

ORIGINAL ARTICLE**SUBSTANCE USE AND SEXUALLY TRANSMITTED INFECTIONS AMONG ANTI-RETROVIRAL TREATMENT ATTENDEES IN JIMMA UNIVERSITY SPECIALIZED HOSPITAL, JIMMA, ETHIOPIA**Shimelis Mitiku¹, Andualem Mossie¹, Sintayehu Fekadu²**ABSTRACT**

BACKGROUND: Substance use increases both the risk of Human Immunodeficiency Virus and other Sexually Transmitted Infections, either directly or indirectly. The association of substance use and Sexually Transmitted Infections has not yet studied in Southwestern Ethiopia. The main aim of this study is to determine the associations between substance use and Sexually Transmitted Infections on clients under follow up in Anti-Retroviral Treatment clinic at Jimma University Specialized Hospital.

METHODS: A cross-sectional study was conducted on clients under follow up at Anti-Retroviral Treatment clinic from June 10 to July 10, 2011 at Jimma University Specialized Hospital. Data collection was done using a pre-coded and pre-tested questionnaire. Trained Anti-Retroviral Treatment adherence counselors collected the data. Data were entered and analyzed using SPSS for Windows version 16.0. Chi-square test was used to measure the levels of significance. P-value < 0.05 was considered as significant.

RESULTS: Three hundred thirty eight Anti-Retroviral Treatment attendees participated in the study. Two hundred twenty (65.1%) of the study participants were females and their mean (\pm SD) age was 33.6 ± 8.04 years while 156 (46.2%) of them lied in the age group of 25-34 years. Clients who reported that they had Sexually Transmitted Infections were 120 (35.5%). Those who consumed alcohol were more likely to have contracted in Sexually Transmitted Infections: AOR (95% CI) =0.46 (0.26-0.80).

CONCLUSION: Prevalence of Sexually Transmitted Infections was comparable among females and males. Substance use, particularly alcohol consumption, found to be a potential risk factor for Sexually Transmitted Infections.

KEYWORDS: Substance use, Sexually Transmitted Infections, HIV

INTRODUCTION

Sexually transmitted infections (STIs) are transmitted mainly through sexual activity, although some sexually transmitted infections can be transmitted by sharing drug injection device. In the United States in 2005, there were 976,445 new cases of chlamydia, 339,593 new cases of gonorrhea, 266,000 new cases of herpes; and 8,724 new cases of syphilis (1). Sexually active adolescents and young adults may be at higher risk of acquiring sexually transmitted infections than

older adults. Recent estimates suggest that person aged 15 to 24 years represent about 25 percent of all persons who were ever sexually active and nearly half of all new STI cases (2). The majority of HIV infections among adolescents are contracted through sexual activity (3). Substance use increases both the risk of HIV and other STI infection, either directly through needle sharing or indirectly through its association with sexual risk-taking (4).

Several STI epidemics are well documented in populations at risk for HIV (5) suggesting that

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STIs may also be prevalent in HIV infected people who continue to practice sexual risk behaviors. In addition, previous research has shown rates of incident of STIs in people living with HIV infection that vary from 15% to 25%, depending on time intervals and inclusion criteria (6).

Ethiopia is one of the sub-Saharan countries severely affected by the HIV/AIDS pandemic. Currently, the national adult HIV prevalence rate is estimated at 2.1% and an estimated number of 901,893 people are living with HIV/AIDS (7). HIV infection and substance use are two of the most important public health challenges, particularly in developing countries (8). The contributions of alcohol, Khat and other substances in interfering with condom use have been studied fairly extensively in developed societies (9). This important area of research has not been explored in Ethiopia. The few prevalence studies conducted on problem of drinking in Ethiopia have shown that a significant proportion of the population used alcohol fulfilling the criteria for problem of drinking (10, 11).

In Ethiopia, studies on substance use and STIs among patients in ART clinic are not carried out sufficiently and also there are no sufficient reported studies showing the association between substance use and STIs. Therefore, the present study was to assess the association of substance use and sexually transmitted infections among patients on follow up for ART at Jimma University Specialized Hospital clinic.

