

## Human Immuno-deficiency Virus (HIV) infection among oral surgery patients at the University College Hospital, Ibadan, Nigeria

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### Summary

The Human Immuno-deficiency Virus is a World-wide epidemic and evidence abound that the infection is spreading rapidly in sub-Saharan Africa with little or no control. Nosocomial transmission of HIV in the Dental Surgery has been documented. This study was undertaken to determine the prevalence of HIV among dental patients undergoing extraction at the University College Hospital, Ibadan. Three hundred patients requiring dental extraction at the dental clinic, UCH, Ibadan who consented were enrolled for the study. Blood samples from these individuals were tested for the presence of HIV antibodies using commercially available ELISA (Monolisa Sanofi, Pasteur, France). All initially reactive samples were confirmed by a commercial Western immunoblot assay (Bio-Rad Norapath HIV kit). A prevalence of 2.3% (7 / 300) was obtained among individuals tested for this study. Four (2.8 %) of the 143 males and 3 (1.9 %) of 157 females were positive for HIV antibodies. All the seropositive patients except one were within the age range 20-39 years and most of them (6 out of 7) do not use condom during intercourse. More than half (57%) of the patients had more than one sexual partner. This study shows that the risk of transmitting HIV to DHCW during treatment is also a potential hazard in this environment. Hence, adequate preventive measure should be observed always.

**Keywords:** HIV, dental, patients, Nigeria.

### Résumé

Le virus de l'immuno déficitaire humain est une épidémie mondiale et l'évidence montre que l'infection se repand rapidement en Afrique ub saharienne avec peu ou pas de contrôle. La transmission nosocomiale du VIH dans la chirurgie dentaire a été documenté. Cette étude était faite pour déterminer la prevalence du VIH parmi les patients dentaire ayant besoin d'une extraction au Centre Hospitalier Universitaire d'Ibadan. Trois cent patients avaient besoin d'une extraction dentaire en clinique dentaire UCH, Ibadan étaient recrutés dans cette étude. Les échantillons de sang de chaque patient étaient analysés pour la presence des anticorps du VIH utilisant l'ELISA commercialisée. (Mosolisa, Sanifa, Pasteur, France) Tous les réactifs étaient examinés et confirmés en utilisant les blocs commercialisés d'analyse d'Ouest (Bio-Rad, Norapath, Kit du VIH). Un taux de 2.3% (7/500) était obtenu parmi les échantillons d'individu analyse dans cette étude. Quatre (2.8%) des 143 males et 3(1.9%) des 157 females étaient positive ayant les anticorps du VIH. Tous les patients séropositif à l'exception d'un étaient agés entre 20 à 39 ans et le majorité (6 sur 7) n'utilisant pas des preservatifs (condons) durant les rapport sexuels. Plus de la moitié (57%) de ces patients avait plus d'un partenaire. cette étude montre que le rrisque de transmission du VIH au DHCW durant le traitement est aussi un danger potentiel

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dans cet environnement. Ainsi, les mesures preventives adéquate doivent étre toujours observées et pratiquées.

### Introduction

The Human Immuno-deficiency Virus (HIV) infection is a global phenomenon. According to UNAIDS/WHO report [1], it is now the 4<sup>th</sup> most common cause of death especially in the developing world and about 70% of the global HIV/AIDS infections occur in Sub-Saharan Africa. Although the first case of AIDS in Nigeria was reported only in 1986 [2] the 2002 HIV Seroprevalence report [3] in the country showed that 5.8% of the Nigerian population are infected with the virus. This signifies that there is an upward trend when compared with the level if infection in 1993 (3.8%), 1995(4.5%) and 1999 (5.4%) [4,5].

Nosocomial transmission of HIV in the Dental surgery has been reported in both developed and developing world [6,7]. Although the precise events resulting in the transmission of infection has not been determined, it is believed that the probability of HIV infection being transmitted from Dentist to patients is higher than from one patient to another patient [8] in Dental Practice.

Many studies have indicated the prevalence of HIV and associated risk factors in different categories of people in Nigeria [9,10,11,12,13,14] but none, to our knowledge, described the rate of HIV infection among Nigerian patients attending oral surgery clinic for treatment. This study was therefore designed to determine the rate of HIV infection among patients undergoing dental treatment at the University College Hospital Ibadan Dental Clinic in order to provide a base line data on the probability of transmission of HIV infection in the dental surgery environment.

### Materials and methods

#### Selection of patients

All the patients reporting for dental extraction at the Oral Surgery Clinic of the University College Hospital Ibadan in the first 6 months of 2001 were eligible for enrolment in the study. Patients were recruited, after detailed explanation of the purpose of the study and the implication of the HIV test. A total of 300 consecutive patients who gave voluntary consent to participate in the study were enrolled for the study.

A short bio-data form was completed by each study subject and an approval was obtained from the Hospital Ethical Committee and post-test counselling and necessary follow-up were made available. No participant in this study had been previously diagnosed with AIDS or tested for HIV infection.

