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CONSISTENT CONDOM UTILISATION AND ASSOCIATED FACTORS AMONG PEOPLE LIVING WITH HIV/AIDS IN MEKELE HOSPITAL, TIGRAY, NORTH ETHIOPIA

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ABSTRACT

Background: The introduction of antiretroviral therapy (ART) has sharply decreased morbidity and mortality rates among HIV infected patients. Due to this, more and more people with HIV live longer and healthier lives. Yet if they practice sex without condom, those with high viral load have the potential to infect their sero-negative sexual partner or at risk of acquiring drug resistant viral strains from their sexual partner who are already infected. Therefore, assessing consistent condom use and associated factors among HIV patients who were on ART is very important in the prevention and control of the disease.

Objective: To assess level of consistent condom utilization and factors associated with it among HIV positive adults on ART at Mekelle Hospital

Methods: Hospital based cross sectional study was conducted among 412 participants using systematic random sampling from July 16 to 27, 2012 by trained health workers using an interviewer guided structured questionnaire. SPSS Software was used for analysis, descriptive statistics, and logistic regression was done to determine the independent predictors of condom utilization. Data was presented in tables and text.

Result: Consistent condom use was reported by 112(55.7%) sexually active study subjects. Participants who were divorced (AOR = 12.3, 95% CI: 1.78, 84.47); and those who were disclosed HIV status to their partner/s (AOR = 8.48, 95% CI: 1.46, 49.36) and those who stayed for longer time on ART (AOR = 0.24, 95% CI: 0.06, 0.99); were found to be the independent predictors of consistent condom use.

Conclusion: consistent condom utilization is still low which needs an improvement to strengthen and scale up the ART program. Counselors have to tailor the information of consistent condom use in each visit without hesitating.

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INTRODUCTION

Background

A condom is a device, usually made of latex, used to avoid pregnancy and sexually transmitted diseases such as herpes simplex, hepatitis B, Chlamydia, gonorrhea, syphilis, human papilloma virus, and human immunodeficiency virus (HIV) etc. There are two types of condom, male and female condoms. Male condoms, by far the most popular,

consist of a disposable one-time-use tube-shaped piece of thin latex rubber or lambskin. Condoms were originally used as a contraceptive to prevent unwanted pregnancies. However, in the early 2000s, condoms are just as important as a device for preventing the spread of sexually transmitted diseases (STDs), especially HIV (2003 and San Diego, 2003). Scientific research by the US National Institutes of Health and WHO found "intact condom are essentially impermeable to particles the size of sexually transmitted disease pathogens, including the smallest sexually transmitted virus". Studies show that condoms are 80% to 97% effective in preventing HIV transmission if they are used correctly every time you have sex (AIDS Info Net, 2012). Intact latex condoms provide a continuous mechanical barrier to HIV and other sexually transmitted infections (STIs). A recent laboratory study

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indicated that latex and the new polyurethane condoms are the most effective mechanical barrier to fluid containing HIV-sized particles (0.1µm in diameter) available. Therefore, condoms block contact with the HIV and have above 80% effectiveness when used correctly and consistently (**Gerald J. Stine et al., 2003**). Despite the rapidly spreading of HIV/AIDS epidemic many people still practice unsafe sex even when they know that using condoms (a barrier method) correctly and consistently, contracting sexually transmitted infections such as HIV/AIDS. The barrier method which is latex and plastic condoms used to prevent HIV infection is the same method used to prevent other sexual transmitted infections. HIV infected peoples are prone to stigmatization and exclusion which let the others not to take the advantage of VCT as a result of this, people simply engage in unsafe sex (**Rothenberg et al.,**). The vast majority of people newly infected with HIV in sub-Saharan Africa are infected during unprotected heterosexual intercourse. Having unprotected sex with multiple partners remains the greatest risk factor for HIV in this region (**UNAIDS, 2010**).

A research done in a Cambodian hospital, Phnom Penh shows that most (61%) of HIV infected male patients were unaware of their risk for HIV infection through their sexual behaviors and these of HIV patients had high risk of sexual behaviors with sex workers, and a low prevalence of condom use (**Saok et al., 2010**). In support of this a study done in South Africa displays that 54.4% of those sexually active in the 6 months preceding the study, had not used a condom during the most recent intercourse (**Olley et al., 2010**). A study done in Swiss the rate of consistent condom use was lower with occasional partners than with stable partners (88% vs. 92%; $P < 001$). The proportion of self-reported consistent condom use was 48% among those with HIV positive stable partners, and 80% among those with occasional partners. Participants with only occasional partners reported consistent condom use in 87% (MSM), 93% (heterosexual men), and 91% (heterosexual women) of visits. The commonest predicted factors for unprotected sex were moderate or severe alcohol use and any illicit drug use: like nasal cocaine and cannabis (**Barbara Hasse et al., 2008**).

