ Ó'<˜"*ƒ* eK kwŸ< 2 ›"É ¾U"}TS" ¾Ów[eÒ ÕÅ— eLK‹˜ 3 K?L c¬ u}¨Òu*ƒ* S`ô }`ÓŠ eKTL¬p 4 G<M Ñ>²? ¢"ÊU eKUÖkU 5 K?L(ÃÖke) _____6 ›L¬pU 88 SMe ¾K˜U 99	
¡õM **3 :** eK ›?‹.›Ã. y=/›?Ée ¬k*ƒ* " Ó"³u? ¾T>SKŸ~ ØÁo-‹ *cont*			
}.I.	ØÁo-‹	›T^ß SMf‹" ¢É	ÃKõ
Ø 315	›"É c¬ ›?‹.›Ã.y=. "ÇKu*ƒ*" "ÅK?Ku*ƒ* "È*ƒ* T¨p Ã‰LM; (Ÿ›"É uLÃ SMe Ã‰LM)	´UwKA uT¾*ƒ* 1 uÖ?" S<Á}— ›ŸL© U`S^ uTÉ[Ó 2 ¨ÅvIL© NŸ=U ¨ÃU Ö"sÃ uSH@É 3 ¨Å U¡¡`" ¾ÅU U`S^ ›ÑMÓKA*ƒ* uSH@É4 K?L (ÃÖke)_____ ___5 ›L¬pU 88 SMe ¾K˜U 99	
Ø316	›?‹.›Ã.y=. zÃ[e uÅTE ¬eØ ÁKv*ƒ* `Ñ<´ "*ƒ* zÃ[c< ¨Å î"c< M e}LMõ *ƒ*‹LK‹;	›- 1 ¾KU 2 ›L¬pU 88 SMe ¾K˜U 99	

Ø317	›?‹.›Ã.y=. zÃ[e uÅTE ¬eØ ÁKv*ƒ* “*ƒ* zÃ[c< ¨Å ›Ç=e ¾¨KÆ*ƒ* Ií” Ö<*ƒ* uTØv*ƒ* M e}LMõu*ƒ* *ƒ*‹LK‹;	›- 1 ¾KU 2 ›L¬pU 88 SMe ¾K˜U 99	
Ø318G	vKð¬ 12¨` Ÿ›‰ S] K?L u¡õKA ŸK?KA‹ ¾c^©*ƒ* ›vL*ƒ* Ò` eK ›?‹.›Ã.y= /›?Ée }¨ÁÃ}¬ Á¬nK<;	›- 1 ¾KU 2 ›Le ¬eU 88 SMe ¾K˜U 99	
Ø318K	vKð¬ 12¨` ŸsT> c?*ƒ* ÕÅ—- K?L ŸK?KA‹ ¾u?}cx ›vL*ƒ* Ò` eK ›?‹.›Ã.y=/›?Ée }¨ÁÃ}¬ Á¬nK<;	›- 1 ¾KU 2 ›Le ¬eU 88 SMe ¾K˜U 99	
Ø318N	vKð¬ 12¨` ŸJ’ K?L c¬ Ò` eK ›?‹.›Ã.y=/›?Ée }¨ÁÃ}¬ Á¬nK<;	›- 1 ¾KU 2 ›Le ¬eU 88 SMe ¾K˜U 99	→Ø318 S → Ø317 → Ø317 → Ø317
Ø318S	eK ›?‹.›Ã.y=/›?Ée ŸT” Ò` }¨ÁÃ}¬ Á¬nK<; ›T^ß SMf‡ ›Ã’uu<:: Ÿ}Ökc 1 Ã¡uu< ŸM}Ökc 2 Ã¡uu<::	›- ¾KU 1. ŸÖ?“ vKS<Á 1 2 2. ŸGÃT•*ƒ* S] Ò` 1 2 3. ŸS¢”” Ò` 1 2 4. ¡õKA ›Ÿvu= ŸK< Tlu[cw 1 2 5. K?L(ÃÖke)_____ 1 2	

