

Prevalence of undiagnosed HIV infection among dental patients in a Nigerian secondary healthcare facility

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Abstract

Objective: To determine the prevalence of undiagnosed HIV infection among patients attending the Dental Clinic of General Hospital Minna, Niger State, Nigeria. **Materials and Methods:** The study was a prospective study of 1080 dental patients of General Hospital Minna. **Results:** Out of the 1080 patients counseled, only 200 gave consent to participate in the study. Of the 200 participants, 8 tested positive for HIV, giving a prevalence of 4.0%. Females and participants in the sixth and fifth decades of life were found to have higher prevalence of undiagnosed HIV. Corpers and traders had higher prevalence of undiagnosed HIV. Participants with periodontal complaints (bleeding gums and shaking teeth) also had higher prevalence of undiagnosed HIV. The proportion of participants that reported having knowledge about the actual existence, risk factors, and prevention of HIV/AIDS was high. The proportion of participants who expressed willingness to receive more information on HIV-related issues was high. **Conclusion:** One out of 25 patients attending this secondary healthcare setting for dental services had undiagnosed HIV infection. This highlights the need for the establishment of voluntary counseling and testing (VCT) unit in the dental clinics and also re-emphasizes the strict compliance of standard precaution in dental practices.

Key words: Dental, HIV, voluntary counseling and testing

INTRODUCTION

AIDS was first reported in Nigeria in 1986 in a 13-year-old girl. After this, the national HIV seroprevalence rate increased from 1.8% in 1991 to 5.8% in 2001, before showing a decline to 4.4% in 2005 and subsequently to 4.1% in 2010.^[1] This prevalence varied with age and gender within and outside the states.

Niger state ranks 20th in terms of HIV infection prevalence among the 36 states and the Federal Capital Territory (FCT) that make up Nigeria, with a prevalence of 4.0% which is slightly below the national average of 4.1%.^[1] Several reports revealed that non-specific oral diseases are common among HIV-infected individuals and these may trigger dental attendance among them. It is known that the majority of HIV-infected individuals may be undiagnosed due to the low uptake of client-oriented voluntary counseling and testing (VCT) in Nigeria. However, the administration of healthcare services creates a valuable opportunity for provider-orientated VCT in Nigeria. This opportunity has been tapped by almost all surgical specialties in healthcare services delivery, but has rarely ventured into by dental practice, whether in general or specialty dental practices, even when the

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procedures in dentistry are invasive and there exists outrageous fear of dental care as a potential source of HIV transmission among patients. The HIV status of patients, if known, may also help in optimizing the post-exposure prophylaxis protocol after occupational percutaneous and mucocutaneous injuries. Previous studies have revealed varied prevalence of undiagnosed HIV in tertiary dental healthcare settings in southwest and southeast geopolitical zones of Nigeria.^[2,3] Data on the prevalence of undiagnosed HIV in dental healthcare settings in the northern part of Nigeria, especially the north central geopolitical zones, appears to be non-existent.

Niger State is a state in the north central zone of Nigeria with a total population of 4,082,558 according to the 2006 National Population Census. It is at present the largest state in Nigeria in terms of land mass (76,363 km²). Niger State shares boundaries with Kebbi and Zamfara states in the north, Kaduna State in the northeast, Federal Capital Territory in the east, Kogi and Kwara states in the south, and Benin Republic in the west. These multiple boundaries including an international boundary with the attendant fluidity contribute to the heterogeneous nature of the state with the attendant problem of interstate and international trade, which could be favorable for cross-infections such as sexually transmitted infections including HIV/AIDS. The three principal ethnic groups in the state are the Nupes, the Gwaris, and the Hausas, with 21 other minority ethnic groups scattered within the state. At present, there are five dental centers located in the general hospitals of Minna, Bida, Kontagora, Suleja, and New-Bussa, which make up the five health zones of the state. Generally, the presence of a dental center signifies a standard secondary healthcare setting which the general hospitals represent. Also located in the state is a federal medical center in Bida, which acts as a tertiary healthcare referral center; it also has a dental unit attached to it. The objective of the study was to determine the prevalence of undiagnosed HIV infection among patients attending the dental clinic in General Hospital Minna, Niger State.

