



Risk factors for Human Immunodeficiency Virus in South-South Nigeria

¹Uche. M. Ochei and ²Raymond I. Ozolua

¹Faculty of Pharmacy

²Faculty of Basic Medical Science
University of Benin, Benin city

- Author for Correspondence

Uche Ochei

Phone: +2348061341995 E-mail: ucochei2000@yahoo.com

ABSTRACT

Background: HIV/AIDS is a global pandemic that has continued to pose a major threat to public health especially in the resource poor regions of the world. The purpose of the study was to investigate how some factors impact on HIV infection in the south-south geopolitical zone of Nigeria.

Method: The study was carried out using government hospitals in the six states in the zone comprising Edo, Delta, Bayelsa, Rivers, Akwa-Ibom and Cross River. The study design was a cross sectional survey and the population were HIV positive and HIV negative subjects who accessed drugs in the Pharmacy department of the selected hospitals. The main study instrument was a structured questionnaire and purposive sampling was used. A total of 1250 questionnaires were distributed based on subject traffic in each of the hospitals and the distribution was as follows: Edo-450, Delta-300, Bayelsa-100, Rivers-150, Akwa-Ibom-130, Cross River-120. The usable questionnaires returned was 955 (76.4%) and in this order Edo-415 (92.2%), Delta-249 (83.0%), Bayelsa-69 (69.0%), Rivers-101 (67.3%), Akwa-Ibom 68(52.3%) and Cross Rivers-3 (44.2%). Data collected from the questionnaires was analyzed using a graph-Pad Prism Software (UK), Chi-

square and simple percentages.

Results: Out of the 955 respondents 33.7% were males while 66.3% were females and also 61.3% of the respondents were HIV positive while 38.7% were HIV negative. From the results, respondents who had sexually transmitted infections (STIs) had a high rate of contracting HIV. Increase in the number of sexual partners increases infection while condom use significantly reduced the chances of infection (Condom users, 26.2%, non-users 73.8%). Blood transfusion was an effective mode of transmission of the virus and accounted for 37.1% of the cases.

Conclusion: Multiple sex partners, non-use of condoms, blood transfusion and STIs especially gonorrhoea were factors associated with increased risk of contracting HIV infection in the South-South geopolitical zone of Nigeria. Educational interventions targeting these factors needs to be stepped up

Keywords: HIV Infection, sexually transmitted infections, risk factors

INTRODUCTION

Historical Background of HIV/AIDS

The Acquired Immunodeficiency Syndrome (AIDS), which is caused by infection with the Human Immunodeficiency Virus (HIV), still remains one of the greatest public health challenges of this age. Infection

with HIV progressively compromises the immune system to the point where the host becomes susceptible to multiple infections, which hitherto could have been contained by an intact immune system¹.

Idigbe¹ et al (2004) reported that the first case of HIV/AIDS in Nigeria was in 1986 when a 13 - year old sexually active girl was diagnosed of the disease. Subsequent to this, the infection was subtly but progressively transmitted within various populations and communities in the country. As at the end of 1996, cases of HIV infections or AIDS had been diagnosed in all the 774 Local Government Areas (LGA) of the country. The disease systematically permeated the entire Nigerian social fabric affecting men and women in urban and rural areas and cutting across all social strata in the country.

Data from national HIV sentinel surveys indicated a rapid transition from near zero prevalence in 1990 to a 5.0% seroprevalence rate amongst the adult population (15 - 49 years) in 2003². A review of infection rates and available clinical data in the country between 1990 and 2003 indicate an escalating epidemic that had spread beyond the so-called groups with "high-risk" behaviours for infections³. Initially the impact of the epidemic was more pronounced on the health sector



the disease was viewed solely as a health problem. As the epidemic evolved, the impact diversified and became more significant on young men and women who constitute the instay of agriculture, education, commerce and industry. By 1999 it is clear that the impact of the epidemic had transcended the health sector to also include the socio-economic and developmental problem in Nigeria, requiring urgent attention and immediate response. Idigbe et al² underscored the fact that in spite of all preventive interventions, there was an urgent need to mount an expanded programme for care and support of the millions already living with HIV infections and AIDS. The situation called for an expanded multi-sectoral national response to the epidemic in the country.

