

# Behavioral survey for HIV/AIDS infection in Asosa, among the general population and commercial sex workers

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## Abstract

**Background:** Assessment of high-risk behavior for HIV/AIDS transmission is rare in emerging regions of Ethiopia.

**Objective:** To assess high-risk behaviors and factors for voluntary counseling and testing. Examination of the situation has been undertaken.

**Methods:** A cross-sectional behavioral survey was done in Asosa Town on randomly selected adults and all female sex workers.

**Results:** From 631 sexually active adults, 527 (84.6%) had sexual intercourse in last the 12months, 67(12.7%) sex in exchange with money and 88(16.7%) with their non-regular non-commercial partner. Ever use of condom among the general population and female sex workers was found in 168(26.6%) and 185(88.5%) respectively. More than one third of the respondents among the general population knew a person who died of HIV /AIDS and 47.6 % of the respondents lost a close relative due to the same cause. Among the general population, 421(47.6%) were aware of being engaged in high-risk practices, which expose them to HIV/AIDS. Multi variate analysis revealed female [OR= 1.5, 95%CI=1.02-2.10] and individuals who had a positive attitude to take VCT test [OR=1.60: 95% CI=1.2-2.2] felt themselves more at risk.

**Conclusion:** High-risk behavior, low levels of condom use and knowledge about the epidemic have been found in Asosa. Behavioral change communication has to be implemented to reduce those risky behavior and scale up condom use. [*Ethiop.J.Health Dev.* 2004;18(2):75-81]

## Introduction

Human Immuno deficiency virus (HIV) has varying patterns of transmission and impact among the various regions. In Africa, especially in sub-Saharan countries adults and children are acquiring HIV at higher rate than ever before (1-5). In the continent, transmission is associated with factors that include multiple sexual partners, commercial sex, and history of STDs (1-5). Different levels of knowledge for HIV transmission and misconception have been documented worldwide. For example an extremely low awareness of AIDS, sexually transmitted diseases, and condom use was documented in Dai villages in Yunnan province, China (6).

In Ethiopia the epidemic was known around 1984 and it has spread everywhere and no region in the country is spared (8). Several behavioral survey have been done on various sub-population groups to identify factors for the occurrence and spread. Nation wide survey on sexual behaviors and serial data on condom use among high school student is available (9,10,11).

Because of the diversity of the HIV epidemic around the world, it is agreed up on to update the existing surveillance system. (12). In the next decade, the aim is to concentrate resources to yield information that is most useful in reducing the spread and providing care for those affected. Some countries, like Uganda and Thailand,

modified their surveillance systems. Information about who is at risk (sex with multiple sexual partner with out condom) and behaviors put them at risk mainly failure to use condom and drug abuse are well documented. Solid behavioral data will identify sub-populations at risk and help to focus sero surveys to yield maximum information (9,11,13-16). The objective of this survey was to assess high-risk behaviors for HIV transmission and to describe determinants of willingness to voluntary counseling and testing.

## Subjects and Methods

A Cross-sectional descriptive study to determine high-risk behavior in the general population and commercial sex workers was conducted in Asosa Town from March to April 2001.

Asosa Town is the capital city of Benishangul Gumuz National Regional State. It is located in the Northwest of Ethiopia around 680 km from Addis Ababa. The native ethnic group in the Town is Bertas, but other ethnic groups namely Amhara, Oromo, Agew, Tigre have been living for long time. The official language is Amharic, which is used for every activity including education.

The number of study participants required for survey was calculated using the formula for a single population. The assumption was 50% of adults in the general population

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have used condom with a non-regular sex partner, with 3.5% precision and 95% confidence of certainty. The total sample size required with 20% contingency was 936. For female sex workers the assumption was 50% of them used condom always with their client, (with 5% precision and 95% confidence of certainty. These gave the required sample size of 384.

The Source populations for this behavioral survey were all adults in the age group 15-49 and commercial sex workers living in the Town. Adult from the general population was drawn using a systemic sampling method. This was done in two stages. The total number of households in each kebele was listed which gave a total of 4446. We took a sampling interval of four households to get the required number of study subject. All individuals who were living in selected households were registered and one adult in the age group of 15-49 was selected randomly.

Commercial sex workers were selected from food and drinking establishments such as bars, hotels, or from their homes for home based commercial sex workers. After obtaining the verbal consent of owner, a review of the registration book of workers in each of the institutions was made. Since the total number was not enough for sampling, all who gave verbal consent were interviewed. Women, who refused registration, were approached three times before being labeled as refusals.

