Assessment of oral lesion and its associated factors in HIV/AIDs patients attending Arero Health Center at ART clinic, Arero town, Borena Zone, Oromia Regional State, South Ethiopia

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A research paper to be submitted to department of dentistry, college of public health and medical sciences, Jimma University in partial fulfillment of the requirements for Doctor Dental Medicine (DMD)

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Abstract

Background:- HIV infection constitutes a main health problem in world wide. Oral disease is frequently associated with HIV. No other condition is associated with as wide and significant spectrum of oral disease as in HIV infection. Many HIV associated and disease should be in many cases, result in earlier diagnosis of HIV infection.

Objectives:- To assess the prevalence of oral lesions and its associated factors in HIV infected patient in Arero Health Center at ART Clinic.

Method:-a cross- sectional study was conducted in Arero Health Center ART clinic, in Arero town from march 14 to 24, 2013 G.C, on HIV infected patients. Data was collected by using convenient sampling technique in two weeks duration of data collection period. The data collected from patient by using structured format questionnaire and clinical examination was done.

Result and discussion:- Among the sampled population ,a total of 40(48.8%) population had with HIV associated oral lesion. Out of the total oral lesion pseudomembranous candidiasis was the most common oral lesion in 37.5% followed by NUG in 22.5% and aphthous ulcer in 22.5%. High prevalence of oral lesion was observed in stage IV (100%), mouth riser (88.5%), and ‹200 cell count (94.4%) and also it was found to have statistically significant association (p value 0.000).

Conclusion and Recommendation:-Oral candidiasis was the most common oral lesion. Oral lesion had statistically significant association with CD4 cell count, WHO clinical stage, HAART & oral hygiene practices, But no association with personal habits. 0ral hygiene status had statistically significant association with oral lesion. I recommend that physicians to be educated to increase their knowledge about oral lesion diagnosis. I invite researchers to do further study on factors associated with oral lesion.

Key words:- Cd4 cell count, cross sectional study, HAART, oral lesion

Acknowledgment

First of all I want to thank **Allah, the most beneficent and the most merciful** !

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Acronyms and Abbreviations

AIDS	Acquired immune deficiency syndrome
ART	Antiretroviral Treatment
ARV	Antiretroviral
AZT/ZDV	Zidovudin
CD4	cluster of differentiation
cmv	cytomegalo virus
dd	Didanosine
D4T	Stavudin
EBV	Epstein barr virus
EFV	Efavirenz
HAART	Highly Active Antiretroviral Therapy
HIV	Human immunodeficiency virus
HPV	Human papilloma virus
HSV	Herpes simplex virus
HZV	Herpes Zester Virus
MOH	Ministry of Health
NGO	Non- governmental organization
NNRTIs	Non- Nucleoside reverse transcriptase inhibitors
NRTIs	Nucleoside reverse transcriptase inhibitors
PI	Protease inhibitors
3Tc	Lamivudine
UNAIDS	Joint united Nations Program on HIV/AIDS
WHO	World Health Organization

CHAPTER -1

Introduction

1.1 Background

Human immuno deficiency virus (HIV) is members of the lenti virus subfamily of retrovirus. HIV disease is a chronic infectious disease caused by HIV which is characterized by spectrum starting primarily infection with/ without the acute syndrome followed by a relatively long period of assymptomatic stage, after which in most patient progress to advanced life threating disease called AIDS. AIDS (Acquired immune deficiency syndrome) was first recognized in USA in 1981 according to CDC, describing un explained occurrence of PCP in 5 and kaposis sarcoma in 26 previously healthy homosexual men, after two years in 1983 HIV was isolated from a patient with lymphadenopathy. (1, 2)

HIV/ AIDS infection is a global pandemic with cases reported from every country in worldwide in 1990's with sub- Saharan Africa being the most severly affected. (3) at the end of 2007 33.2 million people were estimated to be living with HIV and 2.1 million people died of AIDS, (4) in compare to 2011, 34.0 million people living with HIV and 1.7 million people died of AIDS (5), the result of continuing new infectious people living longer with HIV and death have declined due in port to ART.

Our country Ethiopia is the second most populars country is sub- Saharan Africa suffering from the burnt of HIV/AIDS. HIV was first detected in Ethiopia in stored serum collected in 1984 and the first two AIDS cases were reported to MOH in 1986. HIV/AIDS surveillance activity beging in 1989. (2, 6) HIV prevalence in Ethiopia is increasing at an alarming rate and is impacting all sectors of society. There are many factors that promote the spread of the disease including the presence of sexually transmitted infections, gender in equality, multiple sexual partners, prostitution, alcohol, unsafe blood transfusion and transmission from infected mother to her fetus during pregnancy and breast feeding. (6, 7)

In 2011, adult HIV/AIDS prevelance in Ethiopia was estimated at 1.5% approximately 1.2 million Ethiopians were living with HIV/AIDS in 2010. (6)

