

Sexual Risk Behavior among Military Personnel Stationed in Eastern Ethiopia: Using Mixed Methods Approaches

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Abstract

Introduction: The armed forces are high risk population to HIV/STD globally, even when aware of HIV risk, often do not consider at this risk and stay with steady partners. Although various surveys have been made to study the sexual behaviour of uniformed populations in Ethiopia but, few studies assess military personnel risk perception to HIV/AIDS. We assess HIV/AIDS risk perception among Eastern command military members in Ethiopia.

Methodology: A mixed quantitative and qualitative study design was used. For the quantitative study, a cross sectional study design using self-administered questionnaire was used. Multi-stage sampling technique was used to select the study units. The sample size of the study was 840 military members. For the qualitative study a Focused Group Discussion was used and the participants were divided into four groups. Data entry and analysis was performed using Epi-data and SPSS statistical software packages. Descriptive statistics was undertaken, and association was calculated using logistic regression.

Result: From those 812 who completed the questionnaires, 378 (46.5%) were corporals, and majority of the respondents were sexually active. Respondents with educational status <6 grade less likely perceived HIV risk compared with those >6 grade (COR with 95% CI=0.633 [0.264-0.925]). Condom user respondents were three times more likely perceived risk than not users (AOR with 95% CI=3.045 [1.448-6.405]).

Conclusion: The military personnel are at high risk for HIV and other STIs. This is reflected by a low risk perception of getting HIV/AIDS among the military members. Alcohol consumption is also common culture among military personnel and it predisposes them to unsafe sexual practice. Strengthening information, education and communication (IEC) activities provide BCC materials in Continuous and organized manner to change the risk behaviors related to HIV of the personnel.

Keywords: HIV; Risk; Perception; Military; Mixed; Ethiopia

Introduction

Globally, unprotected sexual intercourse between men and women is the predominant mode of transmission of HIV [1]. The epidemic also has a considerable effect on the armed forces. Today, in many parts of the world, HIV and AIDS together with other STIs pose a far more serious threat to militaries than the inherently hazardous nature of their occupation [2].

A study conducted in India 2005, to assess risk perception related to HIV/AIDS stated that only 41.19% felt HIV/AIDS is a problem serious enough to adversely affect operational efficiency [3]. Similarly, the military personnel in Sub-Sahara Africa are very much affected by HIV/AIDS [4]. A survey conducted among Armed Forces of the Republic of Sierra Leone in 2009 found that a relatively low level of knowledge of HIV and AIDS amongst the survey population as evidenced by the 40% and 52% of participants stating that HIV is transmitted by mosquito bites and from public toilets, respectively [5].

In contrast, a survey conducted in Nigeria Naval personnel in 2004 indicated that 52.1% of respondents believed that a cure for AIDS was available in Nigeria and that one can get HIV by sharing personal items with an infected person (25.3%) [6].

A survey conducted among Ethiopian military recruits in 2002, revealed substantial gaps in recruits' knowledge about HIV/AIDS, 12.2% of participants believed that HIV can be transmitted by kissing, 16.3% believed that condoms with lubricant do not protect against HIV. Moreover, only 36.4% reported being tested for HIV [7].

A similar survey conducted in Ethiopia, Northern command in 2006 showed that 84.7% participants correctly identified all the three major prevention methods (abstaining from sexual intercourse, having one uninfected faithful sexual partner, and consistent and correct condom use) and 66.3% of participants had comprehensive knowledge about HIV/AIDS [8].

Ethiopia has already conducted two rounds of behavioural surveys, one in 2002 and another in 2005 [9,10]. However, Studies focusing on perception and risk behaviour of Armed forces including Eastern

command military members were relatively neglected. In addition, those studies were inadequate out to show level of knowledge attitude practice of HIV/AIDS prevention strategies among military personnel of Ethiopia. Therefore, we assessed high risk sexual behaviour, and measure the level of knowledge and attitude among the study population.

Materials and Methods

Study design, settings and participants

A cross sectional study mixing quantitative and qualitative methods was carried out to HIV risk perception among Eastern command military members, Eastern Ethiopia from January 01, 2015-March 30, 2015. The Eastern command military force is governed by National ministry of Defense, ground force and structured as command post for three infantry divisions, one training center and different departments within the command head quarter.

