

# HIV Related Knowledge among Clinical Dental Students Attending a Nigerian University

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## INTRODUCTION

Globally, HIV and AIDS epidemics pose huge public health challenges. According to the global summary of the aids epidemic of who, in 2016, the number of people living with HIV (PLHIV) was 36.7 and nearly 1.6 million people die each year (Abou El Fadl et al., 2019; WHO, 2019). It is well known that HIV infection negatively affects oral health wherein 40%–70% of HIV-positive individuals develop oral complications such as kaposi sarcoma, oral candidiasis, and leukoplakia during disease progression (Nayak et al., 2016; Abou El Fadl et al., 2019), among the future dentists, knowledge concerning the main oral manifestations of HIV-infected patients is of utmost necessity. Dental professionals have an important role in the early detection of the disease as these manifestations may be its first symptoms (Magalhães et al., 2015)

Worldwide, around 18 million infected individuals receive antiretroviral therapy and thus tend to live longer (Li et al., 2016). Clinical dental students would likely manage some of these patients. The fact that the number of human immunodeficiency virus (HIV)-infected patients under dental care is expected to increase, highlights the importance of providing healthcare, part of which is dental treatment, to all individuals without discrimination (Ogunbodede & Rudolf, 2002; Grover et al., 2014)

However, due to a lack of adequate knowledge, dental surgeons are routinely influenced by fear, prejudice, confusion and ambivalence concerning the proper conduct with regard to HIV positive patients and previous experiences with aids patients. Their fear may stem from having lost other patients

to the disease, thus denying care to or referring HIV positive patients, transgressing the ethical principles that govern the profession (Kuthy et al., 2010; Brailo et al., 2011; Magalhães et al., 2015).

Inadequate information on HIV/AIDS will continue to thwart efforts at the prevention of the disease, deprive PLHIV the much-needed care and support; while encouraging stigmatization and discrimination against them. This trend will portend a great danger to the well-being of PLHIV (Oboro et al., 2010). Faced with the high number of patients with HIV/AIDS, it has become necessary to adapt the attitudes of health professionals and students to reality (Berkenblit et al., 2012; Magalhães et al., 2015).

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 (Enabulele & Okoh, 2019). As future dentists, it is pertinent that dental students have not only sufficient knowledge, but a positive approach toward this disease (Li et al., 2016). In this respect, this study was conducted to assess the ability of undergraduate dental students to recognize HIV-associated oral manifestations, their knowledge of the modes of transmission of this infection; role of voluntary counselling and testing; and handling of occupational exposure to HIV among the clinical dental students in University of Benin.

## MATERIALS AND METHODS

This was a descriptive cross-sectional study of clinical dental students attending the University of Benin. All the clinical dental students from 4<sup>th</sup> year to final year

were recruited for the study. However, only those who gave written informed consent participated in the study. Data for the study was garnered by using a self-administered questionnaire which was developed from that used in a previous study (Chew & Cheong, 2013). The questionnaire consisted of 2 sections. The first section elicited information on the socio-demographic characteristics of the respondents' in the form of age, gender, class and marital status. The second section consisted of 82 questions which evaluated HIV related knowledge: 12 closed ended questions were related to knowledge of transmission of HIV, 21 questions on HIV prevention, 29 questions on oral lesions associated with HIV/AIDS and 20 questions on stigma and discrimination of PLHIV. Every correct answer was awarded a score of 1 and every incorrect answer or unanswered question was given a score of zero. All the scores awarded were summed up to give a total knowledge score which was interpreted into four segments as done in a previous study among dental students (Singh, 2017).

- a. < 25% - weak,
- b. 25%–50% - moderate,
- c. 51%–75% - good, and
- d. > 75% - excellent level of knowledge.

All data so obtained were screened for completeness and analysed using IBM SPSS 21.0. The statistical tools used for analysis were descriptive statistics in the form of mean, standard deviation, frequencies, percent and cross tabulation. Chi square test was used to determine associations between categorical variables where applicable. One-way Anova was used to determine the mean difference in knowledge

scores and post hoc (Tukey HSD) applied to determine the group contributing to any difference detected. All results were presented as prose, tables and figures.