A study done on Adherence and Risk Behavior in Patients with HIV Infection Receiving Antiretroviral Therapy in Bangkok condoms were consistently used by 240 respondents (81%). From those not using condom reasons given for not using a condom were most commonly due to lack of availability/preparation (28%) and the respondent or partner not liking using condoms (34%). 63% of patients with unprotected sex had disclosed their HIV status to their primary partner (**Amanda Clarke et al., 2012**). Number of sexual partners who had sex without using condom was assessed in Cote d'Ivoire and shows Among the 379 participants, 249 patients (65.7%) reported having a steady partner, while 60 (15.8%) reported having casual partners. 82% of the latter reported having both steady and casual partners. Seventy-seven patients (40.1%) reported ICU (inconsistent condom use), 44.8% of them were women (**Camelia Protopopescu et al., 2010**). Study done in India Correlates of inconsistent condom use with regular partners was assessed and shows that about one third (30.9%) of men and one quarter (26.5%) of women reported inconsistent condom use for vaginal or anal sex with regular

partners thus, posing health risks to themselves and their partners. In univariate logistic regression models, currently taking ART was a significant negative correlate of inconsistent condom use with regular partners. The most common barriers to condom use were diminished sexual pleasure, alcohol use, Health care providers did not discuss safer sex, not disclosed to her/his wife/husband (**Venkatesan Chakrapani et al., 2010**). A study done in Nigeria the percentage of consistency condom use of HIV patients receiving ART was higher among males (14.7%) than females (13.4%). The level of condom use increased from 6.5% among those with no formal education to 14.0% and 18.9% among those with secondary and tertiary education respectively (**Joshua O. Akinyemi et al., 2010**). A study done in Kenya shows that Close to one-third of patients reported inconsistent condom use, which indicates high numbers of potentially unsafe sexual events. Time on ART was important predictors of inconsistent condom use, with a trend showing that shorter ART use was associated with inconsistent condom use.

Patients who had been on ART for more than 19 months had higher rate of condom use compared with those who had been on treatment for less than six months (**Anders Ragnarsson et al., 2011**). Approximately 51% of the study population with regular sex partners reported that they had unprotected anal or vaginal sex. And also shows that participants who were widows or divorcees were 3.5 times more likely to use condoms during their last sexual intercourse than those who were single. Approximately one third (31%; 3 males, 69 females) of the participants reported that they did not use condoms during their last sexual intercourse. The most common barriers to condom use that found in this study are age, male and female participants aged 35-44 years had a 3.3-fold increased condom use with regular sex partner compared to other age groups. Level of education is also other barriers the more they educated the more they like to use condoms (**Ncube et al., 2012**). A study done in Addis Ababa public hospitals, the percentage of consistency condom use of HIV patients receiving ART were 63.1 with 10% of multiple sexual partner's history and with several personal and social reasons for not using condoms (**Yadeta Dessie et al., 2009**).

A study done in rural Uganda shows that 82% of condom use was observed and also study at Aliwal North Hospital shows that there was 70% of consistent condom use among the patients (**Sandlana, 2011**). In order to reverse the global HIV epidemics, maintaining behavioral change would be the foremost tool in HIV patients in general and who are in ART particularly. Clear understanding is urgently required regarding the optimal means of producing needed behavioral change. ART is a lifelong treatment of HIV/AIDS like that HIV/AIDS prevention is also not a one shot task rather a continuous behavioral change implementation and monitoring is needed (**Group GHpw, 2008**). Effective HIV prevention addresses the social dynamics or the social norm change that influence individual behavior (**UNAIDS, 2005**).

