

HUMAN IMMUNODEFICIENCY VIRUS INFECTION AMONGST FEMALE SEX WORKERS IN NIGERIA.

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ABSTRACT

In most parts of the world, female sex workers (FSW) have been among the groups most vulnerable to and most affected by HIV. The data on HIV infection among FSW is very scanty in North central of Nigeria.

OBJECTIVE To examine factors contributing to the spread of the HIV epidemic among FSW participating in a program for the prevention of transmission of HIV at the Jos University Teaching Hospital (JUTH) Jos, Plateau State Nigeria.

METHODS: A total of 500 FSW were interviewed, but only 307 consented to give their blood samples to be tested for HIV and Syphilis and genital specimens were collected from them, analyzed for other sexually transmitted infections (STIs). Information about socio-demographic characteristics, sexual behaviors, knowledge about HIV and other STIs, HIV risk perception and history of STI-related symptoms were also documented.

RESULT: The prevalence of HIV was 57.3% (176/307). HIV -1, HIV-1&2 and HIV-2 accounted for 96.0%, 2.3% and 1.7% respectively. Their mean age was 24.5 ± 5.5years. The FSW within age groups 20-24 and 25-29 years were more affected with prevalence rates of 39.4% and 35.5%, respectively. In

addition, those with genital symptoms and STIs during the last 12 months had increased risk of HIV by 68.6 (pValue <0.001)

Other predictors of HIV observed include: duration of stay in brothel, marital status, those who did not perceive themselves to be at risk of HIV and use condom are likely to have contributed to HIV epidemic.

CONCLUSION: Development of effective interventions, including behavioral change in terms of condom use, strong HIV intervention services and STI control, should be accorded high priority.

INTRODUCTION:

Women accounted for nearly 43.4% of the 40.3million People Living with HIV/AIDS worldwide. In sub-Saharan Africa, the proportion of HIV-positive women is increasing due to their poor socioeconomic status and gender inequities^{1,2}. In many parts of the world, female sex workers (FSW) have been among the groups most vulnerable to and most affected by HIV¹⁰. The data on HIV infection among FSW is very scanty in this part of the world. However, in 1997 there were two separate reports indicating about 60% prevalence of HIV infection among FSWs in two different zones of Nigeria^{3,4}.

In spite of the magnitude of public health problem associated with HIV infection globally, there is evidence that most Nigerians, especially men have not taken the HIV/AIDS problem with the seriousness it deserves. Highly educated Nigerian men still regard AIDS as non-existent or a mere political issue³. In addition, large numbers of Nigerian men continue to patronize FSWs and in most cases have unprotected sex⁴.

In this report, we present results of a study that was conducted to examine factors contributing to the spread of the HIV epidemic among FSWs in North Central Nigeria. The Jos University Teaching Hospital (JUTH) is a referral center that serves approximately 10 million people in North Central Nigeria.

SUBJECTS AND METHODS

Study site:

The study was carried out in Jos, a cosmopolitan city with an estimated population of 622,873 according to 2006 national census figures and the capital of Plateau State in north central Nigeria. Presently there are about twenty brothels within Jos metropolis with an approximate population of 400-1000 sex workers at any particular time, an average of 20-50 FSWs per brothel. These FSWs are brothel based, but they are in the habit of frequent changing of their brothels.

Nigeria is West African country with a population of about 160 million and annual growth rate of 2.8% spread over 350 ethnic groups and two major religions-Islam and Christianity⁵. The Country is divided into 36 States with a Federal Capital Territory and 774 Local Government Areas (LGAs). The States are grouped into six geopolitical zones as follows; South West, South East, South-South, North Central, North East and North West.

Study Population and Survey:

As part of a national program for prevention of the spread of HIV among high-risk groups, the AIDS Prevention Initiative in Nigeria (APIN) developed voluntary counseling and testing services in Sexually Transmitted Infection (STI) Clinic at JUTH, in 2001. This study was conducted Between April 2003 and May 2006, to determine risk factors for HIV infection among FSWs and was brothel -based. Those sex workers who expressed willingness to participate in the study were invited to access

the services of the STI Clinic at JUTH. During each clinic day, approximately five FSWs were interviewed in a private room to obtain information about socio-demographic characteristics, sexual behaviors, knowledge about HIV and other STIs, HIV risk perception and history of STI- related symptoms.

