

PREVALENCE OF ORAL CANDIDIASIS IN HIV INFECTED PATIENTS AT IMO STATE UNIVERSITY TEACHING HOSPITAL (IMSUTH) ORLU (A 10-YEAR RETROSPECTIVE STUDY, 1ST JANUARY 2009 TO 31ST DECEMBER 2021)**Bede Chinedu Azudialu^{1*}, Fredrick Chiedozi Anolue², Benedict Ezeanoro Ezemenahi³, Henry Chibuikem Chineke (Jnr)⁴, Henry Nnaemeka Chineke (Snr)⁵, Victory Chiedozi Chineke⁶ and Prosper Obunikem Adogu⁷**¹Department of Family Medicine Federal University Teaching Hospital, Owerri, Imo State Nigeria.²Department of Obstetrics and Gynaecology, Imo state University Teaching Hospital, Orlu Nigeria.³Department of Family Medicine Shanahan University Onitsha, Nigeria.⁴Department of Medicine Imo State University Teaching Hospital Orlu, Nigeria.⁵Department of Family Medicine Imo State University Teaching Hospital Orlu, Nigeria⁶Faculty of Clinical Medicine, Danylo Halytslyak National Medical University Ukraine.⁷Department of Community Medicine, Nnamdi Azikiwe University Teaching Hospital, Nnewi, Nigeria.***Corresponding Author: Dr. Bede Chinedu Azudialu**

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ABSTRACT

Background: Oral candidiasis is caused by a common commensal of the oral cavity. However, most species of the genus candida that cause oral candidiasis in HIV patients if not properly and promptly treated with effective drugs, could result in resistance to the drugs and make further treatment very difficult. **Aim:** To evaluate the prevalence of oral candidiasis in HIV infected patients at IMSUTH Orlu over 10 years' period retrospectively. **Methodology:** A 10 year retrospective study of HIV infected patients at IMSUTH Orlu. Relevant data were obtained by use of proforma on the patients' case notes. The collated data was analyzed using the Statistical Package for Social Sciences version 20 IBM, USA, and results presented in frequency tables, bar charts and pie charts. **Results:** The prevalence of oral candidiasis in HIV infected patients at IMSUTH Orlu was 90 %. Most of the respondents were within the age range of 20 to 30 yrs (37%), with more males than females. Higher prevalence was seen in respondents with viral loads of 200-400 copies/ml of plasma (90%), and CD4 count of between 150-250 cells/mm³. **Conclusion:** The Prevalence of Oral Candidiasis in HIV infected patients at IMSUTH Orlu, is quite high. Attending physicians at the HIV clinic should be aware of this and respond accordingly.

KEYWORDS: Prevalence, Oral, Candidiasis, HIV IMSUTH Orlu.**INTRODUCTION**

Oral candidiasis is one of the most common fungal opportunistic infections in immuno compromised individuals.^[1] It occurs in up to 95% of human immunodeficiency virus (HIV)-infected individuals during the course of their illness.^[2,3] It's a prognostic indicator for acquired immune deficiency syndrome (AIDS).^[4,5] In sub-Saharan Africa, there is an increased prevalence of severe immuno compromised conditions, which is associated with a higher incidence of opportunistic infections.^[1]

Globally, it is estimated that 70% of the HIV-infected individuals living in sub-Saharan Africa are at risk of infection with Oral Candidiasis.

It is mainly caused by *Candida albicans* and accounts for up to 81% of cases among HIV-infected individuals. It is

documented that between 17% and 75% of healthy individuals can be colonized by *Candida* species.^[6,7] However, non-*albicans* *Candida* species have been implicated in colonization of the oral cavity, eventually causing infection in 20-40% of immuno compromised individuals.^[7,9]

The increased prevalence of oral candidiasis among African HIV-infected individuals ranges from 18% to >60%.^[10, 11, 12, 13,14]

METHODOLOGY

Study Area: It was conducted at Imo State University Teaching Hospital Orlu, Imo State South East Nigeria. Orlu is located at the intersection of latitude 5° 48' North and longitude 7° 0' East. The hospital provides tertiary health care services, as well as being a training center for both undergraduate and post graduate medical and allied

health science programs. It is a major health referral center serving the whole of Imo state and its environs.