## RESULTS

A total of 60 questionnaires were administered to consenting clinical students however only 58 questionnaires were returned giving a response rate of 96.7%. Of the 58 returned, 3 were incompletely filled and were not included in the study.

The age of the respondents ranged from 21-35years with a mean age of 26.47±3.1years. There was a higher proportion of male respondents (63.6%) compared to female respondents (36.4%) giving a male female ratio of 1:0.57. Figure 1 shows the distribution of the respondents by class of study with final year accounting for 38.2%.

The knowledge score obtained by the respondents ranged from 37.8% to 98.7% with a mean score of 69.26±14.98%. The mean knowledge scores of each class were as follows: final year- 78.09±11.19%, fifth year- 64.68±15.53% and fourth year- 62.69±13.59%. Tukey HSD showed that there was statistically significant difference in mean score attained between the final year respondents and the fifth-year respondents (p=0.01) as well as the fourth-year respondents (p=0.003). About half (50.9%) of the respondents had good HIV related knowledge as depicted in figure 2. There was increased knowledge with increase in level of study with respondents in final year exhibiting only good and excellent knowledge and this was statistically significant (p=0.031) (Figure 3).

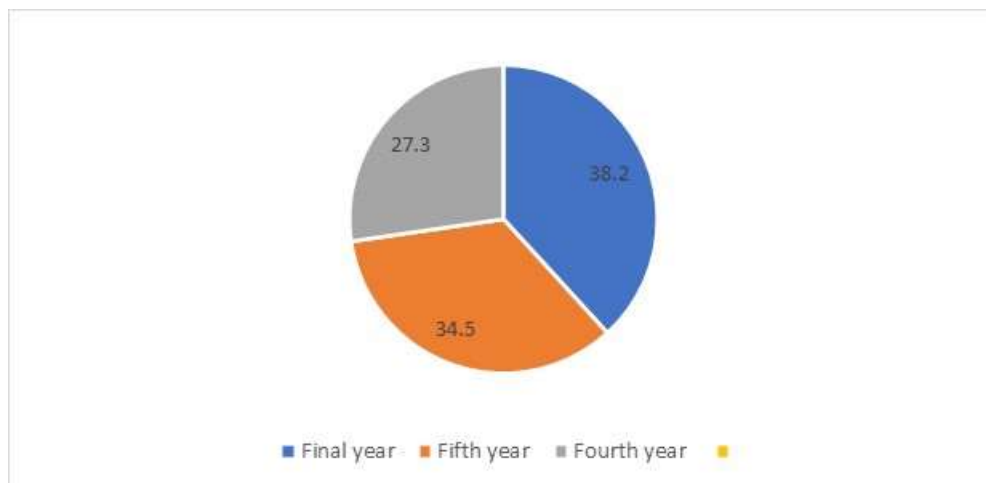


Figure 1: Distribution of respondents by class

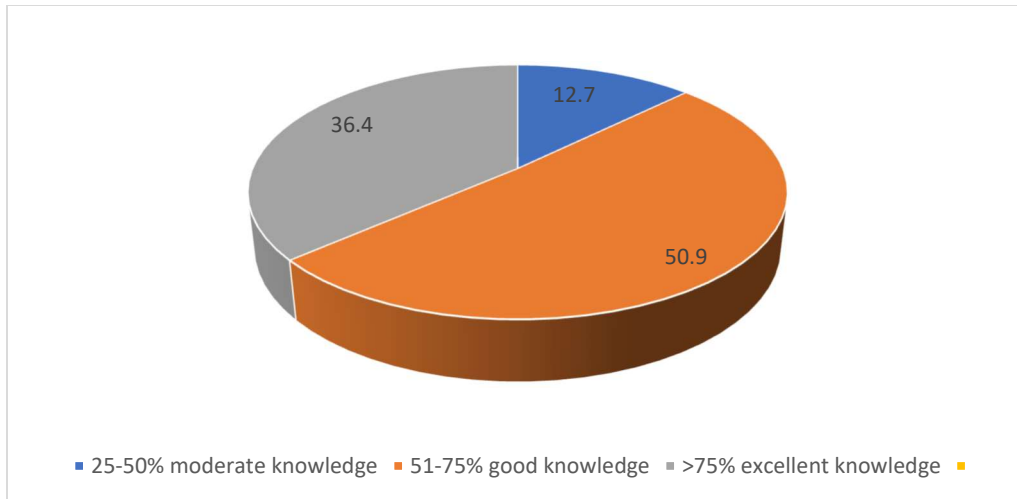


Figure 2: Grading of HIV related knowledge among the respondents

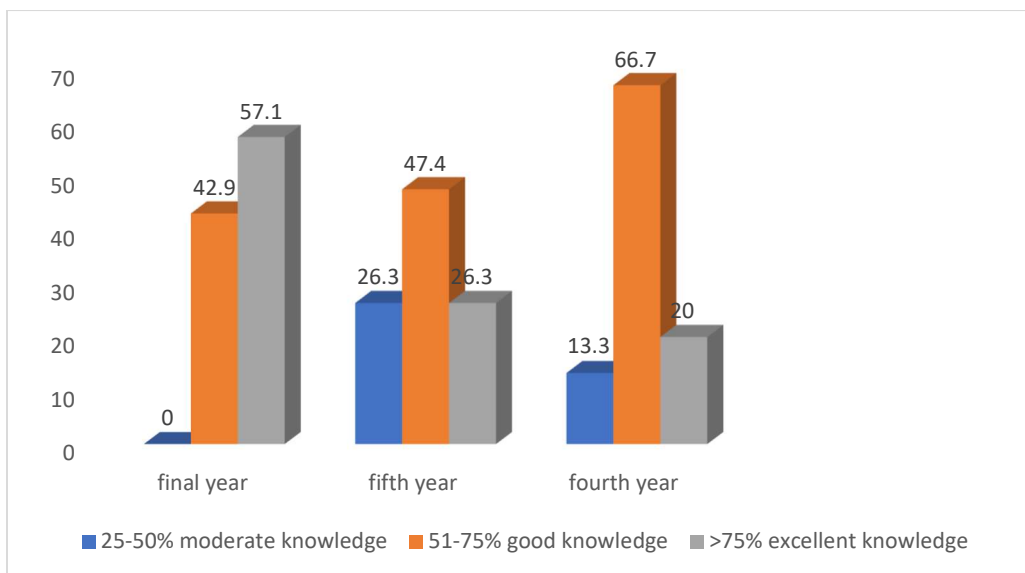


Figure 3: Association between level of study and knowledge grade ( $p=0.031$ )