Since the first reports of AIDS epidemic, oral lesions have been recognized as important clinical markers. Although none of the oral lesions found in patient with HIV are absolutely unique to HIV disease, they may be more prevalent, more severe, or manifest slightly differently then what is reported among other cohorts. Oral health care providers heed to screen for, diagnose and treat these lesions, aqueous recognize the significance of the lesion as markers for immune suppression and HIV disease progression. Oral manifestation observed in HIV +ve patient are associated with opportunistic pathogens with immune suppression with side effects of medication. The prevalence and incidence of lesions vary depending up on environmental and geographic differences, habits and behavioral characteristics or general treatment protocols used for HIV disease. **(3)**

The dramatic declines in prevalence of oral lesions in mid1990's in developed countries was related to management of HIV disease with HAART and the consequent decreases in HIV viremia and improvement in immune status of patient. Additional HAART induced changes in oral lesions epidemiology relate to the development of immune reconstruction inflammatory syndrome (IRIS).**(8)**.the most common oral and perioral manifestation of HIV infection are persistent generalized lymphadenopathy, candidiasis, LGE, NUG, NUP, necrotizing stomatitis, VZV, HSV, EBV, kaposis sarcoma. Less common oral and perioral manifestation in HIV patients are aphtous ulcer, HPV, CMV, histoplasmosis, molluscumcontagiousum, thrombocytopenia, non-Hodgkin lymphoma, oral SCC, and HIV associated salivary gland disease. Several medication taken by AIDS patients may cause hyper pigmentation, xerostomia and peripheral neuropathy (9)

Statement of the problem

The world health organization (WHO) global oral health programme has worked hard over the past five years to increase the awareness of oral health worldwide as an important component of general health and quality of life. Meanwhile, oral disease is still a major public health problem in high income countries and the burden of oral disease is growing in many low and middle income countries. In WHO report 2003, the WHO global oral health programme has strategy of the disease prevention and the promotion of oral health needs to be integrated with chronic disease prevention **(10)** and to encourage research on the impact of oral health on HIV/AIDS, public health initiatives and surveillance.**(7)**

Oral manifestation found in HIV infection are fundamental components of disease progression and frequently the first clinical sign of the HIV infection. They affect the quality of life of the patient and useful markers of diseases progression and immune suppression **(11)**

In cases where a person HIV status is unknown, the lesions provide strong indicators of the presence of HIV infections. For this reason the presence and development of oral lesions are used as entry criteria and end points for prophylaxis and therapy for HIV prevention and intervention programmes. **(10)**

Oral health is an important component of overall health status in HIV infection. Even common dental disease such as caries and periodontal disease have greater impact on patient with HIV infections. Odontogemic pain and non- replacement of missing teeth may limit intake of food and required for adequate nutrition. Many of medication used to treat HIV infections and associated opportunistic infections contribute to increase numbers of caries as a result of decreases salivation and cariogenic fermentable carbohydrate substrate in the presence of several topical oral medications. Painful HIV associated oral disease such as NUP, stomatitis, major aphthous ulcerations, candidiasis and kaposis sarcoma impair ingestion of food and negatively impact on nutritional health. **(12)**

Oral lesion are often the first physical manifestation of the disease because it need to be screen for diagnosis and treatment of these lesions.**(3)** the presence or absence of certain lesion can be often actors the predictors to overall progression of the disease in a diagnosed patient, but its important to note that the presence of oral lesion alone should not be used to diagnose HIV but should promote the clinician to encourage further testing. **(13)**

With the advent of highly active antiretroviral therapy (HAART). The prevalence of oral candidiasis, oral hairly leukoplakia and HIV associated periodontal disease have decreased in adults, but prevelance of kaposis sarcomas, one of the oral manifestation strongly associated with HIV has not changed. **(10, 14)**

Treatment of the oral disease seen in associated with HIV disease is very low, the same as in the Ethiopia. In a study of 1424 adults WHO participated in AIDS cost and utilized study revealed that only 9.1% reported treatment of oral manifestation. **(15, 16)**

1.3 Significance of the study

- This study was assessed data about prevalence of oral lesion and its associated risk factor in HIV positive patient in order to reduce the possible risk factors with a collaboration of dentist with other department.

- It will be utilized to make recommendation to the responsible body for the advancement of better care for HIV positive patient with oral lesion.

- I perceive the research will fill the gap and the result of this study will be used as a base line data and information for further study or intervention.

CHAPTER 2

2.1 Literature Review

Oral manifestation of HIV infection are a fundamental component of disease progression and occur in approximately 30 to 80% of the affected population. The factors which predispose expression of oral lesions include CD4 counts less than 200 cell mm^3, viral load greater than 3000 copies /ml , xerostomia, poor oral hygiene and smoking. Over all prevalence of the oral lesions of HIV disease has changed since the advent of HAART. One study noted a reduction of oral lesions from 47.6% pre HAART to 37.5% during the HAART Era. The details of this study included a significant reduction in oral hairy leukoplakia & Necrotizing ulcerative periodontitis, this population did however, see no increase in salivary gland disease. **(12,16)**

Oral manifestation are often the first symptoms in HIV infected patient and have been associated with immune suppression. The oral manifestation of oral candidiasis and oral hairy leukoplakia in particular are clinical predicators of AIDs, progression and are usually associated with CD 4 $^+$ T- lymphocyte cell count **<**200 cells /ml of blood and high viral load levels in patient. **(14)**