Study Design: Our study design is a descriptive cross-sectional study of HIV positive patients in IMSUTH Orlu, who had oral candidiasis within the past ten years. Performer was used as our study instrument.

Study Population: The study population will include all the HIV / AIDS patients who attended HIV clinic at Imo State University Teaching Hospital, Orlu; irrespective of age, gender, and parity; over the past ten years.

Inclusion Criteria: This Study includes all HIV positive patients in IMSUTH, Orlu during the study period.

Exclusion Criteria: This study excluded all Non - HIV Patients in IMSUTH, Orlu.

Sample Size estimation: For population greater than 10, 000, minimum sample size was determined using the formula for sample size descriptive cross-sectional studies.

The formula: $N = z^2PQ / D$

Where N = Minimum sample size when the population is greater than 10, 000. Z= Standard deviation set at 1.96 Using P = 0.962, P = Prevalence in population for the purpose of this work using the prevalence of 96.2% which is equal to 0.962, D= Degree of accuracy set at 0.02, Q= I -P (Proportion or the probability of opposition P)

Using $Q = 1 - 0.962 = 0.038$.

Therefore, the minimum sample size (N) is calculated thus.

$$N = \frac{(1.962 \times 0.962 \times 0.038)}{(0.02)^2} = \frac{(3.842 \times 0.962 \times 0.038)}{0.0004} = 0.1404$$

To take care of non - response; on attrition rate of 10% was used.

Hence, the minimum sample size for the study is $351 + 35 = 386$.

Data Collection: Data was collected using a proforma and information was sourced from the medical records.

Data Analysis: The collected data was analyzed using Statistical Package for Social Sciences (SPSS) IBM USA, version 20, and results presented in frequency tables, bar charts and pie charts.

Ethical Clearance: Formal permit was obtained from the Research and Ethics Committee of Imo State University Teaching Hospital (IMSUTH) Orlu.

Limitation of Study: Proper records of the patients over these years were not properly documented, hence e-records is being advocated for the medical records department.

RESULT

Out of these 512 patients, 458 were discovered to have oral candidiasis after studying the details of the case files.

Table1: Association of Oral Candidiasis with the socio – demographic factors of HIV patients.

Age (in Years)	Frequency	(%) N=458
<10	34	(7.4)
10 – 19	25	(5.4)
20 – 30	177	(38.6)
31 – 40	101	(22.1)
41 – 50	92	(20.1)
>50	29	(6.3)
Sex		
Male	275	(60)
Female	183	(39.9)
Occupation		
House wife	39	(8.5)
Traders	183	(39.9)
Self employed	73	(15.9)
Student	108	(23.6)
Civil servant	45	(9.8)
Other	10	(2.2)
Educational status		
Primary	44	(9.6)
WAEC	148	(32.3)
JSSCE	33	(7.2)
Tertiary	214	(46.7)
None	19	(4.1)
Marital Status		
Single	244	(53.3)
Separated	40	(8.7)

Currently in marriage	127	(27.7)
Widow/widower	43	
Use of Cigarette		
Yes	133	(29)
No	325	(70.9)
Use of smokeless tobacco		
Yes	102	(22.3)
No	356	(77.2)

Table 2: Factors affecting the prevalence and development of oral candidiasis in HIV/AIDS patients.