Data were collected by 12<sup>th</sup> grade graduates trained on basic data collection. Interview was conducted face to face which was gender matched with verbal consent. The time for data collection was from 7 am to 12:30 pm to get the appropriate study participants. For bar based female sex workers, interview was conducted from 3pm-5pm and additional time was arranged with appointment.

A standard questionnaire that was designed by Family Health International for Behavioral Surveillance Surveys (BSS) was used (17). It was translated from English to Amharic and back into English to ensure the languages were comparable. It was pre tested. Modification was done on ambiguous questions. Information on socio-demographic characteristics, sexual behavior (number and type of sexual partners), uses of condom, knowledge and perception about HIV/AIDS, willingness for VCT were collected.

Data entry and cleaning was done on EPIinfo ver 6 and SPSS ver 10 were used to compute descriptive summary measures and multivariate analysis using the binary logistic regression model. Chi square and Odds ratio were used to see some of the association between variables. The out come variables such as knowledge level, misconception and condom usage were calculated according to the standard indicators stated for

Commercial sex workers and the general population in BSS documents (17).

## Results

### 1) Socio Demographic Characteristics

A total of 833, adults in the general population aged 15-49 years were included with response rate of 94 % and the rest were labeled as non- respondents. During registration the total number of female sex workers found to be smaller than that of calculated and all 209 were taken for interview. About 53% of the respondents were female, 48.9% in the age group 15-24, and 58.6% orthodox-Christian followers (Table 1). The mean (SD) age of the general population and female sex workers were 25.4 (7.1) and 21.7(4) years respectively.

Table 1: **Socio-demographic characteristics of the study population in Asosa, March 2001.**

Variable	General population (n=883) n (%)	Female sex workers (n=209) n(%)
<b>Sex</b>		
Male	466(52.8)	-----
Female	417(47.2)	209(100)
<b>Age (Years)</b>		
<15	-----	1 (0.5)
15-24	428(48.5)	166(79.4)
25-34	339(38.4)	42(20.1)
35-44	100(11.3)	-----
45+	16(1.8)	-----
<b>Educational level</b>		
Illiterate	122(13.8)	57(27.3)
Literate	761(86.2)	152(72.7)
<b>Religion</b>		
Muslim	188(21.2)	37(17.7)
Orthodox Christian	517(58.6)	155(74.1)
Other Christian	172(19.5)	15(7.2)
No religion	6(0.7)	2(1.0)
<b>Ethnicity</b>		
Amhara	370(41.9)	93(44.5)
Oromo	319(36.1)	92(44.0)
Berta	60(6.8)	-----
Others	134(15.1)	17(8.1)

Note: Total, n for Ethnicity in commercial sex workers is less than 209, because of 7 (3.4%) refusals to mention their ethnicity.

### 2) Marriage and Sexual History

The mean (SD) age at first marriage for the general population and female sex work were 18.9(6) and 15.2(3.6) year respectively, in which the difference is statistically significant [ $t=4.93$ ; (95%CI of 2.58-5.08)]. The mean (SD) age of the general population at which they initiated sexual intercourse was 18(3.4) years. From 631 sexually active adults 527 (83.5%) had sexual intercourse in the last 12 months. Though the majority had one regular partner, a total of 16 (3.1%) % and 30 (5.7 %) responded that they had more than one regular and commercial sexual partner respectively (Table 2). There was a statistically significant difference between men and women in the general population in reporting sexual intercourse in the last 12 months ( $\chi^2 = 4.54$ ;  $p=0.03$ ).

Table 2: Marriage, sexual history, number &amp; type of partner for the population survey in Asosa, March 2001.

Variable	Number	Percent
<b>Current marital status (n=883)</b>		
Married	485	54.9
Never married	321	36.4
Others	77	8.7
<b>Age at first marriage (n=485)</b>		
Less than 15 years	40	8.2
15-19 years	171	35.3
20 years and above	186	38.4
Don't recall	88	18.1
<b>Ever had sexual intercourse (n=883)</b>		
Yes	631	71.5
No	243	27.5
Refused to answer	9	1
<b>Age at first sexual intercourse (n=631)</b>		
Less than 15 years	38	6.0
15-19 years	328	52
20 years and above	158	25
Don't recall	107	17
<b>Had sexual intercourse in the last 12 Months (n=631)</b>		
Yes	527	83.5
No	96	15.2
RA (Refused to answer)	8	1.3
<b>Regular partner in last months (n=527)</b>		
None	38	7.2
One	435	82.5
More than one	16	3.1
Don't remember	38	7.2
<b>Sex in exchange for money in last 12 months (n=527)</b>		
None	352	66.8
One & more	30	5.7
Don't remember number	37	7.0
Refused to answer	108	20.5
<b>Non-regular partner in last 12 months (n=527)</b>		
None	384	72.9
One & more	22	4.2
Don't remember	66	12.5
Refused answer	55	10.4

