

# Stomatology: An analysis regarding oral health in HIV patients

*By Zavaleta Alemán Liliana Melchora*

## **Stomatology: An analysis regarding oral health in HIV patients**

Zavaleta Alemán Liliana Melchora; Rojas Huari David; Hinostrroza Conchucos Geraldine Junet;  
Pariajulca Fernández Israel Robert

Universidad Privada De Huancayo Franklin Roosevelt

### **Abstract**

People with human immunodeficiency virus (HIV) are at high risk for oral diseases, therefore, antiretroviral therapies are used to treat HIV in order to restore the function of the immune system. Oral problems can be painful, annoying and can lead to other problems, therefore, the objective of the research is to perform an analysis of the oral health of patients with HIV, in order to provide them with information on the subject and the preventive measures that should be taken in time. The method used is a descriptive analysis, because specific information will be collected to have a better perspective on oral health in patients with HIV. The results obtained is the specific information based on the development of oral health, generating an impact on society, in addition to the consequences that can cause if not treated in time, thus, valuable information was obtained regarding prevention and measures to be taken, in conclusion a comprehensive analysis was performed, to help many people to be informed about the subject and contribute to scientific research for future research implementing solutions to society.

**Keywords:** Testing, oral health, VIH, virus, prevention, patients.

### **Introduction**

The human immunodeficiency virus (HIV) is a worldwide problem, which has claimed about 40.1 million lives, so the World Health Organization (WHO) mentioned that a global strategic planning in the health sector against HIV from 2022 to 2030 (World Health Organization). Therefore, <sup>3</sup> HIV is a virus that attacks the immune system of the human body, so that when it is not treated in time it can lead to acquired immune deficiency syndrome (AIDS). Today, there is still no effective method that can completely cure the virus, but there are treatments to have a quality, long and healthy life, therefore the phases of HIV when they are not treated go through three stages; The first phase is the acute epidemic caused by the disease, so that a large proportion of the virus is in the blood and is contagious, with symptoms similar to a cold; in phase 2, a chronic HIV

infection is generated, in addition to the reproduction of the virus in the body; in phase 3, AIDS develops, which is therefore the most serious phase. People who do not acquire treatment survive for approximately 3 years, and if the immune system of people with AIDS is severely damaged, they can become infected with other diseases that complicate their condition (Duarte-Anselmi et al., 2022). It should be noted that HIV can be transmitted through sexual intercourse, sharing the same needles, and through pregnancy, but HIV is not transmitted through sharing the same bathroom or food, nor through water or air, tears and kissing. The most common use of protection in sexual relations are condoms, as well as choosing activities that do not involve oral sex, getting tested, going to health centers if you have symptoms regarding HIV and not injecting drugs. In case the patient is aware that he/she has HIV disease, he/she should stay healthy and protect others by taking medications correctly, and be in constant communication with his/her doctor in charge, and if he/she has sex he/she should take good care with condom use (Parola & Zihlmann, 2019).

Therefore, the human immunodeficiency virus tends to have a particular risk for various oral health problems, the most frequent of which are gingivitis, chronic dry palate, periodontitis, fever blisters, hairy leukoplakia, candidiasis in the oral area, dental caries, verrucae and oral thrush (Sprague & Johnson, 2023). Antiretroviral therapy, therefore, is used to treat HIV, thereby restoring and improving the immune system, leading to a decrease in the frequency of mouth problems. The causes that HIV patients have result in oral health risks, as it weakens the immune system, making it more difficult to fight infections. The symptoms related to oral health are the presentation of red sores that are covered by a thin yellow layer on top, located on the movable parts of the palate, lips or cheeks, causing pain, however, it is not contagious, so there are other symptoms such as hairy growths, The most common treatment for oral health based on HIV can be treated, so see a dentist or specialized doctor to receive the appropriate treatment (Tonon-Wolyec et al. , 2020).

Consequently, the most common oral diseases are dental caries, thus leading to oral cancer, periodontitis and tooth loss, and untreated tooth decay is estimated to affect up to 2.5 billion people, with severe periodontitis identified as a major cause of tooth loss. It is worth noting that each year an average of 380,000 cases of oral cancer are estimated. In Latin America, six institutions such as Peru, Brazil, Mexico, Argentina and Haiti received grants at the end of 2022 to carry out research projects on HIV and other diseases (Pan American Health Organization, 2022).