Characters	Frequency (%) N= 458
Route of entry	
Unprotected sex	337 (70.6)
Blood transfusion	76 (15.9)
MTCT	42 (8.8)
Needle prick	7 (1.5)
Hair dressing	6 (1.3)
Unknow	9 (1.9)
Duration of infection	
<1 year	106 (23.1)
2-5 years	291 (63.5)
6 -10 years	56 (12.2)
>10 years	5 (1.1)
Outcome	
Alive	277 (60.4)
Severely ill	134 (29.3)
Dead	47 (10.2)
Co Morbidities	
Pulmonary tuberculosis	115 (19.4)
Weight loss	347 (58.4)
Diabetes mellitus	45 (7.6)
Hypertension	85 (14.3)
Others	2 (0.3)
Response of patients	
Sought for medical help	438 (77.7)
Self medication	82 (14.5)
Traditional treatment	40 (7.1)
Nothing	4 (0.7)
Viral load before oral candidiasis	
<200	153 (38.3)
200 – 400	238 (59.6)
>400	8 (2)
Viral load at the diagnosis candidiasis	
<200	25 (6.3)
200 – 400	359 (89.9)
>400	15 (3.8)
CD4 count of patient	
<100	20 (4.1)
150 -200	239 (52.2)
200 -250	56 (12.2)
>250	144 (31.4)

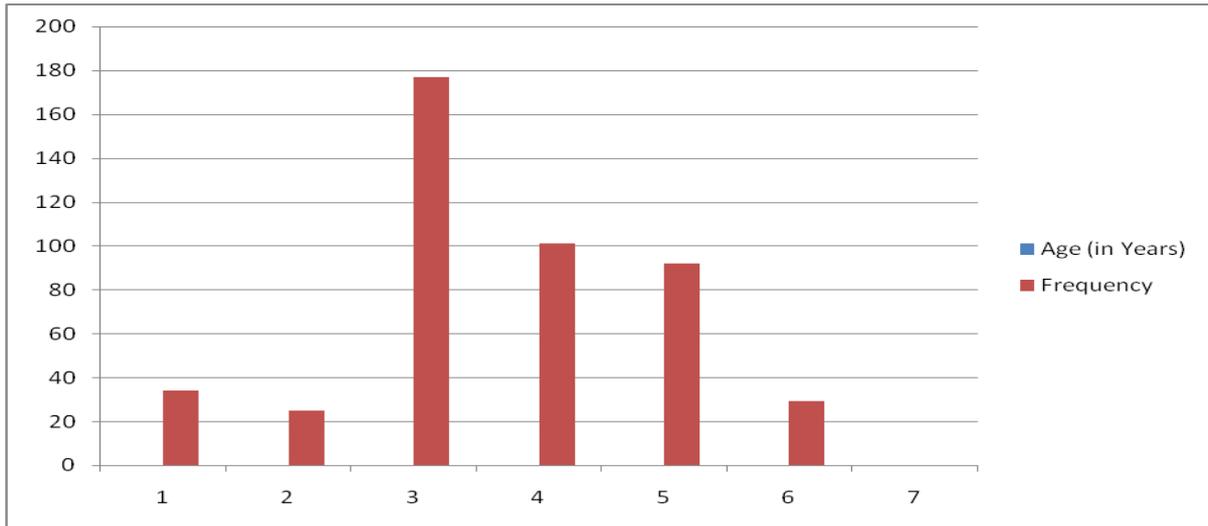


Figure 1: Prevalence of HIV amongst different age groups in Imo State University teaching Hospital Orlu.