The main aim of this study is to determine the factors influencing HIV infection in the south-south zone of Nigeria.

MATERIALS AND METHODS

The study was undertaken in the twelve government hospitals in the six states that comprise the South-South political zone of Nigeria. These states include Edo, Delta, Bayelsa, Rivers, Akwa Ibom and Cross Rivers. Purposive sampling was used for the

study and the study design was correlational observation survey.

The main study instrument was a structured questionnaire designed to elicit information on the following:

Biodata of subjects

Social history

Drug use history

Past medical history

Copies of the research instrument (questionnaires) were self-administered to one thousand, two hundred and fifty (1250) subjects. Direct interview was also used to obtain information especially from illiterate subjects. For this category of respondents local interpreters were used to obtain all the needed information.

The questionnaires were administered to only subjects that met the inclusion criteria. The inclusion criteria for the study included the following:

All subjects (male and female) who were 15 years and above irrespective of their HIV status and who accessed drugs from the pharmacy departments of the selected hospitals during the study period.

Only subjects who consented to participate in the study.

Administrative approval was obtained from each hospital management. Prior

to administration, the questionnaire was vetted by experts in neuropharmacology, clinical pharmacology and psychiatry, who also considered it suitable and relevant to the study.

The experts also established the face and contents validity of the instrument. Test-retest reliability technique was used to establish the reliability coefficient of the instrument. The reliability coefficient was found to be 0.85³.

Data collected from the questionnaires were fed into Microsoft Excel (2003) and were sorted into categories.

Data analysis was done by the use of Graph-Pad Prism Software (UK) using chi-square and simple percentages. The level of significance between compared data was set at $p < 0.05$.

RESULTS

Socio-demographic Parameters

One thousand two hundred and fifty (1250) questionnaires were distributed to subjects and the questionnaire return rate (QRR) was 1065 (85.2%). Out of this, 955 (76.4%) of them were found usable. This was so because the unusable questionnaires were not properly filled or were not filled at all.

Table 1.1: STIs and HIV status of respondents

HIV Status	Sexually Transmitted Infections						Total	No Response	Total
	Syphilis	<i>S. aureus</i>	Gonorrhoea	Herpes	Trichomoniasis	Candidiasis			
Positive	9	22	96	5	36	49	217	323	540
Negative	7	39	70	1	23	25	165	250	415
Total	16	61	166	6	59	74	382	573	955

Highest among HIV-positive respondents.

There is a significant association between HIV infection and STIs ($p < 0.05$)

**Table 1.2: Analysis for STIs in various States**

State of Residence	STI						Total
	Syphilis	Staphylococcus	Gonorrhoea	Herpes	Trichomoniasis	Candidiasis	
Akwa Ibom	-	23.5	42.6	-	19.1	14.7	100.0
Bayelsa	-	17.4	31.9	14.5	14.5	21.7	100.0
Cross River	20.8	22.6	30.2	-	13.2	13.2	100.0
Delta	2.4	11.2	42.6	-	23.7	20.1	100.0
Edo	3.4	15.7	43.6	-	15.7	21.7	100.0
Rivers	-	21.8	52.5	6.9	-	18.8	100.0
Total	3.2	16.2	42.6	1.8	16.1	20.0	100.0

Akwa Ibom State had the highest proportion of respondents having staphylococcus (23.5%), Bayelsa State had the highest proportion of respondents having Herpes (14.5%) and Candidiasis (21.7%). Cross River State had the highest proportion of Syphilis (20.8%), Delta State had the highest proportion of Trichomoniasis (23.7%), Edo State has the highest proportion of Candidiasis; while Rivers State had the highest proportion of Gonorrhoea (52.5%).

