



ASSESSMENT OF AWARENESS TOWARDS THE  
ORAL MANIFESTATIONS OF HIV/AIDS PATIENTS  
IN JIJIGA KARAMARA HOSPITAL,ART CLINIC,  
ETHIOPIA

BY:-ABDI HASSAN

(DENTAL INTERN)

ARESEARCH PAPER TO BE SUBMITTED TO THE  
SCHOOL OF DENTISTRY,FOCULT OF MEDICAL  
SCIENCES ,SRP,IN PARTIAL FULFILMENT OF THE  
REQUIREMENTS FOR THE DEGREE OF DOCTOR OF  
MEDICAL DENTISTRY(DMD)

JANUARY,2013

JIMMA ETHIOPIA

JIMMA UNIVERSITY COLLEGE OF MEDICAL  
SCIENCE AND PUBLIC HEALTH  
DEPARTMENT OF DENTISTRY

ASSESSMENT AND AWARENESS TOWARDS  
THE ORAL MANIFESTATIONS OF HIV/AIDS  
PATIENTS IN JIJIGA KARAMARA  
HOSPITAL, ART CLINIC, ETHIOPIA

ADVISORS:- DR.DEREGE WORKU(DMD)

JANUARY, 2013  
JIMMA ETHIOPIA

## Abstract

**Background:-** Over 30 different oral manifestations of HIV disease have been reported since the beginning of the AIDS epidemic.

Several groups of these oral manifestations are known. They may be; infections, neoplasms or other manifestations.

Infections include fungal, viral or bacterial. Whereas, the most common neoplasms are Kaposi's Sarcoma and Non-Hodgkin's Lymphoma.

The others category include non-specific or Aphthous-like ulcers, idiopathic thrombocytopenic purpura, mucosal melanin pigmentation and salivary gland diseases.

**Objective:-**to investigate the awareness of the oral manifestations of HIV/AIDS patients in jijiga karamara hospital, in ART clinic, Ethiopia.

**METHODOLOGY:-**

Informed consent were obtained from each participant before embarking on the interview. Participants were individually interviewed using structured questionnaires that inquired about participants' awareness of distinct oral manifestations of HIV or AIDS (e.g. oral candidiasis, oral tumours, oral ulcers, and periodontal conditions). Those who aware of oral manifestations were additionally asked if they know about any quality of life problems associated with oral manifestations. Interviews took place within the premises of the jijiga karamara hospital, in ART clinic, ETHIOPIA.

**Results:-**Data from questionnaires were processed and analysed using SPSS version 14.0 and frequency distributions were computed and the result were presented using tables.

from these tables the over all awareness of oral manifestations is 138(54.3%); (oral candidiasis 118(46.4), oral ulcer 108(45.5), periodontal disease 117(46)) and those unaware of is 116(45.66%).

**conclusions and recommendation:-**

### **Conclusions**

- Participants were relatively less aware of the different types of oral manifestations
- Educational status play important role in Awareness of oral manifestation of HIV AIDS.
- The main source of knowledge was training by NGO while the problems associated with oral manifestations were more limited.

### **Recommendation**

It is recommended that health authorities in Ethiopia establish population-oriented health education for improving knowledge about oral disease in HIV/AIDS and that oral health professionals provide

sound information to PLHIV in community-outreach oral healthcare programmes.

## **Acknowledgements**

I would like to give heart full thanks to my advisor Dr.dereje worku for his earnest and enormous support; for his patience,mentorship and endless inspiration throughout the duration of this research proposal and later this paper for his encouragement in the initiation of the project and supervision throughout.

## Table of content

Abstract.....	I
Acknowledgements.....	II
Table of content.....	III
List of dummy tables.....	V
Abbreviations.....	VI
CHAPTER ONE.....	1
1.1 Backgrounds.....	1
1.2. Statement of the problem.....	3
CHAPTER TWO.....	6
2.1 Literature Review.....	6
CHAPTER THREE.....	10
Objective of the Study.....	10
3.1. General objectives.....	10
3.2 .Specific objectives.....	10
CHAPTER FOUR.....	11
4. Methodology.....	11
4.1.study area and study period.....	11
4.2.Study period.....	11
4.3. Study design.....	11
4.3. Population.....	11
4.4.Sample size and Sampling technique.....	11
4.5. inclusion and exclusion criteria.....	12
4.6.Measurement variables.....	13
4.8. Data quality control.....	13
4.9.Data analysis.....	13
4.10. Ethical Considerations.....	13
4.11. operational definations.....	14
CHAPTER FIVE.....	15
Result.....	15
CHAPTER-SEVEN.....	26

CONCLUSSION AND RECOMMENDATION.....	26
CONCLUSSION.....	26
Annex I .....	27
ANNEX-II.....	30

## List of Dummy Tables

Table 1.Frequency distribution of demographic characteristics in age.sex and marital status of respondents of the study in jijiga karamarda hospital ART clinic.

Table.2.Frequency distribution of demographic characteristics in ethnicity and religion of respondents of the study in jijiga karamarda hospital ART clinic.

Table.3.Frequency distribution of demographic characteristics in educational status, occupational status and annual income of respondents of the study in jijiga karamarda hospital ART clinic

Table -4. awareness of the different types of oral manifestations towards hiv/aids patient attending jijiga karamara hospital, ART clinic.

Table-5.awariness about any quality-of-life problems associated with oral manifestations towards hiv/aids patient attending jijiga karamara hospital, ART clinic.

Table.6.Frequency distribution of source of knowledge for those who are aware of oral lesions in jijiga karamara Hospital, ART clinic, eastern part of Ethiopia from march10, 2005 to june17, 2005E

Table.7.association table between independent variable and oral candidiasis.

Table.8.association table between independent variables and oral peri-oral lesions.

Table.9.association table between independent variables and periodontal disease.

Table.10.association table between independent variableness and oral tumors.

Table.11.association table between independent variableness and OHL.

