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Prevalence of Oral Candidiasis among People Living with HIV/AIDS in Sokoto Metropolis

Ikpeama Osita John[1*], Okoh Emeka Emmanuel[2], Ikpeama Chizoba Anthonia[3], Okafor Patrick Adimabua[4], Ikpeama Chinwe Joy[5], Ikpeama Emeka Andrew[6], Igbineweka Osa Osazuwa[7], Ogbonna John Charity[8], Ibeh Isaiah Nnanna[9], Ofuenyi Jacob[10], Onuzulike Nonye Marian[11], Nnabuenyi Francis Chinedu[12] and Gerald Chukwudi Mokwe[13]

[1]Department of Public Health Imo State University, Owerri
[2]I Brigade Medical Centre, Sokoto State
[3]Usmanu Danfodiyo University Teaching Hospital State
[4]School of Medical Laboratory Sciences Ahmadu Bello University,Zaria, Kaduna State, Nigeria
[5]Medicine San Frontires
[6]Anatomy Department Anambra State University Uli
[7]Department of Periodontology and Community Dentistry, University College Hospital, Ibadan
[8]Department of Human Medicine, Faculty of Health Science, Usmanudanfodiyo University Sokoto
[9]Department of Medical Laboratory Sciences, University Of Benin
[10]Livon Medical Diagnostic Laboratory Service, No 1 Cold Room Street, Beside Maddala Hotel, Niger State
[11]Department of Public Health Imo State University, Owerri
[12]Department of Agricultural Extension, Umaru Shinkafi Polytechnic Sokoto
[13]Altinez Pharmaceutical Ltd 8 Obukun Street,Off Coker Road,Ilupeju, Lagos

***Corresponding Author:** Ikpeama Osita John, department of Public Health Imo State University, Owerri, Nigeria, Email: Ikpeama35@gmail.com*

ABSTRACT

Oral Candidiasis remains one of the most common opportunistic infections in countries among people living with HIV/AIDS. Hence the study to determine the prevalence of Oral candidiasis among people living with HIV/AIDS in sokoto metropolis. A prospective study design was adopted for this study. Oral swab sample was collected, stained and cultured aseptically. The data collected were analyzed using inferential statistic, percentage and chi-square analysis. Significant difference was set at $p \leq 0.05$. There is a prevalence rate of 70% (70 tested positive to oral candidiasis out of 100 participants). Among 40 male tested 22(55%) tested positive, while among 60 female tested 48(80%) tested positive to oral candidiasis. There is statistically significance relationship (chi-square of 37.942 greater than the tabulated value of 3.84 df =1) between the different gender of client and oral candidiasis infection. among 27 clients With good Oral hygiene tested 11(40%) tested positive, while among 73 clients Without Oral hygiene tested 59(81%) tested positive to oral candidiasis. There is statistically significance relationship (chi-square of 36.22 greater than the tabulated value of 3.841 df=1) between the oral hygiene of client and oral candidiasis infection.

Keywords: *Oral candidiasis, HIV/AIDS*

INTRODUCTION

In humans, oral candidiasis is the most common form of candidiasis, Anil Ghom; Shubhangi Mhaske (2010), by far the most common fungal infection of the mouth, Bouquot, Neville, Damm and Allen (2002), and it also represents the most common opportunistic oral infection in humans Lalla, Patton and Dongari-Bagtzoglou, (2013), with lesions only occurring when the environment favors pathogenic behavior. Oropharyngeal candidiasis is common during cancer care, Epstein, Thariat, Bensadoun, Barasch, Murphy, Kolnick, Popplewell and Maghami, (2012), and it is a very common oral sign in individuals with HIV (Li, Lei, Tan, Jiang, Zeng, Dan, Liao & Chen, (2013). Oral candidiasis occurs in about two thirds of people with concomitant AIDS and esophageal candidiasis (Yamada & Alpers et al., 2009). The human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDs) global pandemic has been the greatest factor in the increased incidence of oral candidiasis since

the 1980s. The incidence of candidiasis caused by NCAC species is also increasing, again thought to be due to changes in medical practise (e.g., organ transplantation and use of indwelling catheters) (Williams, and Lewis, 2011). The (HIV/AIDS) pandemic has been an important factor in the move away from the traditional classification since it has led to the formation of a new group of patients who present with atypical forms of oral candidiasis (Scully, 2008).

