

PREVALENCE OF HIV AND SEXUALLY TRANSMITTED INFECTIONS AMONG SEX WORKERS IN IBADAN, NIGERIA

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Abstract

A cross-sectional survey was conducted among commercial sex workers (SWs) in Ibadan Oyo State of Nigeria to estimate rates of HIV infection and sexually transmitted infection (STIs) and document their sexual behaviour patterns from December 2008 to December 2009. SWs were recruited by the random sampling technique and were interviewed at their working environments anonymously. This strategy resulted in high rates of response (89%) and concordance (93%) to sensitive questions. A total of 312 SWs were enrolled. SWs were positive for anti-bodies to HIV in oral fluids (prevalence of HIV infection, 1.6% and 0.3%, respectively). A history of STIs was reported by 38% of the SWs. Most SWs (68%) reported inconsistent condom use. Five percent of SWs recognized their clients as drug users. A few SWs (1.5%) were injecting drug users, of whom 2 reported incidents of sharing needles/syringes with other injecting drug users. Inconsistent use of condoms and a high level of STIs underscore the urgent need to implement intervention strategies and use of female condom promotion, particularly among sex workers in Nigeria.

Key Words: sexworkers (SWs), HIV infection, sexually transmitted infections (STIs).

Introduction

Sexually transmitted infections (STIs) are of major public health importance in developing countries including Nigeria, the most populous nation in Africa and home to over 140 million people belonging to more than 350 ethnic and linguistic groups. The

epidemiology of STIs in Nigeria is related to several factors including demographics and social conditions which affect the availability of sexual health education, diagnostic facilities and appropriate treatment. STIs have been shown to be prevalent in the 20 to 29 age group, although sexual activity typically begins between the ages of 9 and 19.1. Despite extensive research in the fields of sexual health and STIs, the full extent of the STI disease burden in Nigeria is not known, as most people do not access formal healthcare sectors for STI treatment.

Hence, STIs tend to be under-reported in Nigeria and other developing countries.

A recent survey among sex workers (SW) in Ibadan reported a 16.6% prevalence of gonorrhoea among this group of women (Bakare, Fayemiwo, Odaibo, et al. 2005). Bacterial Vaginosis was found to be the second most common genital tract infection among female sex workers after candidiasis (Bakare, Fayemiwo, Odaibo, et al. 2005), syphilis also rampant among them (Busari, Gesinde, and Emerole, 2000).

HIV belongs to the lent virus subfamily of retroviruses and is divided into HIV-1 and HIV-2. In a recent study of sex workers in Ibadan, HIV-1 was responsible for infection in 25.6% of cases, with dual infections to HIV-1/2 occurring in 2.8% of cases.14 Subtypes G, C and circulating recombinant forms (CRF) were found to be the most prevalent clades among this high risk group. The 2005 HIV sero-surveillance surveys in Nigeria showed that the national median HIV prevalence was 4.4%. The state HIV prevalence ranged from 1.6% in Ekiti State to 10% in Benue State. Although HIV prevalence was generally higher in urban sites than in rural sites, the difference was not statistically significant.

In a study of the association of genital ulcerative disease (GUD) with HIV prevalence in Lagos State, a baseline sero-prevalence rate of 59% for HSV-2 was detected among female sex-workers.10 Chancroid and HSV-2 antibodies were also more common in HIV-infected sex-workers. A study among GUD patients in Ibadan detected a prevalence of 4.6% for Herpes Simplex Virus HSV by tissue culture (HSV-2 accounted for 3.3% and HSV-1 for 1.3% of cases, respectively).

Laboratory diagnosis of herpes simplex virus is largely beyond the means of most peripheral medical units in the tropics. In practice, therefore, the diagnosis has often to be made by exclusion and on clinical grounds

Research finding has shown that:

- Over 75% of new HIV infections occur through sexual contact. Factors that increase the rate and efficiency of hetero-sexual HIV transmission include high rates of sexual partner change and the presence of other sexually transmitted infections (STI).
- In many countries, sex workers are frequently exposed to HIV and other STIs. HIV prevalence as high as 60-90% are found in some places where sex workers have poor access to HIV prevention services, as stated by UNICEF(UNICEF 2002).
- In commercial sex settings where condom use is inconsistent and access to effective STI treatment limited, half to two-thirds of women working as sex workers typically have a curable STI at any one time. (Lyttleton, Lyttleton, 2000).
- Only 16% of sex workers are estimated to have access to HIV prevention services. Regardless of the region, poor access to services correlates with high STI and HIV prevalence as discussed by Menon, (2003).
- Early in epidemics, HIV and STI prevalence frequently rises rapidly among sex workers and their clients, especially where condom use is low and access to health care services is poor. In the absence of effective interventions, clients transmit infection both to sex workers and to their regular partners, extending transmission unto the general population as discussed by Rooney, (2002).
- In the absence of effective interventions, high rates of transmission in commercial sex and drug injecting networks continue to drive HIV epidemics even widely in generalized epidemics (Lowe,2003).