Table 1 shows the responses of respondents with regards to transmission of HIV. About half (50.9%) knew that mother-to-child transmission of HIV can occur during all 3 stages of pregnancy, delivery and breastfeeding. Majority (76.4%) opined that HIV was prevalent among female sex workers. In like manner, 78.2% knew that HIV could only survive a few hours outside the body as well as it could be destroyed by autoclaving.

With regards to knowledge of HIV prevention 92.7% opined that HIV can be prevented by use of condom during sexual intercourse. In like manner, 90.9% and 89.1% reported that HIV can be prevented by not sharing needles and safe blood transfusion respectively. Vaccine for the prevention of HIV was

reported not to be available by 63.6% of the respondents.

Table 2 shows how the respondents felt occupational HIV exposure should be handled as well as the role of voluntary counselling and testing: 54.5% and 60.0% of the respondents were of the opinion that on the spot treatment of the injury and assessment of HIV exposure risk be carried out respectively. Majority (76.4%) reported that ARV treatment for the exposed person be initiated with majority (81.0%) of respondents in final year and 89.5% of those in fifth year while 53.3% of those in fourth year were of this opinion and this was statistically significant ( $p=0.04$ ). Similarly, 58.2% of the respondents opined that voluntary counselling and testing helped PLHIV to better understand available services. There was

increased proportion of respondents who felt this way with increase in level of study of the respondents (53.1% in final year, 28.1% in fifth year and 18.8% in fourth year) and this was statistically significant ( $p=0.024$ ). About half (50.9%) and 58.2% of the respondents claimed that voluntary counselling and testing provide support in the disclosure of HIV status and reduce and mitigate discrimination respectively.