Purpose/Objectives of the Study

The main purpose of the study was to determine the prevalence rate of oral candidiasis among people living with HIV/AIDs in sokoto metropolis. In specific terms, the objectives of the study include:

- To determine the prevalence of oral candidiasis among client living with HIV attending 1Brigade Medical Centre for care.
- To determine the prevalence of oral candidiasis among male and female clients living with HIV attending 1Brigade Medical Centre for care.
- To determine the prevalence rate of oral candidiasis base on oral hygiene care of clients living with HIV/AIDS attending medical centre for care.

Significance of the Study

Results of the study would reveal prevalence of oral candidiasis among male and female client living with HIV attending medical centre. Specifically result of the study would be significant to clinicians, adults (male /female), public health officers, health counselors, health educators, medical allied personnel and researchers in assessing oral candidiasis among male and female client living with HIV attending medical centre and initiating treatment and preventive measures in adult's female and other preventive programs. Results of the study would motivate public health workers toward identifying disease risk factors that is common in this locality. Clinician and health counselors would through the results of the study develop and adapt effective client treatment and counseling method on the best healthy life style to adopt. These would increase awareness of the public locally about oral candidiasis among people living with HIV/AIDs.

Research Questions

The following research questions gave direction to the study.

- What is the prevalence rate of oral candidiasis among clients living with HIV/AIDS attending medical centre for care?
- What is the prevalence rate of oral candidiasis among male and female clients living with HIV/AIDS attending medical centre for care?
- What is the prevalence rate of oral candidiasis based on oral hygiene care of clients living with HIV/AIDS attending medical centre for care?

Hypotheses

The following null hypotheses were postulated for the study:

- There is no oral candidiasis among client living with HIVAIDS attending medical centre.
- There is no oral candidiasis among male and female client living with HIV/AIDS attending medical centre for care.
- There is no oral candidiasis among client living with HIV/AIDS attending medical centre for care base on good oral hygiene.

Scope of the Study

The study was delimited to the male and female HIV/AIDs client (18 years and above) in Sokoto. It was delimited to independent variables of gender (male/female). It was delimited to the use of structured interview guide as the main instrument for data collection. It was delimited to the collection of oral swab sample using sterile swap stick. Finally, it was delimited to the use of descriptive statistic of frequency and percentage as well as inferential statistic of chi square at 0.05 level of significant for data analysis.

Material and Methods

Research Design

A prospective study was carried out over a period of 6months on clients living with HIV/AIDS for the presence of Oral Candidiasis infection.

Study Area

1 Brigade Medical centre, Gingiya barracks, Dange Shuni LGA in Sokoto South senatorial zone was the study area. By the virtue of its origin, the state comprises mostly Hausa/Fulani and other groups such as Gobirawa, Zabarmawa, Kabawa, Adarawa, Arawa, Nupes, Yorubas, Igbos and others. The Sokoto

township is in dry Sahel surrounded by sandy terrain and isolated hills. Rainfall starts late that is in June and ends in September but may sometimes extend into October. The average annual rainfall is 550 mm with peak in the month August. The highest temperatures of 45°C during the hot season are experienced in the months of March and April. Harmattan a dry, cold and dusty condition is experienced between the months of November and February (Udo and Mamman, 1993).

Collection of Specimen

A total of 100 individuals participated in this research. According to the laboratory procedure of WHO (2009), a sterile swab stick (single use) was inserted into the mouth and gently rotated against the tongue wall to pick oral swab sample (aseptically) the swab was labeled with patient's detail.

