# STI/HIV Co-Infections in UCH, Ibadan, Nigeria

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#### Abstract

Sexually transmitted infections (STIs) are poorly recognised and inadequately treated in Nigeria in spite of the fact that it constitutes a major risk for HIV transmission. This study was carried out to ascertain STI/HIV co-infection rate and to obtain relevant socio-demographic and reproductive health data associated with STIs. This information is urgently needed for designing STI/HIV control strategies. All consenting patients with history suggestive of STI, who attended STI clinic at the University College Hospital, Ibadan, between March and November 2001 were enrolled in the study. Of the 210 patients seen, 98 (46.7%) were males while 112 (53.3%) were females (p > 0.05). One hundred and fifty six (74.3%) of them were aged 20–39 years while only 10 (5.1%) were adolescents. Twenty (9.5%) had laboratory diagnosis of STIs, out of which 6 (30%) were also HIV positive. Among those with STIs, 8 (40%) had gonorrhoea, 8 (40%) had candidiasis, while 4 (25%) were positive for Trichomonas vaginalis. None of the patients' sera was positive for Treponema palladium antibody. HIV prevalence rate in the study was 21.9%. Highest rate was found in patients aged 20–29 years while no adolescent and no one over 50 years old was HIV positive. Five (62.5%) of the patients with gonorrhoea were also HIV positive, a lower percentage (25%) of those with trichomoniasis were positive for HIV, while none of those infected with candidiasis was HIV positive. STI/HIV co-infection rate was 30%. This study reveals a high STI/HIV co-infection rate, indicating that there is a need for proper management of STIs as a way of reducing the spread of HIV infection in Nigeria. (Afr J Reprod Health 2005; 9[1]: 42–48)

#### Résumé

Les co-infections des ISTs/VIH à UCH, Ibadan, Nigéria. On reconnaît mal les infections sexuellement transmissibles (ISTs) et elles ne sont pas traitées de manière adéquate au Nigéria malgré le fait gu'elles constituent un risgue majeur pour la transmission du VIH. Le but de cette étude était d'établir le taux de co-infection des ISTs et du VIH et d'obtenir des données socio-démographiques et de santé de reproduction liées aux ISTs. On a besoin de cette information de toute urgence pour formuler des stratégies de contrôle des ISTs/VIH. Tous les malades consentants dont l'histoire a montré les ISTs, qui ont fréquenté la clinique des ISTs au Centre Hospitalier Universitaire (UCH) à Ibadan entre les mois de mars et de novembre 2001 ont fait l'objet de l'étude. Parmi les 210 malades qu'on a vus, 98 (46,7%) étaient des mâles alors que 112 (53,3%) étaient des femelles (p > 0,05). Cent cinquante-six (74,3%) d'entre eux étaient âgés de 20–39 ans alors que seuls 10(5,1%) étaient des adolescents. Vingt (9,5%) ont fait l'analyse diagnostique des ISTs dont 6 (30%) ont été séropositifs. Parmi ceux qui avaient des ISTs, 8 (40%) avaient la gonorrhée, 8 (40%) avaient la candidose alors que 4 (25%) avaient le Trichomonas vaginalis. Aucune des malades n'avaient des sérums positifs pour les immobilisenes. Le taux de prévalence du VIH était de 21,9%. Les taux les plus élevés ont été constatés chez les malades âgés de 20–29 ans alors qu'aucun adolescent et aucune personne ayant plus de 50 ans n'était séropositif. Cinq (62,5%) des malades qui avaient la gonorrhée étaient séropositifs. Un pourcentage plus bas (25%) de ceux qui avaient la triachomonase étaient séroposoitifs alors qu'aucun de ceux qui avaient la candidose n'était séropositif. Le taux de co-infection des ISTs/VIH était de 30%. Cette étude a révélé un taux élevé de co-infection des ISTs et du VIH, ce qui montre qu'il faut un bon traitement des ISTs comme une manière de réduire la propagation de l'infection du VIH au Nigéria. (Rev Afr Sante Reprod 2005; 9[1]: 42-48)