All the FSWs who consented to take part in the study after pre-test counseling had their biological samples for the detection of HIV and other STIs. Genital examination was done and vaginal pH was determined.

All the FSWs that had any related STI problem were given treatment based on the National Guideline on Syndromic Management. Condoms and lubricants were provided free after training. They were given an appointment to return to the clinic after seven days for collection of laboratory results, review of previous STI treatments and post-test counseling. For those who were HIV positive were referred to Antiretroviral Treatment Clinic for further management and follow up.

Approval for this study protocol was obtained from the Ethical Committee of JUTH and the Institutional Review Board of the Harvard School of Public Health, Boston, USA.

Laboratory methods.

Blood samples were allowed to clot, then centrifuged (Chris Craft centrifuge, Model 6065, Serial No. 12314) at 3,000rpm for 5 minutes to separate serum. The sera so extracted were stored in cryo-vials at -20°C until tested. The sera were tested for HIV with Determine Rapid Test (Abbott Laboratories, IL, USA). Reactive samples were confirmed using the Western blot test in the APIN Laboratory, JUTH Jos, Nigeria using strips for HIV-1 and 2 prepared from the Research Laboratory of Harvard School of Public Health, Boston, MA, USA. Rapid Plasma Reagin (RPR) card kits, (Newmarket Laboratories Ltd, Kentford, UK) used as screening test and active or recent infections were confirmed by *Treponema pallidum* Hemagglutination assay (TPH) (Newmarket Laboratories Ltd, Kentford, UK). What was considered positive for *Treponema palladium* infection in this report were those tested reactive with the two test kits.

A wet mount of the vaginal swab was prepared in normal saline immediately after collection. This was microscopically examined for the presence of clue cells, motile *Trichomonas*

vaginalis and yeast cells. Direct Gram-stained endocervical swabs were done for the detection of polymorph nuclear cells and Gram-negative diplococci (predominately intracellular). *Nersseria gonorrhoea* was isolated by inoculation of endocervical swabs on modified Thayer Martin media. This was followed by incubation in a candle extinction jar with humidification at 36°C for 24-48hours. Identification of isolates was based on colonial morphology, Gram reaction of Gram-negative diplococci, oxidase and sugar fermentation tests. *Candida albicans* identification was by positive wet mount, isolation of Gram-positive yeast-like cells on Saboraud's dextrose agar and confirmed by positive germ tube test. Bacterial vaginosis was diagnosed using Amsel criteria¹⁶

Data analysis

Data entry and analysis were done using Epi info version 3.3.2 (CDC, Atlanta, GA, USA). The prevalence of HIV in each category of predictor variables was determined, and the associations between HIV infection and predictor variables were summarized by using Odds Ratio (OR) and corresponding 95% Confidence Intervals (CI).

RESULTS

FSWs were interviewed, but only 307(61.4%) consented to give their blood samples for HIV and syphilis test, and also genital specimens were collected from them. The women from north central (33.2%), south- east (32.3%) and south -south (20.5%) geopolitical zones of Nigeria formed the majority of this population respectively.

Their mean age was 24.5±5.5 (range 18-54 years) and the majority of the participants were

within the age group of 20-29 years (Table 1). The age group most affected with the HIV infection was within the age groups 20-39 years. The education and duration of sex work were related to the risk of HIV infection ($p=0.002$ and $p=0.001$) respectively.

About 73.4% of these women began their sex trade when they were 18 years or even younger. The prevalence of HIV in this high-risk population was estimated to be 57.3 % .

The prevalence of HIV among Moslem FSWs was 60 % and while their Christian counterparts had 54.7 %.

Most of these women who were involved in this study were divorcees (56.0%) but, the single (never married) had the highest HIV prevalence rate of 81%.

About 80.1% of sex workers were reported to have more client patronage at month ends and they had HIV prevalence rate of 47.6%. Civil servants were also reported to form the majority of the clients that patronized the sex workers. These women who were reported to have high patronage by the civil servants also have HIV infection rate.

The risk factors such as condom used, past history of sexually transmissible infections and presence of genital lesions were positively related to the risk of HIV infection among FSWs ($p=0.002$, $p=0.001$, $p=0.001$, and $p=0.001$) respectively (Table 2).

The risk of HIV increased among those who had genital symptoms and STI during the last 12 months ($p, =0.001$) (Table 3). Candidiasis was the most common genital infection among the FSWs, with a prevalence of 40.1%.

