Original article

Unprotected sex, sexually transmitted infections and problem drinking among female sex workers in Ethiopia

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Abstract

Background: A description of the pattern of use of alcohol and other substances among female sex workers (FSWs) is particularly important because of the high prevalence of HIV in this particular group and their potential for transmitting HIV infection to other groups. However, there is currently lack of systematic studies from developing countries like Ethiopia regarding alcohol use visa vis unprotected sex and STIs.

Objective: To describe the association of risky sexual behaviour with alcohol use and problem drinking among female sex workers in Ethiopia.

Methods: A total of 2,487 female sex workers aged between of 15 and 49 years were randomly sampled from seven urban centres in Ethiopia and interviewed regarding their sexual behavior and substance use.

Results: About 12% of FSWs included in this study reported having unprotected sex during the 12 months prior to the interview. A history of vaginal ulcer or discharge experienced by the FSWs was reported by 5% of the study subjects. Those who reported occasional use of alcohol were found to have a two-fold increase in the odds of having unprotected sex compared to non-users: adjusted OR (95% CI) = 2.06 (1.28, 3.33). Those who responded positively to at least one question from the four - item questionnaire known as CAGE, and which is used as an indicator for problem drinking, had a 50% increased odds of unprotected sex compared with zero scorers: adj. OR (95% CI) = 1.48 (1.07, 2.05). Those who reported alcohol use on a daily basis were found to have a two-fold increased odds of having sexually transmitted infections (STIs) compared to the non-users of alcohol: adj. OR (95% CI) = 2.50 (1.35, 4.64). Compared to those who were not literate, educational attainment was associated with a lower odds of reporting vaginal discharge or ulcers in those that have attended elementary education: adj. Or (95% CI) = 0.56 (0.35, 0.89.), and secondary education: adj. OR (95% CI) = 0.59 (0.37, 0.93).

Conclusion: Unprotected sex and symptoms of STIs were associated with alcohol use, problem drinking and lower educational attainment. [*Ethiop.J.Health Dev.* 2006;20(2):93-98]

Introduction

Over six percent of Ethiopia's adult population is believed to be HIV positive and it is estimated that there are 2.6 million people infected by the virus (1). As is the case elsewhere in Africa, transmission occurs almost exclusively through heterosexual contact. HIV prevalence among antenatal clinic women attendees is over 15% in Addis Ababa, and a large proportion of new HIV infections are now occurring in young people aged less than 25 years. Groups with particularly high levels of risk behaviour are likely to continue to drive new infections, even in a generalized epidemic. Sex workers are considered to be one of the core groups driving the epidemic because of the high prevalence of HIV in these group of women and their exposure to multiple sexual partners. A study of female sex workers (FSWs) attending health centers in Addis Ababa found the prevalence of HIV to be 73%. Because of these factors, FSWs have been given high priority in the prevention and control of HIV/AIDS in Ethiopia (2).

A study by Chakraborty et al in India (3) has found that extreme poverty and family disturbance were common motivations to becoming a female sex worker. Almost all sex workers included in that study had addictions, alcohol being taken regularly by 81.1% of the FSWs and only 1.1% of them reporting that their clients used condoms regularly.

The damage incurred by users of alcohol and substance abuse is well documented. Others also suffer the consequences because of car accidents, family disruption, crime and violence (4). Although the contribution of alcohol and other substances in interfering with condom use have been studied fairly extensively in developed societies (5), this important area of research has not been explored in Ethiopia. The few prevalence studies conducted on problem drinking in Ethiopia (6,7) have shown that a significant proportion of the population used alcohol fulfilling the criteria for problem drinking.

The present study was undertaken to describe the magnitude of unprotected sex and its association with alcohol use, as well as problem drinking and Khat consumption among female sex workers in Ethiopia.

Methods

Data collection for the study was conducted between December 2001 and May 2002.

Sampling procedure: The female sex workers targeted were in the age range of 15-49 years working in either

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bars/hotels, were living at home or were street-based were selected from seven urban centres. By working with relevant governmental organizations, non-governmental organizations and members of the target group in the different cities, a list of locations where FSWs congregated was established, including the approximate number of FSWs found in each site per day/night. Once the lists were constructed, 'time-location' clusters were used to take into account the possibility that sex workers exhibiting different behaviors might have high activity' and 'low activity' periods (considered by the study), along with the number of sex workers that were typically found at each site on those nights.