Statement of the problem

Condom use for positives helps people living with HIV to avoid becoming infected with other illnesses (co-infections), especially sexually transmitted diseases (STDs). These other

illnesses may put a strain on the immune system, especially if it is weaker because of HIV. In addition, HIV+ people can get infected with another strain of HIV that may be different from the strain they already have. Certain "mutations" (genetic changes) in HIV can make it resistant to some HIV medications. These drug-resistance mutations can be transmitted from one HIV+ person to another. Because some HIV treatments might not work even before a person has taken them (CDC, 2000). The Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome (HIV/AIDS) epidemic has rapidly become a global crisis worldwide. It is reported that people living with HIV continued to grow to 34 million worldwide in 2010 (UNAIDS world aids day report, 2010). Sub-Saharan Africa remains the region most heavily affected by HIV. In 2010, about 68% of all people living with HIV resided in sub Saharan Africa, a region with only 12% of the global population (Ethiopia Single Point Estimates, 2010).

Ethiopia is one of the countries of the world that are most seriously affected by HIV/AIDS with adult prevalence of 2.4 percent (7.7% and 0.9%) in urban and rural populations respectively, and adult incidence of HIV infection accounts about 2.04%. For Tigray according to 2007 single point HIV prevalence estimate, the total adult HIV prevalence for 2010 were 3.1%. And adult HIV incidence was 0.35% (Tigray, 2007). The number of peoples living with HIV is increasing more and more Along with the improvement of the medical HIV care and others. Despite a lot of interventions provided to avert the progression and spread of the disease, the impact of growing access to ART on consistent use of condom remains an ongoing debate (HIV/AIDS, 2005). However, it is still pointed out that a subset of (PLWHA) is still engaged in unprotected intercourse, and hence the potential risk for HIV transmission persists. Little information exists about the practice of condom use among HIV positive persons in Ethiopia. Utilization of condom among HIV positive people enrolled in ART units, in Tigray region is among those essential and critical issues which need study in wide range but little is known about.

Significance of the study

Understanding condom use of HIV patients who are on ART is critical in the transmission of the disease. Because the longer the patient on treatment, the more likely to practice unprotected sex. There are limited studies with regard to condom use of ART patients in Sub-Saharan African countries (SSA) as well in our country. Advisable for appropriate and possible provision of special education, counseling and support on risk reduction methods of ART patients, we need to know the magnitude of the problem and the benefit the patient gains. It is necessary to study consistent condom use among ART patients in construct with the factors. Understanding condom use of groups at risk of transmitting the disease is thus a critical task in the prevention efforts of the disease. Therefore, this study would help to identify factors responsible for performing condom use for future improvement in the program of HIV/AIDS control and prevention. It would help also to assess factors associated with condom utilization among HIV patients receiving ART which could further contribute to control the rising prevalence of HIV and STIs and promotional use of condom as preventive measures in

Ethiopia. The significance of the study towards the profession is, it promotes prevention the infection by assessing the level of Condom Utilization and Associated Factors among HIV Clients.

Objectives

General objective

To assess consistent condom utilization and associated factors among people living with HIV/AIDS, in Mekelle hospital, Tigray, Ethiopia.

Specific objective

To determine level of consistent condom utilization among HIV clients who are on antiretroviral therapy. To identify factors associated with consistent condom utilization among HIV clients who are on antiretroviral therapy.

MATERIALS AND METHODS

A hospital based cross-sectional study was conducted at Mekelle Hospital in Mekelle town which is located 784 kms far north of Addis Ababa. The hospital service provision has dramatically been increasing over the last two-three decades in response to the rapid expansion of the city and mounting health service demand of the population. It has long been serving as a referral hospital for Tigray regional state and for some other districts of the neighboring regional states (Amhara and Afar). The hospital renders service for more than 250,000 peoples from Tigray, Afar and north Wolo of Amhara regions. Currently the hospital has about 200 multi disciplinary full time health professionals. It provides many services including ART. About 20% of HIV patients found in the region who currently on ART have been served in this hospital. Mekelle hospital had started providing HIV care and ART service since 9 years. It has 4067 HIV clients among these 3181 HIV clients are currently on ART. The study was conducted from July 16 to 27/2004 E.C.

Source population

All those HIV positive adults enrolled in the ART clinic at Mekelle Hospital

Study population: all HIV positive adults on ART in Mekelle hospital and visit ART clinic at the study period

Inclusion criteria HIV patients whose ages were 15 years and above who are on ART, and those volunteer to participate

Independent variables

- Socio demographic characteristics like (Age, Sex, Marital status, Education, Religion, Residence (urban/rural), Employment status)
- Knowledge of condom use
- attitude of condom use
- Relational and behavioral factors like (Sexual practice (such as number of sexual partners, type of sexual partners (regular/non regular/commercial partners, Disclosure of HIV status to sexual partner, Status of

partner, Duration of start of ART, Being member of association of people living with HIV/AIDS, khat, Alcohol, Active substance use and other stimulants)

- Dependent variable Consistent condom use

Sample size

The sample size was calculated with 95% confidence interval, 0.05 margin of error and 44% prevalence rate of consistent condom use among HIV patients who are on ART (Yalow et al., 2012). The total sample size with the assumption of 10% non response rate was 417.