Table 2.1: Prevalence of HIV based on number of Sexual Partners

HIV Status	NUMBER OF SEXUAL PARTNERS			Total
	One	Multiple	No Response	
Positive	112(19.1%)	131 (22.4%)*	342(58.5%)	585
Negative	141(38.1%)	132(35.7)	97(26.2%)	370
Total	253(57.2%)	263(58.1%)	439(84.7%)	955

*High rate of infection was recorded

There is a significant association between number of sexual partners and HIV status of respondents ($p < 0.05$)

Table 2.2: Showing Number of Sexual Partners and States of Residence of the Respondents

State of Residence	SEXUAL PARTNERS		Total
	1	2 and above	
Akwa Ibom	36.8%	63.2%	100.0%
Bayelsa	20.3%	79.7%	100.0%
Cross River	26.4%	73.6%	100.0%
Delta	57.8%	42.2%	100.0%
Edo	56.1%	43.9%	100.0%
Rivers	50.5%	49.5%	100.0%
Total	50.4	49.6%	100.0%

Bayelsa State has the highest proportion of those having 2 sexual partners and above (79.7%), while Delta State has the highest proportion of those having just one (1) Sexual Partners (57.8%).



Table 3.1: Prevalence of HIV based on reception of blood transfusion by HIV positive respondents in the zone

HIV Status	BLOOD TRANSFUSION		
	Yes	No	Total
Positive	217 (37.1%)*	368	585
Negative	171	199	370
Total	388	567	955

* Highest incidence of infection. There is a significant association between blood transfusion and HIV status ($p < 0.05$).

Table 4.1: Condom use amongst all respondents and their HIV Status

Condom use	HIV STATUS		
	Positive	Negative	Total
Yes	153 (26.2%)	131	284
No	432 (73.8%)	239	871
Total	585	370	955

* Highest incidents of infection. There is an association between condom use and HIV status ($p < 0.05$).

Table 4.2: Condom use amongst respondents in various States

State Residence		Condom Use		Total
		Yes	No	
State Residence	Akwa Ibom	1.5%	98.5%	100.0%
	Bayelsa	21.7%	78.3%	100.0%
	Cross River	17.0%	83.0%	100.0%
	Delta	24.1%	75.9%	100.0%
	Edo	8.4%	91.6%	100.0%
	Rivers	32.7%	67.3%	100.0%
Total		16.0%	84.0%	100.0%

The table above showed that 32.7% of the respondents in Rivers State use condom; while 1.5% from Akwa Ibom was lowest



DISCUSSION

Sexually Transmitted Infection Factor

The vulnerability to HIV infection increases with STIs, gonorrhoea being the most common in this study. Selikow *et al* reported that the chances of HIV being transmitted among homosexuals and heterosexuals are higher if there is the presence of a sexually transmitted infection in either one or both partners in a sexual intercourse⁴. The presence of STI creates an opening in the sex organs thereby making it easier for HIV to pass from that person (if he has the virus) into the body of the uninfected person. The presence of an STI in an uninfected person also creates an entrance for the virus for the same reason. Thus treating STIs helps to reduce the spread of HIV⁴.

Multiple Sex Partners Factor

The more the number of sex partners (i.e. multiple sex partners) the higher the risk of contracting HIV infection. In this study, many of the respondents did not indicate the number of their sex partners. This may be because they had many sex partners and were reluctant to disclose them i.e. hiding their promiscuous lifestyle. With multiple sex partners the risk of contracting HIV infection is high when compared to a one-sex partner individual.

The South-South geopolitical zone of Nigeria is rich in crude oil production and this attracts foreign investors to the zone. These rich investors being far away from wives and friends resort to visiting prostitutes or engaging in sex with many women. This could contribute to the spread of HIV infection in the zone.

Also restless militant groups in this zone are involved in unsafe behavioural practices such as excessive drinking of alcohol and illicit drug use.

These acts further encourage the practice of engaging in sexual acts with many women and prostitutes, which further increases the risk of HIV infection. These restless militant groups are prone to contracting HIV infection.

