

## Dental Caries and Oral lesions among HIV/AIDS Patients in Enugu and Calabar towns in Nigeria.

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**Abstract:** To ascertain the prevalence of dental caries and oral lesions among HIV infected patients in Enugu and Calabar towns in Nigeria, the oral cavities of one hundred and sixty (160) HIV positive and negative patients were examined. Oral ulcers (73.8%) and Oral Candidiasis (67.5%) were the most prevalent Oral manifestation among the HIV positive patients studied, while Non-Hodgkins lymphoma (5%) and Hairy leucoplakia (17.5%) were the least. Other oral manifestations observed among the HIV positive patients include: Angular Chelitis (25%), Peridontitis (33.8%), Oral Kaposi sarcoma (18.8%) and Acute necrotizing ulcerative gingivitis (21.3%). It was however, observed that dental caries occurred more among HIV negative patient (33.8%) than the HIV positive patients (22.5%). Whereas Oral manifestations occurred generally low among the HIV Negative patients, Non-Hodgkins lymphoma and Hairy leucoplakia were completely absent among the HIV Negative patients studied. With the exception of dental caries and Angular Chelitis, Oral manifestations occurred more among males than females. It was also noted that Oral manifestations among HIV positive patients reduced with increase in the level of education of the patients. This study indicate high level of Oral manifestations among HIV positive patients in Enugu and Calabar towns in Nigeria, and thus advocate for the incorporation of oral examination as part of the general physical exam for HIV positive patients in Nigeria.

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**Key Words:** Oral lesion, Dental caries, HIV/AIDS, manifestation.

### 1. Introduction

The Acquired Immunodeficiency Syndrome (AIDS) is a pandemic disease caused by Human Immunodeficiency Virus (HIV), which is a Lentivirus within the family Retroviridae (Dubey and Maheshwari, 2005). It has been reported in every country but parts of Africa and Asia are especially devastated by it (Talaro and Talaro, 2002). HIV is characterized by progressive impairment of the cellular immune system of infected individuals leading to a decline in the CD4 lymphocyte count (Cheesbrough, 2002; Aguirre-Urizar et al., 2004) and Paves the way for opportunistic infections (Cheesbrough; 2002, Talaro and Talaro, 2002, Aguirre-Urizar et al; 2004). Oral manifestations has been reported among HIV positive patients (Onunu and Obuekwe, 2002; Anteyi et al., 2003; Agbelusi and Wright, 2005) as an important component of AIDS and

as indicator of Progression (Aguirre-Urizar et al., 2004). It has been suggested that in the absence of parameters indicating the degree of immunosuppression (CD4 cell count and viral load), Oral lesion may be considered strong indication of HIV-associated immunodeficiency (Reichart et al., 2003). Oral candidiasis has been described as a frequent oral manifestation of HIV infection (Reichart, 2003).

Although the prevalence of oral lesion among HIV positive patients has been widely reported, the spectrum of occurrence in Nigeria has not been vigorously described in the literature. This study therefore, attempts to determine the common Oral manifestation among HIV infected patients in Enugu and Calabar areas of Nigeria.

## 2. Materials and Methods

**Study population/sampling methods:** Forty (40) HIV positive and Forty (40) HIV negative patients attending the Parklane Specialist Hospital Enugu as well as the same number of HIV positive and HIV negative patients attending the University of Calabar Teaching Hospital, Calabar, were involved in this study. The patients not in antiretroviral therapy were randomly selected between May and August, 2005.

The HIV Serostatus of the patients were determined using standard method (Bio-Rad Novapath Diagnostic Group, USA) and Vironostica(R) HIV-1 Microelisa System (Organon Teknika, Durham, USA). Structured questionnaire were administered to the patients for demographic information including: sex, occupation, marital status and educational status.

**Examination of Oral Cavity:** The oral cavities of one hundred and sixty (160) HIV positive and negative patients involved in this study were examined (using Tweezers and Mouth Mirror) for the presence of Dental caries and Oral lesions.

## 3. Results

Oral ulcers (73.8%) and Oral candidiasis (67.5%) were particularly more among the HIV positive patients, whereas, dental caries (33.8%) occurred generally more among the HIV negative patients. No evidence of Non-Hodgkins Lymphoma and Hairy Leucoplakia were observed in the oral cavities of all the HIV negative patients involved in this study.