Table 1. Characteristics of the study subjects

Variable	Number of FSWs documented in the study.(n=307)(%)	(%) HIV Positive FSWs	p-Value
Mean age ± s.d.(years) 24.5±5.5 (range 18-54)			0.55
<19	15(4.9)	25	0.56
20-24	121(39.4)	58.7	
25-29	109(35.5)	59.6	
30-34	40(13.0)	60	
35-39	14(4.6)	64.3	
>40	8(2.6)	37.3	
Religion			
Christians	183(59.6)	54.7	0.54
Muslim	100(32.6)	60	
Blank	24(7.8)	66.7	
Education			
Illiterate	45(14.7)	80.1	0.002
Primary	75(24.4)	75	
Secondary	100(32.6)	65.7	
Tertiary	57(18.6)	34.2	
Others	30(9.8)	56.3	
Marital status			
Single	56(18.2)	40.1	0.58
Married	7(2.3%)	21.2	
Divorced	159(51.8)	45.7	
Separated	1(0.3)	0	
Widowed	81(26.4)	81.1	
Blank	10(3.3)	34.2	
No. customers per day			
less 5	157(51.1)	64.1	0.51
5 to 10	85(27.7)	56.7	
11 to 15	23(7.5)	45.3	
16 to 20	32(10.4)	56.7	
more 20	10(3.3)	45.2	
Duration of the sex work(years)			
less 1	157(51.1)	34.7	0.001
1 to 5	100(32.6)	53.2	
more 5 to 10	45(14.7)	100	
more 10	5(1.6)	100	
Occupation of customers			
Long distance trucks	28(9.1)	78.6	0.56

Taxis drivers	17(5.5)	58.8	
Commercial cyclists	63(20.6)	60.3	
Businessmen/ traders	78(25.4).	14.8	
Civil servants	108(35.2)	80	
Others	9(2.9)	55.6	
When they see high number customers?			
Month ends	246(80.1)	47.6	0.02
Festivals e.g. xmas, sallah	51(16.6)	45	
Political rallies	5(1.6)	23	
Anytime	3(1.0)	40	
Others	2(0.7)	20	
Awareness of the chances of contracting HIV/AIDS?			
No risk	140(45.6)	43.6	1
Small risk	50(16.3)	52	
Moderate risk	22(7.2)	54.6	
Great risk	29(9.5)	51.7	
Has AIDS	4(1.3)	100	
Don't Know	98(31.9)	60.2	

Female Sex workers in Jos, Nigeria.

Risk factors	Number of FSWs documented in the study. (n=307)(%)	(%) HIV Positive FSWs.	p-Value
Condom use.			
Yes always	33(10.7)	63.6	0.04
Not always.	246(80.1)	56.1	
Not with special	11(3.6)	72.7	
Blank	17(5.6)	52.2	
Had genital ulcer during the last 12 months			
No	70(22.9)	68.6	0.0001
Yes	219(71.3)	70.1	
Blank	13(4.2)	56.9	
Had genital discharge during last 12 months			
No	74(24.1)	60	0.001
Yes	184(59.9)	81.2	
Blank	49(16.0)	71.7	
Diagnosed genital lesions.			
Ulcer	56(18.2)	100	0.001
Warts	107(34.9)	100	
Negative	144(46.9)	56	

Table 3. Relationship of other sexually transmissible infections and HIV among Female sex workers in Jos, Nigeria.

Infection	Number of FSWs documented in the study.(n=307)(%)	Number of FSWs documented FSWs.	Crude OR (95% p-Value
Syphilis rapid plasma reagin			
	21(6.8)	87.9	0.0001
TPHA positive	10(3.3)	100	
Bacterial vaginosis	99(32.2)	67.7	
<i>Candida albican</i>	123(40.1)	56.9	
<i>Neisseria gonorrhoea</i>	4(1.3)	100	
<i>Trichomonas vaginalis</i>	5(1.6)	100	

DISCUSSION

The prevalence of HIV (57.3 %) in this study was much higher than the national median prevalence of 5.0%- 7.0% reported for north central zone of Nigeria in 2003 HIV sentinel survey⁷ and the prevalence of 8.2% reported among pregnant women at JUTH⁸. The high prevalence rate among the sex workers reported in this study further confirms that HIV is still a major public health problem in Nigeria.

