



Biosafety in the Management of HIV Patients in Dentistry (Systematic Review)

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Article Info

Volume 6, Issue 8, April 2024

Received: 03 Feb 2024

Accepted: 13 March 2024

Published: 07 April 2024

Abstract

The present investigation investigated the "Biosafety in the management of patients with HIV in dentistry." The objectives that directed the development of the research were to analyze the biosafety protocols in patients with HIV, as well as to describe the biosafety measures corresponding to dental care through a bibliographic review. The methodology used was based on literature searches from January 2018 to May 2023 on biosafety in dentistry before an HIV patient, five scientifically recognized databases in the field of health (Pubmed, Medline, Scopus, Science Direct and Cochrane Library). Following the PRISMA Methodology, of 35 articles resulting from the initial search, through the analysis of inclusion/exclusion criteria and quality of scientific evidence; 20 scientific articles are included for their qualitative evaluation. Results: It was possible to appreciate an exhaustive analysis of the biosafety protocol before an HIV patient in clinical care, managing to obtain highly recognized scientific sources. Conclusion. Within the exposed analysis, as a product of the investigation, the use of biosecurity prior to dental care before an HIV patient was established, remembering the ideal protection and security barriers for its implementation will reduce contagion.

Keywords: biosafety, HIV, protocol, dentistry, care.

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Introduction

HIV (human immunodeficiency virus) is a virus that attacks the body's immune system. If HIV is left untreated, it can cause AIDS (acquired immunodeficiency syndrome). There is currently no effective cure. Once you get HIV, you have it for life. (1)

The epidemic of the Human Immunodeficiency Virus (HIV) is not a current phenomenon, but has been going on for several years, specifically since the 80s, when the first cases in humans were

detected. Since then, an estimated 79.3 million people have contracted the virus since the epidemic began. HIV is the virus that causes Acquired Immune Deficiency Syndrome (AIDS). When a person is infected with HIV, the virus attacks and weakens the immune system. As the immune system weakens, a person is at risk for infections and cancers that can be fatal. Comments (2) (3)

Human immunodeficiency virus (HIV) is transmitted through the exchange of body fluids (semen, vaginal fluid, blood, breast milk) with an infected person, usually through vaginal or anal sex, sharing needles, or from mother to child (during pregnancy, childbirth, or breastfeeding). Many of the carriers of this virus are asymptomatic, which complicates the situation because, by not taking adequate biosecurity precautions in the dental field, there may be a risk of contagion for the professional. There are different lesions that will manifest in the oral cavity, patients with HIV/AIDS can be very variable and range from mild changes to severe lesions. (4)

That is why this research analyzes the biosafety protocols in patients with HIV, as well as describes the measures corresponding to dental care to obtain optimal protection when entering the clinic and avoid risks of contagion, in order to provide efficient patient assistance in these cases. Comments (5)

THEORETICAL FRAMEWORK:

Currently, infection with the Human Immunodeficiency Virus (HIV) and the disease it causes, Acquired Immunodeficiency Syndrome (AIDS), is one of the main public health problems worldwide. Comments (6)

HIV infection is the main human pandemic of a transmissible nature since the end of the twentieth century, the disease is characterized by producing an acquired immunosuppression, which predisposes to opportunistic infections. The HIV virus belongs to the family of human retroviruses, there are two types of HIV (HIV1-HIV2) both coming from the simian immunodeficiency virus (SIV), the only reservoir of the two types of HIV is the infected human being. Comments (6)

The incubation period, understood as the time elapsed from infection to the symptoms of Acute HIV Syndrome is 3-6 weeks and the average time between the initial infection and the onset of AIDS, without treatment, is about 10 years, but it is a very variable period. The routes of HIV transmission are: (7)