Sampling procedure

The required sample size was calculated via Open Epi software using single population proportion calculation formula based on the following assumptions: proportion of perception of risk was 43.6% [10], 95% confidence level, 5% margin of error, since multi-stage sampling technique was applied, a design effect of 2 was considered. Therefore, the total sample size was $2 \times 377 = 754$. Adding 10% (75) for non-response rate; the total sample size was 829. But, to get equal number of participants from each regiment the sample size was increased to 840.

Multi-stage stratified sampling technique was used to select the study units. The Eastern command had two divisions. Sampling was in three stages in each division. In the first stage two divisions were selected randomly. Four hundred twenty participants from each Division were selected. At the second stage three clusters from each division, which is Regiment, was selected randomly. The third stage involves random selection of three Battalions from the Regiments selected at second stage. The smallest unit of study was, the Battalion, selected from three Regiments. All Battalions contains equal number of personnel. Proportionate sample allocation was used to recruit the study participants from each Battalion.

Variables and data collection procedures

HIV risk perception was the response variable dichotomized as susceptible and unsusceptible. The independent variables included age, sex, marital status, education, STI history, non-sexual risk behaviors such as alcohol and drug use. A structured self-administered questionnaire was prepared in English, and translated to local a language, Amharic. With some modifications, the tool was adopted from the BSS Ethiopia. The questionnaire was tested in other military members who live in other place (in the command head quarter stuff) and who were not selected in the study.

After identifying the military members to be included in the survey, a list of them was prepared grouped by regiments. We the heads of the regiments and distributed the questionnaire with an envelope for each participant. Supervised by two health officers, ten diploma nurses collected the data. We gave half day training for the supervisors and data collectors. To ensure the quality of data, the principal investigator

and a supervisor checked the questionnaire for completeness and consistency daily.

For the qualitative study, total of Four Focus group discussions (FGDs) were done in January-March 2015 which consist of 6 to 8 individuals in each group. The discussion was conducted using semi-structured, open-ended questionnaires in order to provide more insight in to the complex pattern of sexual behavior and their perception towards HIV in the study area. The focus group discussants were recruited and organized by data collectors and the principal investigator as 6 to 8 members based on predetermined military rank and marital status to keep homogeneity. The FGD participants were recruited as one group from married personnel, one group from single personnel, one group from officers in rank and one group from non-officers in rank. Moderator of the discussion was used discussion guides and the discussion was recorded using audio tape recorder. All the interviews were conducted in Amharic by the investigator.

Inclusion and exclusion criteria

Inclusion criteria: All military members of the selected divisions who resided at a given place for more than six months prior to the study were included in the study irrespective of their age, sex and military rank.

Exclusion criteria: Since the data collection instrument was self-administered questionnaire, military members who can't read and write, on annual leave, sick and hospitalized were excluded in this study.

Statistical analysis

The collected data was entered and analyzed by using the Epi-info version 3.5.1 and SPSS version 16.0 computer software packages. Data cleaning and editing was carried out. Analysis of frequencies of different variables and chi squared test for multiple sexual partner and condom use was made. Odds ratio was calculated to determine the strength of association of selected variables. Logistic Regression was made to control the effect of each explanatory variable on the outcome variables.

Ethical considerations

The ethical clearance was obtained from Haramaya University School of Public Health Ethical Committee. Permission was obtained from the concerned bodies of Ministry of National defense. Explanation of the purpose of the study stating the importance of participating in the study was given to the Eastern command, down to the hierarchy and the respondents. Participation in to the study was strictly on voluntary basis. Informants were also showed their consent by putting their signature voluntarily and return the questionnaires in a sealed collection box. Information gathered was treated as confidential and accessible only to the investigators.

Limitations

As any cross-sectional study, cause and effect relationship is not possible to establish for the factors dealt in the study. The study was conducted in Eastern command, so it can't be generalized to Defense force in the country.

Results and Discussion

Socio-demographic characteristics

Out of the total 840 respondents 812 military members completed the questionnaires, with non-response rate of 3.4%. Out of the total respondent, most of participants 506 (62.3%) orthodox Christian, the mean age was 30.3 with SD 6.914 and the majorities, 54.9% of the participants were greater than 26 years old.

