
Knowledge of HIV and HIV Associated Oral Lesions Among Nigerian Final Year Dental Students

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Abstract: Providing proper dental care to HIV/AIDS patients necessitates good knowledge for recognition of the oral lesions associated with the disease. This study was aimed at assessing the knowledge of HIV and HIV associated oral lesions among final year dental students in Nigeria. This was a questionnaire-based cross-sectional study of final year dental students in 4 Nigerian universities. The questionnaire consisted of 3 sections: Demographic characteristics of the respondents, knowledge of transmission of HIV and oral lesions associated with HIV/AIDS. Data was analyzed using IBM SPSS version 21.0. Descriptive statistics, Chi square test, Fisher's exact test and Students T-test were the analysis carried out with P set at 0.05. A total of 61 respondents participated in the study. The mean knowledge score of 26.18 ± 7.841 . The knowledge score obtained by the male respondents was 26.38 ± 8.05 while the mean knowledge score obtained by female respondents was 25.82 ± 7.63 . There was no statistically significant difference in mean score across the dental schools and across gender. The most commonly identified oral lesions: oral candidiasis (98.4%), Kaposi's sarcoma (98.4%), periodontal disease (91.8%) and Mycobacterium tuberculosis (82.0%). The least identified oral lesions; facial palsy (21.3%), drug reactions (ulcerative, erythema multiforme, lichenoid) (27.9%), trigeminal neuralgia (32.8%). Nigerian dental students have a good knowledge of HIV transmission and oral manifestations of HIV/AIDS. This is encouraging and should be translated to adequate oral health care for patients living with HIV/AIDS.

Keywords: HIV/AIDS, Nigerian Dental Students, Oral Manifestation

1. Introduction

The possibility of HIV transmission in the oral health care setting is very rare. Nonetheless, the oral health care setting has become a helpful environment for the early detection of HIV infection because most of its lesions present orally during the first stages of the disease [1, 2]. As many as 40 oral manifestations of HIV have been reported [3-6]. Providing proper dental care to HIV/AIDS patients necessitates good knowledge for recognition of the oral lesions associated with the disease [1].

As the number of people with HIV/AIDS are increasing worldwide, the need of infected individuals for medical and dental care will increase. Dentists and other dental personnel have a professional and ethical responsibility to provide treatment to patients with HIV/AIDS [7]. Willingness to treat

HIV patients appears to be related to knowledge of the disease process, recognition of oral manifestations, and understanding the modes of its transmission [8]. Dental practitioners should be required to enhance their knowledge of the disease and its oral manifestations [1].

People living with HIV/AIDS are subject to a spectrum of potentially painful and health-compromising oral conditions with recent studies around the world indicating that oral lesions tend to occur in as many as 50%–70% of all HIV/AIDS cases [1].

A sound basis of knowledge about HIV infection and AIDS is essential to allow students to develop as dentists who undertake appropriate measures during clinical practice. In addition, it is also likely that possessing appropriate information may instil confidence in their own ability to diagnose and then manage patients infected by HIV [2, 9].

Increased knowledge of HIV is believed to lead to an increased willingness and confidence to treat HIV-positive patients [10, 11]. Hence, it is essential to gain insight into dental students' knowledge of HIV. Several countries have reported studies on the knowledge of dental students on HIV/AIDS [12-17] with countries such as Brazil [12], Iran [13], China [14] and Sudan [15] reporting that dental students had insufficient knowledge about HIV, particularly in relation to its transmission. However, there are only a few such studies [18] in Nigeria hence this study which was aimed at assessing the knowledge of HIV and HIV associated oral lesions among final year dental students attending Nigerian Universities.

2. Methods

A cross sectional study was carried out from October 2016 to February 2017 among final year dental students in 4 Nigerian dental schools. The dental schools used for this study were picked using simple random sampling technique (University of Benin, Obafemi Awolowo University Ile-Ife, University of Port-Harcourt and University of Nigeria, Nsukka). Taking into consideration the size of the final year students all final year students who gave their consent to participate in the study were recruited for the study.