A 'quota' approach was used to sample the respondents. This approach specified that a fixed (equal) number of interviews were to be conducted in each bar/hotel or site. The quota was determined based on the total number of FSWs selected, as well as the minimum number of FSWs estimated to be found in a particular bar/hotel or site. However, in bars where it was anticipated that only a few sex workers were present, all of the sex workers were contacted. In contrast, when large numbers of sex workers were expected, a fixed number of sex workers were selected randomly. Take-all and targeted snowballing methods were used to select home-based and street-based FSW respondents. A detailed description of the sampling method is given elsewhere (8).

Data collection and processing: Data collection was done using a standardized, pre-coded, and pretested questionnaire, which was pilot-tested in Addis Ababa. Male and female interviewers were selected from the various regions and establishments. The interviewers had completed high school and had some previous experience of collecting survey data. They were also trained on ways of administering the questionnaire before they started their work. Full-time editors scrutinised all the completed interview forms for completeness, accuracy and consistency in the field. SPSS-PC software was used for both univariate and bivariate analysis.

Substance use (alcohol, khat, and others) was assessed for the 4-week period preceding the interview. A 4- item questionnaire, known as CAGE, was employed to define problem drinking. CAGE is an acronym derived from four questions (1) Have you never thought you should Cut down on your drinking? (2) Have you ever been Annoyed by other people's criticism of your drinking? (3) Have you ever felt Guilty about your drinking? (4) Have you ever had an Early morning drink (eye opener) to steady your nerves? The validity and reliability of the CAGE has been studied previously and has been shown to be acceptable (9). It has also been used in rural (7) and urban (6) areas of Ethiopia. Problem drinking is said to be present when a subject responds positively to any one of the questions, although specificity is improved when a score of two or more is used for definition. The results of both scores are presented this study.

Unprotected sex was defined as sex without the use of a condom during the 12-month period preceding the interview. The irregular use of condoms was also categorized as unprotected sex. Any history of vaginal ulcer or discharge was assessed for the 12-month period preceding the interview. The logistic regression method was employed to adjust for confounding factors. Thus, either having unprotected sex or a history of vaginal ulcer or discharge were included in the logistic regression model as dependent variables. Sex, age, and educational status were included as independent variables.

Ethical clearance for the study was obtained from the National Ethics Committee and the Human Subjects Committee of Family Health International - USA. The participation of the respondents was strictly on a voluntary basis. Informed consent was solicited orally and care was taken to ensure the respect, dignity and freedom of each individual participating in the study and to assure confidentiality.

Results

A total of 2,487 female sex workers participated in the study (Table 1). Most (61%) of them were between the ages of 20 and 29 years, or younger than 20 years of age (30%). Educational status was similarly distributed between the three levels of non-literate, elementary and secondary education. Almost all (96%) were never married and over 86% were Orthodox Christians.

Table 1: **Socio-demographic characteristics of the study population of female sex workers, Ethiopia, 2003**

Characteristics	Number (percent)*
Age	
15-19 yrs	755 (30.4)
20-29 yrs	1,511 (60.8)
30-39 yrs	166 (6.7)
40-49 yrs	35 (1.4)
Educational level	
Not literate	913 (36.7)
Elementary	758 (30.5)
Secondary or above	816 (32.8)
Marital status	
Never married	2,375 (95.5)
Married	9 (0.4)
Separated/divorced/widowed	83 (3.3)
Religion	
Orthodox Christian	2,148 (86.4)
Catholic	60 (2.4)
Protestant	55 (2.2)
Muslim	176 (7.1)
Other	36 (1.4)
Total	**2,487 (100.00)**

Close to 12% of the FSWs reported having unprotected sex during the 12-month prior to interview (Table2). The

probability of having unprotected sex was found to be significantly higher among those aged between 30 to 49 years compared to those that were younger: adjusted OR (95%CI) = 0.70 (0.51, 0.98). Those who reported occasional use of alcohol had a two-fold increase in the odds of having unprotected sex: adj. OR (95% CI) =2.06 (1.28, 3.33) compared to non-users. However the odds of having unprotected sex among those who reported regular weekly and daily use of alcohol were not different from those of non-users.

Problem drinking as assessed with CAGE scores was also found to be significantly associated with unprotected sex. Those who scored one had a 50% increased odds of having unprotected sex compared with zero scorers: adj: OR (95% CI) = 1.48 (1.07, 2.05). The results were similar for those who scored two or more on the CAGE (Table 2). Khat use was not associated with unprotected sex but the use of other substances was associated with unprotected sex: adj: OR (95% CI) = 1.65 (1.04, 2.61).