¡õM 4 eK y=.c.+. ¬k*ƒ* “ Ó”³u? ”Ç=G<U eK y=.c.+. ›ÑMÓKA*ƒ* SeÝ T ŸL*ƒ*			
}.I.	*ØÁo-‹*	›T^ß SMf‹“ ¢É	ÃKõ
Ø401	eK U¡¡`“ ¾›?‹.›Ã.y=. ¾ÅU U`S^ /y=c=+/ cU}¬ Á¬nK<;	›- 1 ¾KU 2	 →Ø501
Ø402	KØ401 SMf ›- ŸJ’ S[Í¬” Ÿ¾*ƒ* ›Ñ–<*ƒ*; (Ÿ›”É uLÃ SMe Ã‰LM)	ŸÕÅ™‹ 1 Ÿ›‰ S]-‹ 2 Ÿu?}cw 3 Ÿi[-›?Ée ¡uw 4 Ÿw²<H” SÑ“— 5 ŸÖ?“ S<Á}™‹ 6 Ò²?× (‘¨ÒÑ”’) 7 K?L(ÃÖke)_____ 8	
Ø403	¾U¡¡`“ ¾›?‹.›Ã.y=. ¾ÅU U`S^ /y=c=+/ ›ÑMÓKA*ƒ* ›eðLÑ> ’¬;	›- 1 ¾KU 2 ›L¬pU 88 SMe ¾K˜U 99	 →Ø405 →Ø405
¡õM 4 : eK y=.c.+. ¬k*ƒ* “ Ó”³u? ”Ç=G<U eK y=.c.+. ›ÑMÓKA*ƒ* SeÝ T ŸL*ƒ*			
}.I.	*ØÁo-‹*	›T^ß SMf‹“ ¢É	ÃKõ
Ø404	KØ403 SMf ›- ŸJ’ ¾U¡¡`“ ¾›?‹.›Ã.y=. ¾ÅU U`S^ /y=c=+/ ØpV‹ U”É“†¬; (Ÿ›”É uLÃ SMe Ã‰LM)	K ”¡wŸu?“ ÉÒõ ›ÑMÓKA*ƒ* SÓu=Á S”ÑÉ 1 Ø\ vl] ”Ç=eóó ÁÅ`ÒM 2 uIw[}cu< ¬eØ ¾›ÉKA“ SÑKM” ›²<]*ƒ* ÁÖóM 3 K?L(ÃÖke)_____ 4 ›L¬pU 88 SMe ¾K˜U 99	
Ø405	¾U¡¡`“ ¾›?‹.›Ã.y=. ¾ÅU U`S^ /y=c=+/ ›ÑMÓKA*ƒ* SÖkU T”” }ÖnT> ¾T>ÁÅ`Ó ÃSeKA M; (Ÿ›”É uLÃ SMe Ã‰LM)	›?‹.›Ã.y=. þ²+{ ¾J’ c¬1 ›?‹.›Ã.y=. ’@Ò+{ ¾J’ c¬2 ›?‹.›Ã.y=. ’@Ò+{U J’ þ²+{ ¾J’ c¬ 3 ›L¬pU 88 SMe ¾K˜U 99	