Chopra *et al*⁵, in their study on estimating HIV prevalence and risk behaviours among high – risk heterosexual men with multiple sex partners, reported that this group of heterosexual urban men practiced high levels of risky behaviour and are an important group that requires more targeted HIV surveillance and prevention intervention. Pylpchuk *et al*⁶ reported from their study that alcohol and drug use were associated with a high odd of multiple partnership and the effect was greater among women than among men⁵. Also, Prybylski *et al*⁷ in their survey found that brothel-based sex workers were probably at greatest risk for acquiring HIV. They reported twice as many sexual contacts per day used condoms less frequently than community – based sex workers. Isiugo – Abanihe had in a study of extramarital relations and perceptions of HIV/AIDS in Nigeria reported that most of the respondents associate HIV/AIDS transmission with multiple sexual partners⁸.

This study shows in table 3.1 that blood transfusion increases the risk of contracting HIV. Franceschi *et al*⁹ reported in their study on trends in incidence of AIDS associated with transfusion of blood and blood products in Europe and the United State (1985 – 1993), that HIV infection can be transmitted through blood transfusion⁹.

Moore *et al* reported in their study that a high proportion of blood transfusions transmitted HIV in the high – prevalence areas of Africa (Kenya) due to erroneous laboratory practices¹⁰.

On the basis of these results, the Kenya Ministry of Health introduced a number of practical and inexpensive interventions to improve national blood safety.

Ward¹¹ concluded in their study that there was a small but identifiable risk for HIV infection for recipients of screened blood¹¹. To minimize this risk, the reasons for deferral of donation need to be communicated more effectively to blood donors who are at high risk of HIV infection.

Iteyman and Brewer indicated in the result of their study that where blood is screened, transfusion patients still risk receiving HIV-infected blood as a result of test sensitivity limitations, human error, and the window period¹².

Blood recipients in African countries run a 1 – 20% risk of receiving infected blood from any blood unit. Under these conditions research revealed that transfusion – associated AIDS accounted for 10% of AIDS cases in Africa.

Some hospitals in Nigeria and especially in the South-South geopolitical zone lack good facilities for the screening of donated blood. Some also do not have a reliable blood bank. This means that some hospitals transfuse blood without effective screening for HIV. Also, many hospitals lack efficient and well trained staff. All these contribute to higher risk of contracting HIV which is associated with receiving blood transfusion in hospitals across the six states.

Condom Use Factor

Infection was significantly lower among condom users than non-users in the study. It was also observed that some respondents who claimed to use condom were infected (26.2%). The reason for this could be that some respondents might have used expired or low quality condoms. Some



condoms might have used one condom several times instead of its time disposable nature. Some condoms can be porous and so allow passage of HIV virus. Incorrect use of condoms can also be a factor. A properly stored condom is a factor so also is insufficiently strong condom for anal intercourse.

Previous studies indicate the effect of condom use in the infectivity of HIV/AIDS. Condom use is an effective prevention method for HIV/AIDS¹³. Prybylski study in Cambodia reported that the majority of sex workers surveyed knew that condom offered protection against HIV/AIDS although one-quarter of them did not use condoms⁷.

Woodford and Evian reported that the presence of genital sores in males or females makes it five to ten times easier for HIV to enter the body, unless a condom is used as a barrier¹⁴.

The WHO AIDS position statement on prevention of HIV infection highlighted that condom use is a critical element in a comprehensive, effective and HIV prevention and treatment¹⁵. The male latex condom is the single most efficient, available technology for the prevention of sexual transmission of HIV and other sexually transmitted infections. HIV prevention education and condom promotion must overcome gender and cultural factors. Condoms have played a decisive role in prevention efforts.

CONCLUSION

In the study, it is concluded that the more the number of sex partners (i.e. multiple sex partners), the higher the risk of contracting HIV infection and the risk of infection was significantly lower among condom users than non-users. Blood transfusion increased the risk of contracting HIV infection and vulnerability to HIV infection

increased with other STIs, with gonorrhoea being the most common. Educational interventions targeting these factors needs to be stepped up

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