The survey instrument was a self-administered questionnaire which was adapted from a previous study [19]. The questionnaire consisted of 3 sections. The first section focused on the socio-demographic characteristics of the respondents' in the form of age, gender, school and marital status. The second section consisted of 15 closed ended questions related to knowledge of transmission of HIV. Each correct answer was awarded a score of one and each incorrect answer was awarded a score of zero. A knowledge score was obtained by adding all correct responses with the highest possible score obtainable being 15 and the least score being zero. The third section contained 29 questions about the oral lesions associated with HIV/AIDS. A knowledge score was computed by adding the correct responses given for the yes/no questions with each correct answer scored 1 and incorrect answer scored 0. A respondent's total score could range from 0 to 29. The scores from section 2 and 3 were added together to give a total knowledge score which was interpreted into four segments as done in a previous study among dental students [1]:

1. < 25% - weak,
2. 25%–50% - moderate,
3. 51%–75% - good,
4. 75% - excellent level of knowledge.

IBM SPSS version 21.0 software was used for statistical analysis. Frequency and percentages were used to describe the sociodemographic characteristics and response to questions in sections 2 and 3. Descriptive statistics in the form of mean and standard deviation were used to describe quantitative data (age and knowledge scores). A Pearson Chi square test was used to determine association between categorical variables. Fisher's exact test was used in areas

were expected cell count was <5. Students T-test was used to determine difference in mean knowledge score across gender of the respondents. P value was set at 0.05.

3. Results

A total of 70 questionnaires were administered but 62 were filled and returned giving a response rate of 88.6% however, only 61 were properly filled and used for the study. There was a male preponderance (63.9%) and University of Benin dental school made up 36.1% of the respondents and Obafemi Awolowo University dental school made up 29.5% of the respondents (Table 1). The age of the respondents ranged from 21-31 years with a mean of 25.24 ± 2.28 years.

Table 1. Demographic characteristics of the respondents.

Characteristics	Frequency	Percent
Dental school		
University of Benin	22	36.1
University of Port-Harcourt	12	19.7
Obafemi Awolowo University	18	29.5
University of Nigeria	9	14.8
Gender		
Male	39	63.9
Female	22	36.1
Marital status		
Single	60	98.4
Married	1	1.6
Total	61	100.0

The knowledge score obtained in this study ranged from 11- 41 with a mean score of 26.18 ± 7.841 . The knowledge score obtained by the male respondents was 26.38 ± 8.05 while the mean knowledge score obtained by female respondents was 25.82 ± 7.63 . There was no statistically significant difference in mean score across the dental schools and across gender ($p=0.428$).

A higher proportion (42.6%) exhibited good knowledge while no participant exhibited weak knowledge and 21.3% exhibited excellent knowledge (Figure 1).

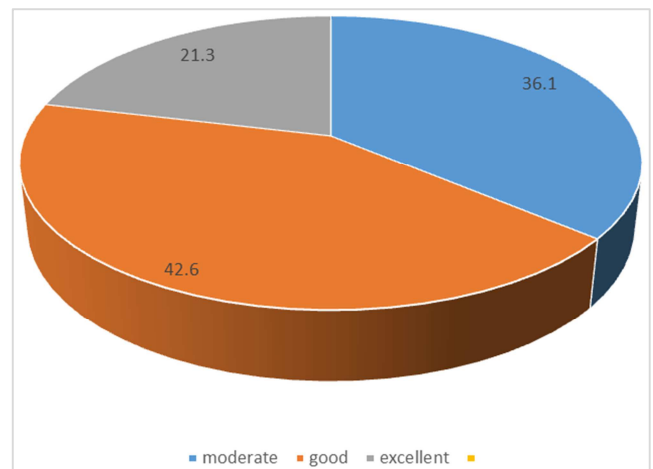


Figure 1. Knowledge of respondents regarding HIV and HIV associated oral lesions.

There was no statistically significant association between

knowledge and gender however, there was statistically significant association between knowledge and the dental school of the respondents ($p=0.008$), with a significantly higher proportion (66.7%) of respondents from University of Port-Harcourt Dental school exhibiting good knowledge and the remaining 33.3% exhibiting moderate knowledge while

none exhibited excellent knowledge. In like manner, a higher proportion (66.7%) of respondents from the University of Nigeria Dental school exhibited moderate knowledge while the remaining 21.3% exhibited excellent knowledge while none exhibited good knowledge (Table 2).

Table 2. Association between knowledge, gender and dental school of the participants.