Other oral manifestation observed mainly among the HIV positive patients in both Enugu and Calabar include Angular Chelitis (25%), ANUG (21.3%), peridontitis (33.8%) and oral Kaposi sarcoma (18.5%). While dental caries, oral ulcer, Angular Chelitis, peridontitis and oral Kaposi sarcoma occurred more among the HIV positive patients in Calabar, Oral candidiasis, Hairy Leucoplakia and ANUG were more among the HIV positive patients in Enugu. However, there were equal occurrence of Non-Hodgkins Lymphoma among the HIV positive patients in both Calabar and Enugu (Table 4). With the exception of Dental Caries and Angular Chelitis, Oral manifestation occurred more among the male HIV positive patients.

The HIV positive Business patient had the highest evidence of Oral Ulcers while the civil servants were the highest in Peridontitis, Oral Kaposi Sarcoma, Non-Hodgkins Lymphoma, Hairy Leucoplakia, ANUG, Dental caries and Angular Chelitis. The least prevalence of oral manifestation was among the HIV

positive patients with masters degree (MSc.) and above qualifications while the highest was among patients with primary and School Certificate qualifications (Table 1, 2, 3).

## 4. Discussion

The fact that over 65% of the HIV positive patients investigated for Oral lesion in this study presented with Oral Candidiasis appears to confirm their association with HIV/AIDS. Results from previous studies have consistently shown that Oral Candidiasis is a frequent Oral manifestation among HIV positive patients (Reichart, 2003; Pongsiriwet et al., 2003).

It was however observed that the prevalence rate of oral candidiasis recorded in this study (67.5%) was higher than those previously reported. For instance, Agbelusi and Wright, (2005) reported 43%, Anteyi et al., (2003) 49%, Arendorf et al., (1998) 37.8%, Lim et al., (2001) 35%, and Taiwo et al., (2005) 36.4%. Similarly, the prevalence rate of Oral Ulcer (73%) and Hairy Leucoplakia (17.3%) as observed among the HIV positive patient in this study were higher than the previously reported figures. 2.9% prevalence of Oral ulcer was reported in South Africa (Arendorf et al., 1998) while 3% (Agbelusi and Wright, 2005) and 5% (Lim et al., 2001) prevalence of Hairy Leucoplakia were respectively reported in Lagos, Nigeria and Singapore.

Although the exact reason for the high levels of oral manifestation recorded in this study was not apparent, it may be attributable to the general low level of oral health awareness which culminates to poor oral health and restorative care in Nigeria (Adegbembo et al., 1995; Kubota et al., 1984). Whereas previous study (Khnogkunthian et al., 2001) conducted in Northern Thailand did not identify Necrotising ulcerative gingivitis and Periodontitis among the HIV positive patient studied, 21.3% and 33.8% prevalence of these two manifestations respectively were recorded in this study. This may be an indication of the oral manifestation pattern of HIV positive patients in the two cities under study. However, an 8.5% prevalence of peridontitis was reported in South Africa (Arendorf et al., 1998).

Furthermore, the prevalence of Oral Kaposi Sarcoma (8.8%), Non-Hodgkins lymphoma (5%) and Angular Chelitis (25%) among HIV positive patients as observed in this study were in conformity with previous reports from Singapore (Lim et al., 2001), South Africa (Arendorf et al., 1998) and Mexico city (Ramirez-Amado et al., 1998). Interestingly, Non-

Hodgkins lymphoma (NHL) and Hairy leucoplakia (HL) were absent in the oral cavities of the HIV negative patient in both Enugu and Calabar. It does appear that NHL and HL were only associated with HIV positive patients in these two cities. However, previous studies have shown that even where NHL and HL occurred among HIV positive patients, their prevalence were often low (Lim et al., 2001). Absence of HL among HIV positive patients has been reported (Jonsson et al., 1998). Dental Caries was the only dental disease that was observed in this study to have occurred more among the HIV negative patients (33.8%). While the reason for this is not very obvious, it is most likely attributable to the fact that HIV positive patient who may be battling with opportunistic infections may be less prone to consumption of sugary products. Reports have shown that sucrose and sucrose products have been implicated as the principal cause of dental caries (Silverstone et al., 1981). Recent report suggested a rapid increase in dental caries as a result of increased use of processed food and sucrose products (Ojofeitimi et al., 2003).