Ø406	u›ÖnLÃ T'¬ ¾›?‹.›Ã.y=. U`S^ TÉ[Ó ÁKu*ƒ*; (Ÿ›"É uLÃ SMe Ã‰LM)	›- ¾K ›L S¾. 1. c?}— ›Ç]-‹ ----------1 2 88 99 2. ¾c?}— ›Ç]-‹ Å"u™‹----------1 2 88 99 3. ¾c^©*ƒ* ›v*Lƒ*----------1 2 88 99 4. jôa‹" }"kdni 'ÒÈ-‹--------1 2 88 99 5. Ÿ›"É uLÃ ¾ï ÕÅ™‹ ÁLD†¬---1 2 88 99 6. ¾ SS< c-‹----------1 2 88 99 7. T"—¬U ¾Ów[eÒ Ó'<˜"*ƒ* ¾ËS[c¬ ---------- ---------- 1 2 88 99 8. T"—¬U K›?‹.›Ã.y=›ÒLß ¾J' vI] ÁK¬ c¬---------- ----------1 2 88 99 9. T"—¬U c¬---------- 1 2 88 99	
Ø407	›"É c¬ SŠ '¬ ¾›?‹.›Ã.y= U`S^ TÉ[Ó ÁKu*ƒ*;	uT"—¬U Ñ>²? 1 u SS Ñ>²? 2 ŸÒu=‰ uò*ƒ* 3 ¨Å ¬Ü GÑ` KSH@É c=ðMÓ 4 e^ KSkÖ` c=ðKÑ< 5 Ÿ `Ó´" uò*ƒ*" u `Ó´" ¨p*ƒ* 6 u}†Ñ[Ñ>²? 7 K?L(ÃÖke) ---------- 8 ›L¬pU 88 SMe ¾K˜U 99	
Ø408	¾y=c=+ ›ÑMÓKA*ƒ* SeÝ ¡K='>¢‹ ¾*ƒ* u=J' ÃS`×K<;	uSŸLŸÁ Ö?" }sT*ƒ* ¬eØ 1 uc=y=M Ö?" }sT*ƒ* ¬eØ 2 uSŸLŸÁ ¬eØ J• ¾y=c=+ ›ÑMÓKA*ƒ* w‰ ¾T>cØ }sU 3 uc=y=M ¬eØ J• ¾y=c=+ ›ÑMÓKA*ƒ* w‰ ¾T>cØ }sU 4 uG<K<U x 5 K?L(ÃÖke) ---------- 6 ›L¬pU 88 SMe ¾K˜U 99	
Ø409	¾y=c=+ ›ÑMÓKA*ƒ* uT" u=cÙ*ƒ* ÃS`×K<;	uÊ¡}` 1 u'`e 2 ¾cKÖ' "¬"eK` 3 ¾GÃT•*ƒ* S] 4 ¾¡õKÙa ›³» 5 ›?‹.›Ã.y= þ²+{ ¾J' c¬6 Ÿ¬"eK` ›ÁeðMÓU 7 K?L(ÃÖke)---------- 8 ›L¬pU 88 SMe ¾K˜U 99	
Ø410	(v¢" eK¬Ö?~ ›Ã"Ñ\˜) ¾›?‹.›Ã.y=. U`S^ ›É`Ñ¬ Á¬nK<;	›- 1 ¾KU 2 SMe ¾K˜U 99	→ Ø419

¡õM 4 : eK y=.c.+. ¬k*ƒ* " Ó"³u? "Ç=G<U eK y=.c.+. ›ÑMÓKA*ƒ* SeÝ T ŸL*ƒ*			
}.I.	*ØÁo-‹*	›T^ß SMf‹" ¢É	ÃKõ
Ø411	KØ410 SMf ›- ŸJ' ¾›?‹.›Ã.y=. U`S^ ÁÅ[Ñ<u*ƒ* U¡">Á*ƒ* U" 'u`; **(K}S[S*ƒ* w‰)**	uðnÅ˜"*ƒ* 1 uÖ?" S<Á}— µM˜ 2 Ky=³ }ðMÔ 3 e^ KSkÖ` 4 K?L(ÃÖke)_____ 5	→ Ø412 → Ø413 → Ø413 → Ø413 → Ø413
Ø412	uðnÅ˜"*ƒ* ŸJ' U¡"Á~ U" 'u`; **(**K}S[S*ƒ* w‰**)**	^c?" KT¨p 1 K¨Åò~ KTkÉ 2 *ƒ*Ç` KTÉ[Ó 3 ÅU KSKÑe 4	