Majority of the study participants were 222 (27.3%) were Amhara in ethnicity followed by 222 (27.3%) Tigre 191 (23.5%). Regarding educational status, 541 (66.6%) was grade 7-12. The majority of the participants, 446 (54.9%) stayed at present deployment site for five years or less. The mean service year of study participants in the army was ten years with a range from one year to 30 years. Majority of participants 324 (40.0%) were belonging to the category of corporal rank (Table 1).

For the qualitative component of the study, 32 participants were involved in four focus group discussions. The discussions were conducted from January to March/2013 in four different regiments of the selected divisions in Eastern command. Depending on the distance which are near to the centre two regiments from division 13 and two regiments from division 32 were purposively selected. Majority of the discussant were grade 7-12 and on the age range of 22 to 45. The Compositions of the participant were homogenous in terms of marital status and military Rank.

	Variables	Number=812 (%)
Sex	Male	808 (99.5)
	Female	4 (0.5)
Age	19-24	206 (25.4)
	25-35	406 (50)
	36+	200 (24.6)
Marital status	Single	450 (55.4)
	Married	307 (37.8)
	Divorced	28 (3.4)
	Others	27 (3.3)
Ethnicity	Amhara	222 (27.3)
	Tigray	200 (24.6)
	Oromo	171 (21.0)
	SNNP*	134 (16.4)
	Somali	13 (1.6)
	Benshangul/gumz	21 (2.6)
	Gambela	34 (4.2)
	Others	17 (2.1)
Religion	Orthodox Christian	506 (62.3)
	Muslims	168 (20.7)
	Protestant	103 (12.7)

	Others	35 (4.3)
Alcohol drinking	Yes	457 (56.3)
	No	355 (43.7)
Khat chewing (currently)	Yes	147 (18.1)
	No	665 (81.9)
Rank	Senior officer	50 (6.2)
	Junior officer	197 (24.3)
	Sergeant	138 (16.9)
	Corporal	324 (40.0)
	Private soldier	103 (12.7)
Educational status	Grade 1-6	68 (8.4)
	Grade 7-12	541 (66.6)
	Diploma and above Others	174 (21.4)
		28 (3.5)
Drug use	Yes	28 (3.4)
	No	756 (93.1)
	NR	27 (3.3)
Military position	Regiment leader	30 (3.7)
	Company leader	95 (11.7)
	Squad leader	239 (29.4)
	Member	128 (15.8)
	Others	28 (3.4)
*SNNP: Southern Nations Nationalities and Peoples		

Table 1: Socio-demographic characteristics of the Eastern command military members in Eastern Ethiopia, 2015.

Behavioral factors

Sexual characteristics of the study population: Out of the 812 respondents, the majority of the Sexually active respondents, 450 (55.4%) were never married, 40 (4.9%) reported having more than one sexual partner during the past 12 months. Of those who are sexually active personnel, sexual partner includes steady boy/girlfriend 33 (4.1%), casual partner 92 (11.3%), spouse 25 (3.1%). Amongst 307 married respondents one hundred fifty-one (49.1%) of the respondents reported that they have sexual inter course with two or more partners in the last 12 months. Out of the sexually active respondents, 264 (32.5%) reported experiencing sex with commercial sex workers in the past 12 months

The qualitative study revealed that age was one of the influencing factors for their sexual behaviour. Although the military members have good awareness about HIV/AIDS, they are not refraining from unsafe sexual practice. This might be related to professional nature of military. Most of the time soldiers are posted in remote areas. Together with this the heavy trainings, unstable security condition of the area and being far from family and loved ones puts them in a stressful situation. To

avoid the stress full life and feeling of lonely, the might have a fun together or individually taking alcohol and other substances. This situation will force the practice sexual risky behaviours. Visiting CSWs and unprotected sex are an inevitable consequence of alcohol taking for the military personnel. For example, one militant said,

“The military professional character is discouraging to build family; because we have no permanent place to reside; there is high potential to move at any time. We don’t know, by tomorrow we might be posted from here to the opposite corner the country. In addition, most of the time we have been posted in periphery which is far from the towns around, so the easiest and accessible way to satisfy our sexual need is having sex with commercial sex workers”. (A 26 years old captain from 132 regiment staff).