The result of this study also showed that the HIV positive patients with masters degree (MSc) and

above qualifications, generally showed low oral manifestation. This appeared to suggest that oral manifestation of HIV infection decreases with increase in level of education. It is important to note that while the level of oral manifestations among HIV positive patients were relatively high in this study, a reduced level of manifestation has been previously reported among HIV positive patients that are receiving Highly Active Antiretroviral Therapy (HAART). A comparison of Oral lesions before and after onset of HAART among HIV positive patients indicated significantly lower oral manifestation (P=0.001) (Schmidt-Westhauser et al., 2000). Previous reports also showed that after introduction of HAART, Oral manifestations such as Oral Candidiasis, Gingivoperiodontitis and Kaposi sarcoma were rarely seen (Reichert, 2003). This study therefore, recommends the prompt use of HAART for HIV positive patients in addition to designing a special Oral health initiative program for HIV infected persons in Nigeria. Also suggested is the incorporation of oral examination as part of the general physical exam for HIV positive patients in Nigeria.

**TABLE 1: PREVALENCE OF DENTAL CARIES, ORAL ULCERS, ANGULAR CHELITIS AMONG HIV POSITIVE AND NEGATIVE PATIENT WITH RESPECT TO SEX, MARITAL STATUS, OCCUPATIONAL AND EDUCATIONAL STATUS**

		DENTAL CARIES		ORAL ULCERS		ANGULAR CHELITIS	
		+VE	-VE	+VE	-VE	+VE	-VE
SEX	M	9 (50%)	13 (48%)	27 (45.8%)	3 (60%)	10(50%)	2 (40%)
	F	9 (50%)	14(52%)	32(54.2%)	2(40%)	10(50%)	3(60%)
	Total of occurrence	22.5%	33.8%	73.8%	6.3%	25%	6.3%
OCCUPATIONAL STATUS	Students	0(0%)	10(37%)	4(6.8%)	2(40%)	2(10%)	1(20%)
	Civil servants	6(33.3%)	6(22.2%)	16(27.1%)	1(20%)	8(40%)	0(0%)
	Businessmen	5(27.8%)	3(11.1%)	26(44.1%)	2(40%)	4(20%)	(20%)
	Housewives	3(16.7%)	0(0%)	8(13.6%)	0(0%)	2(10%)	(20%)
	Others	4(22.2%)	8(29.6%)	5(8.5%)	0(0%)	4(20%)	2(40%)
MARITAL STATUS	Married	14(77.8%)	14(51.9%)	42(71.2%)	3(60%)	10(50%)	2(40%)
	Single	3(16.7%)	13(48.2%)	16(27.1%)	2(40%)	8(40%)	3(60%)
	Divorced	1(5.6%)	0(0%)	1(1.7%)	0(0%)	2(10%)	0(0%)
EDUCATIONAL STATUS	Primary	5(27.8%)	1(3.7%)	12(20.3%)	0(0%)	7(35%)	1(20%)
	SSCE	4(22.2%)	4(14.8%)	26(44.1%)	3(60%)	5(25%)	1(20%)
	NCE,ND,HND,BSc	9(50%)	17(63%)	20(33.9%)	2(40%)	8(40%)	3(60%)
	MSc. & Above	0(0%)	5(18.5%)	1(1.7%)	0(0%)	0(0%)	0(0%)

**TABLE 2: PREVALENCE OF PERIDONTITIS, ORAL KAPOSI SARCOMA AND NON-HODGKINS LYMPHOMA AMONG HIV POSITIVE AND NEGATIVE PATIENTS WITH RESPECT TO SEX, MARITAL, OCCUPATIONAL AND EDUCATIONAL STATUS**

	CATEGORIES	PERIDONTITIS				ORAL KAPOSI SARCOMA				NON-HODGKINS LYMPHOMA			
		+VE	%+VE	-VE	%-VE	+VE	%+VE	-VE	%-VE	+VE	%+VE	-VE	%-VE
SEX	Male	14	51.9%	6	75%	10	66.7%	0	0%	3	75%	0	0%
	Female	13	48.1%	2	25%	5	33.3%	1	100%	1	25%	0	0%
	Total of occurrence	33.8%		10%		18.8%		1.3%		5%		0	0%
OCCUPATIONAL	Students	6	22.2%	4	50%	0	0%	0	0%	0	0	0	0%
	Civil servant	9	33.3%	0	0%	9	60%	0	0%	2	50%	0	0%
	Businessmen	6	22.2%	1	12.5%	3	20%	1	100%	0	0	0	0%
	Housewives	3	11.1%	0	0%	0	0%	0	0%	1	25%	0	0%
	Others	3	11.1%	3	37.5%	3	20%	0	0%	1	25%	0	0%
MARITAL	Married	19	70.4%	3	37.5%	9	60%	1	100%	2	50%	0	0%
	Single	8	29.6%	5	62.5%	6	40%	0	0%	2	50%	0	0%
	Divorced	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
EDUCATIONAL	Primary	8	29.6%	0	0%	7	46.7%	0	100%	2	50%	0	0%
	SSCE	8	29.6%	3	37.5%	5	33.3%	0	0%	1	25%	0	0%
	NCE,ND,HND,BSc	10	37%	5	62.5%	3	20%	0	0%	1	25%	0	0%
	MSc. & Above	1	3.7%	0	0%	0	0%	0	0%	0	0%	0	0%