This study records the highest age-related prevalence of HIV among the FSWs aged 20- 39 years. This agrees with other studies in Nigeria⁴. These are relatively young women who generally have been associated with increased biological vulnerability⁹ and the relative prevalence of asymptomatic and untreated STIs^{9,10}. In addition, when compared with their older counterparts; the younger FSWs tend to have more patronage by men and therefore, service more clients. They might also be in a hurry to make more money and may less experience in resisting the men who insisted on having sex without condom, i.e. men who preferred “skin-to-skin” contact.

This study noted that the majority of the women were those who stayed less than one year in a brothel; a finding that is likely to have some public health implications in terms of HIV/STI spread and planning of any meaningful intervention program for such a mobile population. Those women who have been into the sex work for more than 5 years and above were most at risk of HIV infection when compare with their counterparts that have not been long in the trade. For the intervention purposes, more attention should be paid this group. The widowed FSWs were found increased risk of HIV infection. The likely reason could be that these women most have lost their husbands to HIV infection in the first place or losing their breadwinner pushed them into sex work and in the process they contracted the infection.

The majority of women that participated in the study were of the Christian faith. However Moslem FSWs had relatively

higher risk of HIV when compared to their Christians counterparts. This is not consistent with other studies carried out in Nigeria¹¹. Interestingly religion in this study had a bearing on the risk of acquisition of HIV. This may be more of cultural/habit than religious factor because both Christianity and Islam frown at sex outside marriage and sex work as an occupation.

We found out that the majority of the clients were civil servants, long distance drivers, taxi drivers and commercial motorcyclists and had increased risk of HIV. They are therefore a critical “bridge” population in the transmission of HIV infection to their partners. There is an urgent need to development a comprehensive HIV/AIDS and STIs intervention program to target these risk groups.

This study also observed that the majority of the sex workers came from north central, southeast, and south- south geopolitical zones of the country. This finding reflects to the high National HIV prevalence rates within these zones (north central, 7.0%; south- south, 5.8%, and Southeast, 4.2%). These zones obviously share socio-cultural and socioeconomic similarities. Cultural festivals and other ceremonies are possible occasions during which these girls travel to their villages like other daughters of the community to partake in such festivities and while in the villages, they socialize freely.

The poverty level is very high among the people living within these zones, particularly among the rural populace. The male child is traditionally more favoured and preferentially educated at the expense of the girl child.

Unmarried (single) sex workers and those who started sex work when they were younger than 18years formed the majority and had significantly increased risk of HIV. The increased risk of HIV in this group agrees with previous studies^{8,10}. Biologically and economically, these younger women are also likely to be at increased risk of HIV epidemic i.e. they have more tender genitals that could be traumatized and they are usually favorites

of the older men, and are less empowered economically. It is sad to note that, most of the FSWs were found to be inconsistent in the use of condoms. Low educational level among this high risk group has shown to be a contributory factor in the HIV infection. This finding agrees with the findings in other studies that the formal education is necessary to control HIV infection^{11,12}

This study also reported increased risk of HIV among the women who did not perceive themselves to be at risk of HIV or even infected with the virus when compared to those who had the right perception. This might be linked to the low level of education of these women who can't read and write. Simple instructional materials available how to prevent spread of HIV and other available useful materials that might help them in some ways are useful to the majority who can't read and write.

Some independent risk factors for HIV infection such as genital ulcers and warts were reported. Genital ulcers increase the risk of HIV by providing an easy portal of entry for the virus and increased presence and activation of HIV susceptible cells^{10,14}. In addition, these ulcers may be a complication of HIV disease and a marker of high-risk sexual exposure. Although, syphilis is one of the most common causes of genital ulcers in Africa^{13,14} our study found only 3.3% of FSWs infected with syphilis. HIV was associated with bacterial vaginosis. There are a number of mechanisms by which bacterial vaginosis might be associated with HIV^{15,16 &17}.

CONCLUSION

This study documents a high prevalence of HIV, bacterial vaginosis, *C. albican*, genital ulcer disease (GUD) and warts among female sex workers in Northern Nigeria. Most of the FSWs documented in this study have low educational level. There is also poor condom usage among this group. Hence, there is an urgent need for a comprehensive control/prevention program specially tailored towards this population. Given the strong associations between STIs and HIV, strengthening the

control of other STIs will no doubt have a significant impact on the HIV epidemic in the country generally.

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