## Abbreviations

HIV-	Human Immunodeficiency Virus
AIDS-	Acquired Immune Deficiency Syndrome
PLWA-	People living with AIDS
WHO-	World Health Organization
NGO-	Non-Governmental Organisation
UNAIDS-	United nations program of hiv/aids
HAART-	High active antiretroviral therapy
SPSS-	Statistical Package for the Social Sciences.
QOL-	Quality of life
CDC-	Center of disease control
NHL-	Non-hodgkins lymphoma



## CHAPTER ONE

### 1.1 Backgrounds

HIV/AIDS is considered as a devastating global health problem posing severe challenges in low and middle-income countries. The continuous increase in number of people living with HIV/AIDS (PLWHA) represents a serious health and economic burden that the world is facing. The total number of PLWHA in 2010 was 34 million with an estimated increase of 3.3 million cases annually [1]. In Malaysia, during 2004 the number of individuals infected with HIV and the number of AIDS cases reported were 6,427 and 1,148 respectively and in 2005, 6,120 were infected by HIV and 1,221 of AIDS cases were reported. The number of PLWHA reached a cumulative total of 87,710 by 2009, the most recent figure in 2011 has reached upto a cumulative figure of 79,855 [2]. The large number of PLWHA – although it is slightly decreasing - requires more attention to improve the quality of life of the individuals diagnosed with the disease as HIV/AIDS affects both physical and psychological health [3].

According to Centre of Disease Control (CDC) improving health outcomes of PLWHA is one of the key recommendations proposed in 2010 with an ultimate goal of extending life and improving its quality [4]. Oral health status of PLWHA was identified by WHO as an integral part of optimum case management. CDC recommendations were given to introduce surveillance activities of oral diseases associated with HIV infection in order to ensure appropriate medical evaluation, prevention and treatment [5].

HIV/AIDS may lead to the development of various oral lesions. Several studies have demonstrated that 40–50% of HIV positive individuals have fungal, bacterial or viral infections in oral cavity that are likely to occur early in the course of the disease. These oral lesions have physical, economic,

social and psychological consequences on the individuals and subsequent impairment of the oral-health-related-quality of life [6]. Oral lesions that are strongly associated with HIV infections included oral candidiasis, hairy leukoplakia, Kaposi sarcoma, linear gingival erythema, necrotizing ulcerative gingivitis, necrotizing ulcerative periodontitis and non-Hodgkin lymphoma. Dry mouth was reported as one of the oral manifestations experienced by the patients due to decreased salivary flow rate with subsequent increase in the risk of developing dental caries [7]. Introduction of new therapies like High Active Antiretroviral Therapy (HAART) showed a shift in the prevalence of oral lesions manifesting significant decrease in oral candidiasis and hairy leukoplakia with an increase in salivary gland diseases, xerostomia and warts [8]. The impact of HIV/AIDS and oral disease on the Quality of Life (QOL) is well documented involving physical and emotional well being, social support systems, and life role

s. It has been reported that HIV positive individuals with oral lesions have significantly lower oral health-related quality of life than HIV positive individuals without oral lesions. The poor quality of life in PLWHA can be attributed to the effect of oral lesions that may alter facial appearance, speech, and cause chewing and swallowing difficulty and pain [9]. Poor oral functionality might lead to exacerbation of nutritional problems that may further affect the quality of life [10].

Several Knowledge Attitude and practice (KAP) studies have been carried out worldwide in relation to HIV/AIDS transmission and infection, while scanty literature addressed the awareness of PLWHA towards HIV/AIDS associated oral lesions [11].

The objective of this study was to assess the awareness of PLWHA towards HIV/AIDS associated oral lesions

## 1.2. Statement of the problem

Oral manifestations are reported to have clinical significance in HIV/AIDS across the globe. A number of oral conditions associated with HIV/AIDS have been reported globally. These include Kaposi's sarcoma, oral fungal infections, repeated oral ulcers to mention just a few. Very often, oral manifestations such as candidiasis, oral hairy leukoplakia, herpetic ulcers and kaposi's sarcoma appear frequently as the early symptoms of HIV infection (12). In East Africa, similar conditions have been reported in Kenya and Uganda, although with different relative proportions – due to a number of reasons, such as different diagnostic criteria and levels of awareness and identification skills among professionals and the public (13). The fact that many oral manifestations occurs early in people living with HIV/AIDS, and that some specific oral manifestations strongly appears to be associated with levels of immune suppression and moderately associated with highly viral burden (14), oral manifestations could be used as markers that suggest progression of the disease. As such, oral manifestations have sometimes been suggested to offer suspicion of acute sero-conversion illness, thereby allowing an alternative means of staging the disease progression in addition to paving an entry point or end point criteria for clinical trials for antiretroviral drugs (15)

Relationship of oral manifestations to HIV/AIDS justifies the essence for the dental healthworkers to be familiarised with contemporary skills in early diagnosis of such lesions to aid proper and early management of the disease (16).

With the introduction and use of antiretroviral drugs, along with increasing knowledge on HIV and its commonly associated opportunistic infections, the trend of oral manifestations has been greatly modified (17). This is regardless the type of medication involved, whether by traditional healing or modern-western.

Tanzanian studies on oral manifestation with relation to HIV/AIDS offers important time-based divergent information. Earlier on, (18) reported that

64% of seropositive patients had oral manifestations when compared to 4% of HIV sero-negative patients in Muhimbili National Hospital in which, oral candidiasis was the most common lesion. Recently,(19) reported that 87% people living with HIV in Dar es Salaam had oral ulcers and 84% had oral candidiasis. In the same study, a large proportion of the PLWHAs reflected a gross capability in associating HIV/AIDS to oral manifestations which they were suffering from. However, such reports are not nationwide; more studies are essential to add information to what is available Oral lesions are among the earliest signs of and the most important indicator of HIV infection. Oral lesions not only indicate infection with human immune deficiency virus (HIV), they are also among the early clinical features of the infection and can predict the progression of HIV disease to acquired immune deficiency syndrome (AIDS ) .

The awareness of the oral manifestations of HIV/AIDS and general issues about HIV and AIDS among people living with HIV (PLHIV) in Dares Salaam, Tanzania was done with a structured questionnaire to collect information from 187 participants chosen by convenience sampling from NGOs supporting PLHIV. A total of 13.4% of the participants were completely unaware of the oral manifestations of HIV/AIDS whereas all participants were fully aware of general symptoms of AIDS. There were no significant associations between awareness of oral manifestations and general awareness of HIV/AIDS, or level of education. Participants were relatively well aware of the different types of oral manifestations (e.g. oral ulcers 87%,oralcandidiasis 84%) while their knowledge of the management of specific oral manifestations and the problems associated with oral manifestations was more limited. Education for improving knowledge about oral disease in HIV/AIDS and that oral health professionals provide information to PLHIV in community-outreach oral healthcare programmes (20). The level of awareness of HIV infected patients about associated oral lesion, preventive and treatment modalities and risk behaviors aren't well documented.

This study on assessment of awareness towards oral manifestation of HIV/AIDS among people living with HIV/AIDS will enable others to do many researches on it, particularly in our country where no articles were not published.