PATIENTS AND METHODS

A cross-sectional study was conducted from June 10 to July 10, 2011 at Jimma University Specialized Hospital (JUSH), ART Clinic, located in Jimma City, 357 Kms South-West of Addis Ababa. The hospital serves as a teaching and referral centre for the population of Jimma and adjacent zones and regions in Southwest Ethiopia. During the study period, 3286 HIV-positive persons visited the ART clinic but 1986 of them were actively attending ART Clinic at JUSH in the year of 2010/2011.

Sample size was determined using the formula for single population proportion, and the following assumptions were made. Significance level of 95% ($\alpha=0.05$) and 5% margin of error was taken. Since, the prevalence of substance use and

STIs among ART attendees in Jimma City was not known, in the study area, 50% prevalence was taken to obtain sufficiently large sample size, and 5% was added to compensate for non-response rate. A total of 338 adults aged 15 years and above were included in the study.

From the registration book, the patients aged 15 years and above were identified and the registration number of the clients who were on follow up, eligible, and not involved in the pretest were taken and then, the study subject was drawn using the lottery method.

Data collection was done using a standardized pre-coded and pre-tested questionnaire. The questionnaire contains socio-demographic characteristics, history of sexually transmitted infections, history of substance use and sexually risk behaviors of the respondents. History of sexually transmitted infections of study units was interviewed and obtained from registration card in ART clinic of JUSH. In addition to this, diagnosis of STIs was taken from record and symptoms like genital discharge, swelling, or ulcer was interviewed.

This structured questionnaire was first developed in English, then translated into Amharic and Afan Oromo language, and then back translated to English to check for consistency and phrasing of difficult concepts. The questions and statements were arranged according to particular objectives that they should address. ART adherence counselors and nurse counselors were used to conduct the interviews and collect data. Before starting data collection, training was given on the study objective and the questionnaire to data collectors for two days by the principal investigator.

After data collection, each questionnaire was checked for completeness and end coding at the right margin of the questionnaire was done. The corresponding code number was written carefully at each margin. The template scheme for data entry was developed and pre-tested for ranges, skipping patterns and allowed legal values by entering eighteen questionnaires. After this validation, the data were entered and analyzed using SPSS for Windows version 16.0. Descriptive statistics were used to present frequency distributions. Chi-square test was used to evaluate the association between independent (predictor) variables and outcome variables (STIs).

Table 1: Association between socio-demographic characteristics and other STIs among ART attendees in JUSH, Jimma, Ethiopia, 2011.