#### Laboratory methods

About 10mls of venous blood was collected from each patient and allowed to clot at room temperature the serum from each sample was separated and stored at -20°C until ready for testing. ELISA technique (Monolisa, Sanofi, Pasteur, France) was used for screening of the samples for presence of HIV-1/2 antibodies and Western Immuno blot test using Bio-Rad Novapath HIV-

land HIV-2 immuno blot Kits (Bio-Rad Clinical Division Hercules, Ca, Milano. Munchen: Paris) was carried out for confirmation. All the tests were carried out and interpreted according to the Manufacturers' instructions in the Department of Virology, University College Hospital, Ibadan.

### Results

The result showed that 7 (2.3%) out of 300 patients blood samples tested, were positive for HIV antibodies. These were made of up 4 out of 143 males and 3 (1.9%) of 157 females (Table 1). Six (85.7%) of the sero-positive patients were within the age range 21-39 years. The other person was a 70 year – old male (Table 2).

**Table 1:** Sero-prevalence of HIV among 300 oral surgery patients in University College Hospital, Ibadan

Sex	N (%) tested	N(%) positive
Males	143 (47.7%)	4 (2.8%)*
Females	157 (52.3%)	3 (1.9%)*
Total	300 (100%)	7 (2.3%)

\*Difference between male and female seropositivity for HIV was not statistically significant  $P > 0.05$

**Table 2:** Age distribution of 300 oral surgery patients tested for HIV in Ibadan, Nigeria

Age (yrs)	No. (%) tested	No. (%) positive
10-19	24	0 (0)
20-29	108	4 (3.7)
30-39	54	2 (3.7)
40-49	35	0 (0)
50-59	36	0 (0)
60-69	27	0 (0)
≥70	16	1 (6.3)
Total	300	7 (2.3)

**Table 3:** Age, Sex and risk factors in HIV seropositive oral surgery patients

Patient	Sex	Age (yrs)	Marriage Status	Blood transfu	Multiple sex partner	Use of condom
1	M	26	Single	No	Yes	No
2	M	21	Single	No	Yes	No
3	F	25	Single	No	No	No
4	M	70	Married	No	No	No
5	F	35	Married	No	No	No
6	F	27	Single	Yes	Yes	No
7	M	38	Married	No	Yes	Sometimes

Analysis of the history provided by the patients showed that only one, a 21 year old lady, had received blood transfusion. In addition none of them admitted being involved in any intravenous self-injection habit or previous infections with sexually transmitted diseases.

However Four (57.1%) out of the 7 sero-positive patients admitted having more than one sexual partner and only one (14.3%) used condom occasionally (Table 3).

### Discussion

The risk of exposure to blood-borne viruses in Dental Practice is a potential hazard to both the Dental Health Care Worker (DHCW) and the patient. Transmission of HIV infection to 6 patients of an infected Dentist was reported in Florida United States [6,7] while transmissions from infected patients to Health Care Workers (HCW) have also been documented [15,16] although the latter is rare.

The prevalence rate of HIV infection (2.3%) obtained in this study is comparable with the finding reported among similar categories of hospital patients from other parts of Nigeria. Falope *et al* [11], found a prevalence rate of 4% in a group of Nigerian Trauma patients attending the casualty Department of an Orthopaedic Hospital in Enugu, Nigeria while Emenike and Dozie [17] reported a rate of 3.3% in a group of potential blood donors in Anambra State. Ejele and Ojule [12] in a recent study, also documented a sero-prevalence rate of 2.8% among 13,294 blood donors over a 10 year period in Uniport Teaching Hospital, Port-Harcourt. All these studies are limited by the fact that they were carried out on highly selected groups. However, Odaibo *et al.* [14] reported an infection rate of 1.2% for HIV 1/2 in rural areas of Nigeria.

Finding the greatest number of sero-positive patients within ages 20-39 years is not surprising since this is the age range when high sexual activity and adventurous sexual behaviours are most practised. Previous reports [11,12,13,14] also support this pattern of HIV infection in several regions with predominance of heterosexual transmission like Nigeria.

In addition, 4 of the 7 sero-positive patients admitted having more than one sexual partner or engaged in extra-marital sex and did not use any protective barrier such as condom during intercourse. It can therefore be safely deduced that the probability that the infected patients acquired their infections through sexual transmission is quite high. This supports the conclusion in previous studies [10,13,14] that sexual habit is an important route of spread of the disease, in Nigeria.

The overall male to female ratio of 1.3 : 1 obtained in the present study is similar to previous studies [13,14] from Nigeria. However, equal sex distribution was observed in the peak ages (20 to 39 years). The major role of heterosexual transmission in Nigeria could explain this finding as suggested by Odaibo *et al* [14] and Olaleye *et al* [13]. Preventive measures against the disease should therefore focus more on educating the populace on the importance of safe sex habits.