## CHAPTER TWO

### 2.1 Literature Review

According to a cross-sectional study to assess public awareness of AIDS in Singapore; almost all Singaporeans (98%) had ever heard, seen or read something about AIDS. This compared favorably with the comparative levels of (92%) recorded and compares the finding with those in the USA. Although the large majority of Singaporean were aware of AIDS, not many among them professed that they knew a lot about the disease. The survey showed only 65 of persons left that they knew had substantial knowledge about AIDS, while 42% thought that they had some knowledge about the disease, the rest constituting the majority (52%) indicated that their knowledge on AIDS were little or minimum(21)

As the study conducted in Dire Salem, Tanzania PLHIV are aware of general issues related to HIV/AIDS but less aware of the oral manifestations of HIV/AIDS. According to this study 86.6% of the participants were aware of the different Oral lesions of HIV/AIDS, 49.7% were aware of problems such as, pain, difficulty of eating, bad/foul breath, altered taste sensation with oral lesions. About 39% of the respondents were aware of the general management of oral manifestations and about 99.5% wish to receive education on oral manifestations. Although oral health problems are rarely matters of life and death, there are indications that they may have significant consequences on social, economic and psychological areas of life including the quality of life.

Systematic and quantitative data on the impact of oral disease on these areas would be very useful for several resources for health care; knowledge of such broad consequence is essential to the full scientific understanding of the scope of oral health problems; the person's perception of social, economic and psychological consequence of oral conditions and their treatment must play an important role in his/her oral health behaviors including preventing behaviors and use of dental care( 22).

The US national health interview survey shows that dental conditions were the causes on an appreciable number of days of bed disability (6.7 million), restricted activity (17.7 million), and work loss (7.04 million) and at least 25% of employees lost some of time from work in the past years because of Oral problems .

According study done in Tanzanian by February2004,

A total of 230 PLWHA were recruited through non-governmental organizations (NGOs) that provide different services including counseling and treatment of opportunistic infections in PLWHA in Dares. 80% of the participants were females and 20% were males. 85% of the subjects had primary school education or below. About 90% of the subjects listed correctly the routes of HIV/AIDS transmission. Between 60-80% listed women, children born by HIV/AIDS positive mothers, sex workers, and long distance drivers as the most vulnerable groups for acquiring HIV. More than 90% had knowledge on the common symptom of HIV/AIDS but only 59% and 65.5% listed gingivitis and oral tumors as conditions associated with HIV/AIDS respectively. Only 24-53% had knowledge on simple management of oral manifestations such as keeping the oral cavity clean or using mouth washes. Almost all the subjects (99%) expressed need to be educated on oral lesions and home based care (22)

Other study done in Nigeria showed that majority of the participants exhibited poor knowledge of the oral manifestation of HIV/AIDS although many of them had fair knowledge of general symptoms of HIV/AIDS .the high educational status of the subjects seemed to play little role in awareness of oral manifestation in HIV/AIDS as (21.4%)of the participants had good overall knowledge .many of the respondents 69% wish to know more about oral lesion of HIV/AIDS.

A according to study done in Iringa municipality in southwest tanzania a total of 179 (89.5%) of the PLWHAs had sound awareness on the diverse oral manifestations. However, the knowledge differed linearly across educational status from 100% of those with secondary or college education to 73.5% of those with informal education, with significant statistical

difference ( $P=0.000$ ,  $\chi^2=19.662$ ). There was no statistical significant difference across sex and age groups on the levels of awareness. The most frequently mentioned as perceived oral manifestations were oral ulcerations, severe periodontal disease(7.0%),angular cheilitis(7.0)%, oral thrush(6.5%), Kaposi's sarcoma(1.5%), hairy leukoplakia(1.0%).The majority (89.5%) of the PLWHAs had sound awareness on clinical oral manifestations with significant statistical difference by educational status – the strength increased linearly with educational status.In conclusion,the majority of PLWHA were aware of the conditions.

In comparison with the general level of knowledge about HIV and AIDS, awareness of oral manifestations of HIV/AIDS was somewhat lower among the participants. This is probably explained by the low frequency of dental visits by PLHIV and the low level of attention paid to the oral implications of HIV or AIDS by the dental profession and other stakeholders.

## 2.2. significance of study

HIV/AIDS is the first ranking disease in our country, where the awareness about their oral manifestation of HIV/AIDS is very poor. It will be very nice if study related to awareness is carried out especially on oral manifestation of this disease.

This cross-sectional study on assessment of the awareness of HIV/AIDS infected patients about HIV associated oral and per oral lesion will enumerate the priority to act upon. It is a good tool for policy makers and health care providers to include oral health modalities a assessing the level of awareness of HIV infected individuals and seeking solution will definitely improve the quality of patients. This study also aims at assessing the involvement of government and NGO in promotion and prevention of oral manifestation of HIV/AIDS to alleviate the far reaching improvement on quality of life of the patients. Oral disease occurs disproportionately among individuals from low socioeconomic levels and among those who are most vulnerable because of poor general health. Most reported cases of HIV occur



in communities where levels of oral health care utilization are among the lowest in the nation. This is associated with lack of access to care and lower education levels. Improving oral health within these communities will require changes at a number of levels. Medical care providers will require a better understanding of the relationship between oral disease and general health, and patients living with HIV will need to better appreciate the importance of oral health in general health and well being.

## CHAPTER THREE

### Objective of the Study

#### 3.1. General objectives

to assess the awareness of the oral manifestations of HIV/AIDS patients in jijiga karamara hospital, in ART clinic, Ethiopia.

#### 3.2 .Specific objectives

- To assess the awareness oral candidiasis as oral manifestations of hiv/aids among people living with HIV/AIDS in jijiga karamara hospital,art clinic
- To assess awareness of life problems of oral manifestations of hi/aids/aids among people living with HIV/AIDS in jijiga karamara hospital,art clinic
- To assess awareness of gum disease as oral manifestations of HIV/AIDS among people living with HIV/AIDS in jijiga karamara hospital,art clinic
- *to assess awareness of oral and peri-oral ulcers as oral manifestations of hiv/aids* among people living with HIV/AIDS in jijiga karamara hospital,art clinic
- *to assess the awareness of the signs and symptoms of periodontal disease associated hicv/aids* among people living with HIV/AIDS in jijiga karamara hospital,art clinic.
- To assess the awareness of OHL as orl manifestations of hiv/aids among people living with HIV/AIDS in jijiga karamara hospital,art clinic.
- *to assess the association of variables* among people living with HIV/AIDS in jijiga karamara hospital,art clinic

## **CHAPTER FOUR**

### **4. Methodology**

#### **4.1.study area and study period**

##### **4.1.1 study area**

This study was conducted in jijiga karamarda Hospital, in ART Clinic which is the capital city of somaliregion, eastern part of Ethiopia.