Socio-demographic characteristics		Total (n=338) N (%)	STIs		χ^2	P-value
			Yes (n=120) N (%)	No (n=218) N (%)		
Sex						
	Male	118 (34.9)	42 (35.6)	76 (64.4)	0.001	0.980
	Female	220 (65.1)	78 (35.5)	142 (64.5)		
Age in years						
	Mean, SD	33.6±8.04				
	15-24	29 (8.6)	10 (34.5)	19 (65.5)	4.111	0.250
	25-34	156 (46.2)	64 (41.0)	92 (59.0)		
	35-44	118 (34.9)	36 (30.5)	82 (69.5)		
	≥45	35 (10.4)	10 (28.6)	25 (71.4)		
Marital Status						
	Married	168 (49.7)	64 (38.1)	104 (61.9)	1.987	0.738
	Single	65 (19.2)	19 (29.2)	46 (70.8)		
	Divorced	49 (14.5)	17 (34.7)	32 (65.3)		
	Separated	25 (7.4)	10 (40.0)	15 (60.0)		
	Widowed	31 (9.2)	10 (32.3)	21 (67.7)		
Religion						
	Orthodox	165 (48.8)	60 (36.4)	105 (63.6)	0.911	0.823
	Muslim	123 (36.4)	41 (33.3)	82 (66.7)		
	Protestant	34 (10.1)	14 (41.2)	20 (58.8)		
	Catholic	16 (4.7)	5 (31.2)	11 (68.8)		
Ethnicity						
	Oromo	153 (45.3)	41 (26.8)	112 (73.2)	14.22	0.014
	Amhara	66 (19.5)	34 (51.5)	32 (48.5)		
	Tigrie	37 (10.9)	12 (32.4)	25 (67.6)		
	Gurage	21 (6.2)	10 (47.6)	11 (52.4)		
	Keficho	38 (11.2)	15 (39.5)	23 (60.5)		
	Other*	23 (6.8)	8 (34.8)	15 (65.2)		
Educational Level						
	Illiterate	49 (14.5)	19 (38.8)	30 (61.2)	3.303	0.347
	Grade 1-8	161 (47.6)	63 (39.1)	98 (60.9)		
	Grade 9-12	95 (28.1)	27 (28.4)	68 (71.6)		
	Tertiary (12+)	33 (9.8)	11 (33.3)	22 (66.7)		
Occupation						
	Merchant	52 (15.4)	19 (36.5)	33 (63.5)	1.631	0.897
	House Wife	85 (25.1)	33 (38.8)	52 (61.2)		
	Employee	76 (22.5)	26 (34.2)	50 (65.8)		
	Farmer	30 (8.9)	8 (26.7)	22 (73.3)		
	Daily Laborer	65 (19.2)	24 (36.9)	41 (63.1)		
	Other [‡]	30 (8.9)	10 (33.3)	20 (66.7)		
Income per month (Eth. Birr)						
	Have no income	24 (7.1)	9 (37.5)	15 (62.5)	0.866	0.929
	Not specified	38 (11.2)	13 (34.2)	25 (65.8)		
	≤500	121 (35.8)	40 (33.1)	81 (66.9)		
	501-999	49 (14.5)	17 (34.7)	32 (65.3)		
	≥1000	106 (31.4)	41 (38.7)	65 (61.3)		

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Bivariate analysis was employed to identify factors associated with STIs. Binary logistic regression analysis was performed for those factors that showed a statistically significant association in bivariate analysis and to investigate independent predictors by controlling for possible confounders. For comparisons on measures of sexual behaviors, participants who reported STIs or STIs symptoms were compared with individuals who did not report STIs. All statistical analyze used were two tailed tests with $p < 0.05$. Frequencies and measures of variation were used to describe the study population in relation to socio-demographic and other relevant variables. Finally, the results of the analysis were presented in tables and interpreted.

Ethical clearance was obtained from the Jimma University Ethical Review Board. Respondents were informed of the purposes, procedures, risks and benefits of the study. Participant information and consent form were given to potential participants for a written consent. Participation was voluntary and declining participation would not bring any adverse consequences in terms of service provision at the ART clinic. Only consenting participants were included in the study. The information retrieved was kept strictly confidential and name of the participant was not written on the questionnaire. Finally, written informed consent was obtained from each respondent.

RESULTS

Background characteristics of the study participants: The total sample included 338 HIV

positive ART attendees who fulfilled the inclusion criteria and agreed to participate. More than half, 220 (65.1%) of the study subjects were females, their mean (\pm SD) age was 33.6 ± 8.04 years while 156 (46.2%) of them lied in the age group of 25-34 years. One hundred sixty eight (49.7%) of the study subjects were married, 165 (48.8%) of the respondents were Orthodox Christians, and 153 (45.3%) of the study subjects were Oromo. One hundred sixty one (47.6%) of the study subjects had attended primary school (grade 1-8), 85 (25.1%) of the respondents were house wives and 121 (35.8%) of the study subjects had below 500 ETB average monthly income (Table 1).

Prevalence of Sexually Transmitted Infections:

One hundred twenty (35.5%) participants reported STIs or symptoms of STI in the previous twelve months. Forty two (35.6%) of the men and 35.5% of the women reported to have STIs or symptoms of STIs. Diagnosis and symptoms of STIs were taken from the ART attendees' registration book and were also interviewed. With regard to diagnosis of STIs, 31.7% Gonorrhoea and 39.6% Syphilis were commonly reported among men whereas, 68.3% Gonorrhoea, 83.3% Trichomonas and 60.4% Syphilis were commonly identified in women. Symptoms of STIs were also reported to be different in men and women; where men most often reported genital discharge (32.6%) while women reported genital discharge (67.4%) and genital ulcer (72.1%). Other STIs symptoms reported in this study were offensive discharge, itching, rash and scrotal swelling. Rates of specific STIs and STI symptoms for men and women were shown in Table 2.