In cases of developing countries, oral lesions in HIV infections is a major global health problem affecting developing and developed countries alike. Oral lesions that are associated with this disease are important since they affect the quality of life of the patient and are useful markers of disease progression and immune suppression. Oral candidiasis is the most common opportunitistic infection seen in all continents. Kaposis sarcoma has been reported only from Africa and Latin America, while Histoplasmosis

and penicilliosis were reported in patient with advanced disease from Thailand. HIV associated salivary gland disease has a high prevalence in Africa and Latin America. **(17)**

The prevalence of oral manifestation in HIV infected adults tends to vary from country. Previous studies, at least in Africa showed in wide range of prevalence rates from 1.5% upto 94% however, in HIV infected children, the prevalence of oral manifestation in developed countries has been reported to be as high as 72%, comparable studies in children from developing countries including Africa, indicated variations example 61% in Brazil, 55% in romania, 49% in Thailand and 63% in South Africa. **(14)**

The early clinical sign of HIV disease is persistent generalized lymphadenopathy after sero conversion, HIV disease often remains silent except it. It my persistent for longer than 03 months and involve two/ more extra ingual site. Nodal enlargement fluctuates usually is large than 1cm. oral candidiasis is the most common intra-oral manifestation of HIV infection and often is the presenting sign that lead to the initial diagnosis. **(9)**

Oral lesions are differentiated as fungal, viral and bacterial infections, neoplasm such as kaposis sarcoma and non- specific presentations such as aphthous ulcerations and salivary gland disease. **(3, 18)**

According to the study done by international journal in 2010; in the 50 cases, all case had periodontal disease, over 72% had candidiasis, 42% had lymphadenopathy, 32% had xerostomia and 36% had angular cheilitis, oral hairy leukopalakia (2%), persistent oral ulcer (22%), Herpes Zoster (8%) and facial palsy (8%) **(19)**

The study carried out in Tazania, a total of 187 persons with HIV infections were recruited from NGO serving people living with HIV /AIDs. WHO clinical stage IV (69.7%) was that had with high oral lesion followed by stage III (59.8%), stage II (18.6%) and least in stage I (12.9%).   There was at least one lesion present in 45% of the participants, candidiasis (28.9%) and non- tender lymphadenopathy (11.8%) were the most common lesion. **(20)**

The result of the study in Nigeria on 2006, all HIV +ve patient (n=261) were examined and oral lesions attributable to HIV/AIDs infection were found in 109 (41.8%) patient. Oral candidiasis was the most common presentation (35.7%) with pseudomembraneouscandidiasis(23%) and angular cheilitis (10%) being the most

common variants. All the cases of erythematous candidiasis (n=7) were exclusively seen in the female population. Oral hairy leukoplakia and xerostomia were present in 4.6 % and 3.8% of cases respectively, were kaposis sarcoma was in 5 (1.9%) patients . **(21)**

Another study done among similar subjects in Nigeria show that the common lesions among 70 HIV +ve and 70 HIV –ve patient in Abakaliki using dental instruments. It was show that oral candidiasis was the most common oral lesions and about 22.5% followed by acute Necrotizing ulcerative gingivitis and herpes zoster about 17.1%, tuberculous ulcer (12.9%), kaposis sarcoma (8.6%) and oral hairy leukoplakia and NUP (7.1%) that

reduce with advent of HAART ERA.**(22)**

The study carried out in India an oral manifestation of HIV/AIDs in infected patient on 2006, the most common oral lesion were erythematous candidiasis (44.7%) and xerostomic (29.7%). A significant association was found between oral candidiasis and advanced immune suppression. Oral hairy leukoplakia was predominant in individual less than 35 years and LGE was more predominant in females. **(23)**

As study done in east Africa country, Kenya in Mombasa (n=61), while all the cases had periodontal disease, over 80% had candidiasis, lymphadenopathy and angular cheilistis were each diagnosed in 27.9% of the cases. Kaposis sarcoma was seen in 13% of the patient and persistent oral ulcerations (11.5%) **(24)**

300 patient were observes, of total 39% presented oral lesions with candidiasis as the most frequent (59.1%) followed by oral hairy leukoplakia (19.5%) that highly associated with CD4 count **(25)**. There is a significant association between the presence of oral lesions and CD4 cell count < low cell/mm in which a low value for CD4 characteristics the presence of immune suppression is a predisposing factor for the development of opportunistic infection **(26)**.