Jijigais located about 635 km of Addis Ababa it serves for more than 98,000 inhabitants with a population of 56821, 62% of the population is Somali, 24% Amharic, 7% oromo and 5% gurage.

Jijiga town has an average altitude of 1600m on the foothills of smooth mountains

##### **4.2.Study period**

The study was conducted from june 12, 2005to jully 17, 2005 EC.

##### **4.3. Study design**

A cross-sectional descriptive type of study was conducted using self questionnaires.

##### **4.3. Population**

###### **4.3.1. Source Population**

PLWHAs attending jijiga karamara Hospital, ART Clinic through the study year.

###### **4.3.2. Study Population**

PLWHAs who attend at jijiga karamara Hospital ART clinic who fulfilled the inclusion criteria were included in the study.

##### **4.4.Sample size and Sampling technique**

For this particular cross-sectional study; convenient sampling technique was used as all PLWHAs attending at jijiga karamara Hospital; ART Clinic from june 2, 2005 to 17,2005 EC.

#### 4.4.1. Sample size determination

The sample size were calculated using the following formula for estimation for a single population proportion.

$$No = \frac{z^2 \cdot p \cdot (1-p)}{d^2}$$

d2

The following assumption were used

No= sample size

Z21- $\alpha$ /2=95%confidence (1.96)

p= proportion; p=70% to get maximum sample size since there is no study done in the study area

d= Desired precision (5%)

$$No = \frac{(1.96)^2(0.5)(1-0.7)}{0.05^2}$$

No =230

The actual sample size is calculated by using other reduction formula Though the total sample size required is 230, the total number of HIV/AIDS patients is 3000.As this number is less than 10,000, as a result I need to use correction formula and the total sample size will be calculated

$$Nf = \frac{no}{1 + \frac{no}{N}}$$

Where

N= Total number of HIV/AIDS patients who attend at jijiga karamara Hospital, ART clinic

No=Initial sample size calculated

Nf=Final sample size to be calculated

In average the total no of patients attending art clinic per year is 3000

Then, the final sample size will be

$$Nf = \frac{no}{1 + \frac{no}{N}} = \frac{230}{1 + \frac{230}{3000}} = 230$$

The calculated sample size and anticipated non response 10% were added ,so that the final required sample size for study become =253.44

#### 4.4.2-sampling technique

Convenient sampling technique were used to determine the study subjects

### 4.5. inclusion and exclusion criteria

#### 4.5.1 inclusion criteria

Those study units that happen to be available during data collection period

#### 4.5.2. exclusion criteria

- Those study units that don't happen to be available during data collection period.
- Those patients below 15 years old

## **4.6.Measurement variables**

### **4.6.1 Dependent variables**

- PLWHA, oral manifestations of hiv/aids

### **4.6.2. independent variables**

- Age
- Marital status
- Sex
- Occupation
- Annual income

## **4.7 Data Collection and data Collection instruments**

### **4.7.1 Data collection technique**

The row data for this study were collected by using structured questionnaires prepared in English with adequate translation and explanation by dental interns. The participants of the study were also interviewed about HIV associated oral lesions and their life problems. The questionnaires include typical oral lesions and the impact of the lesions on life style.

### **4.7.2. data collection instruments**

The data were be collected by using a data collection format.

## **4.8. Data quality control**

The principal investigator had an ongoing supervision each day during the data collection to ensure the quality of data by checking filled formats for their completeness and consistency. The data collection was done by dental interns who gave adequate translation and explanation to the participants of the study.

## **4.9.Data analysis**

Data from questionnaires were processed and analysed using SPSS version 14.0 and frequency distributions were computed and the result were presented using numbers ,tables

## **4.10. Ethical Considerations**

A letter of approval were obtained from the Jimma University authority before the study was undertaken. Freely given, informed consent were obtained from all subjects of the research during the study. Permission to undertake the study were given by the Committee for Research Jimma University. Data were recorded anonymously, and strict confidentiality was

ensured at all stages of the research. A formal letter was written to jijiga karamara Hospital eastern part of Ethiopia.

#### 4.11. operational definations.

1. Pseudomembranous candidiasis:- appears as a white "curd-like" material that when wiped off reveals an underlying erythematous mucosa
2. Angular cheilitis:- appears as an erythema and/or fissuring either unilaterally or bilaterally at the corners of the mouth.
3. Oral herpes simplex:- is a viral condition associated with herpes simplex virus type 1
4. Oral hairy leukoplakia (HL):-which presents as a nonmovable, corrugated or "hairy" white lesion on the lateral margins of the tongue.
5. Linear Gingival Erythema:-The gingival (gum) condition originally known as HIV-gingivitis.
6. ulcerative periodontitis (NUP);-is a condition associated with rapid soft tissue and bone loss.
- 7 Kaposi's sarcoma (KS) is the most common neoplasm in people with HIV.
- 8 Salivary Gland Disease:-diseases that causes bilateral enlargement of parotid gland
- 9 Xerostomia;-dryness of the mouth due to reduced salivary flow.
- 10 Aphthous stomatitis (canker sores):- is a common condition regardless of HIV status.
11. Non-hodgkins lymphoma(NHL):- is the second most common tumor associated with HIV/AIDS, it can occur anywhere in the oral cavity. Most often NHL occurs as a soft, tumorlike mass.
12. awareness:- having knowledge or cognizance towards oral manifestations
13. Satisfactory:- awareness oral manifestations of hiv/aids >50%
14. unsatisfactory:- awareness oral manifestations of hiv/aids <50%

## CHAPTER FIVE

### Result

From total of 254 proposed study subjects all were responded. That is response rate is 100%.the sex distribution was 23.62% that is 23.62% males and 76.37% females. Among the study population age 25-44yrs accounts the highest number 159(63.34%) followed by 15-24yrs age group that accounts 85(33.46%).

According to the marital status 104(40.9%) of the study population are widowed that account the highest number followed by single, divorced and married each accounts 64(25.2%),55(21.65%) and 31(12.2%)respectively.

Table 1.Frequency distribution of demographic characteristics in age.sex and marital status of respondents of the study in jijiga karamarda hospital ART clinic.