The research work is focused on the analysis of oral health in people with HIV, because there are several cases of people with AIDS, which affect oral health on a large scale, therefore, serological tests are performed as diagnosis. Consequently, oral problems are very constant in HIV-infected people, many people have oral problems, which the probability of acquiring oral warts is high. The aim of the research is the analysis of oral health in HIV patients, in order to be able to help with regard to up-to-date information and preventive methods that can be applied to avoid health risks.

### **Methods**

The method used is a descriptive analysis, providing a knowledge base for using a quantitative analysis. The problems indicated, may have dry mouth as not enough saliva is generated, whereby saliva helps to digest food and chew properly, protecting teeth from decay, thus preventing infections by controlling fungi and bacteria, therefore, avoiding tobacco, alcohol, salty foods, humidifier, chewing sugarless gum, and drinking pure water helps dry mouth (Thoueille et al., 2022).

### **HIV-related oral diseases**

#### **Oral Candidiasis**

Oral candidiasis is most prevalent in HIV-infected patients, developing in all age groups, gender and race. Its pseudomembrane variant is the most commonly diagnosed, which is caused by fungi called candida, forming part of the microflora in the oral cavity, and is

also common (Ninomiya et al., 2023). Therefore, candidiasis appears in the oral cavity causing discomfort, pain and loss of taste, thus worsening <sup>5</sup> the quality of life, the occurrence in adolescents and adults is treated with corticosteroids and other immunosuppressive agents, and its severity is 10. However, in worse cases it can enter the esophageal mucosa and cause invasive esophageal candidiasis, classified as an AIDS-defining disease, the types of candidiasis are classified into erythematous, angular and pseudomembranous cheilitis (Patel, 2022).

### **Periodontal**

These are common diseases that affect up to 50% of the world's population, with the serious consequence of tooth loss, so they can be prevented and treated if detected early. The categorization systems for periodontal diseases group diseases ranging from gingivitis to the various stages of periodontitis such as peri-implant diseases, so that these have been modified and updated so that doctors have adequate diagnoses and the procedure is optimal (Calderón, 2021). Since the first specification of periodontal pathology, different types of categorization systems have been used to group them according to their etiology, pathogenesis, location and increase, but there are always some peculiarities or complications. Therefore, periodontal infection is related to the odontological area, in charge of the study of pathologies that generate risks in the tissues by infecting them, whose function is to protect the teeth, in addition to the periodontal ligament, alveolar, bone and gum (Loor, 2022).

In this way, lesions are produced by the accumulation of bacteria that cause different alterations related to the periodontium, so that if they are not treated in time they can cause great risks as affections in the organism. Better dental education in the context of prevention, as well as greater awareness and education of society about periodontal

pathology and essential oral hygiene measures, are considered fundamental to prevent periodontal diseases and address the problem (Chifor et al., 2022).

Therefore, there are 2 types of periodontal disease, called gingivitis, which is an early stage of infection that is caused by the accumulation of bacteria. Plaque is made up of bacteria and debris that stick to the teeth, therefore, if not properly removed, it will turn into tartar, which can irritate and inflame the gums. The most common signs are redness of the area and bleeding gums (Das et al., 2023). Gingivitis is reversible, but <sup>4</sup> if left untreated, periodontal disease can progress. In addition to periodontitis is a severe and irreversible periodontal pathology that affects 15% to 20% of adults aged 35 to 44 years, this disease unlike gingivitis, is characterized by structural loss of the attachment artifact. <sup>2</sup> Periodontitis is the main cause of tooth loss in adults, therefore, this disorder is not common in children, but its presence increases during adolescence (Ntoulou et al., 2023).

### **Hairy leukoplakia**

It is usually located on the bilateral or unilateral side of the tongue, but can also be found on the dorsal and ventral side. In some cases it develops asymptotically, so there are no adverse reactions, and it does not require treatment unless there is a significant change in appearance; however, leukoplakia can be considered essential for differential diagnosis, and therefore biopsies and histopathological analysis can be performed (Lozano, 2022). The detection of Epstein-Barr virus has a polymerase chain, from samples obtained from lesions are performed by surgical methods. The presence of Epstein-Barr virus in peripheral blood does not always develop positively even in the presence of hairy leukoplakia (Donoso et al., 2022).