Intra oral examination of 103 patients, where CD4/CD8 ratio was available were conducted. HIV viral loads were available for 30 patients only. The prevalence of oral

lesion was 80.6% (83 patients). The most common oral lesion was Erythematous candidiasis (38.8%) had positive predictive value of 85% for CD4/CD8 ratio <0.30 but patient having any oral manifestation had a mean CD4/CD8 ratio of 0.24.**(27)**

A total of 142 patients were seen, prevalence of HIV related oral lesions was 43.7% oral candidiasis was most prevalent 22.4%. 89.4% were placed on Tenofovir/ Emtricitabine + Nevirapine, 9.9% were placed on Tenofovir/ Emtricitabine + Etavirent. There was strong decline in the clinical feature of oral candidiasis from a month of commencing HAART. Oral hairy leukoplakia was slow in responding to HAART**(28)**.One study noted a reduced of oral lesion like OHL and NUP from 47.6 to 35% during the HAART Era, but increase in salivary gland disease **(30)**.Xerostomia was frequent and showed to have a negative impact on the quality of life of NUP people live with HIV/AIDs.**(29)**

Periodontal lesions and gingivitis were more prevalent in Africa and India due to in adequate nutrition an oral hygiene practice, decreased in weight while on ART is also stated to be associated with decrease CD4 cell count as malnutrition affect CD4 cell count, because improvement of nutritional status is important for immune regeneration. (26,31)

The patients with habits like smoking and alcohol drinking, the prevalence of oral lesions is likely high (32). The studies suggest that smokes are 11 times more likely than to harbor the bacteria that cause a periodontal diseases and 4 times more likely to have advanced periodontal disease. (33)

According to the study done in TikurAnbessa specialized Hospital on 2008, in Ethiopia, oral lesion are often characteristics in HIV patient and in the majority of cases can be diagnosed by their clinical feature alone. To date there is no study addressing the prevalence of oral and perioral lesion in patient in Ethiopia but according to a cross sectional study on 384 consecutive HIV patients before initiation of ARV treatment was conducted. Over all prevalence of oral lesions was 64.35 and perioral lesion was 15.4%, nearly half (44%) had dental caries. The most common HIV associated oral lesions were pseudo membronous candidiasis (20.1%), LGE (11.7%) and erythematous candidiasis

(9.1%) and perioral lesion were angular cheilistis (8%) and molluscumcontagiosum (4%). The most common oral symptoms reported were dry mouth (34.4%). Difficulty eating (27.9%) and oral pain (27.3). age greater than 40 yrs (31%) was significantly associated with oral lesion.(34)

The study done among JUSH ART clinic on HIV positive patient (n=290), oral lesion were observed in 212 (73.1%). Oral candidiasis was the commonest (73.1%) followed by LGE (24.5%). High prevalence were observed in CD4 <200 with (44%) (35)

In general in Africa continent most of HIV infected patient with oral lesion are commonly diagnosed with oral candidiasis, this is what also common in our country Ethiopia.

CHAPTER 3

OBJECTIVE

3.1 General Objective

To assess the prevalence of oral lesions and its associated factors in HIV infected persons in Arero health center at ART clinic.

3.2 Specific objectives

- To assess the prevalence of oral lesions in HIV +ve patient receiving HAART.

- To assess the prevalence of oral lesion in patient with ART and without ART.

- To assess the association of oral lesions and CD4 cell count in HIV +ve patient.

- To assess the association of oral lesion and oral hygiene practice in HIV positive person.

- To assess the association of oral lesion and habits in HIV +ve patient.

CHAPTER -4

METHODOLOGY

4.1 The study area and period

The study was conducted in Arero health center ART clinic, Arero town, Borena Zone from March 14 to 24, 2013 G.C. Arero is one of the woredas locate in the Oromia regional state, 695 km away from Addis Ababa on the southern part of Ethiopia. Arero is bordered on the south east by dire, west by Yabello, North by Bule hora, north east by Guji Zone, east by Somalia region, south by Moyale and with the town of Meta Gefersa.

The altitude of this woreda ranges from 750 to 1700 meter. Its total population is around 48.128 of whom 24,281 were male and 23,845 were females 3,004(6.24%) of its populations were urban dwellers.

The majority of the population is Oromo in ethnicity (95%) and rest are Konso, Burji, Somale, Amhara, Gurage. About 67.73% of population were wakefata, 22.67% were muslim, 6.82% were protestant and 2.62% were orthodox. The Arero town has one health center, two private clinic and three pharmaceutical drug venders.

4.2 Study Design

A cross sectional study was conducted on prevalence of oral lesion in HIV/AIDS patients attending Arero health center at ART clinic.

4.3 Population

4.3a Source population

All HIV infected patients attending Arero Health center at ART clinic, in Arero town.

4.3b Study population

All HIV infected patients attending Arero health center at ART clinic during data collection period that were voluntary and not acute sick looking.

4.4 Sample size and sampling technique

Convenience type of sampling method was used that all HIV infected patient with new incidence and follow up in health center at ART clinic during the during data collection period was included in the study total of 82 patients.

4.5 Study variables

4.5a Independent Variables

- Socio demographic status (Age, sex, marital status, occupational status, educational status, ethnicity, religion).

- CD4, cell count, oral hygiene practice, WHO clinical stage.

- Patients habits (smoking, drinking alcohol, chat chewing).

4.5b Dependent variables

- Oral lesion – Fungal infection

- Viral infection

    - Bacterial infection

    - neoplasm

    - non- specific- xerostomia, salivary gland diseases, aphtous ulcer, pain syndrome

- oral hygiene status- excellent, good, fair & poor

4.6 materials (Data collection instruments)

The materials that was used in this study include, questionnaire stationary materials like paper, pens, pencils, ruler, eraser, sharper, etc and materials used for intra oral examination like gauze, spatula , glove and flash light.