Demographic characteristic	Frequency (number)	Percentage(%)	
Age group 1(yrs)	15-24	85	33.46
	25-44	159	63.34
	45-64	10	3.93
	65+	-	-
Sex	M	60	23.62
	F	194	76.37
Marital status	Single	64	25.2
	Married	31	12.2
	Widowed	104	40.9
	Divorced	55	21.65

By ethnicity; amhara accounts the highest number 108(42.5%) followed by oromo,Somali,gurage each accounts 85(33.46%),50(19.68%),and 11(4.33%) respectively. Regarding religion from the total the study population the orthodox accounts 96(37.79%) followed by muslims 87(34.25%) catholic 45(21.65%) protestant 26(10.23%) of the population.

Table.2.Frequency distribution of demographic characteristics in ethnicity and religion of respondents of the study in jijiga karamarda hospital ART clinic.

Ethnic group	Somali	50	19.68
	Amharic	108	42.5
	Oromo	85	33.46
	Gurage	11	4.33
Religion	orthodocs	96	37.79
	Protestant	26	10.23
	catholics	45	21.63
	Muslims	87	34.25

Among the study population 130(52%) are illiterate while 124(48%) are educated. most of the participants had up to elementary education that accounts 82(32.28%) followed by certificate holders 24(9.44%),secondary school 10(3.93%) and diploma holders 8(3.14%);and majority of the study population are illetterate that accounts 52%(130)

According to occupational status majority of the study population are merchant which accounts 138(54.33%) followd by govermental employers 80(31.37%),farmer 32(12.6%), student 50(19.69%).

Among the study population annual income 1201-5000birr account 124(48.8%) while <1200birr accounts 130(51.18%) that is the highest number.

Table.3.Frequency distribution of demographic characteristics in educational status,occupational status and annual income of respondents of the study in jijiga karamarda hospital ART clinic

<b>Educational Status</b>	<b>Illetterate</b>	<b>130</b>	<b>52</b>
	<b>1-4</b>	<b>28</b>	<b>11.02</b>
	<b>1-8</b>	<b>54</b>	<b>21.25</b>
	<b>Secondary school(9-10)</b>	<b>10</b>	<b>3.93</b>
	<b>Certificate</b>	<b>24</b>	<b>9.44</b>
	<b>Diploma</b>	<b>8</b>	<b>3.14</b>
<b>Occupational Status</b>	<b>Student</b>	<b>50</b>	<b>19.69</b>
	<b>Farmer</b>	<b>32</b>	<b>12.56</b>
	<b>Government employer</b>	<b>80</b>	<b>31.37</b>
	<b>Merchant</b>	<b>138</b>	<b>54.33</b>
<b>Household annual income in birr</b>	<b>&lt;1200birr</b>	<b>130</b>	<b>51.18</b>
	<b>1200-5000birr</b>	<b>124</b>	<b>48.8</b>



The survey showed that,117(46%) were aware of periodontal disease (NUP,MUG) 60(23.6% were aware off OHL 56(21.95) were aware off oral tumours and 108(45.5.%) were aware off oral and perioral ulcers and 118(46.6%) were aware of oral candidiasis that accounts the highest.

Table -4. awareness of the different types of oral manifestations towards hiv/aids patient attending jijiga karamara hospital, ART clinic.

	Oral lesion	Aware		Not aware	
		NO	%	NO	%
Awareness of oral manifestation of HIV/Aids	Oral cadididasis	118	46.4	136	53.5
	Periodontal diseases(NUP,NUG)	117	46	137	53.9
	OHL	60	23.6	194	76.3
	Tumors(KS,NHL)	56	21.9	198	77.9
	Oral and per oral ulcers	108	45.5	136	53.5

According to the awareness of life problems of oral manifestations of hiv/aids the majority of the study population are aware off pain 92(36%), followed by difficult of swallowing, bad breath and difficult of speech each 89(35.03%),74(27.13%) and 52(20.47%) respectively.

Table-5. awareness about any quality-of-life problems associated with oral manifestations towards hiv/aids patient attending jijiga karamara hospital, ART clinic.

		Aware		Not aware	
		NO	%	NO	%
Awareness of the quality of life problems Associated with oral manifestations towards hiv/aids	Dificult of speech	56	22.04	198	77.95
	Dificult of chewing	91	35.8	163	64.17
	Dificult of swallowing	89	35.03	165	64.9
	Pain	92	36	162	63.77
	Bad breath	74	27.13	180	70.86

The main source of knowledge about AIDS associated oral lesions were health information from NGOS 47(23.91%). Reading different sources 28(20.28%) listening radio 30(21.73%) and formal education 33(23.91%).

Table.6. Frequency distribution of source of knowledge for those who are aware of oral lesions in jijiga karamara Hospital, ART clinic, eastern part of Ethiopia from march10, 2005 to june17, 2005E

Source knowledge	Number	%
Formal education	33	23.91
Training by NGOs	47	34.02
Reading different sources	28	20.28
Listening Radio	30	21.73

Statistically this cross sectional final study showed that there is highly significant association between level of awareness of HIV/Aids patients about AIDS associated oral problems and educated status , sex ,annual income and occupational status of the participates( $p=0.00,0.00,0.04$  and  $0.00$ ) respectively

On the other hand age ,and marital status of the respondents had no an association with the level of awareness of HIV/AIDS patients about HIV/AIDS associated oral lesions

**Table-5.association table b/n independent variables and oral candidiasis**

<b>Age(yrs)</b>		<b>satisfa ctory</b>	<b>Unsatisfac tory</b>	<b>Level of significan ce</b>
	<b>15-24</b>	<b>44</b>	<b>41</b>	x <sup>2</sup> =41.51 df=2 p=0.470
	<b>25-44</b>	<b>70</b>	<b>89</b>	
	<b>45-64</b>	<b>4</b>	<b>6</b>	
	<b>65+</b>	<b>-</b>	<b>-</b>	
<b>Sex</b>	<b>M</b>	<b>48</b>	<b>12</b>	x <sup>2</sup> =35.5 df=1 p=0.00
	<b>F</b>	<b>70</b>	<b>124</b>	
<b>Marital status</b>	<b>Single</b>	<b>29</b>	<b>35</b>	x <sup>2</sup> =4.25 df=3 p=0.236
	<b>married</b>	<b>12</b>	<b>19</b>	
	<b>window</b>	<b>45</b>	<b>59</b>	
	<b>divorced</b>	<b>32</b>	<b>23</b>	
<b>Educational status</b>	<b>illetterate</b>	<b>30</b>	<b>80</b>	x <sup>2</sup> =49.5 df=5 p=0.00
	<b>1-4</b>	<b>8</b>	<b>22</b>	
	<b>1-8</b>	<b>40</b>	<b>22</b>	
	<b>9-10</b>	<b>10</b>	<b>5</b>	
	<b>certificate</b>	<b>20</b>	<b>5</b>	
	<b>diploma</b>	<b>10</b>	<b>2</b>	
<b>Occupational status</b>	<b>student</b>	<b>34</b>	<b>16</b>	x <sup>2</sup> =47.1 df=3 p=0.00
	<b>farmer</b>	<b>10</b>	<b>22</b>	
	<b>governme</b>	<b>45</b>	<b>35</b>	
	<b>merchant</b>	<b>29</b>	<b>109</b>	
<b>Income</b>	<b>≤1200</b>	<b>54</b>	<b>76</b>	x <sup>2</sup> =8.35 df=1 p=0.004
	<b>1201-5000</b>	<b>74</b>	<b>50</b>	