Recently, Cohen and Alexander (1995); Farmer, Connors and Simmong, (1997) found association between HIV infection and heavy crack use and unprotected fellatio. This they say may be due to poor oral hygiene and damage to the mouth from crack pipes, high frequency of fellatio and inconsistent condom use.

Sex workers may agree to unprotected sex if a client offers substantially more money, if they are desperate for money to buy drugs, or if business has been slow. In some cases, clients may use violence to enforce unsafe sex. Police in many countries routinely confiscate condoms when they arrest or stop sex workers, and sex workers may not be able to obtain more condoms immediately. Thus, in some situations, sex workers are powerless to insist on condoms for safer sex.

Sex workers (SWs) were believed to play a critical role in their dissemination due to the high prevalence of STIs among them.(Chen ZD, Li SP, Liu XH, et al). Nigeria has a population of 140 million, including 2 million people living in urban areas. There are massive population movements in Ibadan every day due to its central location in the south western part of the nation and its commercial activities. To date, HIV infection has been manifested in 2 population groups in Nigeria (blood/plasma donors and SWs), although the prevalence of HIV infection has been uncertain among them. Since the early 1990s, HIV has been detected in thousands of villagers living in semi-urban areas of Ibadan, who had donated blood/plasma and were infected as a result of unsafe procedures for blood donation that led to cross-contamination among the donors (Osho & Olayinka, 2004). HIV infection in SWs in Ibadan was first demonstrated by 3 cases in a national HIV sentinel surveillance site in 1997 and then by 2 more in 1999. These data were generated from SWs who were detained in a local re-education centre due to their illegal sexual activities (Li ZZ, Wang, Xue XL, et al1997) and thus are probably not representative of the population of SWs. In China, most epidemiologic studies of SWs have been conducted among SWs who were not in their commercial environment.(Wang and Wang 1997). In this study, we undertook a survey among non-incarcerated SWs in Ibadan to examine the prevalence of HIV infection and STIs and to document their sexual behaviour characteristics.

Methods Data Collection

A cross-sectional study was conducted among SWs between December 2008 and December 2009 in Ibadan. To increase sample of sampling techniques, both local public health nurses and SWs were invited to be

interviewers after obtaining informed consent. The recruited SWs were responsible for recruiting additional SWs to participate in the study.

The staff nurses administered the interview schedule. All team members had similar training about the study, which was based on the results of a pilot study that was conducted to evaluate operational procedures and the acceptability of the questionnaire. SWs were identified by previous observations and pilot studies in Ibadan. They receive lower compensation than non-residential SWs, who usually provide other services in addition to sexual services in establishments such as hair salons, massage parlours, and other commercial entertainment centres. SWs were recruited by a snowball sampling technique, which was initiated in 2 local private STI clinics. Verbal informed consent was obtained from each participant before collection of data and an oral fluid sample in the participants' workplace.

Instrument

A 2-part anonymous questionnaire was developed, to complete the questionnaire. A flyer about HIV/STIs and a pen were distributed to each participant. The first part, concerning socioeconomic and demographic information and knowledge of HIV/AIDS, was administered by the staff nurses. The questions in the second part were designed to collect sensitive information, such as sexual behaviour practices, drug use, and STI history. This part was administered in Akinyele Local government using a tape recorder with earphones and an answer sheet (Liu and Detels, 1999) which had only the numbers corresponding to each question on it. Upon completing the questionnaire, a small amount of oral fluid was collected, using the Epitope OraSureHIV-1 Oral Specimen Collection Device (Epitope, Inc., Beaverton, OR). The screening tests for antibodies to HIV in the oral fluid samples were carried out by the researchers in conjunction with Two Members of Red Cross Organization with determined HIVU in-Form II oral test kits according to the manufacturer's instructions. There was no confirmation of positive samples.