4.7 Pre- testing

Before actual data collection, pretesting was done on 5 data formats here in JUSH ART clinic, results of pre-testing is there is slight different in ethnicity of the patients from my questioners but I did not change my questioners because of different in place with different in population.

4.8 Data collection process

The examination was done when patient was seat on the chair under flash light and natural light, the extra oral examination then intra oral examination was done by a dental intern- according to their clinical presentation without knowing the HIV clinical stage and CD4 cell count level of the patient or whether the patient was on HAART or not, then further medical information was obtained by reviewing the patient medical record and filling self administered questionnaire because to reduce the bias activity during examining the patient to get correct diagnosis by myself.

4.9 Data quality control

The principal investigator reviese data each day during the data collection to ensure the quality of data by checking fill formats for their completeness and consistency, the data collection formats was pre- tested, the research assistant were well informed and to consult if any cases is come to clinic.

4.10 Data processing and Analysis

The data was summarized for cleanness, check for completeness and analysed by computer statistical program, SPSS using window 16 version and the result was presented by using, tables, , figures and statements.

4.11 Ethical Consideration

Approval and permission for the study was requested the JU college of public health and medical science. School of dentistry, (the responsible body for the conduct of our research activities). Eligible subjects was informed about the objectives, purposes and benefits of the study and the consent of the patient was asked and informed verbally before any procedure was under taken. Confidentiality was assured before conducting data collection and no names appeared on the research document. Inform the patient about negative side of culture of the society in relation with social stigma in HIV infected patient and inform the HIV is the what type of disease and how it can attack patient in short period and give awareness to the patient.

4.12 limitation of the study

_because of drawback of traditional behavior and social stigma they didn't need tell correct history about himself; and not come on a day of regular follow up and use medication regularly.

_there was lack of laboratory examination material; because there is may be incorrect diagnoses for some lesion.

4.13 Plan for Dissemination

The result of the study will be disseminated to the responsible bodies like; CBE office, to the health center administration and HIV regional division of MOH .

4.14 Operational Definitions

Oral lesions- lesions which are presents in oral cavity due to fungal, bacteria, viral, Neoplastic condition and others.

Fungal infection:- a localized fungal infection is the most common opportunistic oral manifestation found in patients with HIV disease caused pain, burning sensation and difficulty in chewing in patient.

four different clinical presentation of oral candidiasis

- o erythematous (atrophic) candidiasis
- o pseudomembranous candidiasis (thrush)
- o Hyperplastic candidiasis
- o Angular cheilitis (perleche)

Viral infection:- HIV, EBV, HPV, HZV, others

Bacterial infection:- LGE, NUG, NUP

Neoplasms:- - kaposis sarcoma
- Non-hodgkin lymphoma

Non- specific etiology:- - Necrotizing stomatitis
- aphthous ulcers
- xerostomia
- salivary gland diseases

ARV- drugs designed to suppress the replication of HIV and prevent the progression of AIDS.

HAART:- a combination of at least three ARV drugs usually composed of two different categories in three drug regimes.

Categories – NRTI

       - NNRTI

       - PI

Regimen   d4T   NVP

                        3TC

              AZT   EFV

WHO clinical staging of HIV/AIDS for adults and adolescents with confirmed HIV infection.

Clinical stage 1 condition

- Asymptomatic
- Persistent generalized lymphadenopathy

Clinical stage 2 condition

- un explained weight loss (<10@ of body weight)

- recurrent URIT (sinusitis, tonsilitis, pharyngitis)

- HZ, PPE, angular cheilitis, recurrent oral ulceration

- Fungal nail infections, seborrhoeic dermatitis

Clinical stage 3

- Un explained weight loss (>10 % body weight)

- Un explained persistent fever (>37.6%) > one month

- Un explained chronic diarrhea for longer than on month

- Persistent candidiasis

- Pulm-TB, severe bacterial infection (pneumonia, meningits....)

- ANUG,NUP,OHL

- Un explained anemia (‹ 8 9/dl), neutropenia (0.5*10 ^{9}/L)

  Chronic thrombocytopenic (‹ 5010 ^{9}/L)

Clinical stage 4 (AIDs indicating condition)

- HIV wasting syndrome

- PCP, esophogeal candidiasis

- Recurrent severe bacterial pneumonia

- Chronic HIV infection (more than one month)

- Extra palm-TB, kaposis sarcoma

- HIV encephalopathy

- CNS Toxoplasmosis

- Symptomatic HIV- associate nephropathy

- Lymphoma

Chapter-5

Table1:- frequency distribution of HIV/AIDS patient by their socio demographic status, Among HIV infected patient attending. Arero health center at ART clinic, March 2013 G.C, Arero.