Table 3 depicts the various oral lesions associated with HIV as identified by the respondents. The three most commonly identified oral lesions associated with HIV in this study were: oral candidiasis 98.2%, periodontal disease 89.1% and Kaposi's sarcoma 87.3%.

Table 1: Responses relating to transmission of HIV

| Variable   | Frequency | Percent      |
|--|-----------|--------------|
| <b>Mother-to-child-transmission of HIV can occur</b>   |           |              |
| During pregnancy                                       | 6         | 10.9         |
| During delivery  | 19        | 34.5         |
| During breast feeding                                  | 2         | 3.6          |
| During all the above three stages                      | 28        | 50.9         |
| <b>*Groups in which HIV is prevalent</b>               |           |              |
| Drug abusers   | 29        | 52.7         |
| Female sex workers                                     | 42        | 76.4         |
| Male homosexuals                                       | 34        | 61.8         |
| <b>Survival of HIV outside the body</b>                |           |              |
| A few hours  | 43        | 78.2         |
| A few days   | 4         | 7.3          |
| A few weeks  | 4         | 7.3          |
| No idea  | 4         | 7.3          |
| <b>Sterilization method effective for HIV</b>          |           |              |
| Regular disinfectant                                   | 4         | 7.3          |
| Autoclaving  | 43        | 78.2         |
| UV rays/gamma rays                                     | 7         | 12.7         |
| No known effective method                              | 1         | 1.8          |
| <b>Main target cells that HIV infects and depletes</b> |           |              |
| TCD <sub>4</sub> lymphocytes                           | 52        | 94.5         |
| TCD <sub>8</sub> lymphocytes                           | 2         | 3.6          |
| No idea  | 1         | 1.8          |
| <b>Infection risk of HBV and HCV compared to HIV</b>   |           |              |
| HBV higher   | 46        | 83.6         |
| HBC higher   | 6         | 10.9         |
| No idea  | 3         | 5.5          |
| <b>*Body fluids that can transmit HIV</b>              |           |              |
| Blood  | 54        | 98.2         |
| Semen  | 44        | 80.0         |
| Vaginal fluid  | 42        | 76.4         |
| Breast milk  | 39        | 70.9         |
| <b>Total</b>   | <b>55</b> | <b>100.0</b> |

\*multiple responses

Table 2: Respondents' knowledge of handling of occupational HIV exposure and the role of voluntary counselling and testing.

| Variable   | Frequency | Percent |
|--|-----------|---------|
| <b>Handling of occupational HIV exposure</b>                     |           |         |
| On the spot treatment of the injury                              | 30        | 54.5    |
| Assessment of HIV exposure risk                                  | 33        | 60.0    |
| Determination of HIV status of the source person                 | 38        | 69.1    |
| Test for HIV 03-06 months after exposure                         | 40        | 72.7    |
| ARV treatment for the exposed person                             | 42        | 76.4    |
| <b>Role of voluntary counselling and testing</b>                 |           |         |
| Provision of HIV tests results                                   | 37        | 67.3    |
| Assistance to PLHIV to better understand available services      | 32        | 58.2    |
| Reduction and mitigation of discrimination                       | 32        | 58.2    |
| Reduction in risk behaviours for people testing negative for HIV | 30        | 54.5    |
| Reduction in risk of transmissible behaviour of PLHIV            | 28        | 50.9    |
| Provision of support in the disclosure of HIV status             | 37        | 67.3    |
| Enhancement of treatment adherence                               | 28        | 50.9    |
| Provision of psychological support for PLHIV                     | 35        | 63.6    |

Multiple responses

## DISCUSSION

The knowledge a student acquires in his/her academic field can make him/her a professional who is conscious of his/her attitudes and who has greater awareness of the risks involved within the workplace (Magalhães et al., 2015).