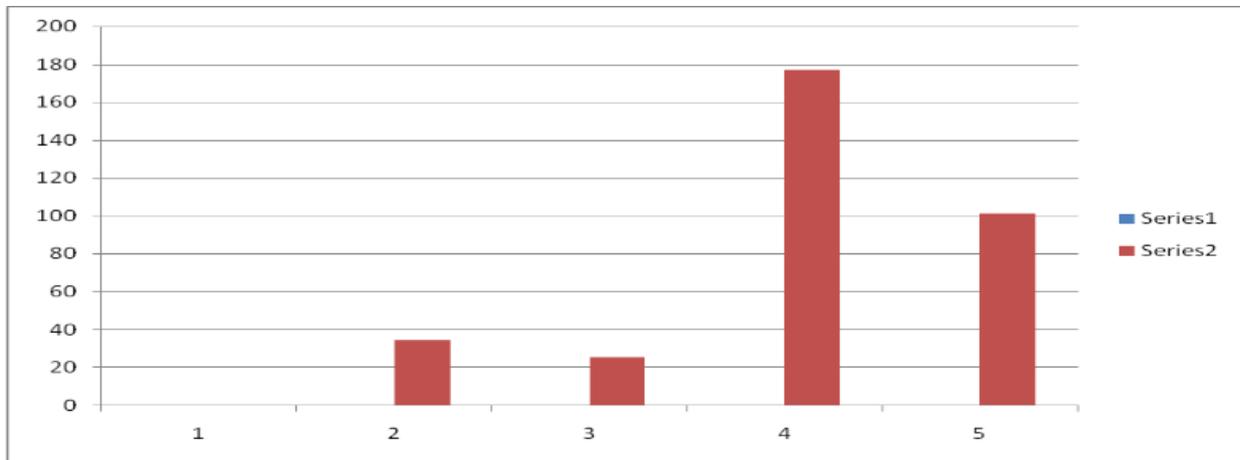


Figure 2: Duration of infection.

The length of infection amongst patients were mostly 2-5 years (63.5%).

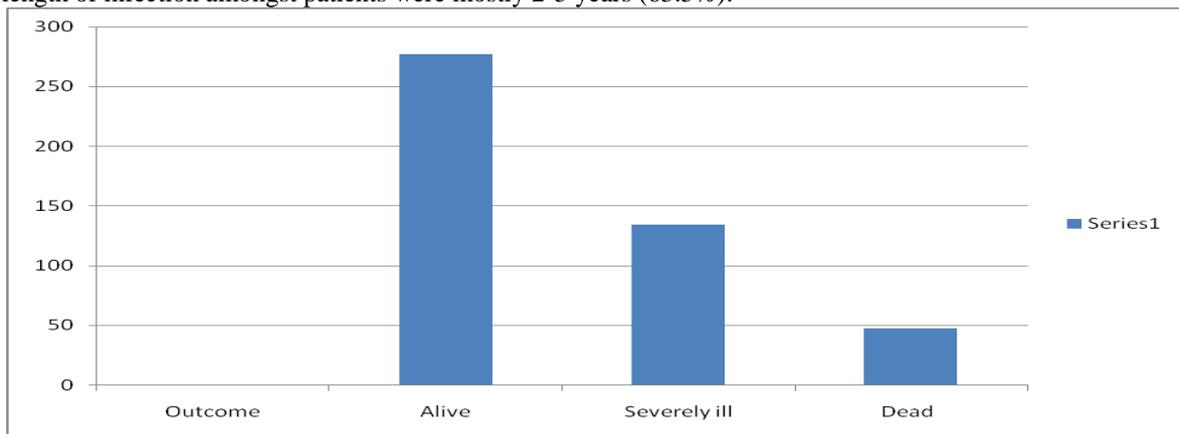


Figure 3: Treatment outcome.

About 60% of patients were alive after the diagnosis and management of the infection.

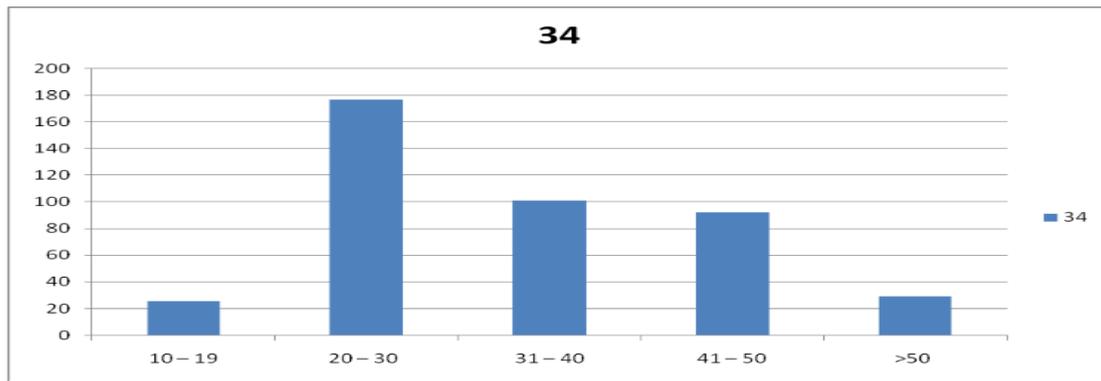


Figure 4: Modes of Transmission.