Variants	Characteristics	Number	%
Age	< 20	4	4.9%
	20-29	29	35.3%
	30-39	23	28.1%
	40-49	13	15.9%
	50-59	7	8.5
	≥60	6	7.3%
Sex	Male	21	25.6%
	Female	61	74.4%
religion	Protestant	35	42.7%
	Wakefata	21	25.6%
	Muslim	12	14.65%
	Orthodox	12	14.65%
	Others (live catholic)	2	2.4%
Ethnicity	Oromo	52	63.4%
	Konso	13	15.85%
	Burji	7	8.53%
	Amhara	6	7.32%
	Somali	4	4.9%
Marital status	Married	53	64.6%
	Widowed	12	14.6%
	Single	8	9.8%
	Divorced	5	6.1%
	Engaged	4	4.9%
Occupation	House wife	25	30.5%
	Merchant	19	23.2%
	Others (like students,etc)	19	23.2%
	Former	13	15.8%
	NGO employs	4	4.9%
	Gov.t worker	2	2.4%

Level	Illiterate	37	45.1%
Of education	Read and write know only elementary	15	18.3%
		14	17.1%
	High school	9	11%
	Diploma	5	6.1%
	degree	2	2.4%
Total		82	100%

The study includes a total of 82 samples of HIV infected patients, most of them were in the age group of 20-29 (35.3%) followed by age group 30-39 (28.1%). Out of the total population (74.4%) were females. According to marital status most of them were married (64.6%), followed by widow (14.6%).

According to occupation (30.5%) of the subjects were house wife followed by merchant (23.2%). Religious conviction of the sampled population showed that most of them were protestant (42.7%) followed by wakefata (25.6%) and least were others like catholic religion 2(2.4%).

According to level of education (45.1%) were illiterate, and least were in degree program 2(2.4%).

Most of the participants were from oromo ethnicity 52 (63.4%). (table 1)

Fig.1:- Number of HIV + ve patient with lesion and without lesion attending Arero health center at ART clinic, March 2013 G.C Arero.

Table 2:- Types of oral lesion Among HIV +VE patient attending Arero health center at clinic,

March 2013 G.C Arero

Oral lesion	No/of patient with lesion	% out of patient with lesion
PC	15	37.5%
NUG	9	22.5%
AU	9	22.5%
NUP	7	17.5%
LGE	5	12.5%
EC	4	10%
OHL	3	7.5%
AC	3	7.5%
HC	1	2.5%
KS	1	2.5%
HZV	1	2.5%
HSV	1	2.5%

PC= pseudo membranous candidiasis   OHL= oral hairy leukoplakia

EC= Erythemathous candidiasis   AV= Aphthous ulcer

HC= hyperplasic candidiasis   KS= kaposis sarcoma

AC= Angular cheilitis   HZU= Herpes zoster virus

NUP= Necrotizing ulcerative gingivitis   HSV= herpes simplex virus

LGE= linear gingival erythema

Among the sampled population, total of 40 (49%) patient had with HIV associated oral lesion over all, oral candidiasis was the commonest oral lesion in 57.5%, followed by NUG, in 22.5% and Aphthous ulcer were in 22.5%, NUP in 17.5 in 17.5% LGE in 12.5%, OHL in 7.5% and also kaposis sarcoma was present in one patient. The most common type of oral candidiasis was pseudomembranous candidiasis in 37.5% followed by erythemathous candidiasis in 10 % and Angular cheilitis in 7.5% out of total patient with lesion. Salivary gland disease including xerostomia were found to be in 25(30.5%) patients out of total samples. (fig; 1& table 2)

Fig2:- who clinical stage for HIV the patient attending Arero health center at ART clinical, march 2013G.C Arero.

Most of the sample patients were categorized under WHO clinical stage III (34%) patient followed by stage II (33%) and the least were in stage IV with (4%) of patient. (fig; 2)

Table 3 Association of WHO clinical stage and oral lesion in HIV patient attending Arero health center at ART clinic, March 2013 G.C, Arero.

WHO clinical stage	Patient with lesion	Patient without lesion	Statistical

	Number	%	Number	%	significancy
Stage I	2	7.4%	25	92.6%	P=0.000
Stage II	9	37.5%	15	62.5%	X^2=44.6
Stage III	26	92.9%	2	7.1%	Df=3
Stage IV	3	100%	0	0%	

Oral lesion was highly observed in WHO clinical stage IV patient in 100% followed by stage III in 92.9%, stage II in 37.5% and low in stage I in 7.4%, number of patient in each stage, with high statistical significant association p-value=0.000 (table 3)

Fig 3:- types of oral hygiene practice among HIV +ve patient attending Arero health center.

Majority of the sample population uses mefakia (49%) to clean their tooth (32%) uses month rinse only and (19%) used tooth brush to keep their oral hygiene.(fig; 3)

Table 4:- Association of oral hygiene practice and oral hygiene status in HIV +ve patient in Arero health center at ART clinic, March 2013 G.C, Arero.

Oral hygiene practice	Oral hygiene status						Statistical significancy
	Good		Fair		Poor		
	No	%	No	%	No	%	
Tooth brush	8	9.6%	8	9.6%	0	0%	P=0.000
Mefakia(riga)	1	1.4%	29	35.3%	10	12.2%	X^2=68.0
							Df=4
Month rinse	0	0%	1	1.4%	25	30.5%	
Total	9	11%	38	46.3%	35	42.7%	

Most of patient were under oral hygiene status of fair (46.3%) followed by poor (42.7 %) and least (11%) in good and there is no any patient with excellent oral hygiene status.

most of the patient uses month rinse technique were under poor oral hygiene status (30.5%) and uses mefakia were under fair (35.3%) and poor (12.2%). Patient uses tooth brush were under good (9.6%) and fair (9.6%) oral hygiene status. with high statistical significant association p-value=0.000 (table; 4).