**Table-6.association table b/n independent variables and oral and peri-oral ulcers.**

<b>Age(yrs)</b>		<i>satisfactory</i>	<i>Unsatisfactory</i>	<b>Level of significance</b>
	<b>15-24</b>	<b>47</b>	<b>38</b>	x <sup>2</sup> =2.52 df=2 p=0.284
	<b>25-44</b>	<b>72</b>	<b>87</b>	
	<b>45-64</b>	<b>4</b>	<b>6</b>	
	<b>65+</b>	<b>-</b>	<b>-</b>	
<b>Sex</b>	<i>M</i>	<b>49</b>	<b>11</b>	x <sup>2</sup> =34.8 df=1 p=0.00
	<i>F</i>	<b>74</b>	<b>120</b>	
<b>Marital status</b>	<i>Single</i>	<b>30</b>	<b>34</b>	x <sup>2</sup> =3.34 df=3 p=0.342
	<i>married</i>	<b>14</b>	<b>17</b>	
	<i>widow</i>	<b>45</b>	<b>59</b>	
	<i>divorced</i>	<b>32</b>	<b>23</b>	
<b>Educational status</b>	<i>illiterate</i>	<b>30</b>	<b>80</b>	x <sup>2</sup> =60 df=5 p=0.00
	<i>1-4</i>	<b>9</b>	<b>21</b>	
	<i>1-8</i>	<b>42</b>	<b>15</b>	
	<i>9-10</i>	<b>12</b>	<b>3</b>	
	<i>certificate</i>	<b>20</b>	<b>5</b>	
	<i>diploma</i>	<b>10</b>	<b>2</b>	
<b>Occupational status</b>	<i>student</i>	<b>36</b>	<b>14</b>	x <sup>2</sup> =55.8 df=3 p=0.00
	<i>farmer</i>	<b>10</b>	<b>22</b>	
	<i>governme</i>	<b>48</b>	<b>32</b>	
	<i>merchant</i>	<b>29</b>	<b>109</b>	
<b>Income</b>	<i>≤1200</i>	<b>55</b>	<b>75</b>	x <sup>2</sup> =3.99 df=1 p=0.0046
	<i>1201-5000</i>	<b>68</b>	<b>56</b>	

**Table-7.association table b/n independent variables and periodontal diseases**

<b>Age(yrs)</b>		<i>satisfactory</i>	<i>Unsatisfactory</i>	<b>Level of significance</b>
	<b>15-24</b>	<b>44</b>	<b>42</b>	x <sup>2</sup> =1.11 df=2 p=0.573
	<b>25-44</b>	<b>70</b>	<b>89</b>	
	<b>45-64</b>	<b>4</b>	<b>6</b>	
	<b>65+</b>	<b>-</b>	<b>-</b>	
<b>Sex</b>	<i>M</i>	<b>47</b>	<b>13</b>	x <sup>2</sup> =31.5 df=1 p=0.00
	<i>F</i>	<b>70</b>	<b>124</b>	
<b>Marital status</b>	<i>Single</i>	<b>30</b>	<b>34</b>	x <sup>2</sup> =4 df=3 p=0.262
	<i>married</i>	<b>13</b>	<b>18</b>	
	<i>window</i>	<b>44</b>	<b>60</b>	
	divorced	<b>32</b>	<b>23</b>	
<b>Educational status</b>	illetterate	<b>30</b>	<b>80</b>	x <sup>2</sup> =51.2 df=5 p=0.00
	1-4	<b>7</b>	<b>23</b>	
	1-8	<b>40</b>	<b>22</b>	
	9-10	<b>10</b>	<b>5</b>	
	certificate	<b>20</b>	<b>5</b>	
	diploma	<b>10</b>	<b>2</b>	
<b>Occupational status</b>	student	<b>35</b>	<b>15</b>	x <sup>2</sup> =53.5 df=3 p=0.00
	farmer	<b>10</b>	<b>22</b>	
	governme	<b>48</b>	<b>32</b>	
	merchant	<b>29</b>	<b>109</b>	
<b>Income</b>	≤1200	<b>53</b>	<b>77</b>	x <sup>2</sup> =3.99 df=1 p=0.0046
	1201-5000	<b>74</b>	<b>50</b>	

**Table-8.association table b/n independent variables and oral tumours**

<b>Age(yrs)</b>		<b>satisfactory</b>	<b>Unsatisfactory</b>	<b>Level of significance</b>
	<b>15-24</b>	<b>22</b>	<b>63</b>	x <sup>2</sup> =43.54 df=2 p=0.171
	<b>25-44</b>	<b>30</b>	<b>129</b>	
	<b>45-64</b>	<b>4</b>	<b>6</b>	
<b>Sex</b>	<b>M</b>	<b>32</b>	<b>28</b>	chi-square = 44.7 degrees of freedom = 1 probability = 0.000
	<b>F</b>	<b>24</b>	<b>170</b>	
<b>Marital status</b>	<b>Single</b>	<b>14</b>	<b>50</b>	chi-square = 3.11 degrees of freedom = 3 probability = 0.374
	<b>married</b>	<b>9</b>	<b>22</b>	
	<b>window</b>	<b>18</b>	<b>86</b>	
	divorced	15	40	
<b>Educational status</b>	illiterate	4	116	x <sup>2</sup> =49.5 df=5 p=0.00
	1-4	5	25	
	1-8	19	53	
	9-10	7	8	
	certificate	14	11	
	diploma	7	5	
<b>Occupational status</b>	student	28	22	x <sup>2</sup> =47.1 df=3 p=0.00
	farmer	4	28	
	governme	18	62	
	merchant	6	132	
<b>Income</b>	≤1200	23	107	x <sup>2</sup> =8.35 df=1 p=0.004
	1201-5000	33	91	