		KI¡U“ 6 K?L(ÃÖke)_____ 7	
Ø413	(v¢” eK¬Ö?~ ›Ã”Ñ\˜) ¾U`S^¬” ¬Ö?ƒ }kwK^{a}M; **(K}S[S\ƒ w‰)**	›- 1 ¾KU 2 SMe ¾K˜U 99	
Ø414	(v¢” eK¬Ö?~ ›Ã”Ñ\˜) ¾ƒ ’u` ¾}S[S\ƒ; **(**K}S[S\ƒ w‰**)**	y=c=+ ÁK¬ ¾SŸLŸÁ Ö?“ }sU 1 y=c=+ ÁK¬ ¾S”Óeƒ Ö?“ }sU 2 y=c=+ ÁK¬ S”Óe © ÁMJ’ Ö?“ }sU 3 y=c=+ ÁK¬ ¾¾ÓM Ö?“ }sU 4 uSŸLŸÁ Ö?“ }sU }”kdni y=c=+ 5 K?L(ÃÖke)_____ 6 ›L¬pU 88 SMe ¾K˜U 99	
Ø415	u}cÙƒ ›ÑMÓKAƒ [¡}¬ ’u`; (K}S[S\ƒ w‰)	›- 1 ¾KU 2 SMe ¾K˜U 99	→ Ø416 → Ø417
Ø416	KØ415 SMf ›- ŸJ’ U¡”Á~ U” ’u`; **(**K}S[S\ƒ w‰**)** (Ÿ›”É uLÃ SMe Ã‰LM)	Vp ÁK ›kvuM 1 ð×” ›ÑMÓKAƒ ›c××†¬ 2 T>eØ` ›Övun†¬ 3 ÁK¬ ÓL© ’í’ƒ/ý^Ãy?c=/ 4 ¾’í ›ÑMÓKAƒ uSJ’< 5 ÕÅ—© ›k^[w eLL†¬ 6 ¾S<Á}™‡ ¾S<Á wnƒ 7 K ”¡wŸu?“ ÉÒõ ]ð` eKT>ÁÅ`Ó 8 K?L(ÃÖke)_____9	
Ø417	KØ415 SMf ›ÃÅKU ŸJ’ U¡”Á~ U” ’u`; **(**K}S[S\ƒ w‰**)** (Ÿ›”É uLÃ SMe Ã‰LM)	Vp ÁK ›kvuM ¾KU 1 ¾›ÑMÓKAƒ Ñ>²? uS`²S< 2 ÅŸT ¾T>eØ` ›Övun†¬ 3 ÓL© ’í’ƒ /ý^Ãy?c=/ ›KS•` 4 ¾U¡¡` ›ÑMÓKA~ ÓMî ›KSJ” 5 ¨Å ”¡wŸu?“ ÉÒõ cÜ]ð` eKTÁÅ`Ó 6 ÕÅ—© ›k^[w eKK?L†¬ 7 ¾y=c=+ ¡K=’>Ÿ< S^p 8 K?L(ÃÖke)_____9	
Ø418	¾U`S^ ¬Ö?„” KSkuM U” ÁIM c¯ƒ ¨cÅxƒ; (K}S[S\ƒ w‰)	_____c›ƒ ›L¬pU 88 SMe ¾K˜U 99	