The qualitative finding explored that there was a feeling of hopelessness when they were assigned in remote front areas. Concern about what will happen to them in the near future is highly prevalent although the situation was peaceful at the time of data collection. For example, military personnel said:

“We are going to die tomorrow in the front so why should we care for the future we have to enjoy today”. (Male, participant 5, FGD 3).

As the result of this the military personnel especially these who are in the remote front area practice sexual risky behaviours and perceived as no risk of HIV.

Other behaviors

This study revealed that alcohol consumption in the military personnel was high, with 266 (32.7%) of respondents’ drunk alcohol containing drinks regularly. The use of these substances was strongly associated with having sexual intercourse. They are highly likely to start having casual sex which is true even despite the concern about HIV infection [11]. For example, a study undertaken in the United States demonstrated that males who use alcohol are 40% more likely to have casual sex than those who do not use alcohol [12].

According to participants, even though military members have high knowledge on HIV/AIDS and seemed to fear HIV/AIDS but still demonstrate unprotected sex. Peer pressure, absence of recreation place, over consumption of alcohol and Khat were the main reason for not bringing behavioural change. In addition, the reasons why military members do not perceive themselves at risk of HIV are due to nature of the disease not causing sudden death and over indulgence in alcohol. Similarly, about 150 (18.5%) of respondents reported that they consume Khat and 36 (4.2%) reported taking injected drugs in the past 12 months (Table 2).

This is because Khat chewing and multiple sexual practice were strongly associated. The situation is further exacerbated by similar strong linkage that exists between Khat chewing habit and indulgence in alcohol. Khat chewing and its associated behaviors, i.e. alcohol consumption and committing multiple sexual practices were found to be linked more strongly with the increase in HIV cases [13].

In addition, loss of track of mind induced by Khat chewing may have contributed for this higher rate of casual sex among the chewers more than the non-chewers. Indeed, the effect of the drug is known to bring about mood swings that vacillate between hypomania and depression. During the hypomanic phase, chewers may not be capable of rational judgment and they also may not be able to predict the serious consequences of their actions. Thus, the chewers could walk

into the most dangerous situations, feeling that they are invincible, that there is no danger – morally or physically [13,14].

The discussants in all groups were asked about what they perceive to be the risk of contracting HIV/AIDS among people who had multiple sexual partners and how do the military members perceive risk of HIV/AIDS. Almost all the junior officer group participants perceived that people with multiple sexual partners are at high risk of contracting HIV/AIDS.

Variables		Number=812 (%)
Extra marital partner	Yes	154 (18.9)
	No	618 (76.2)
	No response	40 (4.9)
Multiple sexual partner	Yes	34 (4.3)
	No	753 (92.7)
	No response	24 (3.0)
Having sex with CSWs	Yes	264 (32.5)
	No	537 (66.1)
	No response	11 (1.4)
Condom used with CSWS n=(264)	Yes	247 (93.6)
	No	17 (6.4)
How often condom used with CSWS n=(247)	Always	181 (73.6)
	Most of the time	37 (14.9)
	Some time	29 (11.5)
Ever had STIs n=(812)	Yes	42 (5.2)
	No	770 (94.8)
First discuss the issue with n=(42)	R Partner/ spouse	1 (2.4)
	My friends/peers	18 (42.9)
	My boy/girl friend	4 (9.6)
	Health workers	19 (45.2)
Alcohol drinking	Yes	457 (56.3)
	No	355 (43.7)
Khat chewing	Yes	150 (18.5)
	No	662 (81.5)
Drug use	Yes	36 (4.2)
	No	620 (73.9)
	No response	183 (4.9)

Table 2: Sexual and other characteristics of the Eastern command, military personnel, 2015.

Knowledge, attitude and HIV/AIDS risk perception of the respondents

Knowledge and attitude related to HIV/AIDS: Majority of the respondents 655 (80.7%) reported that HIV/AIDS can be avoided by consistent condom use, and majority of the participants 689 (84.9%) agreed that condom use practice is protective option against HIV/AIDS, 597 (73.5%) agreed that having multiple sexual partners leads to HIV acquisition, 594 (73.2%) agreed that alcohol consumption and drug use can predisposed to HIV acquisition, 451 (55.5%) rejected that using condom consistently is a sign of not trusting sexual partner and 536 (66%) rejected that if one look carefully, he/she can know if someone has HIV (Table 3).