Sampling procedure

Mekelle Hospital was purposively chosen because it provides ART for the last 9 years and the numbers of clients on ART follow up were large as compared with other hospitals in the region. Based on evidences obtained from the hospital the average daily clients flow for attending ART service were 85. Sampling interval was determined by dividing the total client flow in the two week period by the total sample size ($K=N/n$, $850/417 = 2$). Systematic random sampling technique was used to select the participants hence every 2nd participant was selected for the study. The first unit to be selected was taken at random from among the first “k” units. A structured interview administered pre-tested questionnaire was used to obtain information from the respondents. The questionnaire was prepared from different relevant literatures. It was addressed socio-demographic data, Knowledge and attitude, behavioral factors and sexual practice of the participants. An exit interview was conducted continuously all working days by two nurses who were not working in that clinic. To maintain the data quality training was given to both data collectors on the detail procedures of the task before the data collection. Before actual data collection pre-test was conducted with 20 clients (5% of anticipated sample)

The data was coded, edited and entered using SPSS version 16.0 for windows. Descriptive analysis was done to determine the proportion of clients using condom consistently. Bivariate analyses were done to determine association between consistent condom use and factors that affect consistent condom utilization. Finally factors which were found to be statistically significant at $P < 0.05$ was taken to multivariate logistic regression was used to determine the independent predictors of consistent condom use.

Ethical considerations

Prior permission was obtained from the Hospital manager. It was also stressed that every information was kept confidential and informed consent was sought from the respondents before participation after all the study subjects gave their informed consent data collection was conducted.

Operational definitions

Attitude towards the use of condom: We can say an individual has supportive attitude towards condom use if they give positive response to more than half of the attitudes of consistent condom use questions.

Knowledge: Subjects were considered knowledgeable about condom use if they give positive response to more than half of the knowledge of consistent condom use questions.

Substance use: poor lifestyle that predisposes to HIV infection including khat Chewing, alcohol drinking, cigarette smoking and drug use.

Condom use: Performing an entire process of an intercourse (Vaginal, anal or oral) by putting on a male condom onto a penis.

Consistent condom use: Using condoms at every sexual intercourse, in the past 3 months.

Regular sexual partner: Spouse or co-habiting (live-in) sex partner.

Non regular sexual partner: Sexual partners, who had been together for less than 3 months, were not married had never lived together and those who did payment for sex.

Multiple sexual partners: Those male or female who have more than one partner in the last 3 months before the study

RESULTS

Socio demographic characteristics

A total of 412 with the response rate of (98.8 %) individuals were participated. About two third 307 (74.5%) of the respondents were females. The ages of the participants ranged from 18-64 years. The mean age of the respondents was 35.00 ± 8.1 (SD) and large number of respondents 176 (43%) were aged 25-34 years. Most of respondents 387(93.9%) were orthodox, and 400(97%) were Tigrean. In terms of educational status, 175(42.5%) were attended secondary school. Concerning marital status of the participants 160(38.8%) were married and the median monthly income of the participants were 200 ETB with range of 3734 ETB & those who have below and equal to 500 birr were 299(72.6%). Majority 240(58.3%) of the participants were employed (Table 1).

Relational and behavioral factors

More than three fourth of the respondents 337(81.8%) were tested for HIV within the facility. More than two third 318(77.2%) of the respondents of duration of HIV diagnosis was above 2 yrs, and 58(14.1) & 36(8.7) of the respondents were tested less than 1yr and 1-2 yrs respectively. 87 (21.1%) of the respondents was on ART for less than 1 yr, 44(10.7%) were for 1-2 yrs and 281(68.2%) more than 2 yrs. A total of 201 (48.7%) respondents were engaged in sex during previous 3 months. Of them 112 (56%) respondents were used condom consistently. And 22 (10.9%) of the sexually active had sex with non regular partners. The common reasons reported by respondents for use of condom inconsistently were: 26(29.2%) partner was already HIV positive, 22(24.7%) thoughts that partner didn't have STI, 16(18%) partner did not want to use condom, 15 (17%) desire of having children, 5(5.6%) had no condom available, 1(1.1%) of them was drunk and didn't