Sample Microscopy/Culture

Wet Preparation

Diagnosis of a yeast infection was done by microscopic examination and culturing. For identification by light microscopy, a swab of the affected area is placed on a microscope slide. A single drop of 10% potassium hydroxide (KOH) solution is then added to the specimen. The KOH dissolves the skin cells, but leaves the Candida cells intact, permitting visualization of pseudohyphae and budding yeast cells typical of many Candida species.

For the culturing method, the second oral swab was streaked on a culture medium (Sabouraud Chloramphenicol agar manufactured by Bio-Rad, UK) a selective media for fungal following standard laboratory procedure (WHO 2009). The culture is incubated at 37 °C (98.6 °F) for 3 days, to allow development of yeast. The characteristics (such as morphology and colour) of the colonies may allow initial diagnosis of the organism causing disease symptoms (Hidalgo and Vazquez 2015).

Data Analysis

The data collected were analyzed using inferential statistic, percentage and chi-square analysis. Significant difference is set at $p \leq 0.05$.

RESULTS

Table1. *Shows the total no. 70% tested positive to oral candidiasis out of 100 participants.*

Total screened and tested n (100)	Total testing positive n(%)
100	70(70%)

Table2. *Shows that among 40 male tested 22(55%) tested positive, while among 60 female tested 48(80%) tested positive to oral candidiasis. There is statistically significance relationship (chi-square of 37.942 greater than the tabulated value of 3.841 df=1) between the different gender of client and oral candidiasis infection.*

Gender	Total tested n	Total testing positive n(%)
Male	40	22 (55)
Female	60	48(80)

Table3. *Shows that among 27 clients with good Oral hygiene tested 11(40%) tested positive, while among 73 clients Without Oral hygiene tested 59(81%) tested positive to oral candidiasis. There is statistically significance relationship (chi-square of 36.22 greater than the tabulated value of 3.841 df =1) between the oral hygiene of client and oral candidiasis infection.*

Oral hygiene	Total tested n	Total testing positive n(%)
With good Oral hygiene	27	11 (40)
Without Oral hygiene	73	59(81)

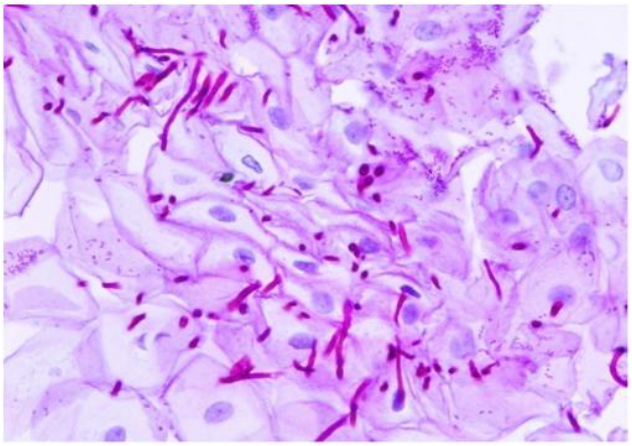

Figure1. *Shows the PAS stain of sling of Pseudohyphae of candida Albican (https://upload.wikimedia.org/wikipedia/commons/d/dsEsophageal.candidiasis)*

Figure2. *49 year old man with Pseudomembranous of the candidiasis tongue found in the study area*