Statistical Analysis

All analyses were performed using Epi Info 2000 (Centers for Disease Control and Prevention, Atlanta, GA) and the SA Stest and the Student t test for proportional and continuous variables, respectively. Logistic

regression was performed for multivariate analysis by assessing the adjusted odds ratios from the univariate analyses. Selection of variables for entry into the logistic model was based on the odds ratios with P, 0.01 in univariate analysis. The variables of knowledge about HIV/AIDS transmission included 12 questions. Correct answers were assigned 1 point and summed to obtain the individual's score.

Table 1. Sociodemographic and Sexual Behaviour Characteristics of 312 SWs

Characteristic	No. (%)
Age(y)	
19 or younger	86 (27.6)
20-24	126 (40.4)
25-29	152 (48.7)
30 or older	36 (11.5)

Marital status

	No. (%)
Married	58(18.6)
Never married	208(66.7)
Other	6(14.7)

Schooling

0-4	68 (21.8)
5-8	104(33.3)
9-11	108(34.6)
≥12	32 (10.3)

Educational level

No education	44 (14.1)
Primary school	68 (21.7)
Junior school	142 (45.5)
High school	38 (12.1)
College and Higher Education	22 (7.1)

Score of knowledge about HIV/AIDS*(based on 12 answers)*

Poor (#4)	130 (41.7)
Medium (5-8)	132 (42.3)
High (9-12)	60 (19.2)

Perception of personal risk for HIV infection

No chance	88 (28.2)
Some chance	32 (10.3)
Very likely	28 (9.0)
Do not know	164 (52.7)

Age at first intercourse

14 or older	14 (4.5)
15-19	192 (61.5)
20-24	104 (33.3)
25 or older	4 (1.3)

Age of initiating sex work (y)

14 or younger	2 (0.5)
15-19	126 (40.4)
20-24	116 (37.2)
25-29	50 (16.0)
30 or older	20 (6.4)

No. provinces in which engaged in sex work

1	198 (63.5)
2	70 (22.4)
3	25 (8.1)
4	14 (4.5)
5	6(1.9)

Consistent use (always) of condom with clients

Yes	42 (13.5%)
No	266(85.3%)

No. sex without using a condom per month

0	30 (9.6)
1	52 (16.7)
2	70 (22.4)
3	56 (17.9)
4	32 (10.3)
5	34 (10.9)

History of drug use

Injection	3 (1.0)
Non injection only	5(1.6)
HIV infection	2 (0.6)

Self-reported STI history

STI	63 (20.2)
Genital ulcer	35(11.2)
Vaginal warts	34(10.9)
Vaginal discharge	134 (42.9)

Table2. Selected Characteristic of Residential and Non-Residential SWs

Characteristics residential (95%CI)	Residential (95%CI) P	Non-
No. SWs	23478 -	
Mean age(y) 24.8(23.3–25.5)	21.6(21.0–21.6) .0001*	
Percent married 33.4(24.02–42.6)	14.7(11.6–17.8) .0001↑	
Mean duration of schooling(y) 4.5(4.0-5.5)	.0001*	6.6(4.5–8.1)
Percentage completing middle school 28.7(19.5-37.2)	.0001↑	70.5(66.2-74.2)
Percentage born in rural area	59.5(55.5-63.0)	

79.0(71.0-87.0)	.0001↑	
Mean at first intercourse(y)		15.3(15.1-15.5)
16.7(16.0-18.7)	.0001*	
Mean at age initiation of sex work(y)		17.8(16.5-17.11)
22.5(21.3-23.7)	.0001*	
Mean no. client per week		8.0(7.6-8.4)
6.0(5.6 -6.4)	.0001*	
Percent always using condom		3.2(0.0-6.4)
8.6(7.2-9.4)	.0001↑	
Percentage reporting history of STIs	20.2(20.0-20.4)	
25.4(24.4-26.0)	.0001↑↓	
Percentage ever having used drug	2.3(1.1- 5.5)	
1.9(1.5-2.3)	-	

*Student t test

↑x2 test

↓Fisher exact test

CI indicates confidence interval

Table3. Factors Associated with Self-Reported STIs History among Residential and Non- Residential SWs

Characteristic	Adjusted OR*	95% CI P
2 sexual services without using a condom per month	4.92.1-11.7	0.0001
1 – 2 sexual services without using a condom per month	4.41.8-8.20	0.0003
Providing sexual services during menstruation	2.91.6-5.9	0.0004
Having drug-using clients	2.01.0-3.8	0.0191
Residential SWs	2.21.3-3.7	0.0006

*Multiple logistic regression analysis

CI indicates confidential interval; OR, odds ratio

Results

Description of Participants

Twenty-three SWs (8 residential and 15 non-residential) refused to participate in the survey, and 7 participants (2 residential and 5 non-residential) withdrew from the study because they were unwilling to answer the sensitive questions in the second part of the questionnaire.