The risk of transmission of HIV in the Dental Surgery, although estimated to be even lower than that of HBV [16], is real. In view of the fact that there is a potential risk of transmitting HIV infection in the Dental Surgery [18,19,20,21], adequate steps could prevent this hazard. Precautions against needle-stick and other sharp injuries, adequate sterilisation and disinfection of instruments, equipment and surface as well as barrier methods (gloves, goggles, face masks) following recommendations by Centres for Disease Control [22] will definitely minimise, if not eliminate, this hazard.

Although the positivity rate (2.3%) obtained in the present study is lower than the average for the general population (5.4%) [6], the potential risk of transmitting the virus in the dental surgery is still present. Therefore, a high index of suspicion, strict adherence to Universal Precautions by all

DHCW, and adequate sterilization of instruments and equipments would go a long way in its prevention. A sound hospital policy on the management of HIV positive patients should be in place and well-publicized among all DHCW. Further studies would be necessary to determine the actual risk of transmission of HIV in Dental Practice.

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#### References

- UNAIDS/WHO Joint United Nations Programme on HIV/AIDS/STI Epidemiological Fact sheets on HIV/AIDS and STI 2000 update(revised).UNAIDS/WHO.
- Rukejei AD. AIDS case Reports: 1986-1997 National AIDS/STD Control Programme 1997. 1
- Federal Ministry of Health Abuja Nigeria; 2002 National AIDS/HIV/STD Control Programme 2002/2001 Sentinel Seroprevalence Report.
- National AIDS/HIV/STD control Programme 1995: 1993/94 Sentinel Sero-Prevalence /surveillance Report (NACAP). Federal Ministry of Health and Social Services.
- National AIDS/HIV/STD Control Programme (1997): Report of 1995 HIV Sentinel Sero-prevalence Surveillance in Nigeria NACAP. Federal Ministry of Health.
- Ciesielskei C, Marianos D, Chin-Yih OU *et al*: Transmission of HIV in a Dental practice Ann. Intern Med. 1992: 116:798-805.
- Centre for Disease Control: Investigations of patients who have been treated by HIV infected health care workers-United States. MMWR 1993:329-31:337.
- Gooch B, Marianos D, Ciesielskei C. *et al*: Lack of evidence for patients transmission of HIV in dental practice. J. Am Dent Assoc. 1993:124:33-44.
- Durosinni MA, Ndububa DA, Alabi OA and Soyinka OO. Prevalence of HIV-1 and HBs Ag in normal blood in Ile-Ife, Nigeria Niger Med.J. 1991 21: 138-140.
- Akinsete. I, Akanmu AS and Okany CC. Trends of HIV seropositivity among visa application in Lagos, Nigeria: A five year survey, Nig Postgrad. Med.J. 1998 5(2) 69-72.
- Falope IA, Adedeji OO and Eyesan SU. Incidence of HIV postitivity in trauma victims over the age of 20 years. The Nig. Postgrand Med. J. 1998 5 (3) 115-117.
- Ejele OA and Ojude AC. Human Immunodeficiency virus (HIV) 1 and 2 screening in University of Post-Harcourt Teaching Hospital (UPTH): A ten year review (1989-1998) Niger J. Clinical Practice 2001 4 (2) 64-68.
- Olaleye O.D, Bernstein L, Ekweozor C.O. *et al* Prevalence of human immunodeficiency virus Types 1 and 2. J infect. Dis. 1993; 3:710-714.
- Odaibo G.N., Olaleye O.D.and Tomori D: Human Immunodeficiency Virus Types 1 and 2 infection in some rural areas of Nigeria Rom. J. Virol 1998 : 49 : 89-95
- Hendersen DK, Fabey BJ, Willy M, *et.al*. Risk of occupational transmission of human immunodeficiency virus type 1 (HIV-1) associated with clinical exposures:a prospective evaluation. Ann Intern Med. 1990 113:740-746
- Chamberland ME, Conley IJ, Bush TJ, Ciesielskei CA, Hammett TA and Taffe HW. Health Care Workers with AIDS: National Surveillance update JAMA 1991: 266: 3459-3462.
- Emenike C.A. and Dozie I. AIDS: Safe surgical practice. Niger J. of surgical sciences 1993: 3: 82-85.
- Short LJ and Bell DM. Risk of occupational infection with blood-borne pathogens in operating and delivery room settings. Ann.J. infect. Control 1993: 21 (6) 343-350.
- Center for Disease Control: Update; Investigations of persons treated by HIV-infected health care workers-United States MMWR 1993 42:329-337.
- Porter SR and Scully C. HIV: The Surgeon's perspective. Part 1 Update on pathogenesis epidemiology and risk of nosocomial transmission. Brit.J. Oral and Maxillofac Surg. 1994:32:222-230.
- Samarayanake LP. The risk of HIV transmission in Dentistry. Dental Update 1990: 17; 241-243.
- Center for Disease Control; Recommended Infection-Control Practices in Dentistry 1993. 41 RR-8: 1-12.