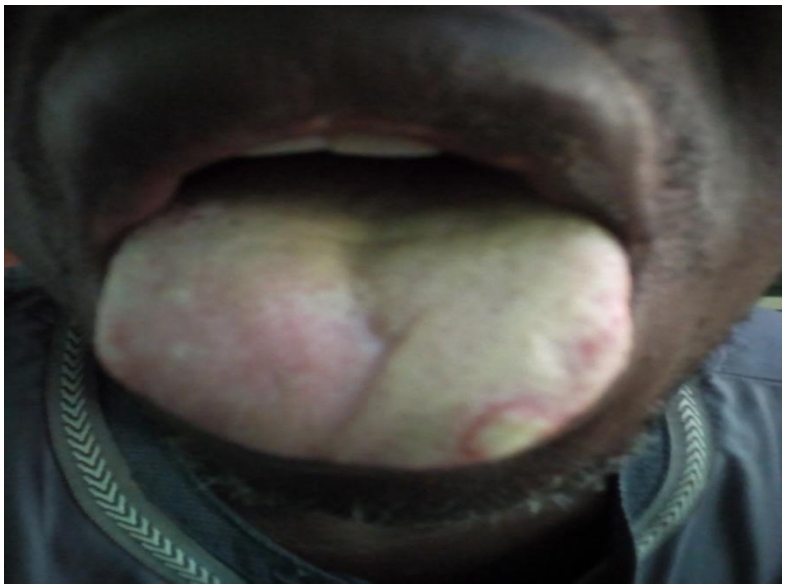

Figure3. *42 year old man with Halitosis, Amphotoid stomatitis with white raid and ulcer found in the study area*

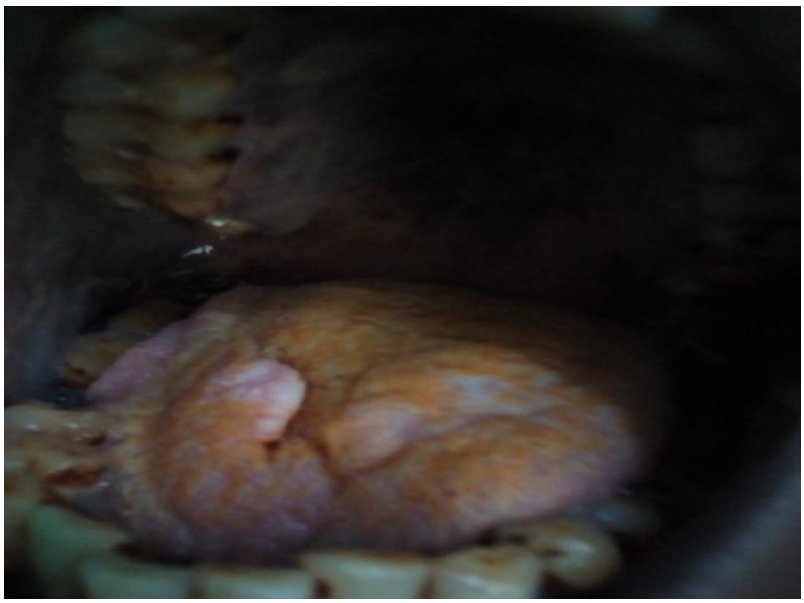

Figure4. *38 year old man with Median rhomboid glossitis with candidiasis found in the study area*

Figure5. *30 year man having red and White coating and loss of lingual papillae of the central dorsum and ulcer of the tongue with candidiasis found in the study area*