**TABLE 3: PREVALENCE OF ORAL CANDIDIASIS, HAIRY LEUCOPLAKIA AND ACUTE NECROTIZING ULCERATIVE GINGIVITIS (ANUG) AMONG HIV POSITIVE AND NEGATIVE PATIENTS WITH RESPECT TO SEX, MARITAL OCCUPATIONAL AND EDUCATIONAL STATUS**

	CATEGORIES	ORAL CANDIDIASIS				HAIRY LEUCOPLAKIA				ANUG			
		+VE	%+VE	-VE	%-VE	+VE	%+VE	%+VE	%-VE	+VE	%+VE	-VE	%-VE
SEX	Male	29	53.7%	4	66.7%	9	64.3%	0	0%	9	53.0%	0	0%
	Female	25	46.3%	2	33.3%	5	35.7%	0	0%	8	47.0%	0	100%
	Total of occurrence	67.5%		7.5%		17.5%		0	0%	21.3%		1.3%	
OCCUPATIONAL	Students	4	7.4%	2	33.3%	1	7.1%	0	0%	3	17.6%	0	0
	Civil servant	17	31.5%	0	0%	6	42.9%	0	0%	6	35.3%	0	0
	Businessmen	17	31.5%	3	50%	3	21.4%	0	0%	5	29.4%	1	100%
	Housewives	4	7.4%	0	0%	0		0	0%	1	5.9%	0	0
	Others	12	22.2%	1	16.7%	4	28.6%	0	0%	2	11.8%	0	0
MARITAL	Married	31	57.4%	2	33.3%	8	57.1%	0	0%	11	64.7%	1	100%
	Single	20	37.0%	4	66.7%	5	35.7%	0	0%	5	29.4%	0	0
	Divorced	3	5.6%	0	0%	1	7.1%	0	0%	1	5.9%	0	0
EDUCATIONAL	Primary	20	37.0%	1	16.7%	2	14.3%	0	0%	6	35.3%	0	0
	SSCE	18	33.3%	5	83.3%	4	28.6%	0	0%	4	23.5%	1	100%
	NCE,ND,HND,BSc	12	22.2%	0	0%	8	57.1%	0	0%	7	41.2%	0	0
	MSc.& above	4	7.4%	0	0%	0	0%	0	0%	0	0%	0	0

**TABLE 4: ORAL MANIFESTATIONS AMONG HIV POSITIVE AND NEGATIVE PATIENTS IN ENUGU AND CALABAR TOWNS IN NIGERIA**

CITY	ENUGU				CALABAR				ENUGU & CALABAR			
	+VE	%+VE	-VE	%-VE	+VE	%+VE	-VE	%-VE	TOTAL +VE	TOTAL %+VE	TOTAL -VE	TOTAL %-VE
Dental caries	5	12.5%	15	37.5%	13	32.5%	12	30%	18	22.5%	27	33.8%
Oral ulcer	29	72.5%	0	0%	30	75%	5	12.5%	59	73.8%	5	6.3%
Angular Chelitis	5	12.5%	4	10%	15	37.5%	1	2.5%	20	25%	5	6.3%
Peridotitis	10	25%	8	20%	17	42.5%	0	0%	27	33.8%	8	10%
Oral Kaposi sarcoma	7	17.5%	1	2.5%	80	20%	0	0%	15	18.8%	1	1.3%
Non-Hodgkins lymphoma	2	5%	0	0%	2	5%	0	0%	4	5%	0	0%
Oral candidiasis	29	72.5%	5	12.5%	25	62.5%	1	2.5%	54	67.5%	6	7.5%
Hairy leucoplakia	9	22.5%	0	0%	5	12.5%	0	0%	14	17.5%	0	0%
ANUG	13	32.5%	1	2.5%	4	10%	0	0%	17	21.3%	1	1.3%

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