Table 1. Socio demographic characteristics of HIV clients on ART in Mekele Hospital, 2012

Variable	frequency	Percentage (%)
Sex		
Male	105	25.5
Female	307	74.5
Total	412	100
Age category (years)		
15-24	23	5.58
25-34	176	42.7
35-44	151	36.7
>=45	62	15
Total	412	100
Religion		
Orthodox	387	93.9
Muslim	20	4.9
Others	5	1.2
Total	412	100
Ethnicity		
Amhara	12	2.9
Tigrac	400	97.1
Total	412	100
Educational status		
Unable to write and read	113	27.4
Write and read	19	4.6
Primary	71	17.2
Secondary	175	42.5
College and university	34	8.2
Total	412	100
Current marital status		
Single	48	11.6
Married	160	38.8
Divorce	120	29.1
Widowed	84	20.4
Total	412	100
Monthly income		
<=500	299	72.6
501-999	58	14.1
>=1000	55	13.3
Total	412	100
Employment status		
Employed	240	58.3
Unemployed	172	41.7
Total	412	100

Table 2. Relational and behavioral factors of HIV clients on ART in Mekele Hospital, 2012

Variables	Frequency	Percentage (%)
Place of HIV test		
Within the facility	337	81.8
Outside the facility	175	18.2
Total	412	100
The duration since tested positive (yrs)		
<1	58	14.1
1-2	36	8.7
>2	318	77.2
Total	412	100
The duration since started ART (yrs)		
<1	87	21.1
1-2	44	10.7
>2	281	68.2
Total	412	100
Number of partner in the last 3 months		
Single	182	90.5
Multiple	19	9.5
Total	201	100
Sexual activity in the last 3 months		
Yes	201	48.8
No	211	51.2
Total	412	100

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Number of partner in the last 3 months		
Single	182	90.5
Multiple	19	9.5
Total	201	100
Types of partner		
Regular partners	179	89.1
Non Regular Partners	22	10.9
Total	201	100
Types of partner for single		
Regular partners	178	97.8
Non Regular Partners	4	2.2
Total	182	100
Types of partner for multiple		
Regular partners	1	5.3
Non Regular Partners	18	94.7
Total	19	100
Disclosure of sero-status to partner		
Disclosed	174	86.6
Not disclosed	27	13.4
Total	201	100
Any substance use		
Yes	14	7
No	187	93
Total	201	100
Member in the association PLWHA		
Yes	158	38.3
No	254	61.7
Total	412	100

Note: Total numbers of various variables differ because of skipping.
: - 8 respondents' use alcohol and 6 respondents' use cigarette

Table 3. Knowledge and attitude about consistent condom use of respondents on ART in Mekelle Hospital, 2012

Variables	Freq.	Percentage (%)
Ever heard of condom		
Yes	405	98.3
No	7	1.7
Total	412	100
Knowledge where to get condom		
Yes	386	93.7
No	26	6.3
Total	412	100
Condom prevent HIV+		
Yes	399	96.8
No	13	3.2
Total	412	100
Consistent condom use prevent re-infection		
Yes	376	91.3
No	36	8.7
Total	412	100
Consistent condom use prevent HIV to partners		
Yes	390	94.7
No	22	5.3
Total	412	100
Consistent condom use can prevent STI		
Yes	385	93.4
No	27	6.6
Total	412	100
Condom source of HIV		
Yes	3	0.7
No	409	99.3
Total	412	100
People can be protected from HIV by using condom consistently		
Yes	383	93.0
No	29	7.0
Total	412	100

think of condom use, and 4(4.5%) others. Concerning the respondents number of partners they had in the last 3 months, 182(90.5%) of them had single partner. Of those who reported single partnership, 178(97.8%) of them were with regular partners. Regarding with disclosure of their HIV sero-status to their partners, 174(86.6%) of them had disclosed their sero-status to partner. Regarding with respondents substance use, only 14(7%) of the sexually active participants reported to have used different substances. Of those 8(57.1%) have used alcohol and 6(42.9%) were cigarette smokers (Table 2).