¡õM 4 : eK y=.c.+. ¬kƒ “ Ó”³u? ”Ç=G<U eK y=.c.+. ›ÑMÓKAƒ SeÝ T ŸLƒ

}.I.	ØÁo-‹	›T^ß SMf‹“ ¢É	ÃKõ
Ø419	KØ410 SMf ¾KU ŸJ’ ¾y=c=+ ›ÑMÓKAƒ ÁM}ÖkS<uƒ U¡”Áƒ/„‹ U” ’u`/\; **(**LM}S[S\ƒ w‰**)** (Ÿ›”É uLÃ SMe Ã‰LM)	›- ¾K ›L SM¾ 1. ¾y=c=+ ›ÑMÓKAƒ SeÝ¬ S^p 1 2 88 99 2. SÑKM” uSõ^ƒ 1 2 88 99 3. T>eØ^©’~” uSÖ^Ö` 1 2 88 99 4. ¾ ÉT@ T^²T>Á SÉH’ƒ ›KS•`1 2 88 99 5. ¾ƒ^”eþ`ƒ S¨ÅÉ 1 2 88 99 6. Ÿ¡õK? Ky=c=+ wÂ ðnÉ KSÖ¾p uSõ^ƒ1 2 88 99	

		7. ¾U`S[^¬" ¬Öƒ uSõ^ƒ 1 2 88 99 8. ÕÅ—Â"U J' ^c?" eKTU" 1 2 88 99 9. e^ LKT×ƒ õ^‰ 1 2 88 99 10. ¾ÉÒõ" ¾ "¡wŸu? ›ÑMÓKAƒ ›KS•`1 2 88 99 11. Ÿ¬"eKa‡" ›KTS" 1 2 88 99 12. ¾SS`S]Á Sd]Á¬" eKUÖ^Ö`1 2 88 99 13. ¾y=c=+ ›ÑMÓKAƒ ¾ƒ "ÇK eKTL¬p1 2 88 99 14. K?L(ÃÖke)_____	
Ø420	Ÿ²=I uòƒ u=S[S\U vÃS[S\U ›G<" ¾SS`S` õLÔƒ ›KAƒ;	›- ›K˜ 1 ¾K˜U 2 SMe ¾K˜U 99	→Ø423
Ø421	G<K~U ¾U`S^ ²È-‹ u=•\ ¾ƒ—¬" ÃS`×K<;	T>eØ^© J• Ÿ}S`T]¬ T"'ƒ Ò` ¾}ÁÁ² 1 T>eØ^© J• Ÿ}S`T]¬ T"'ƒ Ò` Ó'<˜ƒ ¾K?K¬2 K?L(ÃÖke)_____ 3	
Ø422	¾›?‹.›Ã.y=. U`S^ ¬Ö?ƒ u¾ƒ—¬ S"ÑÉ u=ÁÑ–< ÃS`×K<;	òƒ Kòƒ 1 uT>eØ` uÅwÇu? 2 uÕÅ— 3 u²SÉ 4 K?L(ÃÖke)_____ 5 ›L¬pU 88 SMe ¾K˜U 99	
Ø423	¾T>Ÿ}K¬ ›[õ} 'Ñ` K`f U" ÁIM ¬'ƒ '¬; ¾›?‹.›Ã.y= U`S^ vÅ`Ó •a ¾^c?" G<'@ uT¨p Ÿß"kƒ ÃÑLÓK˜ 'u`::	uõì<U ¬'ƒ ›ÃÅKU1 ¬'ƒ K=J" Ã‹LM 2 ¬'ƒ '¬3 u×U ¬'ƒ 4 SMe ¾K˜U 99	
Ø424	¾T>Ÿ}K¬ ›[õ} 'Ñ` K`f U" ÁIM ¬'ƒ '¬; Iw[}cu< u›?‹.›Ã.y=./›?Ée K}Á²< c-‹ u=ÁÑMU "Ÿ ¾›?‹.›Ã.y= U`S^ "ÅTÅ`Ó `ÓÖ— '˜:	uõì<U ¬'ƒ ›ÃÅKU1 ¬'ƒ K=J" Ã‹LM 2 ¬'ƒ '¬3 u×U ¬'ƒ 4 SMe ¾K˜U 99	