Three potential establishments did not agree to participate. A total of 312 SWs, 87% of those approached, were enrolled in the study, including 234 residential and 78 non-residential SWs. Twenty-five establishments were involved in enrollment of SWs, with an average of 13 SWs per establishment. General characteristics of the participants are listed in Table 1. The mean age of the participants was 23.2 years.

One hundred and eighty-six (59.8%) of the respondents were born in rural areas. The average duration of schooling was 6.6 years.

Almost half (45.5%) of the participants graduated from junior school or higher. Employment/career before sex work included the following: participants 25 (8.1%); waitresses in establishments such as massage parlors and hair salons, 80 (25.3%); unemployed, 94 (30.1%); and various other occupations. Participants' knowledge of HIV/AIDS was evaluated by scoring correct answers on 12 statements to which they agreed or disagreed (Table 2). Although most (82.5%) of them had heard of HIV/AIDS, their knowledge about HIV/AIDS was relatively poor (median score = 6). When asked about their personal risk of being infected by HIV, most participants (80.9%) answered either "no chance" or "don't know." Eight SWs (2.6%) admitted to drug use, of whom 6 were currently using drugs. Two of the 5 injecting drug users reported sharing needles/syringes with others 1 time during the last 7 days.

Sexual Behaviour

The median duration of sex work was 1.5 years, but 12% of participants had worked as SWs for .5 years. Most SWs (68.6%) had been involved in sex work only in Ibadan, but 51 (16.5%) had migrated among at least 3 different states for sex work. The median number of clients reported by each woman was 10 per week. When asked the occupation of their most frequent clients, more than one half (53.8%) of the participants answered drivers. Other major client occupations included officers (26%), businessmen (20%), and workers (15%). Thirty-one participants

(10.2%) reported drug-using clients. Sixty-eight women (21.9%) admitted to engaging in intercourse during menstruation. Most SWs (85.3%) did not insist on condom use with their clients, averaging 2 non-condom-using clients per month. When asked for reasons why not (multiple choice), the most frequently reported reasons were “know the client” (53.2%) and “like the client” (51.6%), followed by “clients’ offering more compensation” (16%) and “clients’ request only” (14.8%). The answers to the question “Do you have a boyfriend?” asked in both parts of the questionnaire separately showed a 93% concordance rate.

Prevalence of HIV Infection and STIs

Two (1 residential and 1 non-residential) of 312 FSWs (234 residential and 78 non-residential) whose oral fluid specimens were available for testing were positive for antibody to HIV, a prevalence of HIV infection of 0.5% (1.2%, residential SWs; 0.3%, non-residential SWs). The HIV-positive residential SW was an injecting drug user. Forty-three (13.8%) of the respondents reported being previously diagnosed with an STI by a physician. However, when asked whether they ever had “genital ulcers,” “vaginal warts,” or “vaginal discharge,” either diagnosed by a physician or self-diagnosed (multiple choice), 28 (9.2%), 27 (8.8%), and 116 (37.2%) of the participants, respectively, recalled that they had ever had such episodes. Combining SWs reporting these 3 conditions with those reporting an STI, a total of 304 participants (51%) had been infected with an STI: 62.3% of residential SWs and 36.7% of non-residential SWs.

Residential and Non Residential SWs

Characteristics of residential and non-residential SWs that were significantly different are shown in Table 2. Residential SWs were younger (mean age, 21.6 years), less often married (14.7%), more highly educated (mean duration of schooling, 6.6 years; 70.5% completed middle school), and less likely to have a rural background (59.5%) than residential SWs (24.8 years, 33.4%, 4.5 years, 28.7%, and 79.0%, respectively). 2.3% residential SWs, but non-residential SWs (1.9%), reported a history of drug use. The 2 groups also had different sexual behaviors. Non Residential SWs were characterized by earlier first intercourse (mean age, 15.3 years), earlier involvement in sex work

(mean age, 17.8 years), a lower rate of consistent condom use (3.2%), many clients (average, 8 per week), and fewer list of STIs (20.2%) than non-residential SWs (17.7 years, 22.5 years, 8.6%, 6 per week, and 25.4%, respectively).