Factors that affect consistent condom utilization

Factors that are independently associated with consistent condom use were explored using multivariate analysis. Those variables that showed significant association with consistent condom use ($p < 0.2$) from bivariate analysis were included in multivariate analysis after checking for Multicollinearity. Participants who had divorced were 12 times more likely to use condom during the last 3 months (95% CI: 1.79-84.5) than those who were single. Also, participants who had disclosed their HIV status (AOR=8.48; 95% CI: (1.46, 49.36)

Table 4. Bivariate and multivariate analysis of variables & consistent condom use of respondents on ART in Mekelle Hospital, 2012

Variable	Condom use		Crude OR,95% CI	AOR,95%CI
	Yes	No		
	No (%)	No (%)		
Educational status				
Unable to read & write	25(53.2)	22(46.8)	1.00	1.0
Read & write	3(30)	7(70)	2.65(0.61,11.5)	4.16(0.71,24.31)
Primary	21(58.3)	15(41.7)	0.81(0.34,1.95)	0.90(0.31,2.64)
Secondary	56(58.3)	40(41.7)	0.81(0.40,1.64)	1.17(0.49,2.78)
College&/university	7(58.3)	5(41.7)	0.81(0.23,2.93)	0.28(0.03,3.18)
Employment status				
Employed	57(47.5)	63(52.5)	1.00	1.0
Un employed	55(67.9)	26(32.1)	2.34(0.91,6.0)	1.83(0.54, 6.2)
Place of HIV diagnosis				
Within the facility	84 (52.5)	76(47.5)	1.00	1.0
Outside the facility	28(68.3)	13(31.7)	0.51(0.25,1.06)	0.63(0.25,1.61)
Disclosure to partner/s				
Yes	106(60.9)	68(39.1)	1.00	1.0
No	6(22.2)	21(77.8)	5.46(2.09,14.2)	8.48(1.46,49.36)*
marital status				
Single	11(55)	9(45)	1.00	1.0
Married	88(65.2)	47(34.8)	0.65(0.25,1.69)	3.96(0.65,24.28)
Divorce	13(34.2)	25(65.8)	2.35(0.78,7.11)	12.3(1.79,84.47)*
Widowed	0	8(100)	1.97(0.000)	4.09(0.000)
Grouped monthly income				
<=500	74(54.4)	62(45.6)	1.00	1.0
501-999	13(43.3)	17(56.7)	1.56(0.70,3.46)	0.89(0.27,2.89)
>=1000	25(71.4)	10(28.6)	0.48(0.21,1.07)	0.46(0.14,1.60)
Time since HIV diagnosis				
<1yr	13(43.3)	17(56.7)	1.00	1.0
1-2yrs	12(57.1)	9(42.9)	0.57(0.19,1.77)	5.77(0.71,46.74)
>2yrs	87(58)	63(42)	0.55(0.25,1.2)	3.43(0.67,17.58)
Duration of ART				
<1yr	17(37.8)	28(62.2)	1.00	1.0
1-2yrs	21(67.7)	10(32.3)	0.29(0.11,0.76)	0.12(0.02,0.70)
>2yrs	74(59.2)	51(40.8)	0.42(0.21,0.84)	0.24(0.06,0.99)*

*Statistically significant ($p < 0.05$)

Knowledge and attitude of participants regarding consistent condom use

Out of 412 participants 402(97.6%) are knowledgeable about condom use. However, about 26 (6.3%) of the participants didn't know where to get condom. Three hundred eighty nine (94.4%) of the participants were expressed their positive attitude towards condom use (Table 3).

were significantly more likely to use condom during the last 3 months of sexual intercourse. Patients who had been on ART for more than 2yrs had significantly decreased odds of consistent condom use compared with those who had been on treatment for less than 1yr AOR 0.24; 95% CI (0.06, 0.99) (Table 4).

DISCUSSION

This study provides information on consistent condom utilization and associated factors among patients on antiretroviral therapy (ART) in Mekelle Hospital. The finding of the study showed that, the proportion of consistent condom use was 55.7%. This figure is less than a study done in Addis Ababa public hospitals which was 63.1% hospitals (Yadeta Dessie *et al.*, 2009). This variation could be because of the study settings influence the respondent's socio demographic condition which could in turn affects the outcome variable. About half (48.7%) the people living with HIV were sexually active. This is in line with data from North West Ethiopia in the preceding 3 months (Yalow *et al.*, 2012) and Kenya (47.5% in the preceding 12 months (Anders Ragnarsson *et al.*, 2011), Ghana (49.3%) in the last sexual intercourse (Ncube *et al.*, 2012). However, it is far less than the study done in India (Venkatesan Chakrapani *et al.*, 2010) where 63.2% of participants reported being sexually active in the previous 3 months.