**Table-9.association table b/n independent variables and OHL.**

<b>Age(yrs)</b>		<i>satisfactory</i>	<i>Unsatisfactory</i>	<b>Level of significance</b>
	<b>15-24</b>	<b>24</b>	<b>61</b>	x <sup>2</sup> =4.67 df=2 p=0.067
	<b>25-44</b>	<b>30</b>	<b>129</b>	
	<b>45-64</b>	<b>6</b>	<b>4</b>	
<b>Sex</b>	<i>M</i>	<b>36</b>	<b>24</b>	x <sup>2</sup> =35.5 df=1 p=0.00
	<i>F</i>	<b>24</b>	<b>170</b>	
<b>Marital status</b>	<i>Single</i>	<b>15</b>	<b>49</b>	chi-square = 5.20 degrees of freedom = 3 probability = 0.158
	<i>married</i>	<b>10</b>	<b>21</b>	
	<i>window</i>	<b>18</b>	<b>86</b>	
	divorced	17	38	
<b>Educational status</b>	illetterate	5	105	chi-square = 51.9 degrees of freedom = 5 probability = 0.000
	1-4	6	24	
	1-8	21	51	
	9-10	7	8	
	certificate	14	11	
	diploma	7	5	
<b>Occupational status</b>	student	30	20	chi-square = 71.5 degrees of freedom = 3 probability = 0.000
	farmer	6	26	
	governme	18	62	
	merchant	6	132	
<b>Annual Income</b>	≤1200	25	105	chi-square = 2.85 degrees of freedom = 1 probability = 0.092
	1201-5000	35	89	

## **Chapter-six**

### **Discussion**

Within the population of the study it was found that majority of patients were females, similar findings were reported by the study conducted in Dare Salem, Tanzania as females represented 89% of total reported cases infected with HIV/AIDS.

Early identification of oral lesions in HIV/AIDS patient may ensure improving and maintaining quality of life and can predict HIV disease progression. Hence, it is important to assess the patients' awareness towards HIV/AIDS associated oral lesions.

Results related to the awareness of HIV/AIDS associated oral lesions have an association with level of education and patients' knowledge. These findings were similar to those obtained in a study conducted in Tanzania to assess the awareness of PLWHAs towards oral manifestations of AIDS

According to this study 54.3% of the participants were aware off the different Oral lesions of HIV/AIDS which is low in comparison with study done in Iringa municipality in southwest tanzania a total of 179 (89.5%) of the PLWHAs had sound awareness on the diverse oral manifestations.

In an other study conducted in Dire Salem, Tanzania 86.6% of the participants were aware of the different Oral lesions of HIV/AIDS

this may be due to low educational status of the study population.

ithin the study 36% were aware off the life problems of hiv related oral lesions such as, pain, difficulty of eating, bad/foul breath, altered taste sensation with oral lesions which is lower in comparing with the study conducted in Dire Salem,Tanzania 49.7% were aware of problems such as, pain, difficulty of eating, bad/foul breath, altered taste sensation with oral lesions. this may be due to low educational status of the study population.



with in the study there is significant statistical difference by educational status on awareness of hiv/aids related oral manifestations – the strength increased linearly with educational status of the participants from secondary or college education to those with informal education.

in comparison with study done in Iringa municipality in southwest tanzania a total of 179 (89.5%) of the PLWHAs had sound awareness on the diverse oral manifestations. However, the knowledge differed linearly across educational status from 100% of those with secondary or college education to 73.5% of those with informal education, with significant statistical difference ( $P=0.000$ ,  $\chi^2=49.5$ ). also there is significant association between level of awareness of hiv/aids related oral lesion and sex, occupational status and annual income with significant level of ( $\chi^2=34.8, df=1, p=0.00$ ), ( $\chi^2=55.5, df=1, p=0.00$ ), ( $\chi^2=3.99, df=1, p=0.0046$ ) respectively.

study further revealed that there is no statistical significant difference across marital status and age groups on the levels of awareness.

The most types of oral manifestations in this study are 118(46.6%) oral candidiasis, 117(46%) periodontal disease (NUP, MUG), 60(23.6%) OHL 56(21.95) oral tumors and 108(42.5%) oral and perioral ulcers that accounts the highest. On the other hand the result of this study is similar to study in Dar es Salaam, Tanzania that showed Oral candidiasis 163( 87.2%) as highest, Periodontal conditions 117 (62.6%), Oral ulcers 157( 84%) Oral tumours 126 (67.4 %) Angular lesions 145 (77.5%)

**CHAPTER-SEVEN**  
**CONCLUSSION AND RECOMMENDATION**  
**CONCLUSSION**

Awareness of oral manifestations of HIV/AIDS was somewhat lower among the participants.

significant statistical difference by educational status – the strength increased linearly with educational status. This is probably explained by the low educational status by PLHIV and the low level of attention paid to the oral implications of HIV or AIDS by the dental profession and other stakeholders, The main source of knowledge was training by NGO while the problems associated with oral manifestations were more limited

**RECOMMENDATION**

It is recommended that

- the dental profession in strengthen its public health education, and that community-outreach oral health programmes targeting PLHIV focus on improving knowledge of the oral manifestations of HIV/AIDS.
- more intensive studies should be carried out to assess the standard strength of the public awareness on oral manifestations among PLWHA and ascertain the magnitude of the problem and facilitate appropriate control strategies.
- It is important that the Ethiopian health authorities revise the national strategy for control of HIV/AIDS to incorporate the prevention of oral diseases related to HIV infection.

## Annex I

### Data collection format

Data collection questioners formats for a cross-sectional study on assessments of awareness of HIV/AIDS patients about HIV/AIDS associated oral manifestations in jijiga karamara Hospital , ART CLINIC , eastern part of Ethiopia.

#### Part-I -----socio demographic status

1. Age 15-24  25-44  45-64  665+

2. Sex male  female

#### 3. Religion

Orthodox  Catholic  Protestants  Muslims  Others.....

#### 4. Ethnicity

somali  oroma  amharic  gurage  others.....

5. Marital s tatus :  single  married  windowed  divorced

#### 6. Eductional level :

illiterate  1-4  1-8  9-10  11-12

certificate

Diploma  Degree  Master and  above

#### 7.occupation :-

student  household  Merchant  farmer

Governmental employer  Others(specify).....