Some of the sample characteristic for female sex workers is depicted in Table 4. The mean (SD) age of female sex workers at first sexual intercourse was 16.1(2.6) years and the age at which they received money for the first time for sexual intercourse was 17.3(4.8) years. A total of 142(67.9%) have had at least one paying client in the last week prior to the survey with mean number of partners of 3.0. Out of 105 sex workers who were willing to tell us the number of clients in last day or night of their work, 65.7% had one and 34.3% more than one client with mean of 2.1. The mean Ethiopian Birr they were paid by last customer was 34.6.

### 3. Condom use

Only 91 of 489 (18.6%) respondents have used condom with regular partner during last sexual contact. Among 67 respondents who had contact with commercial sex worker, 65 (97%) have used condom during last sexual intercourse. Forty five (67.2%) subjects reported that they use always condom while they have sex with commercial sex workers (Table 3).

From 527 sexually active respondents in the last 12 months, only 133, (25.2%) have ever used a condom though the difference with ever non-users was not significant ( $p>0.05$ ). There was a statistically significant difference between men and women in ever use of condom with [OR= 4.10, 95 % CI=2.72-6.20]. Out of 206 participants in the age group 15-19 years, only 27(13.1%) have ever used condom in their life.

Table 3: Condom use in the population survey with regular, commercial and non-regular partner. Asosa, March 2001.

Variable	Number	Percent
<b>Ever used condom (n=631)</b>		
Yes	168	26.6
No	463	73.4
<b>Ever use condom**</b>		
Male (n=317)	125	39.4
Female (n=125)	43	13.6
<b>Condom use with regular partner</b>		
<b>Last time (n=489)</b>		
Yes	91	18.6
No	395	80.8
RA	3	0.6
<b>Condom use with regular partner in Last 12 month (n=489)</b>		
Always	49	10
Not always	39	8.0
Never used	320	65.4
DK & RA	81	16.6
<b>Condom use with CSW last time (n=67)</b>		
Yes	65	97.0
No	2	3.0
<b>Condom use with CSW last 12 months (n=67)</b>		
Always	45	67.2
Not-always	19	28.4
Never	3	4.4
<b>Condom use with non-regular Last time (n=88)</b>		
Yes	56	63.6
No/DK	32	36.4
<b>Condom use with non-regular partner Last 12 months (n=88)</b>		
Always	21	23.9
Not-always	20	22.7
Never	19	21.6
DK and refused to answer	28	32.8

Note

DK: Don't Know. RA: Refused to answer, CSW: Commercial sex workers

(Last time of sexual intercourse refers the last episode).

Condom use refers to male condom, \*\*Significantly more men reported ever use condom than women with [OR=4.10, 95 % CI=2.72- 6.20]

Table 4: Sample characteristics, number, type of sexual partner, and condom use by female sex workers Asosa, March 2001.

Variable	Number	Percent
<b>Ever married</b>		
Yes	77	36.8
No	132	63.2
<b>Total number of years lived in Asosa</b>		
≤ 1 years	61	29.2
2-5 years	98	46.9
> 5 years	50	23.9
<b>Worked as sex workers in other places</b>		
Yes	180	86.1
No	29	13.9
<b>Condom use in last 30 days (paying client)</b>		
Always	161	77
Not always	25	12
Never used	19	9.1
Don't remember	4	1.9
<b>Condom use with non-paying client last time (n=77)</b>		
Yes	57	74.0
No/DK	20	26
<b>Condom use with non-paying client last 12 month (n=77)</b>		
Always	50	64.9
Not always	15	19.5
Never used & Don't remember	12	15.6

Note, n=209 unless mentioned

A total of 185(88.5%) female sex workers have ever used condom in their lifetime. A total of 184 (88.%) commercial sex workers used condom at the last sexual intercourse. More than 67.4% of the general population and 93.5% of female sex workers could get a condom in less than one hour and the majority of them know from where they could get.

#### 4. Knowledge on STDs and HIV/AIDS

In the population, survey 758(85.8%) has heard about the different type of sexually transmitted disease. Respondents in the general population who correctly mentioned all symptoms of STI<sup>1</sup> in women were 64(7.2%) and 170(19.3%) mentioned up to four of the symptoms. The prevalence of self-reported symptoms or sign of sexually transmitted disease in the general population in last 12 months was 2.8%.