¡õM 5 : Ÿ›?‹.›Ã. y=/›?Ée u}ÁÁ² SÉKA " TÓKM" ¾T>SKŸ~ ØÁo-‹			
}.I.	*ØÁo-‹*	›T^ß SMf‹" ¢É	ÃKõ
Ø501	Ÿ›?‹.›Ã.y=/›?Ée ›wa ¾T>•\ c-‹ Kw‰†¬ }KÃ}¬ SkSØ ›Kv†¬ wK¬ ÁU"K<;	›- 1 ¾KU 2 ›e}Á¾ƒ ›McØU 3 SMe ¾K˜U 99	
Ø502	›?‹.›Ã.y=/›?Ée "ÇKuƒ ŸT>Á¬lƒ c¬ Ò` ›w[¬ UÓw KSwLƒ ðnÅ— •ƒ;	›- 1 ¾KU 2 ›L¬pU 88	

		SMe ¾K˜U 99	
Ø503	¨"É ²SÊ u›?‹›Ã.y= /›?Ée uT>ÁS×¬ zÃ[e/ u= SU u?„ ¬eØ KS"ŸvŸw ðnÅ— •ƒ;	›- 1 ¾KU 2 ›L¬pU 88 SMe ¾K˜U 99	
Ø504	X@ƒ ²SÊ u›?‹›Ã.y= /›?Ée uT>ÁS×¬ zÃ[e/ wƒ SU u?„ ¬eØ KS"ŸvŸw ðnÅ— •ƒ;	›- 1 ¾KU 2 ›L¬pU 88 SMe ¾K˜U 99	
Ø505	›"É ¾Ù` S¢"" u›?‹›Ã.y= zÃ[e }Ãµ/³ 'Ñ` Ó" ISU ŸK?K¬/Lƒ uc^©~ ¬eØ ›ÑMÓKAƒ SeÖƒ SkÖM ›Kuƒ/vƒ wK¬ ÁU"K<;	›- 1 ¾KU 2 ›L¬pU 88 SMe ¾K˜U 99	
Ø506	›"É ¨ Å` u›?‹›Ã.y= zÃ[e }Ãµ/³ 'Ñ` Ó" ISU ŸK?K¬/Lƒ uc^©~ ¬eØ ›ÑMÓKAƒ SeÖƒ SkÖM ›Kuƒ/vƒ wK¬ ÁU"K<;	›- 1 ¾KU 2 ›L¬pU 88 SMe ¾K˜U 99	
Ø507	›"É vKc<p ¨ÃU UÓw hß ›?‹›Ã.y= "ÇKuƒ/vƒ u=Á¬l Ÿc</dD UÓw KSÓ³ƒ ðnÅ— •ƒ;	›- 1 ¾KU 2 ›L¬pU 88 SMe ¾K˜U 99	
Ø508	UÓw ¾T>c^KAƒ c¬ ›?‹›Ã.y= "ÇKuƒ u=Á¬l uc< ¾}²ÒË¬" UÓw KSwLƒ ðnÅ— •ƒ;	›- 1 ¾KU 2 ›L¬pU 88 SMe ¾K˜U 99	
Ø509	›"É ¾u?}cx ›vM u›?‹›Ã.y= /›?Ée uT>ÁS×¬ zÃ[e/ u= SU uT>eØ` "Ç=Á´ ÃðMÒK<;	›- 1 ¾KU 2 ›L¬pU 88 SMe ¾K˜U 99	

SÖÃn‹" u²=l ÁunM:: '˜l" ØÁo-‹ KSSKe ¬É Ñ>²?-" Ÿ'@ Ò` eLdKñ u×U ›ScÓ• KG<::

SÖÃl Áunuƒ Ñ>²?_____

ANNEXE-VI <u>DECLERATION</u>

DECLARATION

I the undersigned, declare that this is my work and that all sources of materials used for this thesis have duly acknowledged.

Name **YIHEYIS AYTENFISU, MD**

Signature _____

Place **ADDIS ABABA**

Date of submission**: APRIL 27, 2007**

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

GETNET MITIKE, MD, MPH _____
Advisor **Signature**