Table 5:- Association of oral hygiene practice and oral lesion in HIV +ve patient in Arero health center at ART clinic, March 2013 G.C, Arero

Oral hygiene practice	Oral lesion				Statistical significancy
	Yes		No		
	No	%	No	%	P=0.000
Tooth brush	4	25	12	75	X^2=24.3
Mefakia(riga)	13	32	27	67.5	Df=2
Mouth rinse	23	88.5	3	11.5	

The prevalence of oral lesion was found to be high in patients using only mouth rinse around 88.5% followed by mefakia in 32.5% and least oral lesion observed in tooth brush 25%, with high statistical significant association p-value=0.000 (table; 5)

Fig 4:- CD4 cell count among HIV +ve attending Arero health center at ART clinic, March 2013 G.C, Arero.

Most of patient were under 200-499 cell/NL count category (48%) followed by (30%) in ≥ 500 cell/NL count and (22%) in < 200 cell/ NL category (fig; 4)

Fig 5:- anti retroviral therapy among HIV +ve patient attending Arero health center at ART clinic, March 2013 G.C Arero.

Out of the total sample majority of the patient were without HAART (52%) and the rest (48%) were with HAART. (fig; 5)

Table 6:- Frequency of distribution of oral lesion in patient taking HAART and without HAART in Arero health center at ART clinic, March 2013G.C Arero.

chrxn	Oral lesion		Statistical
	Yes	No	

					significancy
	no	%	no	%	
Without HAART	9	20.9	34	79.1	P=0.000
With HAART	31	79.5	8	20.5	X^2=28.1
					Df=1

Oral lesion was found to be commonest in persons with HAART in 79.5% while persons without HAART 20.9% were observed, with high statistical significant association p-value=0.000 (table; 6)

Table7:- Association of CD4 cell count and oral lesion in HIV + ve patient attending Arero health center at ART clinic, March 2013 G.C Arero.

CD4 cell count	Oral lesion		Statistical s

	yes		No		Significancy
	no	%	no	%	
>500 cell/NL	1	4	24	96	P=0.000
200-499 cell/NL	22	56.1	17	43.6	X^2=36.0
< 200 cell/NL	17	94.4	1	5.6	Df=2

Oral lesion were highly observed in < 200 cell/NL in 94.4% followed by 200-499 cell /NL in 56.4% and only 4% and only 4% of lesion is in patient with $\geq$ 500 cell/NL category, in the out of patient in each category, with high statistical significant association p-value=0.000 (table; 7)

Table 8 Association of habits and oral lesion in HIV +ve patient attending Arero health center
at ART clinic, March 2013 G.C, Arero

Habits	Oral lesion		Statistics
	Yes	No	

					statistical significancy
	no	%	no	%	
smoking	6	85.7	1	14.3	P=0.061
Alcohol drinking	17	60.7	11	39.3	X^2=7.36
Chat chewing	9	64.3	5	35.7	Df=3
None	19	40.4	28	59.6	

Oral lesion were highly observed in patient with smoking in 85.7% followed by chat chewer in 64.3% and patient with alcohol drinking in 60.7% and least oral lesion was seen in patient with not use any substance, with no statistical significant association p-value=0.061 (table; 8).

Chapter -6

Discussion

The overall prevalence of oral lesion in this study was found to be in 48.8% the other studies show that their occurrence was approximately 35.7% to 73.1 %(**21,35***)*

Among the oral lesions oral candidiasis had the highest prevalence about 57.5% followed by NUG in 22.5% and aphthous ulcer were in 22.5%, NUP in 17.5%, LGE in 12.5% OHL in 7.5% and also kaposis sarcoma was present in 2.5%, in other studies oral candidiasis was most common oral lesion in 22.5% followed by NUG in 17.1% (**22),** Au 11.5%-22 in (**24,19)** respectively, NUP 7.1% (**22**), LGE in 11.7%-24.5% (**34,35**) respectively, OHL in 2%-19.5% (**19,25**) and report of kaposis sarcoma in Kenya 13% (**24**) and in Nigeria 1.9% and 8.6% in a report of (**21,22**) respectively. The most common type of oral candidiasis was pseudomembranous candidiasis in 37.5% followed by erythematous candidiasis 10% and Angular cheilits in 7.5%, other studies show similar result, the occurrence of pseudomembranous candidiasis was found to be 23% in Nigeria (**21**) and 20.1% in Ethiopia (**34**) erythematous candidiasis 9.1% and angular cheilitis 8% in Ethiopia (**34**)

Salivary gland diseases including xerostomia were found to be in around 30.5% on our study when compared to other literatures especially reports from India was 29.7% (**23**) and from Ethiopia was 34.4% (**34**).