Table 2: Prevalence of Sexually Transmitted Infections, diagnosis and symptoms by gender among ART attendees in JUSH, Jimma, Ethiopia, 2011.

STI Diagnosis and Symptoms	Men (n = 42)	Women (n = 78)	Total (n = 120)
	No. (%)	No. (%)	No. (%)
Diagnosis			
Gonorrhoea	19 (31.7)	41 (68.3)	60 (100.0)
Chlamydia	9 (33.3)	18 (66.7)	27 (100.0)
Trichomonas	7 (16.7)	35 (83.3)	42 (100.0)
Syphilis	21 (39.6)	32 (60.4)	53 (100.0)
Hepatitis B	-	2 (100.0)	2 (100.0)
Symptoms			
Genital Discharge	29 (32.6)	60 (67.4)	89 (100.0)
Painful Urination	12 (33.3)	24 (66.7)	36 (100.0)
Genital Ulcer	12 (27.9)	31 (72.1)	43 (100.0)
Other STI symptoms*	20 (45.5)	24 (54.5)	44 (100.0)

*Offensive discharge, itching, rash and scrotal swelling.

Table 3: Association between substance use and STIs among ART attendees in JUSH, Jimma, Ethiopia, 2011.

Characteristics	Total (n=338) N (%)	STIs		AOR (95%CI)
		Yes (n=120) N (%)	No (n=218) N (%)	
Sex				
Male	118 (34.9)	42 (35.6)	76 (64.4)	1.00
Female	220 (65.1)	78 (35.5)	142 (64.5)	0.85 (0.45, 1.6)
Age in years				
15-24	29 (8.6)	10 (34.5)	19(65.5)	1.00
25-34	156 (46.2)	64 (41.0)	92 (59.0)	0.93 (0.38, 2.31)
35-44	118(34.9)	36 (30.5)	82 (69.5)	1.93 (0.73, 5.12)
≥45	35 (10.4)	10 (28.6)	25 (71.4)	1.98 (0.61, 6.47)
Marital Status				
Married	168 (49.7)	64 (38.1)	104 (61.9)	0.97 (0.41, .32)
Single	65 (19.2)	19 (29.2)	46 (70.8)	2.45 (0.85, .04)
Divorced	49 (14.5)	17 (34.7)	32 (65.3)	1.37 (0.49, .79)
Separated	25(7.4)	10 (40.0)	15 (60.0)	0.98 (0.31, .18)
Widowed	31(9.2)	10 (32.3)	21 (67.7)	1.00
Ethnicity				
Oromo	153 (45.3)	41 (26.8)	112 (73.2)	1.95 (0.86, 4.43)
Amhara	66 (19.5)	34 (51.5)	32 (48.5)	0.66 (0.28, 1.57)
Tigrie	37 (10.9)	12 (32.4)	25(67.6)	1.67 (0.61, 4.57)
Gurage	21 (6.2)	10 (47.6)	11 (52.4)	0.68 (0.21, 2.21)
Keficho	38 (11.2)	15 (39.5)	23 (60.5)	1.24 (0.40, 3.83)
Other*	23 (6.8)	8(34.8)	15(65.2)	1.00
Alcohol intake				
Yes	170 (50.3)	71 (41.8)	99 (58.2)	0.46 (0.26, 0.80)
No	168 (49.7)	49 (29.2)	119 (70.8)	1.00
Khat Chewing				
Yes	153 (45.3)	54 (35.3)	99 (64.7)	0.91 (0.52, 1.58)
No	185 (54.7)	66 (35.7)	119 (64.3)	1.00
Shisha				
Yes	29 (8.6)	13 (44.8)	16 (55.2)	0.46 (0.19, 1.13)
No	309 (91.4)	107 (34.6)	202 (65.4)	1.00
Cigarette				
Yes	37 (10.9)	12 (32.4)	25 (67.6)	1.21 (0.49, 2.99)
No	301 (89.1)	108 (35.9)	193 (64.1)	1.00

* Wolayta, Yem, Dawuro, Sidama and Konita.