This could be attributed to the similar health status and treatment conditions under which both populations in the mentioned African countries go through, but the variation with India might be due to geographical and other socioeconomic factors. Finding related with number of patients with multiple partners were in line with a study done in Addis Ababa public hospitals which was (10%) (Yadeta Dessie *et al.*, 2009) and (9.5%) for this study. A higher proportion of men reported multiple sexual partners during the previous three months compared with women. This is due to the fact that men have high power on decision in sexual activities in developing countries including Ethiopia. A finding from this research shows that the respondents who had sex without using condom with regular types of partners (42.5%) which was lower than a study done in Addis Ababa public hospitals (77.0%) (Yadeta Dessie *et al.*, 2009). This might be because of poor counseling on condom utilization and being on ART. Of the participants who had knowledge on condom use (97.6%) in this study, 43.6% were less likely to use condom consistently during the last three months.

Participants who had positive attitude on condom use (94.4%) in this study, 54.7% were more likely to use condom consistently during the last three months. The study also showed that those participants who thought consistent condom use can prevent STI (93.4%) were lower at risk of using inconsistent condom than those who did not think so. A study done in Addis Ababa public hospitals (Yadeta Dessie *et al.*, 2009) and Ghana (Ncube *et al.*, 2012) the participants with secondary education or higher were more likely to use condoms than those primary. But the finding in this study shows that there is no significant association in educational status and condom use. This might be because of small sample size in this study. An important factor associated with consistent condom use in this study was disclosure of HIV status to partners. Participants who had divorced were significantly associated with consistent condom use. Studies in Ghana have also documented higher condom use among divorced HIV positive individuals. This might be because of the participants' knowledge towards condom use and their attitude not to have child and concerns to prevent resistant strains and other STIs that makes them to use condom

consistently. The other key variable significantly associated with consistent condom use was the duration of time in the ART. Participants who had on ART for more than two years were less likely to use condom consistently than those stayed for less than one year. This is contrary to a study done in Kenya where consistent condom use was associated with longer time on ART (Anders Ragnarsson *et al.*, 2011). This might be because of the difference between the two study setting in the HIV prevention programs and counseling system among ART experienced patients. Participants who had disclosed were more consistent condom use than those who did not disclose to their partner. This finding is similar to a study done in Ghana (Ncube *et al.*, 2012). In this study those who were a member of association of people living with HIV/AIDS, 58.3% were using condom consistently which were higher compared to a study done in North West Ethiopia (40%) (Yalow *et al.*, 2012). the reason for this difference might be due to time variation.

Conclusion

In this study, we found that; consistent condom utilization is still low which needs an improvement to strengthen and scale up the ART program. And disclosure, shorter ARV therapy, and divorced were associated with consistent condom use. These findings highlight the need for the development and implementation of HIV prevention interventions for HIV infected people in Mekelle Hospital. There is a positive attitude to condom use by patients on antiretroviral therapy. Further studies are needed to assess the strength of this finding.

Limitations

Being cross-sectional study, it may not show the trend of consistent condom use over a period of undergoing ARV therapy and makes it difficult to determine the direction of causality, and a Prospective design is recommended to confirm the factors identified. The sensitive nature of study may result in social desirability bias, likely to lead to underestimate of the prevalence of consistent condom use or missing in some of the variables. It is not also supplemented by qualitative studies for more solicitude of ideas about sensitive issues.

Recommendation

It is known that consistent condom use is an effective prevention strategy to stop the transmission and re-infection of HIV/AIDS. Thus condom use has decreased substantially among patients who are on ART and still inconveniences of consistent condom use among the patients were the biggest challenge. Counselors have to tailor the information of consistent condom use in each visit without hesitating. In addition, ART patients must be encouraged to keep condoms handy so that there can be no instance where they want to engage in sex but do not have condoms on hand. A range of reason for not using condom by the respondents was identified. Therefore, a series of counseling that targets these reasons is necessary. Further research, to link the actual behavior of consistent condom use with intention to use condom consistently through prospective cohort study should be done to know their correlation and the rigor effects on the prevention and transmission of the disease.