KEY WORDS: HIV, STI, transmission, trichomoniasis, gonorrhoea

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#### Introduction

Sexually transmitted infections (STIs), including HIV/AIDS, constitute a public health problem worldwide especially in sub-Saharan Africa where 70% of HIV/AIDS infected persons live.<sup>1</sup> The burden of the disease is most felt in developing countries due to inadequate finance and poor logistics to curtail the spread of the infection. In Africa, where sexual transmission is the predominant mode of spread for HIV, one of the most important risk factors for seropositivity is history or clinical evidence of STI, particularly genital ulcerations.<sup>1,2</sup> STIs play a direct role in facilitating HIV transmission by disrupting genital epithelium. A person with untreated STI may be 6–10 times more likely to pass on or acquire HIV during sex. This risk increases from 10 to 300 fold in the presence of a genital ulcer such as syphilis, chancroid and herpes genitalis.<sup>3</sup> The situation becomes more worrisome in Nigeria where STIs are poorly recognised and inadequately treated.<sup>4-6</sup> Nigeria has the second largest number of HIV/AIDS persons in the world and the highest number of AIDS orphans globally<sup>1</sup> and the country entered the explosive phase of the epidemic in 1999.<sup>7</sup> Despite the magnitude of this problem, limited data is available to show the co-existence of STI and HIV infection. In addition, factors associated with HIV co-infection have been poorly documented. This information is urgently needed. This study was therefore embarked upon to ascertain the magnitude of STIs/HIV co-infection and to identify socio-demographic and other factors associated with it. Attention to this will help identify the best practices for reducing and curbing the rate of spread of this dreadful disease in Nigeria.

#### Materials and Methods

#### Study Area

The study was conducted in Ibadan, a cosmopolitan city and capital of Oyo State in Nigeria. It is believed to be the largest city south of Sahara. Majority of the people are civil servants, African Journal of Reproductive Health Vol. 9 No.1 April 2005

traders and artisans. A sizeable percentage is made up of unemployed school leavers.

STI services are mainly obtained at the University College Hospital (UCH), Ibadan, which serves as both a referral centre and a walkin clinic for patients within and outside the city. It is one of the two designated STI clinics in Oyo state.

## Study Population

The study population for this study included all new patients with presumptive signs and symptoms of STI seen at the STI clinic, UCH, Ibadan, from March to November 2001. All consenting patients with features of STI were enrolled into the study while those with prior antibiotherapy were excluded. Each patient was given pre and post-test HIV counselling and his/ her consent obtained before enrolment into the study. Ethical clearance was obtained from the University of Ibadan/University College Hospital joint ethical committee.

A standardised, structured, pre-coded questionnaire with open and close-ended questions was used for data collection. Socio-demographic and reproductive health data were obtained in addition to information on clinical features of STI by the attending physician.

Patients were examined clinically for evidence of urethral, cervical and vaginal discharges, groin nodes enlargement, genital swelling and ulcerations, and other observations suggestive of STIs.

#### Laboratory Investigations

Urethral swab (for males), high vaginal swab and endocervical swab (for females), urine microscopy and bubo aspirate were taken as indicated for microscopy, culture and sensitivity. All the isolates were confirmed by standard methods.<sup>8</sup> Venous blood was collected from each patient for both VDRL (venereal disease research laboratory) and HIV screening tests. Serum was screened for HIV using recombinant ELISA kit (Human Biochemical and Diagnostic Laboratories, Germany). Those who tested positive were re-tested using Capillus HIV 1 & 2 (Cambridge Diagnostic). Those who tested positive were appropriately counselled and referred.

# Data Analysis

Data were entered into the computer using SPSS software packages. Statistical analysis was done by applying the chi-square test.

# Results

## Socio-Demographic Data

Two hundred and ten patients, made up of 98 (46.7%) males and 112 (53.3%) females were seen. Only 10 (5.1%) were adolescents while the majority (156 [74.3%]) were in the age bracket 20–39 years. Married respondents constituted 55.7% of the population studied while 88 (41.9%) were single. Majority of the patients had at least secondary education.

# Reproductive Health Data

Table 1 shows age at first sexual experience by sex of the respondents. Significantly more females had their sexual debut at a younger age, compared to their male counterparts ( $\Box^2 = 4.18$ , p = 0.040). Majority of both sexes (56.7%) had their first sexual experience as adolescents. Median age at

sexual debut for males was 18.8 years, and 15.5 years for females.

Of their sexual partner(s), 151 (71.9%) had sexual intercourse with only one partner a month prior to presentation. Forty five (21.4%) had 2–4 sexual partners; one (0.5%) had more than four partners, while 13 (6.2%) could not ascertain the number of their sexual partners during the same period. Similarly, majority of the respondents (91.4%) practiced vaginal intercourse, ten (4.8%) engaged in anal sex, five (2.4%) in oral and vaginal sex, one (0.5%) in oral and anal sex, while two (1.0%) did not respond to the question.