Among female sex workers respondents, 103 (49.2%) didn't mention any of the symptoms of STIs in women and 106(50.8%) mentioned at least one of the symptoms. All symptoms of STIs in men were correctly identified by 67(32.1%) and 42.1% mentioned at least one of those symptoms. Self-reported signs or symptoms of STIs among female sex workers in the last 12 months were 8.6%. There was a statistically significance difference in self-reported symptoms of STI between female sex

workers and general population. Reporting of vaginal discharge and genital ulcer were more common among female sex workers. [OR=2.4; 95CI=1.01-5.47] & [OR=5.9; 95%CI=1.82-19.3].

Adequate knowledge<sup>2</sup> on HIV/AIDS Prevention and transmission was found among 580(65.7%) of the respondents' in the general population and 131(62.7%) of female sex workers. A total of 548 adult (62.1%) knew a person who had died of the disease, 41(4.6%) had relatives and 58(6.5%) close friends who had died of it. On the other hand nearly 61.7% of respondents from female sex workers had close friends and 8.6% a relative who had died of HIV/AIDS.

Misconception on some form of HIV transmission was found among 387(43.8%) the general population and 124 (59.3%) of female sex workers. Educational level plays an important role in both groups. It was four times higher in illiterate among the general population and three times among illiterates in female sex workers. Knowledge on other methods of HIV transmission such as sharing sharp objects, maternal to child transmission during pregnancy and through breast-feeding was fairly high in the general population i.e. 95.8%; 89.8%, and 74.9%, respectively.

#### 5. Knowledge, attitude and experience for VCT

##### 5.1 Adult general population

Even though a total of 249(28.2%) of the respondents stated that voluntary counseling and testing service were available in Asosa, it was only 34(3.9%), who ever had an HIV test in the past. Provision of HIV testing and counseling to married couples and to pregnant women was accepted by 89.2% and 84.5% of the respondents respectively. Never married [OR=0.45;(95% CI=0.24-0.89) and participants who lived 11 years and above in Asosa [OR=0.68; 95%=48-0.97] had negative attitude towards HIV testing in multi variate analysis. The ethnic category of Berta had positive attitude towards VCT [OR=1.99,95%CI=1.06-7.50] (Table 5).

##### 5.2 Female sex workers

In female sex workers it was found out that 124(59.3%) had no intention to take voluntary HIV testing and counseling. After controlling for possible confounders such as age, educational status, religious, and ethnicity, being ever married and having misconception on mode of HIV transmission, FSW who lived in Asosa 6 years and more were willing to undergo VCT [OR=2.3; 95%CI=1.1-5.0].

There was a statistically significant difference between female sex workers and the general population in having a previous HIV test [OR=4.5;95%CI=2.54-7.8].

<sup>1</sup>STI symptoms were lower abdominal pain, itching, genital discharge, ulcer, pain during urination, swelling around the genital area.

<sup>2</sup>Adequate knowledge means in this study that respondents know proper condom use, and sexual abstinence as ways of prevention; and asymptomatic nature of the illness.

Table 5: Logistic regression results to determine factors for voluntary counseling and testing in (the general population) survey in Asosa, March 2001.

Variable	Willingness for VCT		OR, 95%CI	OR 95%CI adjusted
	Yes n (%)	No n (%)		
<b>Marital status</b>				
Married	170(35.1)	315(64.9)*	1.0	1.0
Never married	149(46.7)	170(53.3)	1.62(1.20,2.19)*	0.46(0.24,0.89)*
Others	44(55.7)	35(44.3)	2.33(1.40,3.88)*	1.00(0.49,2.10)
<b>Education</b>				
Secondary & above	193(44.8)	238(55.2)	1.0	1.0
Elementary	132(40.0)	198(60.0)	0.82(0.61,1.11)	0.98(0.64,1.51)
Not literate	38(31.1)	84(68.9)	0.56(0.36,0.87)*	0.70(0.40,1.23)
<b>Religion (n=877)</b>				
Muslim	65(34.6)	123(65.4)	1.0	1.0
Orthodox Christian	230(44.3)	287(55.5)	1.52(1.06,2.18)*	0.98(0.60,1.90)
Other Christian	68(39.5)	104(60.5)	1.24(0.79,1.94)	1.25(0.78,2.00)
<b>Ethnicity (n=867)</b>				
Amhara	161(43.5)	209(56.5)	1.0	1.0
Oromo	137(42.9)	182(57.1)	0.98(0.71,1.34)	1.76(0.97,3.23)
Berta	18(30.0)	42(70.0)	0.56(0.30,1.04)	1.99(1.06,3.73)
Others	41(34.7)	77(65.3)	0.69(0.44,1.09)	1.38(0.54,3.52)
<b>Duration of residency</b>				
≤ 1 year	11(36.7)	19(63.3)	1.0	1.0
2-10 years	182(38.6)	289(61.4)	1.09(0.48,2.50)	0.97(0.33,2.83)
≥11 years	170(44.5)	212(55.5)	1.39(0.61,3.20)	0.68(0.48,0.97)*

Note\* P value <0.05, total n=883 unless specified,

OR adjusted for, age, marital status, education, religion, ethnicity, occupation, total years of residency.