### **Non-Hodgkin's lymphoma**

It is the second most frequently developed dangerous neoplasm in patients with HIV pathology. It is therefore both common and risky. Non-Hodgkin's lymphoma presents as a large mass of tissue with soft consistency and tissue necrosis, which is often affected

towards the gingival, alveolar, palatal and ultimately tonsillar mucosa, therefore, in the gums it can become equal to periodontal pathology and thus cause mucosal thickening and ulceration (Jácome et al., 2022).

### **Human papillomavirus**

Virus infection occurs in the oral mucosa associated with various clinical entities, whose appearance can range from benign wounds to papillomatous or wart-like lesions (Pupo et al., 2022). Consequently, it has been identified that squamous cell carcinoma, verruca vulgaris, condyloma acuminatum and finally focal epithelial hyperplasia are associated with the existence of the virus, so that interest in the analysis of these wounds has increased in recent years, based on the pathogenesis of malignant tumors or squamous cells (Conde et al., 2023).

### **Recurrent oral ulcers**

They are characterized by epithelial mucous membranes, in addition to which the ulcers usually lack an erythematous areola due to the immunosuppression suffered by different people, being considered idiopathic showing ulcerative wounds of known origin, therefore, special attention must be paid to the clinical symptoms, because they must be treated in time for the person's recovery (Zeng et al., 2022).

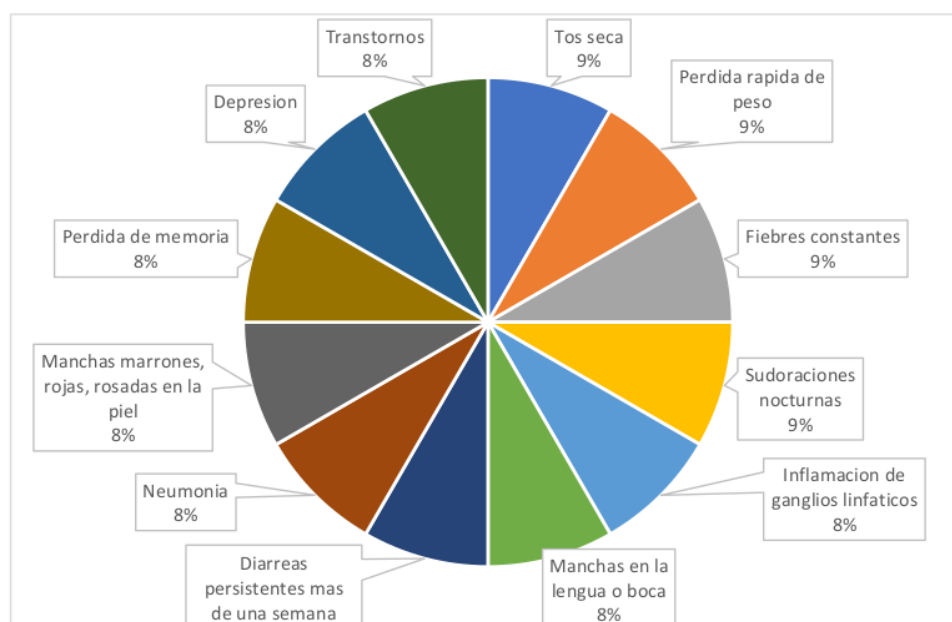
## **Results and discussion**

According to the authors (Ninomiya et al., 2023) agree on the different causes that develop in a person with HIV, being oral candidiasis, and (Patel, 2022) mentions that it is a very consecutive disease in patients with HIV. However (Calderón, 2021) and (Loor, 2022) emphasize that periodontal diseases develop worldwide, and (Chifor et al., 2022) state that they are lesions produced by an increase in bacteria. However (Donoso et al., 2022) indicate that hairy leukoplakia occurs asymptotically, and (Jácome et al., 2022). He mentions that non-Hodgkin's lymphoma is a very common infection among people

with AIDS in agreement with the authors (Jácome et al., 2022). Consequently (Conde et al., 2023), the human papilloma virus develops sometimes benign sores, in conclusion, the authors agree that there are different affectations with respect to people with oral health problems.