MATERIALS AND METHODS

The protocol for this study was reviewed and approval granted by the Hospital Management Board of Niger State. This study was conducted among all the consecutive consenting patients who attended the dental clinic of General Hospital Minna during the study period (from January 2009 to March 2010). Administration of questionnaires

and provider-initiated VCT were the modes of data collection in this study. The questionnaire that assessed the demographic characteristics, the reason for dental visit, and HIV-related knowledge was administered after obtaining informed consent from the participants. After questionnaire administration, standard protocol of provider-initiated VCT ensued. Approximately 5 µl of specimen was collected from the oozing blood by a finger prick using a disposable pipette. The sample was dispensed in the center of SAMPLE well/sample port or absorbent pad. The required amount of buffer was added following manufacture's instructions, holding the vial vertically over the SAMPLE well/sample port or absorbent pad. A 10–15 min wait, depending on the reagent, was observed before reading the results. The results and other pertinent information on the worksheet were read and recorded. The initial testing for HIV was done with Determine kit. If the result was "reactive," it was interpreted as positive for HIV-1 and/or HIV-2 antibodies if two lines of any intensity appeared in both the control and test areas. A confirmation was done with STAT PAC. In case where the test was positive (reactive) with Determine kit but non-reactive, which is interpreted as negative for HIV-1 and/or HIV-2 antibodies with STAT PAC, meaning that one line appeared in the control area and no line in the test area, then UniGold was used to ascertain the true result as it is known to break the tie. The presence of two lines of any intensity in both the control and test areas confirmed positive result (reactive), and the presence of only one line in the control area and no line in the test area confirmed negative result (non-reactive). Participation in this study was voluntary. The incentive offered was 50% discount for the dental treatments available in the dental center and this discount was expected to encourage the usual non-research participants from such a setting to participate, with a view to improve generalization of the findings of this study.^[4] Those who tested positive were referred to the free anti-retroviral therapy (ART) center, otherwise known as the Heart to Heart Center. Data analysis was done using Statistical Package of Social Sciences (SPSS) version 17.0.

RESULTS

A total of 1080 patients attending the dental clinic of General hospital Minna were counseled, and 200 (18.5%) gave consent and were included in this study. Of these 200 participants, 93 (46.7%) were aged 21–30 years. More than half [113 (56.5%)] of the participants were males. More than half [115 (57.5%)] of the participants were single.

About one-third [71 (35.5%)] of the participants were students [Table 1]. The predominant presenting complaint among the participants was toothache [127 (63.5%)] [Table 2]. A total of 158 (79.0%) participants answered that they were sexually active. More than half [110 (55.0%)] of the participants said that they used condom. The proportion of the participants who reported having knowledge about the actual existence, risk factors,

and prevention of HIV/AIDS was high. Unprotected sex was the most commonly reported risk factor by the participants [Table 3]. There was high perceived information need among the participants in relation to HIV/AIDS [Table 4]. Of the 200 participants, 8 tested positive to HIV, giving a prevalence of 4.0%. Females and participants in the sixth and fifth decades of life were found to have higher prevalence of undiagnosed HIV. Corper and traders had higher prevalence of undiagnosed HIV. Participants with periodontal complaints (bleeding gums and shaking teeth) also had higher prevalence of undiagnosed HIV [Table 5].

Table 1: Demographic characteristics of the participants

| Characteristics | Frequency (no.) | Percent |
|-----------------|-----------------|---------|
| Age (years) | | |
| 1-10 | 8 | 4.0 |
| 11-20 | 20 | 10.0 |
| 21-30 | 93 | 46.5 |
| 31-40 | 47 | 23.5 |
| 41-50 | 25 | 12.5 |
| 51-60 | 6 | 3.0 |
| 81-90 | 1 | 0.5 |
| Gender | | |
| Male | 113 | 56.5 |
| Female | 87 | 43.5 |
| Marital status | | |
| Single | 115 | 57.5 |
| Married | 84 | 42.0 |
| Divorced | 1 | 0.5 |
| Occupation | | |
| Student | 71 | 35.5 |
| Civil servant | 49 | 24.5 |
| Housewife | 33 | 16.5 |
| Business | 24 | 12.0 |
| Applicant | 7 | 3.5 |
| Trader | 6 | 3.0 |
| Corper | 5 | 2.5 |
| Pupil | 3 | 1.5 |
| Farmer | 2 | 1.0 |
| Total | 200 | 100.0 |

Table 2: Reasons for dental visit among the participants

| Reason | Frequency (no.) | Percent |
|------------------------|-----------------|---------|
| Toothache | 127 | 63.5 |
| Want to clean my teeth | 11 | 5.5 |
| Shaking teeth | 5 | 2.5 |
| To replace teeth | 6 | 3.0 |
| Hole in the tooth | 13 | 6.5 |
| Gum pain | 9 | 4.5 |
| Bleeding gum | 5 | 2.5 |
| Dental checkup | 6 | 3.0 |
| Filling | 6 | 3.0 |
| Others | 12 | 6.0 |
| Total | 200 | 100.0 |