Variables		Number=812 (%)
By looking carefully, you can know if someone has HIV	Agree	44 (5.4)
	Not sure	232 (28.6)
	Disagree	536 (66.0)
Do you believe condom use is a practical protective option against HIV?	Agree	689 (84.9)
	Not sure	80 (9.9)
	Disagree	43 (5.3)
Using condom is a sign of not trusting your partner	Agree	245 (30.2)
	Not sure	15 (14.2)
	Disagree	451 (55.5)
Do you believe having multiple sexual contact leads to HIV acquisition?	Agree	597 (73.5)
	Not sure	86 (10.6)
	Disagree	129 (15.9)
Do you believe alcohol consumption and drug use can predispose to HIV acquisition?	Agree	594 (73.2)
	Not sure	142 (17.5)
	Disagree	76 (9.4)

Table 3: Attitudes and beliefs towards risks of sexual activity and HIV/STIs among Eastern command military members, 2015.

The HIV/AIDS knowledge score was computed by adding the knowledge scores on HIV prevention. Because most respondents did not mention all three methods of prevention, only 260 (32.0%) have “good” score, with six of the six items correct. However, 371 respondents (45.7%) of respondents did score four to five items correct, which is classified as “fair” HIV/AIDS knowledge, 181 (22.3%) of respondents did score between zero and three correct answers are “poor” scores.

Nearly one-quarter of the participants are classified as having poor HIV/AIDS knowledge because they are unable to answer more than 3 of the 6 items on the scale correctly (Figure 1).

knowledge of the respondents about HIV prevention methods

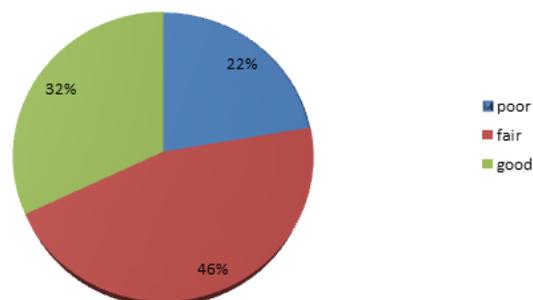


Figure 1: shows the distribution of respondents' HIV/AIDS knowledge scores, 2015.

The qualitative study also tries to explore their knowledge and perception of the military members about HIV testing and knowledge of VCT. Majority of the discussants have knowledge on the importance of VCT especially Mobile VCT which is testing them everywhere. The participants believe Voluntary Counselling and Testing is necessary to plan for the future and to prevent transmission of HIV. Although majority of the participants acknowledged the importance of VCT, there was a poor VCT uptake in the military members. The main reason stated by the participants were high feeling of hopelessness and the nature of the disease not causing sudden death as compared death from enemy shoot.

The discussants acknowledged the continuous improvement in the service delivery of the military health department including health education about preventive health problems especially about HIV and other STIs, the mode of transmission and how to prevent them provided by health professionals from military health department. They found it important in changing their attitude and reducing risky sexual behaviour.

Risk perception: Participants attitude towards perceiving themselves as susceptible to HIV infection was asked and result indicated that 236 (29.1%), respondents replied that have no chance of acquiring HIV. Three hundred fifty-six (43.8%) believed to have low risk of acquiring HIV (Figure 2).

The common reasons given by those who perceived themselves at no risk were: always use condoms 31.7%, being faith full to regular partner 26.5%, and abstained sex 7.5%. While those who perceived themselves at risk were: practiced unprotected sex 35.9%, claimed injury with contaminated sharps 18.6%, had sex with commercial sex workers 18.3%, and had multiple sexual partners 19.5%.