### 6. Perceived susceptibility

A total of 421 (47.6%) respondents in the general population survey were aware of being engaged in high-risk practices, which expose them to HIV infection. Being female [OR=1.5, 95%CI=1.02-2.10] and individuals who had a positive attitude to take VCT [OR=1.60; 95% CI=1.2-2.2] felt themselves more at risk in multi variate analysis by controlling possible social demographic confounders.

Participants who never had sexual intercourse [OR=0.45;95%CI=58-0.74], those who didn't have adequate knowledge of HIV/AIDS transmission [OR=0.7;95% CI=0.53-0.91] and those who had been in Asosa for eleven years and more [OR=0.65;95%CI=5-0.89), considered themselves at low risk. From the total of 209 FSW, 145(69.4%) perceived themselves as being at high-risk of acquiring the virus, FSW who were illiterate perceived two-time at risk to other category of education, with [95%CI, 1.01-4.42].

### Discussion

Human behaviors that predispose people to acquiring and transmitting HIV were assessed. The key benefits from this survey that involved both high and low risk groups of population is to fill the gaps of information existing in behavioral survey in Ethiopia in general and emerging regions in particular.

Uganda and Thailand used behavioral survey as an evidence to prove the reduction of AIDS prevalence in the past couple of years as a result of change in high-risk human behaviors gained earlier (13,14,15). For effective prevention and handling of the epidemic, definitive and concrete knowledge on means of viral transmission and rejecting prevalent misconception are crucial.

Assessment of high-risk behaviors in Ethiopia was initiated as early as 1990s. High score especially in some mode of viral transmission was documented which showed some success especially in raising awareness both in the general and sub group of population (9-11,16).

Adequate knowledge on transmission of HIV by itself is of no use if individuals don't know that they can get infection from asymptomatic carrier who look well and healthy. In this particular survey both the commercial sex workers and the general population were engaged in high-risk sexual behavior, had low level of awareness and condom use, which is quite comparable to many studies in Ethiopia and Africa (3-5,9-11,16). Further more the respondents had little knowledge or awareness in asymptomatic healthy carriers and misconceptions of mosquito bite, as a vehicle for transmission was prevalent. Those factors may result in a big challenge in an effort to fight the epidemic in the region.

Being illiterate was associated with lack of knowledge on prevention and transmission mechanisms. In the survey people who had inadequate HIV knowledge on transmission or prevention had low level of concern, or felt themselves to be at low risk. Knowledge is important factor to change high-risk behavior, because of a tendency to change their behavior early (18).

Similarly misconception was more common among illiterates and those who were in elementary school. Raising educational level is a key tool in fighting the epidemic. Access to education for women in general and for marginalized group such as sex workers in particular is recommended.

Self-reported symptoms of STI such as genital ulcer and discharge were high in both groups. More than 50% of

the respondents in the general population failed to mention at least one symptom on women and only 7.2% mentioned all symptoms. The asymptomatic nature of most STIs and under reporting by the respondents could make the reported figure much lower than expected.

Female sex workers felt more at risk than the general population. Among the general population women perceive themselves more at risk than men [OR=1.5; 95% CI=1.02-2.10]. Similarly, respondents who have positive attitude towards a HIV test had concern and felt at risk. Perceived susceptibility is an indicator for effective intervention (21). People who perceived themselves susceptible to a disease tend to change their behavior earlier (21-22). Respondents who have positive attitude for HIV test has much concern and felt at risk. One study in ANC attendee in Atlanta showed that VCT acceptors have more concern than refusals (23).

Some of the results of the survey has to be interpreted with grate care because of the following limitation: Similar to other behavioral survey, most of the respondents may not report their sexual history in all cases and self reported sign and symptoms could be affected by recall bias. In conclusion, the survey provides substantial evidence that high-risk sexual behavior, with low level of awareness on prevention and condom uses are common in Asosa. Efforts have to be coordinated which focus on behavioral change communication strategies to scale up condom use and voluntary counseling and testing service in the region.

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