DISCUSSION

Providers-initiated VCT, which is advocated in countries with a high population of HIV-positive individuals, should be upgraded to include Dentistry. In this prospective study, 1080 patients were counseled, but only 200 gave consent which made them the study participants. This low recruitment rate reflects a low uptake of provider-initiated VCT in secondary dental healthcare setting in the north central geopolitical zone of Nigeria. The low recruitment rate in this study may

Table 3: Knowledge of actual existence, risk factor, and prevention of HIV/AIDS among the participants

| Question | n (%) | |
|--|------------|------------|
| | Yes | No |
| Sexually active | 158 (79.0) | 42 (21.0) |
| Does HIV/AIDS exist? | 199 (99.5) | 1 (0.5) |
| Do you know the meaning of HIV/AIDS? | 126 (63.0) | 74 (37.0) |
| Do you know how HIV/AIDS can be prevented? | 196 (98.0) | 4 (2.0) |
| Do think the following are risk factors for HIV/AIDS | | |
| Transfusion | 2 (1.0) | 191 (99.0) |
| Unprotected sex | 25 (12.5) | 175 (87.5) |
| Sexually transmitted infection | 4 (2.0) | 196 (98.0) |
| More than one sex partner | 18 (9.0) | 182 (91.0) |

HIV=Human immunodeficiency virus, AIDS=Acquired immune deficiency syndrome

Table 4: Perceived needs in relation to HIV/AIDS among the participants

| Perceived needs | n (%) | |
|---|-------------|-----------|
| | Yes | No |
| Want to know HIV status now | 200 (100.0) | 0 (0.0) |
| Like family to be tested on HIV | 136 (68.0) | 64 (32.0) |
| Information about HIV drugs (HAART) | 187 (93.5) | 13 (6.5) |
| Information about all transmission routes | 200 (100.0) | 0 (0.0) |
| Information about all risk factors | 200 (100.0) | 0 (0.0) |

HAART=Highly active antiretroviral therapy, HIV=Human immunodeficiency virus, AIDS=Acquired immune deficiency syndrome

Table 5: Prevalence of undiagnosed HIV among the participants

| Characteristics | HIV test result (n (%)) | |
|-------------------------------|-------------------------|------------|
| | Positive | Negative |
| Age (years) | | |
| 1-10 | 0 (0.0) | 8 (100.0) |
| 11-20 | 0 (0.0) | 20 (100.0) |
| 21-30 | 4 (4.3) | 89 (95.7) |
| 31-40 | 1 (2.1) | 46 (97.9) |
| 41-50 | 2 (8.0) | 23 (92.0) |
| 51-60 | 1 (16.7) | 5 (83.3) |
| 81-90 | 0 (0.0) | 1 (100.0) |
| Gender | | |
| Male | 3 (2.7) | 110 (97.3) |
| Female | 5 (5.7) | 82 (94.3) |
| Occupation | | |
| Student | 1 (1.4) | 70 (98.6) |
| Civil servant | 3 (6.1) | 46 (93.9) |
| Housewife | 2 (6.1) | 31 (93.9) |
| Business | 0 (0.0) | 24 (100.0) |
| Applicant | 0 (0.0) | 7 (100.0) |
| Trader | 1 (16.7) | 5 (83.3) |
| Corper | 1 (20.0) | 4 (80.0) |
| Pupil | 0 (0.0) | 3 (100.0) |
| Farmer | 0 (0.0) | 2 (100.0) |
| Reasons for dental attendance | | |
| Toothache | 2 (1.6) | 125 (98.4) |
| Want to clean teeth | 2 (18.2) | 9 (81.8) |
| Shaking teeth | 1 (20.0) | 4 (80.0) |
| Replace teeth | 0 (0.0) | 6 (100.0) |
| Hole in the tooth | 0 (0.0) | 13 (100.0) |
| Gum pain | 1 (11.1) | 8 (88.9) |
| Bleeding gum | 2 (40.0) | 3 (60.0) |
| Dental checkup | 0 (0.0) | 6 (100.0) |
| Filling | 0 (0.0) | 6 (100.0) |
| Others | 0 (0.0) | 12 (100.0) |
| Total | 8 (4.0) | 196 (96.0) |

HIV=Human immunodeficiency virus

be hooked on the stigmatization and discrimination faced by HIV-positive patients, as these may have influenced their decision not to participate. Previous studies have reported discriminatory attitude toward HIV-infected patients among Nigerian health and dental professionals.^[5,6]