According to WHO clinical stage category, many of the participants fall under stage III 34%, followed by stage II 33% and stage I 29%, the least was in stage IV with 4% patient. Among these highest prevalence of oral lesion was observed in stage IV patient 100% followed

by stage III in 92.9%, stage II in 37.5% and least in stage I in 7.4% with statistical significant association In other study oral lesion was most common in stage IV 69.7% followed by stage III 59.8%, in stage II 18.6% and least in stage I 12.9% (20).

Among 82 participants, 49% use mefakia to clean their tooth, followed by 32% persons who use mouth rinse only. Among these groups oral lesion was found to be high in persons using only month rinse 88.5% followed by mefakia 32.5% and least oral lesion observed in patient used tooth brush, in other study period equate nutrition and hygiene proactive (**26, 31**), with statistical significant association.

ART increase CD4 T-cell count, decrease HIV RNA viral load and result in decreased frequency and severity of opportunistic infection (**29**). In this study oral lesion was found to be commonest in persons with HAART around 79.5% and low in persons without HAART 20.9% only, the reason for this is the patient start HAART is not use it regularly on his/her day of follow up and not use medication regularly and the most of patient on ART had with low CD4 level and patient with and the most of patient on ART had with low CD4 level and patient without HAART had without HAART had with high CD4 level. But one study noted a reduction of oral lesion from 47.6% are HAART to 37.5% during HAART (**12, 16),** with statistical significant association.

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In this study oral lesion were highly observed in < 200 call /NL around 94.4% followed by 200-499 cell/ NL category, with statistical significant association. Other study shows that there is a significant association between the presence of oral lesion and low CD4 cell count **(26)**.

According to this study oral lesion was highly observed in patient with smoking in 85.7 % followed by chat chewer in 64.3% and patient with alcohol drinking in 60.7% and least oral lesion was seen in patient with not use any substance, with no statistical significant association. .Other study suggest that patient with habits like smoking and alcohol drinking has high prevalence of oral lesion (**32,12,16**), the smokers are 11x more likely to harbor the bacteria that cause periodontal disease and 4x more likely to have advanced periodontal disease (**33**).

CHAPTER 7

CONCLUSION AND RECOMMENDATION

conclusion

➤ prevalence of oral lesion was high, oral candidiasis was the most common oral lesion.

➤ Statistically significant association was found between oral lesion, and CD4 cell count, WHO clinical stage, HAART and oral hygiene practice.

➤ No statistically significant association was found between Oral lesion and personal habit.

➤ Oral hygiene status was found to have statistically significant association with oral hygiene practices

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Recommendation

Based on my finding I will make recommendation to the following bodies :

_ Woreda health bureau should strength regular oral health education for the patients on their day of follow up.

_ Patients should regularly follow up of HAART and control their CD4 level.

 _ MOH should collaborate with different NGO to increase awareness of disease prevention and treatment and how to reduce opportunistic infection like oral lesion affects the quality of life and nutrition intake.

_There is a few studies done on this topic in our country, I invite researchers to do further study on the factors associated with oral lesions

Annex: I

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Annex: II

Jimma University

Jimma university community based education students research program

Questionnaire on prevalence of oral lesion on its associated factors in HIV/ AIDs patients attending ART clinic in Arero health center.

Instruction:- Mark "X" on the space required and without write your name on it.

Part I- Socio-demographic characteristics

1. ART unique ID Number _____

2. Age _____ yr

3. Sex   A. Male

        B. Female

4. Religion   A. Wakefata   D. orthodox

            B. Muslim   E. Others

            C. Protestant

5. Ethnicity   A. Oromo   D. burji

            B. Somali   E. Amhara

            C. Konso   F. Others

6. Marital status   A. single   D. Divorced

                     B. Engaged   E. Widowed

                     C. Married

7. Occupation   A. Farmer   E. NGO employer

B. Governmental worker   F. Merchant

C. House wife   G. Others

D. Private worker

8. Level of education   A. Illiterate

B. read and write only

C. Elementary

D. high school

E.Diploma

F.Degree

Part II

1. WHO clinical stage_____

2. Antiretroviral therapy   A. without therapy

B. HAART therapy

3. CD4 cell count   A. $\geq$500 cells /μL

B. 200-499 cells /μL

C. <200 cells /μL

4. Oral hygiene practice   A. Tooth brush

B. mefakia (riga)

C. Mouth rinse

D. None

5. Habits

A. Smoking cigarettes   yes   no

B. alcohol drinking   yes   no

C. chat chewing   yes   no

D. none   yes

Part III Clinical examination

1. Oral hygiene status

A. Excellent

B. Good

C. Fair

D. Poor

2. Fungal infection

A. Erthenathous candidiasis

B. pseudo membranous candidiasis

C. Hyperplastic candidiasis

D. Angular cheilitis

3. Viral infection
A. Oral hairy leukoplakia

B. Herpes simplex virus

C. Herpes zoster virus

D. human papilloma virus

E. Epstain barr virus

4. Bacterial infection
A. Linear gingival erythema

B. Necrotizing ulcerative gingivitis

C. Necrotizing ulcerative periodontitis

5. Neoplasm
A. Kaposis sarcoma

B. Non- Hodgkin lymphoma

6. Non- specific etiology
A. nectrotizingstomatis

B. aphtous ulcers

C. xerostomia

D. salivary gland disease

E. Others