Table 2: **Socio-demographic and behavioral correlates of unprotected sex among female sex workers, Ethiopia, 2003**

Characteristics	Total Population	Cases (%)	Crude odds ratio (95% confidence interval)	Adjusted odds ratio* (95% confidence interval)
Age				
15-19 yrs	720	74 (10.3)	1.0	1.0
20-29 yrs	1,413	146 (10.3)	1.00 (0.75, 1.35)	1.04 (0.77, 1.41)
30-49 yrs	160	47 (29.4)	3.63 (2.39, 5.51)	3.62 (2.36, 5.54)
Educational level				
Not literate	838	115 (13.7)	1.00	1.0
Elementary	702	84 (12.0)	0.86 (0.63, 1.16)	0.85 (0.62, 1.17)
Secondary or above	772	71 (9.2)	0.64 (0.47, 0.87)	0.70 (0.50,0.98)
Alcohol intake				
None	455	56 (12.3)	1.00	1.0
Less than one per week	167	35 (21.0)	1.89 (1.19, 3.01)	2.06 (1.28, 3.33)
Once a week or more	1,685	178 (10.6)	0.84 (0.61, 1.16)	0.91 (0.65, 1.28)
Problem drinking				
None	967	96 (9.9)	1.00	1.0
Present (CAGE=1)	618	84 (13.6)	1.43 (1.05, 1.95)	1.48 (1.07, 2.05)
Severe (CAGE=2 or more)	727	90 (12.4)	1. 28 (0.94, 1.74)	1.40 (1.02, 1.93)
Khat intake				
None	1,155	154 (13.3)	1.00	1.0
Less than one per week	103	8 (7.8)	0.55 (0.56, 0.95)	0.45 (0.20, 1.00)
Once a week or more	1,020	103 (10.1)	0.73 (0.56, 0.95)	0.75 (0.57, 1.01)
Substance use other than Khat				
No	2,101	242 (11.5)	1.00	1.0
Yes	211	28 (13.3)	1.18 (0.77, 1.79)	1.65 (1.04, 2.61)
Total	**2,312**	**270 (11.8)**		

* Terms included in the logistic model were: age (3 levels), educational level (3 levels), either alcohol intake (3 levels), or problem drinking (3 levels); Khat intake (3 levels), and substance use other than Khat. Marital status not included in the model because there were only 9 married female sex workers.

** Substance use other than Khat include: Shisha, Benzene, Hashish, Mandrax, Cociane, or Crack. (Shisha is a mixture that may include tobacco, honey, hashish and spices and is smoked from an oriental tobacco pipe).

*** Missing values not shown

A history of vaginal ulcer or discharge during the 12-month prior to the interview was reported by nearly 5% of the women (Table 3). Age was not found to be associated with having vaginal ulcer or discharge. However, compared to those who were non-literate, educational attainment was found to be negatively associated with these signs of sexually transmitted diseases (STIs), with a 40-45% decreased odds among those with elementary education: adj: OR (95% CI) = 0.56 (0.35, 0.89), and secondary education: adj. OR (95% CI) = 0.59 (0.37, 0.93).

Those who reported alcohol use on a daily basis were found to have a two-fold increased odds of having STIs compared to the non-users: adj OR (95% CI) - 2,50 (1.35, 4,64). Those who scored 2 or more on the CAGE also had equally increased odds: adj. OR (95% CI) = 207 (1.32, 2.33). On the other hand, both Khat use and the use of other substances were not associated with reported STIs.

Discussion

Twelve percent of the female sex workers included in the study reported practicing unprotected sex, although it is possible that condom use is more irregular than what was reported due to the very high prevalence of alcohol use and problem drinking in the study group.

Older FSWs also practiced unprotected sex more often than younger individuals, independent of their educational level or substance use. This is consistent with the findings of studies in other countries in sub-Saharan Africa (10). For example, cross-sectional population surveys were conducted in four cities in sub-Saharan Africa: Yaoundé, Cameroon; Cotonou, Benin; Ndola, Zambia; and Kisumu, Kenya where a random

sample of 1000 women and 1000 men aged 15-49 years were assessed for non-spousal partnership characteristics in the past 12 months (10). In those studies reports of frequent condom use did not vary with the age of the male respondents but young women were found to be more likely to report frequent condom use than older women in two of the study areas, - Kisumu and Yaounde. After adjusting for potential confounding factors, being in the age of less than 30 years was found to be strongly associated with frequent condom use in women from Kisumu and Ndola. It is possible that older individuals may have been working as

Table 3: **Socio-demographic and behavioral correlates of 12-month history of vaginal ulcer or discharge more female sex worker, Ethiopia 2003**