Figure 1 shows the symptoms that people with HIV present, such as dry cough, disorders, depression, memory loss, brown, red and pink spots on the skin, pneumonia, persistent diarrhea for more than a week, spots in the mouth, swollen lymph nodes, night sweats, constant fevers and weight loss. If these types of symptoms are present, you should go to a nearby health center..

**Figure 1.** Symptoms of HIV



**Source:** Own elaboration

Table 1 identifies oral health lesions in HIV-positive patients, classified by the least common; The most common lesions are candida fungal infections and cat scratch disease, i.e. they are caused by adverse reactions in the body as a result of a cat scratch,



therefore also mentioned are the strong lesions caused by HIV, such as Kaposi's sarcoma, erythematous candidiasis, periodontitis and gingivitis.

**Table 1. Oral health injuries in HIV-positive patients**

Common (-) conditions	Common (+) conditions	Strong effects
Melanic pigmentations	CMV viral infections	Infection leukoplakia pilosa
Atypical bacterial infections	Fungal infections other than <i>Candida a spp.</i>	Kaposi's sarcoma involvement
Non-specific ulcerations	Neurological disturbances: trigeminal neuralgia	Linfoma no Hodgkin
Salivary gland pathologies: Increased volume and xerostomia	Drug reactions	Oral candidiasis: Erythematous Pseudomembranous
Viral infections: Herpes simplex virus Human papillomavirus Virus varicela-zoster	Cat scratch disease	Periodontal disease: Ulcerative-necrotizing Linear gingival erythema Periodontitis and gingivitis

**Source:** Own elaboration

Table 2 shows the characteristics of HIV-infected people, classified by oral lesions, etiology, problem specification, location of the infection, symptoms and diagnosis, which are specifically detailed as follows:

**Table 2. Oral clinical features associated with HIV-positive patients**

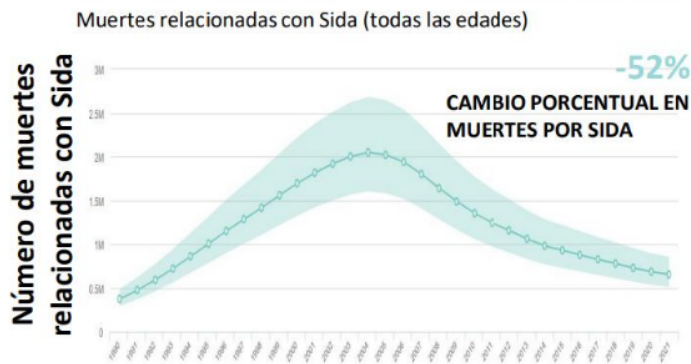
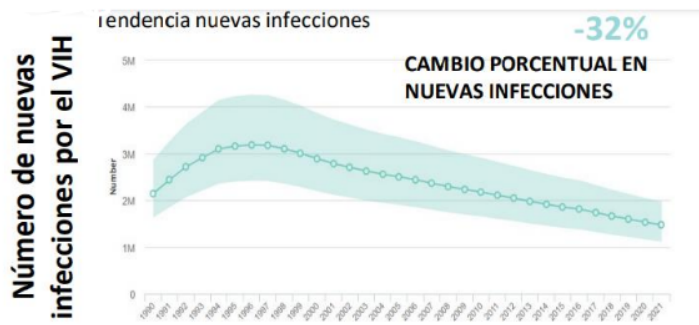
Oral Lesions	Aetiology - Description	Specification	Location	Symptoms	Diagnosis
Ulcers	Idiopathic E.	red, yellow and white ulcers	Tongue, palate, lip mucosa	Burning sensation, constant pain	Clinical
Non-Hodgkin's lymphoma	E. Multifactorial	Indurado, Solevantado, Ulcerated, Nodular, white, necrotic, and red in color	The whole area of the mouth such as the palate, oropharynx and gums.	Pain when an ulcer develops	Biopsy