- Sexual contact: Through semen and vaginal secretions. Comments (7)
- Parenteral route: It occurs due to blood transfusions and blood products, as well as the sharing of needles and syringes between addicts to intravenous drugs, contaminated needles and ink for tattoos, and accidents with sharp instruments. Comments (7)
- Vertical: It is given from mother to child through the placenta, at birth or during breastfeeding. Comments (7)
- Accidental: Aimed at health professionals who are exposed to the virus by punctures or traumatic maneuvers with instruments contaminated with the blood of infected people. Comments (7)

Transmissibility is maintained as long as the infection persists in the affected individual, i.e., throughout his or her life. The contagiousness depends on factors such as the amount of the virus in the inoculum (high viremia) and the sharing of the virus in the different fluids. Comments (8)

Caring for people who are HIV-positive is no more complicated or different compared to people who are HIV-negative. This is because infection control measures apply to all patients receiving medical care. For HIV-positive people, receiving prompt treatment is crucial to maintaining and restoring their dental function and preventing intraoral infections, particularly those related to immune system overload, including periodontal problems. (8)

It is important for health personnel, especially those working in oral care teams, to recognize that preventive and clinical treatments are closely related to improving patients' self-esteem, producing positive psychological effects for people living with HIV and AIDS. (8)

Oral treatment should be provided in any dental office, using the same clinical and preventive procedures applied in general practice, including endodontics, periodontics, exodontics, dental treatments, and orthodontics. However, it is worth noting that some oral manifestations of HIV infection may require specialized care through consultation and referral to more complex levels. (8)

Even though an HIV-positive patient informs the dental staff of his or her condition, the recommended indications for care and treatment, as well as the specific techniques used, are generally the same as those used for people who are not infected with HIV and other medical conditions that affect the patient's overall health. (9)

It should be noted that some oral manifestations of HIV infection may require specialized care through consultation and referral to more complex levels. Even though an HIV-positive patient informs the dental staff of his or her condition, the recommended indications for care and treatment, as well as the specific techniques used, are generally the same as those used for people who are not infected with HIV and other medical conditions that affect the patient's overall health. (9).

In order to prevent cross-transmission, it is necessary to comply with biosafety regulations, which are all those procedures and care that must be taken in the care of patients and/or handling contaminated instruments to reduce the risk of contracting infections in the professional environment as much as possible. In dental care for HIV patients, the possibility of transmission will always be latent, so strict precautions must be considered to avoid the transmission of the disease. Comments (10)

Preventive health measures for health personnel in the face of a patient with HIV/AIDS are: (11)

1. Keep your vaccination schedule up to date. Comments (10)
2. Use protective barriers to prevent contact with blood and other contaminating fluids. Comments (11)
3. Effective sterilization and disinfection procedures. Comments (11)
4. Waste Management and Disposal Biosafety Protocol. Comments (11)
5. Hand washing: The hand is the main vector for pathogen transmission. Hands should be washed with soap and water before and after each patient's care or when contact with blood has occurred. Comments (11)
6. Clothing: It is used in order to protect the skin and avoid contamination of daily clothing, this clothing will be used only in the consultation, it is necessary to use caps and long-sleeved surgical clothing. Contaminated clothing should be removed in the same work area and placed in waterproof bags and transported to the washing area. Comments (11)
7. Coveralls: Provides health personnel with complete 360-degree coverage, for its use it is necessary to wear a gown over it. Comments (11)
8. Gloves: For the management of an HIV patient, it is advisable to use double gloves as it is an effective measure to prevent contact of the hands with blood. Although it does not prevent inoculation from the jab, it does reduce the risk of infection by 25%. Comments (11)

9. Gown: It must be long-sleeved, with a reinforced cuff and high collar (the coveralls must not be directly exposed, it must cover the disposable gown). Comments (11)
10. Mask: for the care of patients with HIV, the most recommended is the use of the KN95 or FFP2, as they provide greater protection, have an adjustable nose clip function, filter almost 94% of harmful particles that come from the outside. Comments (11)
11. Hat: Hair is an area of contamination, so a protective cap should be worn. Comments (11)
12. Eye protectors: The dental professional must wear eye protection, as this is the way to avoid eye infections caused by aerosols and splashes. Comments (11)
13. Face shield: To give a wider and safer protection it is necessary to use the face shield, it must exceed at least 8 cm below the chin and must also have a fluid repellent layer. Comments (11)
14. Shoes: They must be for single use, that is, only to be within the facilities of the dental work, they must also be comfortable and completely closed. Comments (11)