Out of the 200 participants who were screened in this study, 8 (4.0%) tested positive, which can also be interpreted as 1 in every 25 patients in this sample was HIV positive. This is consistent with 4.0% documented in Federal Dental Clinic in Enugu, southeast Nigeria.^[3] In the international arena, it is comparable to 4.8% documented among patients of Oral and Maxillofacial Surgery Clinic in San Francisco.^[7] However, it is higher than 2.3% documented among patients undergoing

dental extractions in a tertiary dental clinic in Ibadan by Arotiba *et al.*^[2] The difference in the prevalence in the general hospital dental clinic recorded in this study and other studies can be attributed to the differences in the characteristics of patients seeking services in secondary and tertiary dental healthcare settings in Nigeria. The cultural and religious beliefs are known to influence the prevalence of HIV and these are different in the locations of compared studies from those of the location where this study was conducted. The prevalence of HIV in general hospital was same as the state prevalence and also comparable to national average recorded in the National Sentinel Survey.^[1] The fact that more than half of the dental patients reported being sexually active may be a contributory explanation for this prevalence. The prevalence of HIV in this study substantiates that there is an appreciable risk of transmission of HIV in dental clinic if standard precaution is not strictly adhered to, thereby re-emphasizing the need for proper instrument sterilization to prevent patient-to-patient transmission. Safe needle practice and proper sharp disposal are also necessary to prevent occupational exposure to blood among dentists.

In this study, the participants in the sixth and fifth decades of life had the highest prevalence of undiagnosed HIV. This may be due to the fact that these groups of adults are usually neglected in HIV testing, prevention and intervention programs because they are considered to have lesser risk factors and, therefore, less prone to HIV infection. Females had higher prevalence of undiagnosed HIV than males and this is similar to what is observed in the general populace.^[8] However, this contrasted with the findings of Arotiba *et al.*^[2] and Mgbor *et al.*,^[9] which documented higher prevalence among males than females. The higher risk factors for HIV among females in comparison to males in terms of financial empowerment and entrenched inequality may explain this difference.

In this study, the diversity of occupations of HIV-positive dental patients was similar to the findings among patients attending ENT clinic in Enugu.^[9] Corper and traders had the highest prevalence of undiagnosed HIV in this study, which contrasted with the finding of a study among pregnant women attending the antenatal clinic at General Hospital Minna, Nigeria.^[10] These groups are involved in interstate travel and get accommodated in locations other than their homes temporarily, which increases their risk of indulgence in unsafe sexual practices.^[11]

In this study, the presenting complaints were diverse, reflecting the symptoms of oral diseases and condition affectations. The predominant complaint in this prospective study was toothache. This substantiates the fact that pain is the most common reason for dental consultation in Nigeria.^[12] Dental check-up was one of minor reasons for consultation, which is connected with the fact that Nigerians are more likely to be involved in curative dental visit than preventive dental visit.^[13] However, it was participants with the complaints of bleeding gums and shaking teeth who were found to have higher prevalence of undiagnosed HIV in this study. The periodontal manifestations of HIV, which include linear gingival erythema, HIV-gingivitis and HIV-periodontitis, may have contributed to the prevalence of periodontal symptom complaints among the participants.

In this study, the proportion of the participants that reported knowledge about the actual existence, risk factors, and prevention of HIV/AIDS was high. This means that the public enlightenment campaigns on HIV and HIV-related issues organized in Nigeria by governmental agencies and non-governmental organizations are yielding positive result. Among the assessed risk factors, unprotected sex was the most commonly reported risk factor, followed by having more than one sexual partner. This may be due to the fact that HIV transmission in Nigeria is predominantly through heterosexual route.^[8]

In this study, the perceived information need among the participants in relation to HIV/AIDS was high. The impact of HIV/AIDS on all the social fabrics of society and its indirect or direct effects in the society may have motivated the participants of this study for desiring to obtain more knowledge about the risk factors and prevention of HIV transmission. The willingness to get family members tested was high. This implies that those who have undergone VCT have a high likelihood of encouraging and convincing their family members to undergo the same, which will ultimately increase the proportion of the population that is aware of their HIV status. The implication will be early entry into HIV care, which starts with HIV testing and is associated with improved survival and quality of life among infected individuals.

Although the findings of this study may be limited by the small and biased sample, the offer of discount was expected to encourage the usual non-research participants from such a setting to participate, thereby improving the generalization of the findings of this study.

CONCLUSION

Data from this study revealed the prevalence of undiagnosed HIV in a secondary dental healthcare setting in Nigeria to be 4.0%. High perceived HIV-related information need and high awareness of unprotected sex as a risk factor for HIV/AIDS were also noted among participants.

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