Characteristics	Total Population	Cases (%)	Crude odds ratio (95% confidence interval)	Adjusted odds ratio* (95% confidence interval)
Age				
15-19 yrs	755	38 (5.0)	1.00	1.00
20-29 yrs	1,511	67 (4.4)	0.88 (0.58, 1.32)	0.92 (0.60, 1.40)
30-49 yrs	201	16 (8.0)	1.63 (0.89, 2.99)	1.82 (0.98, 3.41)
Educational level				
Not literate	913	58 (6.4)	1.00	1.00
Elementary	758	29 (3.8)	0.59 (0.37, 0.93)	0.56 (0.35, 0.89)
Secondary or above	816	34 (4.2)	0.64 (0.42, 0.99)	0.59 (0.37, 0.93)
Alcohol intake				
None	512	12 (2.3)	1.00	1.00
Less than one per week	177	6 (3.4)	1.46 (0.54, 4.07)	1.50 (0.55, 4.07)
Once a week or more	1,787	102 (5.7)	2.50 (1.38, 4.62)	2.50 (1.35, 4.64)
Problem drinking				
None	1,051	36 (3.4)	1.00	1.00
Present (CAGE=1)	662	32 (4.8)	1.43 (0.88, 2.33)	1.47 (0.90, 2.41)
Severe (CAGE=2 or more)	774	53 (6.8)	2.07 (1.34, 3.20)	2.07 (01.32, 3.23)
Khat intake				
None	1,289	58 (4.5)	1.00	1.00
Less than one per week	111	4 (3.6)	0.79 (0.28, 223)	0.70 (0.25, 1.98)
Once a week or more	1,051	57 (5.4)	1.22 (0.84, 1.77)	1.27 (0.84, 1.91)
Substance use other than Khat				
	2,262	106 (4.7)	1.00	1.00
	225	15 (6.7)	1.45 (0.83, 2.54)	1.37 (0.75, 2.51)
Total	**2,487**	**121 (4.87)**		

* Terms included in the logistic model were: age (3 levels), educational level (3 levels), either of alcohol intake (3 levels), or problem drinking (3 levels); Khat intake (3 levels), and substance use other than Khat. Marital status not included in the model because there were only 9 married female sex workers.

** Substance use other than Khat include: Shisha, Benzene, Hashish, Mandrax, Cociane, or Crack.

FSWs for longer periods, and have assumed or knew that they had already been infected with HIV, thus reducing their motivation for practicing safer sex. Alternatively, having been engaged in this activity and not being infected may have given them a false assurance that they would not be infected in the future.

It is also shown by this study that better education is associated with having safe sex. This again is in agreement with the findings from the above mentioned four country study which showed a significant increase in condom use with increasing level of education both in men and women at all the four sites. It is to be expected that educational attainment is associated with higher rates of condom use. Those with better education are likely to have better access to information about HIV/AIDS.

The findings of this study also show that the use of alcohol and problem drinking are associated with unprotected sex. Occasional use, rather than regular use, was also associated with unprotected sex. Under reporting of alcohol use is common, and may have resulted in misclassification of the two groups. CAGE scores were used to classify the individuals in the study as problem drinkers. Cut-off points ranged from 1 to 3 in various studies, although a cut-off level of 1 is recommended in clinical settings (11). Three levels of scores were used in the present study (0, 1 and 2 or more). Compared to the zero scorers, both levels of the CAGE were found to be associated with unprotected sex. This may be a better indicator of the influence of alcohol on safer sex than just the use of alcohol, which does not properly take into account the volume of intake. This finding concurs with several other findings, where alcohol use by either FSW themselves or their sexual partners increases the risk of non condom use (5,10,12-16). In the four country study mentioned previously, alcohol consumption was not found to be associated with condom use in men. For women, drinking alcohol more than once a week was found to be associated with a decreased rate of condom use in Yaoundè. Other studies have shown that regular alcohol use or the presence of a drinking problem is one of the strongest predictors of non condom use when visiting a FSW or other non regular sexual partners (15-17).

In the present study, Khat use was not found to be significantly associated with condom use. This is in contrast to other (non published) findings among Ethiopian adults and young people where there was a clear association between Khat use and unprotected sex. The active ingredient found in Khat is an amphetamine-like substance called Cathinone (18) and is not known to alter decision making or risk taking (19). The discrepancy with other reports may be due to a possible difference of effect in males and females. The association of unprotected sex with use of substances other than Khat is to be expected, as most of the substances in that group (hashish, cocaine, crack), are known to decrease inhibitions and increase risk taking and reports have clearly indicated that the use of such drugs increases STD/HIV related risk behaviours (20,21).