8 . Income:-1200birr  11201-5000birr  5001-10,000birr   
>10,000birr

**PART. II Awareness questions**

**1. do you know that HIV/AIDS has oral manifestations?**

Yes  no

**2.if yes to Q5 which of the following do know ?**

- a. oral candidiasis
- b. Periodontal disease (NUP,NUG,LGE)
- c. oral and peri oral ulcers
- d. oral tumors (KS,NHL)
- e. OHL

**3. what is the source of your knowledge?**

- a. Formal education
- b. Training by NGOs
- c. Trainings by GOs
- d. Reading
- e. Radio and TV
- f. Religious conferences

**5. Do you know symptoms and sign associated with oral lesion of HIV.AIDS in oral cavity? yes  no**

**6.If yes to Q8 ,which of the following do you know?**

Pain  Halitosis  Bleeding  Soreness   
ulcreation  color change  swallowing problem

**7.do you know the life problems of oral manifestations of hiv/aids?**

Yes  No

**8.if yes in Q7,which life problems of oral lesions related with hi/aids do you know?**

Pain  difficult of swallowing  bad breath   
ulceration

**9.do you know periodontal disease as oral oral manifestations of hiv/aids?**

Yes  No

**10. if yes on Q9.which sign and symptoms of periodontal disease do you know?**

Gum recessions  tooth mobility  bad breath  difficult of chewing

**11.do you know white patches on the dorsal surface of tongue as oral manifestations of hiv/aids.**

**Yes**  **No**

**12.if Q11, is yes, which life problems of this lesion do you know?**

**Burning sensation of the mouth**  **difficult of swallowing**

**Color change of the tongue**  **gum pain**

**13. do you know the oral and perioral ulcers as oral manifestations of hiv/aids?**

**Yes**  **No**

**14.do you know the oral masses that associates with hiv/aids in plwhds?**

**Yes**  **No**

**15. do you know the oral and peri oral ulcers associated with hiv/aids?**

**Yes**  **NO**

**16. if yes on q15; whtch oral ulcers do you know?**

**Aphthous ulcers**  **hsv**  **hsv**  **Angular chielitis**

## ANNEX-II

### **References**

1. WHO Global HIV: Aids Response-Epidemic update and health sector progress towards Universal Access. Progress Report; 2011.  
[http://www.who.int/hiv/pub/progress\\_report2011/summary\\_en.pdf](http://www.who.int/hiv/pub/progress_report2011/summary_en.pdf)webcite Accessed February 2011
2. Coogan MM, Greenspan J, Challacombe SJ: Oral lesions in infection with human immunodeficiency virus. World Health Organization 2005, 83:700-706.
3. Centre of Disease Control: Vital Signs: HIV p\*7/revention through care and treatment –United +States. MMWR 2011, 60(47):1618-1623. [PubMed Abstract](#) | [Publisher Full Text](#)  
[Return to text](#)
- 4 Petersen PE, WHO Oral Health Programme: Strengthening the prevention of HIV/AIDS-related oral disease: a global approach. Community Dent Oral Epidemiol 2004, 32:399-401. [PubMed Abstract](#) | [Publisher Full Text](#)  
[Return to text](#)
- 5 Bajomo AS: The impact of oral manifestations of HIV/AIDS on quality of life of patients living with HIV/AIDS. South African Division, IADR. [abstract]. J Dent Res 2004, 83:b.  
[Return to text](#)
- 6 Palmer GD, Robinson PG, Challacombe SJ, Birnbaum W, Croser D, Erridge PL, et al.: Aetiological factors for oral manifestations of HIV infection. Oral Dis 1996, 2:193-197. [PubMed Abstract](#)  
[Return to text](#)
- 7 Sroussi HY, Epstien JB: Changes in the pattern of the oral lesions associated with HIV infection: implications for dentists. JCDA 2008, 73(10):949-952.  
[Return to text](#)
- 8 Sheiham A: Oral health, general health and quality of life. Bulletin of WHO 2005, 83(9):644.  
[Return to text](#)

- 9 Effect of Oral Health on Overall Health <http://www.hc-sc.gc.ca/hl-vs/iyh-vsv/life-vie/dent-eng.php> [webcite](#)
- 10 Hodgson TA, et al.: Identification of oral health care needs in children and adults, Management of oral disease.
- 11 Oral health complications in the HIV infected patient: HIV Guidelines Chapter 8. New York State Department of Health AIDS Institute, 2000–2012.  
Available from: <http://www.hivguidelines.org/wpcontent/uploads/2009/05/ORALHEALTH.pdf> [webcite](#). Accessed July 2011
- 12 Reznik DA: Oral manifestations of HIV disease. Topics in HIV Medicine, International AIDS Society 2005, 13(5):143-148.
- 13 Adelekan M, Jolayemi S, Ndom R, Adegboye J, Babatunde S, Tunde-Ayimode M, et al.: Caring for people with AIDS in a Nigerian teaching hospital: staff attitudes and knowledge. AIDS Care 1995, 7(S1):63-72.
- 14 Li-zhen Y: KAP about AIDS among College Students and Relevant Health Education Strategies. Chinese Journal of Health Education 2004, 02:52-56.
- 15 Rahlenbeck SI: Knowledge, attitude, and practice about AIDS and condom utilization among health workers in Rwanda. J Assoc Nurses AIDS Care 2004, 15(3):56-61. [PubMed Abstract](#) | [Publisher Full Text](#)
- 16 Xiu C, Jiang Z, Chu Q, Wang Z, Fa P, Hao B: KAP about AIDS among Prisoners and Relevant Intervention. Chinese Journal of Health Education 2004, 11:711-720.
- 17 Tirwonwe, J.F., Rwenyonyi, C.M., Muwazi, L.M., Besigye, B. & Mbolli, F. (2007) Oral manifestations of HIV/AIDS in clients attending TASO clinics in Uganda. Clinical Oral Investigation 11, 289-292.
- 18 UNAIDS report on the global AIDS epidemic 2010. [http://www.unaids.org/globalreport/documents/20101123\\_GlobalReport\\_full\\_en.pdf](http://www.unaids.org/globalreport/documents/20101123_GlobalReport_full_en.pdf) (Accessed 2011-09-01).
- 19 U.S. Department of Health and Human Services. Oral Health in America: A Report of the Surgeon General. Rockville, MD: U.S. Department of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institutes of Health, 2000
- 20 Agbelusi GA, et al. Knowledge and attitude of oral lesion of HIV/AIDS among patients of pefpar clinic in lagos, Nigeria Med j. 2011, June 18(2);120-5

**21 American Journal of public Health, volume 75, No.1**

**22. Anils and Challacombe SJ (1997). Oral Anils and Challacombe SJ**

**(1997). Oral lesions of HIV and AIDS in Asia an overview oral diseases**

**23 (supp 1 536-540). 23 McCarthy, GM. Host factors associated with HIV-related oral candidiasis. A review. *Oral Surg Oral Med Oral Pathol* 1992;73:181-186.**