Figure 1 shows self-reported sources of recent infection. Eighty nine (42.4%) persons had their last sexual contact with a boy/girlfriend, 87 (41.4%) had it with their spouse, 25 (11.9%) with a casual friend, four (1.9%) with a commercial sex worker (CSW), while five (2.4%) gave no response. Table 2 shows the socio-demographic characteristics of the patients in relation to STI and HIV infections. Only 26.7% of patients reported using condom occasionally. Of these, 16.1% were females and 38.8% were males ( $\square^2$ = 11.97, p = 0.003), and males were more likely to be using condom. HIV rate was significantly higher among the unskilled and unemployed compared to the professionals and the skilled workers (p < 0.05).

 Table 1
 Age at First Sexual Experience by Sex of Respondents

Age (years)	Sex				Total		
	Male		Female				
	No	%	No	%	No	%	
< 10	4	4.1	_	_	4	1.9	
10–14	10	10.1	24	21.4	34	16.5	
15–19	35	35.8	50	44.7	85	40.3	
20–29	47	47.9	31	27.7	78	37.0	
□ 30	2	2.1	_	_	2	1.0	
No response	-	_	7	6.2	7	3.3	
Total	98	100	112	100	210	100	

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Figure 1 Source of most Recent Infection

Table 2	STI and HIV Infection by Socio-Demographic Characteristics of Respondents
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Variable	All respo	All respondents		STI infection		HIV infection		STI & HIV	
	No	%	No	%	No	%	No	1011 %	
Sex									
Male	98	46.7	9	9.2	25	25.5	5	5.1	
Female	112	53.3	11	9.8	21	18.9	1	0.9	
Age (years)									
< 10	2	0.7	-	-	_	-	-	_	
10–14	_	_	-	_	-	-	-	_	
15–19	10	5.1	1	-	-	-	-	_	
20–29	86	41.0	12	10.0	12	13.9	4	4.7	
30–39	70	33.3	5	14.0	18	25.7	2	2.9	
40–49	18	8.5	1	7.1	4	22.2	_	_	
> 50	9	4.3	1	5.5	_	-	-	_	
Unknown	15	7.1	_	11.0	12	50.0	1	20.0	
Marital status									
Single	28	41.9	7	8.0	18	20.5	4	4.5	
Married	117	55.7	8	6.8	26	22.2	1	0.9	
Separated/divorced	5	2.4	5	100	2	50.0	1	20.0	
Level of education									
No formal	5	2.4	3	60.0	1	20.0	_	_	
Primary	34	16.2	3	8.8	8	29.4	1	2.9	
Secondary	63	30.0	4	6.3	10	15.9	2	3.2	
Post-seondary	108	51.4	10	9.3	24	22.2	3	2.7	
Occupation									
Unemployed	8	3.8	3	37.5	3	37.5	1	12.5	
Unskilled	121	57.6	8	6.6	30	24.8	3	2.5	
Skilled	40	19.	6	15.0	6	15.0	1	2.5	
Professional	41	19.5	3	7.3	7	17.1	1	2.4	

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Isolates		Sex		
	Male		Female	
	No	(%)	No	(%)
N. gonorrhoeae (8)	8	8.2	-	-
Candida albican (8)	_	-	8	7.1
Coliforms (0)	-	_	-	_
Trichomonas vaginilis (4)	1	1.0	3	2.7
No growth (160)	82	83.7	78	69.6
Culture not indicated (30)	7	7.1	23	20.6
Total (210)	98	100	112	100

#### Table 3STIs by Sex of Respondents

#### Table 4 STIs Co-infections and HIV Seropositivity

STIs	HIV status					
	HIV po	sitive	HIV negative			
	No	(%)	No	(%)		
N. gonorrhoeae (n = 8)	5	62.5	3	37.5		
C. albican (n = 8)	_	_	8	100		
Coliforms $(n = 0)$	_	_	_	_		
T. vaginalis $(n = 4)$	1	25.0	3	75.0		
No growth $(n = 96)$	18	18.8	78	81.2		
Culture not done $(n = 94)$	22	23.4	72	76.6		
Total (210)	46	21.9	164	78.1		

Table 3 shows the prevalence of STIs by sex of respondents. Twenty (9.5%) of the 210 patients screened had laboratory diagnosis of STI. Eight (3.8%) grew Neisseria gonorrhoeae (all males), 8 (3.8%) were positive for Candida albicans (all females), while 4 (1.9%) grew Trichomonas vaginalis (both sexes). The STI distribution by sex of the respondents was statistically significant (p < 0.05). VDRL test was done following clinical examination. None of the patients' sera gave a positive result. Eighty six (41.0%) of them did not have their blood tested for VDRL, as it was not indicated.