Substance use and Sexually Transmitted Infections:

Logistic regressions analysis was conducted to see the effect of independent predictors on outcome variables while controlling cofounders. The odds ratios for STIs were equally distributed among males (35.6%) and females (35.5%) subjects. Being married, 38.1% reported to have STIs. Forty one (26.8%) and 34 (51.5%) of the respondents to have STIs were Oromo and

Amhara, respectively but there was no a statistically significant association.

Out of the 170 (50.3%) subjects who were consuming alcohol, 41.8% were reported to have STIs which was a statistically significant [AOR (95% CI) = 0.46 (0.26, 0.80)]. Of the 153 (45.3%) respondents who were chewing khat, 54 (35.3%) reported to have STIs; 29 (8.6%) used shisha (a less active narcotic smoked/sucked through a tube like apparatus) and 37 used cigarettes (32.4% had STIs) (Table 3).

Table 4: Association between sexually risk behaviours and STIs among ART attendees in JUSH, Jimma, Ethiopia, 2011.

Characteristics	Frequency N (%)	STIs		χ^2	P-value
		Yes N (%)	No N (%)		
	n = 338	n = 120	n = 218		
Sexual intercourse within twelve previous months					
Yes	257 (76.0)	109 (42.4)	148 (57.6)	22.34	0.000
No	81 (24.0)	11 (13.6)	70 (86.4)		
Use of condom					
Use	165 (48.8)	72 (43.6)	93 (56.4)	9.31	0.002
Not use	173 (51.2)	48 (27.7)	125 (72.3)		
Unprotected sex under influence of alcohol				9.27	0.002
Yes	143 (42.3)	64 (44.8)	79 (55.2)		
No	195 (57.7)	56 (28.7)	139 (71.3)		
Unprotected sex under influence of Khat				0.65	0.422
Yes	109 (32.2)	42 (38.5)	67 (61.5)		
No	229 (67.8)	78 (34.1)	151 (65.9)		
Believe sexual initiation causes for STIs					
Yes	333 (98.5)	119 (35.7)	214 (64.3)	0.53	0.465
No	5 (1.5)	-	5 (100.0)		
Believe alcohol intake causes for sexual initiation				0.32	0.570
Yes	329 (97.3)	116 (35.3)	213 (64.7)		
No	9 (2.7)	4 (44.4)	5 (55.6)		
Believe Khat causes for STIs					
Yes	272 (80.5)	96 (35.3)	176 (64.7)	0.03	0.871
No	66 (19.5)	24 (36.4)	42 (63.6)		
Current partner HIV serostatus	n=220	n=87	n=133		
Positive	149 (67.7)	59 (39.6)	90 (60.4)	0.231	0.891
Negative	33 (15.0)	14 (42.4)	19 (57.6)		
I don't know	38 (17.3)	14 (36.8)	24 (63.2)		
Current partner alcohol intake	n=217	n=85	n=132		
Drink	89 (41.0)	39 (43.8)	50 (56.2)	1.37	0.241
Not drink	128 (59.0)	46 (35.9)	82 (64.1)		
Current partner Khat use					
Yes	95 (43.8)	40 (42.1)	55 (57.9)	0.61	0.434
No	122 (56.2)	45 (36.9)	77 (63.1)		
Current partner Shisha use					
Yes	18 (8.3)	11 (61.1)	7 (38.9)	3.97	0.046
No	199 (91.7)	74 (37.2)	125 (62.8)		
Current partner smoking Cigarette					
Yes	42 (19.4)	18 (42.9)	24 (57.1)	0.29	0.586
No	175 (80.6)	67 (38.3)	108 (61.7)		

Sexual Risk Behaviors of the respondents: All of the respondents reported on their sexual behavior and were included in the analysis. In the twelve months prior to the study, 257 (76.0 %) of respondents had sexual intercourse, 42.4% of them reported to have STIs. Respondents who had sexual intercourse within the previous twelve months were more likely to have encountered sexually transmitted infections ($p < 0.05$).