Kaposi's sarcoma as an oral lesion	Human herpes viruses	Raised, flat, macula, wine red, red and purple colored nodule	Located in the mouth area with a predilection for the palate and gums.	Asymptomatic in some cases pains when an ulcer invades areas of the mouth	Biopsy
Hairy leukoplakia	Epstein Barri virus	Vertical or white corrugated	Located on the lateral edges of the tongue	Asymptomatic	Clinical
Gingivitis/Periodontitis	Periodontal bacteria	Necrotic, foul red and white odor	Found in periodontal tissue and alveolar bone.	Toothaches, constant sensitivity	Clinical
Erythematous candidiasis	Candida fungus	Maculae or red plates	Palate or buccal mucosa	Asintomáticas	Clinical

**Source:** Own elaboration

Therefore, information was also obtained regarding a planning project by the World Health Organization, indicating a strategy until 2030, where <sup>1</sup> the number of new HIV infections was predicted to decrease by -32%, and <sup>1</sup> the number of AIDS-related deaths was identified as decreasing by -52% due to HIV, as shown in Figure 3..

**Figure 3.** Strategy planning



**Source:** World Health Organization

Thus, people with HIV have oral health problems because they are very likely to get oral health infections, and more than a third of people with HIV have oral problems, which makes them more susceptible to warts, which if not treated in time can lead to oral cancer.

### **Frequent pain**

If a person has AIDS, he or she must face the various threats to the well-being of his or her health, and care is very important in order to have a better quality of life. However, the impact of infections or diseases of oral health is often minimized, manifesting themselves through pain and are usually uncomfortable in the oral cavity, which is a very frequent cause of embarrassment and damage to the quality of life. In this way, oral problems can cause various difficulties with regard to food, due to the pain generated

when chewing and passing food, as well as the sense of taste, leading to a lower intake of food for a good diet.

### **Diagnosing HIV through oral diseases**

Oral health can be an indicator that there may be a possibility of infection with the human immunodeficiency virus, although this does not apply in all cases. However, many symptoms of HIV first appear in the mouth, which is where the health specialist first notices the changes. In several cases, the mouth may be the first site of HIV infections, mentioned above, such as oral candidiasis, indicating that the immune system is not functioning properly.

### **Prevention**

The best way to prevent various oral problems is to continually visit the dentist for regular check-ups and oral cleanings to prevent bacteria from building up under the teeth, which can then pass through the bloodstream and be sent to other areas of the human body. It is therefore important for people with HIV to follow essential recommendations for oral hygiene and to employ a number of recommendations such as:

- ✓ Floss every day
- ✓ Brushing after every meal
- ✓ Visiting your dentist regularly
- ✓ Use oral antiseptics
- ✓ Use fluorides for caries prevention
- ✓ Use dental tape to remove biofilm in the interproximal spaces

Therefore, dry mouth is one of the main characteristics of the disorders that people with HIV suffer from, and it often occurs when there is not enough saliva to keep the mouth moist, so saliva helps to keep the mouth moist:

- ✓ Protecting teeth from decay

- ✓ Avoid infections and the spread of bacteria in the mouth.
- ✓ Digest food

If not enough saliva is generated, the spread of new bacteria is generated, it can also cause problems when chewing and passing food, and the mouth can feel dry and sticky with a burning sensation. The lips are often dry and cracked, which is why it is important that the person goes immediately to their doctor to be prescribed medication for improvement, therefore, it is recommended to:

- ✓ Chew sugar-free gums.
- ✓ Avoid consumption of salty foods, alcohol and tobacco.
- ✓ Sipping sugar-free drinks or pure water
- ✓ Night-time humidifiers

### **Conclusion**

The research work is concluded with the analysis based on oral health in HIV patients, also recommendations for oral health care and detailed information on the symptoms of oral diseases in people with HIV, the descriptive analysis method was used for a better understanding of the detailed information regarding oral health related to oral diseases caused by HIV, such as oral candidiasis, periodontal, hairy leukoplakia, non-Hodgkin's lymphoma, oral human papillomavirus and recurrent oral ulcers. Therefore, thanks to obtaining specific data, it contributes to scientific research, so as future work is expected the contribution of different researchers to carry out a study and implementation of a solution to the identified problem.

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