STIs are more specific indicators of risk for HIV/AIDS than risk behaviours, as one needs to go through unprotected sex to acquire them. A 12-month prevalence of 5% for reported vaginal ulcer and discharge in this group of women has been identified in this study. In parallel with the findings for unprotected sex, educational attainment was found to be protective against STIs probably indicating better access to HIV and other health related information compared to those with elementary and secondary education. Again, as would be expected, both alcohol use and problem drinking were associated with reporting symptoms of STIs.

In conclusion, the present study shows that a significant proportion of female sex workers reported risky sexual behaviour and symptoms of STIs, which are associated with alcohol use, problem drinking and lower educational attainment.

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References

1. MOH. AIDS in Ethiopia. Ministry of Health, Addis Ababa, Ethiopia. 2000.
2. NAPCC. National HIV/AIDS Control program (prepared in the Amharic Language). National AIDS Prevention and Control Council, 2000, Addis Ababa, Ethiopia.
3. Chakraborty A, Jana S, Das Aea. Community based survey of STD/HIV infection among commercial sex workers in Calcutta (India). Part I. Some social features of commercial sex workers. Commun Dis 1994;26:161-7.
4. Ritson B. Epidemiology and primary prevention of alcohol misuse. Bell and Bain Ltd., 1994. Glasgow, UK.
5. Leigh BC. Alcohol and condom use: A meta analysis of event-level studies. *Sexually transmitted diseases* 2002;29:476-482.
6. Kebede D, Alem A. The epidemiology of alcohol dependence and problem drinking in Addis Ababa, Ethiopia. Acta Psychiatrica Scand (Suppl*)* 1999; 100:30-34.
7. Alem A, Kebede D, Kullgren G, Jacobsson L. The epidemiology of problem drinking in Butajira, Ethiopia. Acta Psychiatrica Scand (Suppl) 1999; 100:77-83.
8. HAPCO/MOH. HIV/AIDS Behavioral Surveillance Survey (BSS), Round 1, Addis Ababa, Ethiopia, 2002.
9. Mayfield D, McLeod G, Hall P. The CAGE Questionnaire: Validation of a new alcoholism screening instrument. Am J Psychiatry 1974; 131:1121-1123.
10. Lagarde E, Carael M, Glynn JR, et al. Educational level is associated with condom use within non-spousal partnerships in four cities of sub-Saharan Africa. AIDS 2001; 15:1399-1408.
11. Allen JP, Maisto SA, Connors GJ. Self-report screening tests for alcohol problems in primary care. Aarch Intern Med 1995;55: 1726-1730.
12. Witte SS, El-Bassel N, Wada T, Gray O, Wallace J. Acceptability of female condom use among women exchanging street sex in New York City. Int JSTD AIDS 1999;10:162-8
13. Witte S, Wada T, E1-Bassel N, Gilbert L. Wallace J. Acceptability of female condom use among women exchanging street sex in New York City. Int J STD AIDS 1999;10162-8.
14. MacQueen KM, Nopkesorn T, Sweat MD, Sawaengdee Y, Mastro TD, Seniger BG. Alcohol consumptions brothel attendance, and condom use: normative expectations among Thai military conscripts. Med Anthropol Q 1996;10:402-23.
15. Nopkesorn T, Mock P, Mastro Tea. HIV-1subtype E incidence and sexually transmitted diseases in a cohort of military conscripts in northern Thailand. J Acquir Immune Defic Sybdr Hum Retrovirol. 1998;18:372-9.
16. Morrison TC, DiClement RJ, Wingood GM, Collins C. Frequency of alcohol use and its association with STD/HIV-related risk practices, attitudes and knowledge among an African-American community-recruited sample. Int J STD AIDS 1998;9:608-12.

17. Mogone CS, Passey ME, Mnang Jea. Human Immunodeficiency Virus and other sexually transmitted infections among female sex workers in two major cities in Papua New Guinea. Sexually Transmitted Diseases 2002;29:265-270.
18. Kalix P. The pharmacology of Khat. Gen Pharmacol 1984;15:179-187.
19. Kalix P. Khat: Scientific knowledge and policy issues. Br J Addict 1987;82:47-53.
20. Fullilove MT, Golden E, Fullilove Rerea. Crack cocaine use and high risk behaviours among sexually active black adolescents. J Adolesc Health 1993;14:295-300.
21. Celentano DD, Nelson KE, Suprasert Sea. Behavioural and socio-demographic risks for frequent visits to commercial sex workers among northern Thai men. AIDS 1999;7:1647-52.