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REFERENCES

- "Male Latex Condoms and Sexually Transmitted Diseases." Centers for Disease Control and Prevention, January 23, 2003. Available online at San Diego, CA, A Medical Dictionary, Bibliography, and Annotated Research Guide Icon Group International Inc., 2003.
- AIDS Info Net, condom, Fact Sheet Number 153, June 21, 2012)
- Gerald J. Stine, Jackson Ville, AIDS Update 2003, P: 262-279. And Nada Chaye, Kali Ahset Amen, Michael Fox. The Pai Report Card, 2002, P: 2-16.
- Quinn, TC., Wawer, MJ., Sewnkanbo, N. *et al.* for the Rakai Project Study Group. Viral Load
- CDC, condoms and STDs, April 6, 2011 and heterosexual transmission of HIV type-1. NEJM 2000; 342:921-929
- United Nations Program on Human Immunodeficiency Virus/ Acquired Immune Deficiency Syndrome (UNAIDS world aids day report 2010).
- Ethiopia Single Point Estimates for 2010.
- Ethiopia MOH, Single point HIV prevalence estimate, Tigray June 2007)
- The impact of the transmission dynamics of the HIV/ AIDS epidemic on sexual behavior: Med Hypotheses 2005, 65(2):215–226.
- Rothenberg, R., Campos, P. E., Rio, C. D. *et al.* once and future HIV treatment: a comparison of clinic and community groups, international journal of STD and AIDS; 14(7).
- UNAIDS report on the global aids epidemic | 2010
- Saok, P., Harwell, J.I., Dansereau, L. *et al.* pattern of sexual behavior of male patients before testing HIV positive in Cambodian hospital, Phnom Penh. NIHPA13 April 2010; 5(4):353.
- Olley, B. O., Seedat, S., Gxamza, F. *et al.* Determinant of unprotected sex among HIV positive patients in South Africa. AIDS care 2010; 17(1):1-9.
- Barbara Hasse, Bruno Ledergerber, 1 Bernard Hirschel, *et al.* Frequency and Determinants of Unprotected Sex among HIV-Infected Persons, the Swiss HIV January 2008
- Amanda Clarke*, Stephen Kerr, Adam Honey brook, *et al.* Adherence and Risk Behavior in Patients with HIV Infection Receiving Antiretroviral Therapy, in Bangkok, The Open Virology Journal, 2012, 6, 23-28
- Camelia Protopopescu, Fabienne Marcellin, Marie Pre'au *et al.* Psychosocial correlates of inconsistent condom use among HIV infected patients enrolled in a structured ART Co^ te d'Ivoire: June 2010 volume 15 no 6 pp 706–712
- Venkatesan Chakrapani, M.D., Peter A. Newman, Ph.D., Murali Shunmugam, M.S.W. and Robert Dubrow, M.D., Ph.D. Prevalence and Contexts of Inconsistent Condom Use Among Heterosexual Men and Women Living with HIV in India, AIDS patient care and STDs, 2010, Volume 24, Number 1.
- Joshua O. Akinyemi, Olutosin A. Awolude, Isaac F. Adewole, Phyllis J. Kanki, Condom use among antiretroviral therapy patients in Ibadan, Nigeria, 29 May 2010.
- Anders Ragnarsson, Anna Mia Ekström, Jane Carter, *et al.* Sexual risk taking among patients on antiretroviral therapy in an urban informal settlement in Kenya, Ragnarsson *et al.* Journal of the International AIDS Society 2011, 14:20
- Ncube, N.M., J. Akunna, F. Babatunde, *et al.* Sexual Risk Behavior among HIV-positive persons in Kumasi, Ghana, *Ghana Medical Journal*, March 2012, Volume 46, Number 1.
- Yadeta Dessie1, Mulusew Gerbaba2, Abdo Bedru1 and Gail Davey, Risky sexual practices and related factors among ART attendees in Addis Ababa Public Hospitals, Ethiopia, Addis Ababa University; July 2009.
- Sandlana, S. D. An investigation of the utilization of condoms among patients on ART therapy at Aliwal north Hospital as a prevention method against HIV reinfection University of Stellenbosch; March 2011
- Group GHpw. Behavior change and HIV prevention: Re considerations for the 21st Century August 2008.
- UNAIDS. Report on the global HIV/AIDS epidemic updates: UNAIDS, 2005.
- Yalow *et al.* Patterns of condom use and associated factors among adult HIV positive clients, North Western Ethiopia 2012.