Risk Factors of STIs

A logistic model was set up to estimate adjusted odds ratios of variables related to STIs (either an STI history or related disorders) (Table 3). The entry of variables into the model was based on the results of univariate analyses ($P, 0.1$). Inconsistent condom use was independently associated with STIs; the more episodes of sexual contact without using condoms, the higher the likelihood of STIs. SWs who reported not using a condom at least 2 times per month were more likely to have reported having had an STI (62.1%; 194 of 312). A relatively lower proportion of those SWs who claimed, 2 unprotected sexual encounters reported an STI history (44.3%; 138 of 312). An STI history was reported by 35% (40 of 312) of SWs who reported either consistent condom use or seldom providing sex services without condoms (less than once per month).

SWs who reported sex work during menstruation and intercourse with drug users had more previous STIs. A higher proportion of residential SWs reported a history of STIs than non-residential SWs.

DISCUSSION

Results of several epidemiologic surveys among SWs in Nigeria have been reported recently. (Menon, 2003) Most of these studies collected data from women who were detainees in reeducation centres, clinic attendees, or hospital patients. SWs in Nigeria are difficult to access because of their illegal status and the covert nature of their work. In this study, SWs were recruited and data was collected in their working environments, using a snowball sampling technique and administering the questionnaire anonymously. These strategies probably contributed to the relatively high response rate (89%) and high concordance of our data (93%) concordance rate of answer to the question "Do you have a boyfriend?" in parts 1 and 2 of the questionnaire). Some SWs did not want anyone else to know about their sex work. Thus, they neither wanted to be involved in the study nor wanted to refer others, leading to low sampling efficiency. The difference in sampling efficiencies

among different sub-groups of SWs may have introduced a sampling bias in this study. In this report, the differences between residential and non-residential SWs in Ibadan are described for the first time. Such establishments need to provide these other services to be registered with the local government. Each establishment has 1 manager (“mammy”) over the non-residential SWs, but each non-residential SW usually also has at least 1 pimp, because they might be involved in sex services in different establishments at the same time or during a short period. Conversely, residential SWs, who work in the streets or in mini motels, usually have no pimp managing them. Because they are not establishment-based, they provide no services other than sex. Our data indicate that residential SWs are more vulnerable to HIV infection (1.1%) and STIs (61.9%), probably due to their lower education level, less knowledge about HIV/AIDS, and their lower rate of condom use.

During the survey, it was noticed that some residential SWs traded sex for a meal. These SWs probably reflect the increasing economic disparity between rich and poor resulting from the shift to a market-driven economy in Nigeria. The prevalence (0.37%) of HIV infection observed in this study was commensurate with the prevalence among SWs (0.39%) reported by the National Sentinel Surveillance in Zhengzhou as discussed by Li, Wang, Xue, et al (1999). However, it is much lower than that reported recently by other studies in Nigeria.

One study revealed a prevalence of HIV infection of 1.4% among SWs in Guangzhou.

In that study, 7% of participants reported a history of injecting drug use. HIV infection was independently associated with injected drug use (adjusted odds ratio = 8.0). Another study found a prevalence of HIV infection of 10.3% among SWs in Yunnan, where the HIV epidemic has been established among injecting drug users for .10 years.

Fifty-eight per cent of SWs in that study reported a history of drug use. However, injecting drug use among women participating in this survey was low (1.0%). Thus, the variation in the prevalence of HIV infection is probably due to the proportion of injecting drug users among SWs. In this study, an STI history was based on self-reporting. The lower percentage (19.8%) in this study compared with rates in other studies (van Den Hoek, Yuliang, Dukers, et al 2001) might be partially due to underestimation or underreporting of an STI history, because most participants did not regularly have checkups for STIs.

Forty-seven per cent of the 203 women who had genital warts, vaginal warts, and/or vaginal discharge reported no history of STIs, underscoring their lack of awareness about STIs. As expected, unsafe sexual behaviours (sex work with inconsistent condom use, intercourse during menstruation, and having drug-using clients) were independently associated with STIs.

Although the prevalence of HIV infection is still very low among this group of SWs, their high prevalence of STIs and their high percentage of inconsistent condom use suggest that once HIV infection is introduced into their network, it will spread rapidly. Accordingly, a ‘‘100% condom campaign’’ and regular checkups for STIs should be implemented immediately to prevent the HIV epidemic before it takes hold in Ibadan. More health education programmes targeting SWs are urgently needed. Distribution of free condoms will greatly assist the prevention of HIV infection/STIs among residential SWs. Residential SWs in particular should be targeted for intervention efforts. There is a window of opportunity to stop the HIV epidemic in Ibadan, but health officials, NGOs, State and Federal Government and the community must take immediate action.

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