DISCUSSION

Oropharyngeal candidiasis is often the first sign of HIV infection, it is the most prevalent fungal opportunistic infection in HIV-infected individuals (Barr, 1992). Prior to the availability of active antiretroviral therapy, oropharyngeal Candidiasis was a very common finding in patients with HIV/AIDS. The result of this study showed a very high prevalence rate of oral candidiasis of 70% this correlate with that of Pruthvi *et al*. (2006) reported 71% prevalent rate of candidiasis in of HIV positive patients, Nagalingeswaran *et al*. (2003) reported 70%. Singh *et al*. (2003) reported 65% and Anupriyawadhwa *et al*. (2007) found candidiasis in 50% of the HIV positive patients. Sangeorzan , Bradley, He, Zarins, Ridenour , Tiballi and Kauffman (1994) reported Yeasts colonized 84% of patients. C albicans accounted for 81% of all isolates out of 92 patients involved in the research. Other studies reported candidiasis in 23% to 27% of HIV positive patients (Sharma, et al., 2003; Mulla et al., 2007;Ismail et al., 2009). Khan, Malik, and Subhan (2012) reported that Out of a total of 165 HIV positive patients, a definitive diagnosis of candidiasis was made in 80 patients (71.25%) prevalence rate. In a similar research Gaitán-Cepeda , Sánchez-Vargas and Castillo (2015) reported Prevalence of oral candidiasis varied from 2.9% in American HIV-positive children undergoing highly active antiretroviral therapy to 88% in Chilean HIV-positive children without antiretroviral therapy. With respect to geographical location and antiretroviral treatment, higher oral candidiasis prevalence in HIV-positive children on combination antiretroviral therapy/antiretroviral therapy was reported in African children (79.1%) followed by 45.9% reported in Hindu children. In HIV-positive Chilean children on no antiretroviral therapy, high oral candidiasis prevalence was reported (88%) followed by Nigerian children (80%). Gaitán-Cepeda et al., (2015) opined that Oral candidiasis is still frequent in HIV-positive children in the highly active antiretroviral therapy era irrespective of geographical location, race and use of antiretroviral therapy. Everyone has small amounts of the fungus in the mouth, vagina, digestive tract and skin. In healthy persons, their immune systems prevent it from causing disease (Remedy Health Media,2019). However, a weaker immune system makes it easier for *Candida* to grow and cause disease. Certain drugs can alter the natural organisms in the mouth, which can then allow the fungus to grow (Remedy Health Media,2019). These include the extended use of antibiotics, steroids and oral birth control with a high estrogen content. Other factors that may stimulate *Candida* to grow include diabetes, pregnancy, iron, folate, vitamin B12 or zinc deficiency and using antihistamines. Cancer chemotherapy, stress and depression can also cause candidiasis (Remedy Health Media, 2019). Recurrent oral thrush infections was very common in people living with HIV in this study. It was also noticed that it sometimes occur without symptoms, the most common are pain, discomfort and burning of the mouth and throat and an altered sense of taste.

Among 40 male tested 22(55%) tested positive, while among 60 female tested 48(80%) tested positive to oral candidiasis. There is statistically significance relationship (chi-square of 37.942 greater than the tabulated value of 3.841 df=1) between the different gender of client and oral candidiasis infection. Certain drugs can alter the natural organisms in the mouth, which can then allow the fungus to grow. The high prevalence among women could include the increase use of antibiotics, steroids and oral birth control with a high estrogen content. Other factors that may stimulate *Candida* to grow include diabetes, pregnancy, iron, folate, vitamin B12 or zinc deficiency and using antihistamines (Remedy Health Media,2019).

Among 27 clients With good Oral hygiene tested 11(40%) tested positive, while among 73 clients Without Oral hygiene tested 59(81%) tested positive to oral candidiasis. There is statistically significance relationship (chi-square of 36.22 greater than the tabulated value of 3.841 df=1) between the oral hygiene of client and oral candidiasis infection. It was noticed that subject without good oral hygiene are more prone to the disease, even though some who had good oral hygiene still comes with oral candidiasis which could best be due to weak immune system. The increase use of antibiotics, steroids and oral birth control with a high estrogen content and other factors that may stimulate *Candida* to grow include diabetes, pregnancy, iron, folate, vitamin B12 or zinc deficiency and using antihistamines (Remedy Health Media, 2019). Refractory candidiasis tends to occur in persons with advanced HIV disease (CD4 lymphocyte counts <50 cells/µL) who have been exposed to antifungal therapy on a continuous, chronic basis (Fichtenbuam et al., 2000). It was observed among the respondent that those with suppressed viral load had oral candidiasis.

Conclusion

There is a prevalence rate of 70% of oral thrush among people living with HIV/AIDS in this study.

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