The present study showed that clinical dental students exhibited a level of knowledge of 69.26% considered to be good. This is comparable to a study with a knowledge score of 64.1%. There were differences between levels, with higher scores found in the more advanced ones (Magalhães et al., 2015). On the other hand, several studies report knowledge of HIV/AIDS by students and dental surgeons as being unsatisfactory or poor (Garcia et al., 2011;

Ryalat, et al., 2011; Brailo et al., 2016). These differences may be due to the different locations of study and varying degree of exposure of the dental students and dental surgeons to the subject of HIV/AIDS

The majority of students (94.5%) responded that TCD<sub>4</sub> lymphocytes cells were affected by the HIV virus. Students had a good knowledge of HIV/AIDS-related lesions such as oral candidiasis, Kaposi's sarcoma, and periodontal disease. This is similar to a study by Linguissi et al. in which the students identified T cells as majorly affected by HIV and lesions such as Kaposi's sarcoma, oral hair leukoplakia, and oral thrush as HIV-associated oral lesions (Linguissi et al., 2018)

Table 3: Identification of oral lesions associated with HIV by the respondents

| Oral lesions  | Frequency | Percent |
|---|-----------|---------|
| Oral candidiasis  | 54        | 98.2    |
| Kaposi's sarcoma  | 48        | 87.3    |
| Non-Hodgkins lymphoma                                       | 34        | 61.8    |
| Periodontal disease   | 49        | 89.1    |
| Linear gingival erythema                                    | 35        | 63.6    |
| Necrotizing ulcerative gingivitis                           | 43        | 78.2    |
| Necrotizing ulcerative periodontitis                        | 41        | 74.5    |
| Mycobacterium tuberculosis                                  | 43        | 78.2    |
| Melanotic hyperpigmentation                                 | 18        | 32.7    |
| Necrotizing ulcerative stomatitis                           | 33        | 60.0    |
| Salivary gland disease                                      | 25        | 45.5    |
| Dry mouth due to decreased salivary flow                    | 25        | 45.5    |
| Unilateral or bilateral swelling of major salivary gland    | 34        | 61.8    |
| Thrombocytopenic purpura                                    | 26        | 47.3    |
| Ulceration not otherwise specified                          | 31        | 56.4    |
| Herpes Simplex virus infection                              | 41        | 74.5    |
| Varicella Zoster virus infection                            | 40        | 72.7    |
| Human Papilloma virus infection (warty-like lesions)        | 42        | 76.4    |
| Focal epithelial hyperplasia                                | 23        | 41.8    |
| Verruca Vulgaris  | 24        | 43.6    |
| Actinomyces Israeli   | 17        | 30.9    |
| Drug reactions (ulcerative, erythema multiforme, lichenoid) | 20        | 36.4    |
| Histoplasma capsulatum                                      | 23        | 41.8    |
| Aspergillus flavus  | 20        | 36.7    |
| Neurological disturbances                                   | 31        | 56.4    |
| Facial palsy  | 16        | 29.1    |
| Trigeminal neuralgia  | 20        | 36.4    |
| Recurrent aphthous stomatitis                               | 38        | 69.1    |
| Cytomegalovirus infection                                   | 36        | 65.5    |

On mother to –child transmission, there was an average response of 50.9% that HIV could be transmitted during pregnancy, delivery and breast-feeding. These responses show little knowledge of HIV transmission pathways among students. Rickles et al., revealed that over 70% of students reported that a person is at risk of contracting HIV through urine. Students are poorly informed about the risk of HIV transmission (Rickles et al., 2016; Linguissi et al., 2018).

Practical demonstrations on handling of occupational HIV exposure among the clinical dental students should be encouraged as 30.1% believed that there is no need of determination of HIV status of the source person during accidental occupational exposure.

Clinical dental students' knowledge of the role of voluntary counselling and testing is on the average as about 50.9% reported that VCT helps in reduction in risk of transmissible behaviour of PLHIV and

enhancement of treatment adherence.

Inclusion of adequate knowledge pertaining to oral manifestations of HIV infection, its modes of transmission, and management of PLHIV in undergraduate dental program curricula should be considered an urging priority.

### CONCLUSION

It may be concluded, that the clinical dental students have good knowledge of HIV/AIDS transmission and HIV- associated oral manifestations. We equally propose that the students should obtain greater practical knowledge concerning handling of occupational exposure to HIV and post-exposure prevention. As future dentists, this should help them harbour positive attitudes toward the care of patients with HIV/AIDS

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### Conflict of interest

The authors declare that they have no conflicts of interest.

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