Characteristics	Knowledge			Total n (%)
	Moderate	Good	Excellent	
	n (%)	n (%)	n (%)	
Gender				P=0.894
Male	14 (35.9)	16 (41.0)	9 (23.1)	39 (100.0)
Female	8 (36.4)	10 (45.5)	4 (18.2)	22 (100.0)
Dental school				P=0.008
University of Benin	3 (13.6)	12 (54.5)	7 (31.8)	22 (100.0)
University of Port-Harcourt	4 (33.3)	8 (66.7)	0 (0.0)	12 (100.0)
Obafemi Awolowo University	9 (50.0)	6 (33.3)	3 (16.7)	18 (100.0)
University of Nigeria	6 (66.7)	0 (0.0)	3 (33.3)	9 (100.0)
Total	22 (36.1)	26 (42.6)	13 (21.3)	61 (100.0)

Table 3. Knowledge of oral lesions associated with HIV.

Oral lesions	Frequency	Percent
Oral candidiasis	60	98.4
Kaposi's sarcoma	60	98.4
Non-Hodgkins lymphoma	37	60.7
Periodontal disease	56	91.8
Linear gingival erythema	38	62.3
Necrotizing ulcerative gingivitis	49	80.3
Necrotizing ulcerative periodontitis	49	80.3
Mycobacterium tuberculosis	50	82.0
Melanotic hyperpigmentation	23	37.7
Necrotizing ulcerative stomatitis	42	68.9
Salivary gland disease	24	39.3
Dry mouth due to decreased salivary flow	25	41.0
Unilateral or bilateral swelling of major salivary gland	29	47.5
Thrombocytopenic purpura	21	34.4
Ulceration not otherwise specified	35	57.4
Herpes Simplex virus infection	43	70.5
Varicella Zoster virus infection	40	65.6
Human Papilloma virus infection (wart-like lesions)	38	62.3
Focal epithelial hyperplasia	27	44.3
Verruca Vulgaris	22	36.1
Actinomyces Israeli	21	34.4
Drug reactions (ulcerative, erythema multiforme, lichenoid)	17	27.9
Histoplasma capsulatum	26	42.6
Aspergillus flavus	25	41.0
Neurological disturbances	28	45.9
Facial palsy	13	21.3
Trigeminal neuralgia	20	32.8
Recurrent aphthous stomatitis	40	65.6
Cytomegalovirus infection	42	68.9

Table 3 shows the most commonly identified oral lesions: oral candidiasis (98.4%), Kaposi's sarcoma (98.4%), periodontal disease (91.8%), Mycobacterium tuberculosis (82.0%), Necrotizing ulcerative periodontitis (80.3%), Necrotizing ulcerative gingivitis (80.3%) and Herpes Simplex Virus infection (70.5%) and the least identified oral lesions; facial palsy (21.3%), drug reactions (ulcerative, erythema multiforme, lichenoid) (27.9%), trigeminal

neuralgia (32.8%), thrombocytopenic purpura (34.4%), Actinomyces Israeli infection (34.4%), Verruca vulgaris infection (36.1%) and salivary gland disease (39.3%).

Table 4. Responses relating to transmission of HIV.

	Frequency	Percent
Mother-to-child-transmission of HIV can occur		
During pregnancy	2	3.3
During delivery	15	24.6
During breastfeeding	6	9.8
During all the above three stages	38	62.3
Groups in which HIV is prevalent		
Drug abusers	28	45.9
Female sex workers	42	68.9
Male homosexuals	48	78.7
Survival of HIV outside the body		
A few hours	51	83.6
A few days	4	6.6
A few weeks	1	1.6
No idea	5	8.2
Sterilization method effective for HIV		
Regular disinfectant	5	8.2
Autoclaving	46	75.4
UV rays/gamma rays	10	16.4
Boiling water	0	0.0
Main target cells that HIV infects and depletes		
TCD4 lymphocytes	60	98.4
TCD8 lymphocytes	1	1.6
Red blood cells	0	0.0
Infection risk of HBV and HCV compared to HIV		
HBV higher	55	90.2
HCV higher	4	6.6
No idea	2	3.3
Body fluids that can transmit HIV		
Blood	59	96.7
Semen	54	88.5
Vaginal fluid	50	82.0
Breast milk	46	75.4
Total	61	100.0

Table 4 depicts the response to questions regarding transmission of HIV. Less than two-thirds (62.3%) of the respondents were aware that mother-to-child HIV

transmission can occur in all three stages of pregnancy and nursing (during pregnancy, during delivery and during breastfeeding).