Results also showed that majority of the respondents (51.2%) were not used condom during sexual intercourse. Those who have never used condom during sexual intercourse were more likely to have acquired STIs ($\chi^2 = 9.31$, $p = 0.002$).

Majority (67.7%) of sexual partners of the respondents had positive HIV serostatus and of these, 39.6% were reported to have STIs. Respondents who used shisha were more likely to have acquired sexually transmitted infections ($\chi^2 = 3.97$, $p = 0.046$).

One hundred forty three (42.3%) of the respondents were reported unprotected sex under influence of alcohol and 109 (32.2%) of them reported unprotected sex under influence of Khat. The majority, 98.5% and 97.3%, 80.5% of the study subjects believed sexual initiation activities, heavy alcohol consumption and chewing khat as the risk factors of STIs, respectively (Table 4).

DISCUSSION

This study presents findings that showed the socio-demographic characteristics, prevalence of sexually transmitted infections, substance use and STIs associations, and sexual risk behaviors of the respondents. The prevalence of STIs was comparable among females and males, though more females were reported having STIs than males in this study. The reason might be women are physiologically more vulnerable to the STIs and two to four times more likely to contract STIs during unprotected vaginal intercourse than men (12). Gonorrhea, Syphilis and genital discharge were more commonly reported STIs diagnosis or symptoms in this study. A study assessing the magnitude of Chlamydia and Gonorrhea infections together with self-reports of sexual risk behavior among youths in Addis Ababa, reported similar findings (13).

Logistic regression analysis was conducted to see the effect of independent predictors on

outcome variables while controlling cofounders. Substance use, particularly alcohol consumption, might be a risk for STIs in HIV positive people. Analysis showed that there was a statistically significant and linear association between alcohol intake and STIs. This might be due to the fact that continuous and excessive use of alcohol by clients increased the likelihood of engaging in multiple risk behaviors (e.g. multiple sexual partners, unprotected vaginal and anal intercourse, inconsistent condom use, and paying for or selling sex) (14). The study done in Uganda showed similar finding with this study. The association between a history of alcohol consumption and HIV seropositivity was investigated (15).

Different factors may influence respondents to engage in a premarital sexual practice due to an inherent risk in being adults and the need to experiment different things by this group. In the twelve months prior to the study, more than half of the respondents had sexual intercourse and one-third of them reported to have STIs. Respondents who had sexual intercourse within the previous twelve months were more likely to have acquired sexually transmitted infections. This might be due to the fact that they had unprotected sex, a condom tears during intercourse, their sexual partner had STIs or their partner engaging in sex with other people. This finding is similar to the study done in Bale, Oromia Region (16).

Respondents who had sexual intercourse within the previous twelve months were more likely to have acquired in sexually transmitted infections. This is less self-protection due to having negative feelings about condoms use and heavy alcohol consumption. Similarly a study done in Mozambique indicated that trust in their partner would make them ignore of use condoms (17).

The limitations of this study include the study design itself, as cross-sectional study design was too weak to test the association or risk factors. Most of the information to be investigated such as Khat chewing, alcohol use and sexually transmitted infections were culturally not acknowledged and liable to social desirability bias. In addition to the cultural effect the retrospective nature of this study made it to be liable to recall bias. All these factors would affect the association between substance use and other STIs in HIV-positive persons.

In conclusion, the magnitude of STIs was comparable among females and males clients. Gonorrhea, Syphilis and genital discharge were more commonly reported STIs symptoms or diagnosis in this study. Substance use, particularly alcohol consumption was higher among clients who had sexually transmitted infections. Majority of the respondents have never used condom during sexual intercourse and were more likely to have engaged in risky sexual practice. Relationship with regular sexual partner could be the one that protects people from acquiring HIV infection if the partnership is maintained. Attitude towards condom use is not improved through time due to a misconception about the level of sexual satisfaction in case of condom usage. Most of the respondents (clients who were not reporting for STIs) were confessed that sexual initiation activity as a cause for STIs.

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