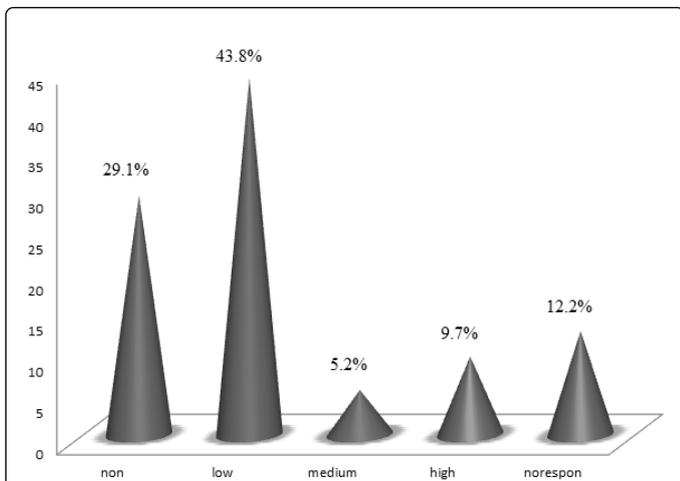


Figure 2: The HIV risk perception among Eastern command military members in 2015.

Predictors of risk perception: In this study Sexual risk behavior and alcohol abuse have been linked. Among those reporting sex with a casual sex partner (40.7%), 10.7% said they did not use protection during last sexual contact. Thirty-seven percent of men engaged in sex with a CSW during their lifetime, and among the 19.2% who had sex with a CSW during the past 12 months, 13.6% did not use protection during last sexual contact. Studies in other countries also revealed alcohol abuse has been associated with sexual risk behavior, particularly among military personnel [15-18]. Because alcohol consumption was used to decrease inhibitions associated with interacting with women as well as sexual risk-taking behavior, and to provide a socially acceptable excuse for not using condoms as well as a means to increase male sexual pleasure [19].

Respondents with educational status <6 grade (37%) less likely perceived HIV risk compared with those >6 grade (COR with 95% CI=0.6 [0.3-.9]). because those with higher schooling level understand and read HIV and other STI educational materials distributed easily rather than those with lower schooling. Condom user respondents were three times more likely perceived risk than not users (AOR with 95% CI=3.0 [1.4-6.4]). as the result indicates those who consistently condom users mean, those who have better awareness. There were significantly association between respondents with multiple sexual partners and risk perception (AOR with 95% CI=3.0 [1.4-6.4]) (Table 4).

Variables		Risk perception		OR (95% CI)	
		Yes	No	Crude	Adjusted
Age	18-24	27	162	1.3 [0.6-2.5]	1.4 [0.9-2.2]
	25-47	52	472	1	1
Educational status	<6	9	77	0.6 [0.3-0.9]	0.3 [0.2-2.5]*
	>6	70	557	1	1

Marital status	Never married	60	376	0.6 [0.5-1.8]	0.6 [0.7-3.8]
	Married	19	258	1	1
Current rank	Non officer	59	432	0.5 [0.6-1.9]	0.8 [0.5-1.4]
	Officer	20	202	1	1
Multiple sexual partners	Yes	6	53	3.1 [1.8-5.4]	2.0 [0.8-5.0]**
	No	72	590	1	1
Condom use	Yes	73	609	4.8 [1.7-8.6]	3.0 [1.4-6.4]*
	No	6	25	1	1
HIV Tested (VCT)	Yes	57	481	0.5 [0.5-1.4]	0.8 [0.5-1.4]
	No	22	153	1	1
Drinking alcohol	Yes	45	365	0.4 [0.4-0.8]	1.5 [0.7-2.1]
	No	34	269	1	1
Khat	Yes	12	121	0.6 [0.3-1.3]	1.4 [0.8-2.6]
	No	67	513	1	1
Drug use	Yes	5	20	1	1
	No	69	666	2.5 [0.8-7.7]	1.0 [0.3-3.4]
Knowledge of HIV prevention	Yes	603	31	1.9 [0.8-4.4]	0.5 [0.2-1.2]
	No	72	7	1	1

*<0.05; **<0.001; ***<0.000. Adjusted for Age, educational status, marital status, multiple sexual partners, Condom use, tested for HIV (VCT), alcohol drinking, Khat chewing and knowledge of risk.

Table 4: Comparison of selected variables and own risk perception among Eastern command military members Eastern Ethiopia, 2015.