With regards to groups where HIV was prevalent 78.7% claimed male homosexuals, 68.9% female sex workers and 45.9% drug abusers. Majority (83.6%) were of the opinion that HIV can only survive for a few hours outside the body. With regards to the best sterilization method for HIV 75.4% felt autoclaving was the best. Almost all (98.4%) of the respondents knew that the main target cells that HIV infects and depletes were the TCD4 lymphocytes. Majority (90.2%) were cognizant with the infection risk of HBV and HCV as they reported a higher risk of HBV compared to HIV. The respondents were knowledgeable about the body fluids that could transmit HIV, with 96.7% affirming that blood could transmit HIV, 88.5% agreed that semen could transmit HIV, 82.0% believed that Vaginal fluid could transmit HIV and 75.4% were of the opinion that breast milk could transmit HIV.

4. Discussion

Oral care is vital to (HIV)-positive individuals. As future dentists, it is pertinent that dental students have sufficient knowledge and a positive approach toward this disease [14]. The mean age of respondents in this study was higher (25.24 ± 2.28 years) than that reported in a previous study 23.27 ($SD = 1.01$) years [1].

The mean score of 26.18 ± 7.841 (59.5%) observed in this study was lower than that reported in a previous study [14]. It was noticed that there was no statistically significant difference in mean score across gender a finding similar to a previous study that also found no significant difference regarding sex [14].

Less than half (42.6%) of the respondents had good knowledge score a finding far lower than the 72.7% reported in a previous study [1] and also the 82.1% reported by Sadeghi and Hakimi [13] and the 78.8% reported by Aggarwal and Panat [8]. Less than a quarter of the respondents exhibited excellent level of knowledge a finding similar to a previous study that reported that more than half of the respondents demonstrated a good level of knowledge, although few exhibited an excellent level [9].

There was no statistically significant association between knowledge and gender in this study, a finding contrary to that reported in a previous study where there was statistically significant association between knowledge and gender ($P = 0.009$), with a significantly high proportion (48%) of female students having excellent knowledge [1].

Oral candidiasis, Kaposi Sarcoma and periodontal disease were the three most commonly identified oral lesions by respondents in this study. a finding similar to a previous study that reported Kaposi's sarcoma, oral candidiasis and hairy leukoplakia, as three of the most common oral lesions in HIV-positive patients [1, 20] and another study that reported that most dental students were aware of the association of hairy leukoplakia, oral Kaposi's sarcoma, oral

candidiasis as a whole, and thrush as one clinical variant, with HIV infection [9].

There was a much lower level of knowledge of awareness of the association of facial palsy, drug reactions (ulcerative, erythema multiforme, lichenoid), trigeminal neuralgia, thrombocytopenic purpura, actinomyces Israeli infection, Verruca vulgaris infection and salivary gland disease with HIV infection. A finding similar to a previous study where there was a much lower level of knowledge of erythematous candidiasis, HIV-associated salivary gland disease, oral melanotic hyperpigmentation and idiopathic thrombocytopenic purpura [9, 20].

Majority of the respondents were of the opinion that infection Hepatitis B was more infectious than HIV. This is contrary to a previous study in which about a third (33.1%) of the study population claimed that HIV was more infectious than any of the strains of hepatitis virus [7].

However, the students needed a broader knowledge of lesions less strongly associated with HIV such as condyloma, papilloma and xerostomia. Students should also be educated that even the lesions strongly associated with HIV/AIDS are not exclusive to HIV/AIDS. Kaposi's sarcoma, oral candidiasis, and hairy leukoplakia may also be seen in patients not infected with HIV/AIDS [1].

5. Conclusion

Nigerian dental students tend to have a good knowledge of HIV transmission and oral manifestations of HIV/AIDS however, there is still room for improvement. This is encouraging and should be translated to adequate oral health care for patients living with HIV/AIDS. As future dentist having good knowledge of HIV/AIDS will ensure a high index of suspicion of HIV cases which will prompt adequate diagnostic investigations for confirmation. Furthermore, this will enable recognition and accurate diagnosis of these oral lesions as well as early treatment with ultimate reduction in morbidity and mortality of the HIV infected patient.

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