Thirty per cent of those who had STI (n = 20) were also HIV positive. Nearly two-thirds (62.5%) of the patients with gonorrhoea were HIV positive, a lower percentage (25%) of those with trichomoniasis were positive, while no one with candidiasis was positive for HIV infection. Of the 96 patients with culture negative results, 18.8% were HIV positive while 23.4% seropositivity was seen among those who did not require culture. A significant proposition of patients with STI was also positive for HIV ( $\square^2$  = 10.66, p = 0.03) (Table 4).

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#### Discussion

When AIDS epidemic was first discovered in 1981, there was very little concern that the disease would spread to developing countries like Nigeria. Nevertheless, there were apprehensions about the spread of STIs long before the advent of the first case of AIDS in the developing countries. More attention is now being paid to STI because it is known to be a major co-factor in the spread of HIV/AIDS.

The low patronage of patients seen during the study could be attributed to the 100% increase in fees paid for treatment apart from consultation fees. A three-week local strike action embarked upon by health workers also contributed to a sharp drop in the number of clients seen during the period. The majority of patients prefer cheaper treatment without laboratory back-up, which is readily available at chemist shops, traditional healing homes and clinics run by non-professionals. However, HIV tests were carried out free for all consenting patients, which facilitated their readiness to participate in the study.

The study shows a high percentage of patients between the ages of 20 and 39 years attending STI clinics, which supports the findings of Fawole et al.<sup>9</sup> The high morbidity due to STIs in this age group may be due to high sexual activity. Adolescents constituted an insignificant number. This may be because adolescents are not comfortable to seek medical treatment at STI clinics, as the society frowns at pre-marital sex. We reported similar findings in 2002.<sup>10</sup>

A substantial number of the patients had their sexual debut as adolescents despite the fact that only a small percentage sought treatment at the clinic. Adolescents are known to be one of the most sexually active groups in the society. They are viewed as been at high risk for STI due to their tendency to engage in exploratory behaviour, their valuation of peers' social approval and their lack of reliable experience of life.<sup>4</sup> More studies need to be carried out to identify how to meet the reproductive health needs of adolescents. From this study, only 1.9% of the patients had their last sexual contact with a commercial sex worker (CSW) before infection. Majority had sex with regular partners of which about half were co-habiting. Regular partners are usually considered as having low risk for STIs; this must therefore be taken into account when designing intervention programmes in a community where HIV is largely transmitted through heterosexual contact. Condom use was very low in this highrisk population, which calls for the need to make condoms more accessible and affordable.

Of the STIs, the 1.9% T. vaginalis recovered from the urethral smears of male patients in this study is low compared to 8.4% obtained by Bakare et al in the same centre in 1994.<sup>11</sup> This may be because they used special culture medium for the isolation of the organism. Culture for 3.8% of the patients grew N. gonorrhoeae, which is far below the figure obtained in 1994.<sup>12</sup> This may be due to undisclosed prior antibiotic use among the patients. Studies need to be carried out to determine which drugs have actually been used prior to presentation at the clinic. Furthermore, none of the N. gonorrhoeae isolates was recovered from female patients, which may, among other reasons, be a random finding.

The HIV prevalence rate of 21.9% obtained in this study is higher than the current national rate of 12.2%<sup>7</sup> and much higher than what was obtained in the same centre a decade ago,<sup>12</sup> indicating a worsening situation. This high rate may be because the study was carried out in a tertiary health care centre that serves as one of the two referral centres for the region. The higher HIV prevalence among unskilled subjects may be attributed to the fact that they have little knowledge about HIV transmission.

From this study, a large proportion of those with gonorrhoea and trichomoniasis were also positive for HIV. This finding supports data from other studies showing a strong association between STI and HIV.<sup>1,7</sup> Among the HIV positive cases, 18.8% had STI culture negative. This may

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be as a result of the inability of our laboratory to routinely isolate some pathogens, such as Chlamydia trachomatis, Haemophilus ducreyi and herpes simplex virus type II because of limited resources. A previous study has implicated these pathogens as the major cause of genital diseases in our environment.<sup>12</sup>VDRL test was also carried out only on attendees that had genital lesion due to limited resources. Some of those who were infected in the post-primary phase may therefore have been missed.

Intervention projects need to be carried out to educate the public on STIs. Efforts should also be made to upgrade diagnostic facilities at STI clinics and to make it more user-friendly particularly to adolescents and other vulnerable groups. This will help curtail the spread of HIV infection in Nigeria.

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