Conclusion

In conclusion although the military personnel stationed in Eastern Ethiopia have good knowledge and practice in HIV testing, results from this study suggest the military personnel are at high risk for HIV and other STIs. This is reflected by a low risk perception of getting HIV/AIDS among the military members. Alcohol consumption is also common culture among military personnel and it predisposes them to unsafe sexual practice. The respondents in the FGD also mentioned similar response. Lower schooling and inconsistent condom use was found to have significant association with low risk perception which increase the risk of HIV and other STIs among this population. Therefore, the ministry of Defense should strengthen the existing programmes and activities.

The study has the following limitations: (I) being a cross-sectional study, cause and effect relationship was not possible to establish for the factors dealt in the study; (II) the study was conducted in Eastern command it can't be generalized to Defence force in the country.

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References

1. Sohal A, Thankian k, Megan K, John B (2002) Reasons for non-use of condom in eight countries in sub-Saharan Africa. *PSI research division working paper* 49.
2. Rritzenthaler R (2005) On the Front HIV/AIDS and the Uniformed Services, UNAIDS (English original August 2005).
3. Brig Z Singh, Banerjee A (2005) HIV Prevention in the Armed Forces: Perceptions and Attitudes of Regimental Officers, *MJAFI* 2006, 62: 335-338.
4. UNAIDS (2005) On the frontline: a review of policies and programmes to address AIDS among peacekeepers and uniformed soldiers, CH-1211 Geneva 27, Switzerland.
5. Foday S, Brima K, Sahr MG, Aiah AG, Alim SD (2009) Knowledge, Perception of Risk and Attitude of Sierra Leone Military Personnel towards Colleagues with HIV/AIDS 1: 38-43.
6. Nwokoji UA, Ajuwon AJ2004. Knowledge of AIDS and HIV risk-related sexual behavior among Nigerian naval personnel, *BMC Public Health*, 4: 24.
7. Larson S, Booth-Kewley K, Kelley L, Bakhireva RA, Shaffer HS (2002) Kraft DOD HIV/AIDS prevention program: country progress reports APRIL 2002, Report No. 02-16 supported by the Defense Health Program.
8. Aytenfisu Y (2006) Thesis of public health: assessment of utilization and determinants of voluntary counseling and testing for HIV in the armed forces of ETHIOPIA, MPH thesis, department of community health, AAU 2006.
9. Mitike G (2002) HIV/AIDS Behavioral Surveillance Survey, Round One. Federal Ministry of Health, Ethiopia.
10. Mitike G (2005) HIV/AIDS Behavioral Surveillance Survey (BSS), Round Two. Federal Ministry of Health, Ethiopia.
11. Abebe D, Debella A, Dejene A (2005) Khat chewing habit as a possible risk behavior for HIV infection: A case-control study. *Ethiop J Health Dev* 3: 174-181.
12. Kammeyer KCW, Ritzer G, Yetman NR (1997) *Sociology: Experiencing changing societies*. Allyn and Bacon Boston190-211.
13. Report of a WHO Advisory Group (1980) Review of the pharmacology of khat. *Bulletin on Narcotics* 33: 83-93.
14. Mekonnen N, Mekonnen E, Gebretsadik K (1988) Behavioural changes and development of tolerance to repeated administration of khat (*Catha edulis*) in mice. *Ethip J Health Dev* 12: 253-260.
15. Brodine SK, Starkey MJ, Shaffer RA, Ito SI, Tasker SA, et al. (2003) Diverse HIV-1 subtypes and clinical, laboratory and behavioral factors in a recently infected US military cohort. *AIDS* 17: 2521-2527.
16. Hart G (1974) Factors influencing venereal infection in a war environment. *Br J Vener Dis* 50: 68-72.
17. MacQueen KM, Nopkesorn T, Sweat MD, Sawaengdee Y, Mastro TD et al. (1996) Alcohol consumption, brothel attendance, and condom use: normative expectations among Thai military conscripts. *Med Anthropol Q* 10: 402-423.
18. Anastario MP, Tavarez MI, Chun H (2010) Sexual risk behavior among military personnel stationed at border-crossing zones in the Dominican Republic. *Rev Panam Salud Publica* 28: 361-367.
19. Malone JD, Hyams KC, Hawkins RE, Sharp TW, Daniell FD (1993) Risk factors for sexually transmitted diseases among deployed U.S. military personnel. *Sex Transm Dis* 20: 294-298.