In figure 4, unprotected sex is the predominant mode of transmission.

DISCUSSION

The overall prevalence of oral candidiasis among HIV patients at Imo State University Teaching hospital Orlu was 89.5% which was slightly higher than 80% found in Abakaliki by Okonkwo *et al.*,^[36] 34.4% in Lagos State Nigeria by Enwuru *et al.*,^[38] and 9.68% reported from seropositive patients in Jos, Northern Nigeria by Lar *et al.*^[37]

Association of Socio – Demographic Factors of HIV/AIDS Patients with Oral Candidiasis

Age: The participants in our study were between <10 years and >50 years of age with the age group of 20-30 years having more cases of oral candidiasis. This is in collaboration with the works of Michael *et al.*^[47] who reported that patients <40 years had the highest risk of developing oral candidiasis. This is because 20-30 years represents the peak of reproductive age with increased sexual activity.

Sex: Males were in the majority (60%). This can be associated with the fact that males are more involved in indiscriminate sexual activity like felatio; are prone to poor oral hygiene and use of cigarette. This is at variance with the works of Michael *et al.*^[47] who reported majority of females (65.5%).

Occupation: The predominant occupation of the patients in our study was trading (39.9%) and students (23.6%). This again underscores the risk of indiscriminate sexual activity in the development of HIV/AIDS and hence Oral Candidiasis.

Educational Status: Majority (46.7%) of our participants had tertiary education, which was not in consonance with the findings of Michael *et al.*^[47] who reported a maximum level of secondary education in they respondents At the tertiary level of education, most individuals have lost parental guide and restriction making them indulge in unprotected sexual activities.

Marital Status: Most of the patients were single (53.3%) as at the time of diagnosis of HIV/AIDS. This predisposes to increased and indiscriminate sexual activity.

Use of Cigarette Smoking: Most (70.1%) of the patients were found not to be using cigarette. This collaborates the works Darwazeh *et al.*^[48]

Regularity of Oral Toiletry: Most of the patients did oral toiletry once a day (51.5%) as against the recommended regularity of oral toiletry of twice a day, thus increasing the risk of oral candidiasis. However, Darwazeh *et al.*^[48] did not find the status of oral hygiene as a risk factor for oral colonization by candida.

Symptoms experienced by respondents: Most (39.3%) of the patients were experiencing white plaque which is one of the cardinal symptoms of oral candidiasis in HIV/AIDS patients.

Factors Affecting the Development and Prevalence of oral Candidiasis in HIV/AIDS Patients CD 4+ T cell count / Viral Load: Our study showed that 52% of patients who had oral candidiasis had CD4+ count of between 150 -200cells/mm³. This was similar to the works of Black *et al.*^[43] in Brazil, who reported a relationship between CD4+ count of 200cells/mm³ and oral candidiasis. Similarly, 89.9% of patients in our study had a viral load of between 200 - 400 copies/mL at diagnosis of oral candidiasis which was in accordance with the findings of Black *et al.*^[43]

Co-Morbid Diseases: From our study, 58.4% of our patients had weight loss, 19.4% had pulmonary tuberculosis, 7.6% had Diabetes Mellitus. This result was in agreement with the findings of Masia *et al.*^[45], who reported a significant relationship between recent or concurrent infection of Tuberculosis and hyperglycaemia in a multivariate analysis.

Cigarette Smoking: From the results of our study 70.9% were not smokers. This negates the relationship between cigarette smoking and oral colonization by candida species in HIV/AIDS patients as reported by Van der Meer *et al.*^[46]

CONCLUSION

The prevalence of Oral candidiasis in HIV/AIDS infected patients attending Imo State University

Teaching Hospital, Orlu, Imo state was 89.5%. Routine checks for opportunistic infections including oropharyngeal candidiasis is important and should be carried out as and when due because it helps to monitor disease progression and it prevents complications such as candidemia. HIV patients not on drugs should also be screened for oropharyngeal candidiasis because its presence in such individuals could be an indication to start antiretroviral therapy.

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