In addition to these measures, dental professionals should also follow standard precautions, including hand hygiene, respiratory hygiene, and environmental cleaning and disinfection. Hand hygiene is essential to prevent the spread of infection and should be performed before and after every contact with a patient. Respiratory hygiene, such as covering your mouth and nose when coughing or sneezing, helps prevent the transmission of respiratory infections. (12)

Dental professionals should be aware of the potential risks associated with needle stick injuries and should take appropriate steps to prevent them. This may include the use of safety devices, proper sharps disposal, and proper post-exposure prophylaxis if a needle stick injury occurs. (13)

They should also be aware of the signs and symptoms of infectious diseases, including HIV, and take appropriate action if they suspect a patient may be infected. Patients with HIV or other infectious diseases should be treated in a separate room, away from other patients, to prevent the spread of infections. (14)

If a dental professional is unsure of a patient's infectious status, they can use rapid test kits to check for the presence of infectious agents. (14)

It is important for dental professionals to keep accurate and complete records of patients' treatment, including their infectious status, if known. These registries can help track the spread of infectious diseases and allow for appropriate treatment and follow-up care. (14)

In addition to these measures, they can educate their patients on the importance of maintaining good oral hygiene and going for regular dental check-ups. Regular dental checkups can help detect and treat dental problems early, avoiding the need for more invasive procedures that can increase the risk of infectious disease transmission. (15)

Disinfection is an essential part of infection control in dentistry, as it helps prevent the spread of infectious diseases between patients and dental health workers. (15)

There are several disinfection methods used in dentistry, depending on the specific area or item being disinfected. Some common methods of disinfection include: (15)

Chemical disinfection: involves the use of chemicals such as chlorine dioxide, hydrogen peroxide, and quaternary ammonium compounds to kill or eliminate microorganisms. (15)

Autoclave: This is a sterilization method that involves subjecting instruments and other items to high-pressure steam at high temperatures.

UV-C light disinfection: This involves using ultraviolet-C light to kill bacteria, viruses, and other microorganisms. (15)

Alcohol-based disinfectants: These are often used to disinfect surfaces and hands in dental clinics. (15)

It is important to follow strict infection control protocols to ensure that all surfaces, instruments, and equipment are properly disinfected before and after each patient. Your dental healthcare provider can provide you with more information about their specific disinfection protocols and the measures taken to ensure patient safety. (16)

In general, biosecurity in dentistry for HIV patients requires a combination of proper sterilization of instruments, use of appropriate PPE, following standard precautions, and additional measures, such as the use of disposable items and rapid test kits. By implementing these measures, dental professionals can help protect themselves and their patients from the transmission of infectious diseases, including HIV. (17)

Materials and methods

A systematic review of the published scientific literature on biosafety in dentistry was carried out with a specific emphasis on patients with HIV. For its preparation, the guidelines of the PRISMA declaration have been followed for the correct conduct of a systematic review.

Systematic search

The first searches were conducted in January 2018 combining the terms 'biosafety' and 'dentistry' in the PubMed, ScienceDirect and Scopus databases. Limiting the results to publications made from 2018 to the present. Specifically, 20 results were obtained in PubMed and 15 in other search engines. Before proceeding to the selection of articles, the inclusion and exclusion criteria were defined.

Inclusion criteria

- This research is based on single case studies, books or manuals.
- Scientifically based articles on dental biosafety in patients with HIV.
- Articles on medicine and dental advancement.

Exclusion Criteria

- Articles that do not have scientific evidence are excluded.
- Articles with topics that do not focus on the one proposed.
- Articles outside the current search range.

In order to carry out a search adapted to the fulfillment of the objectives, selection/exclusion criteria were proposed for the research review. Within the eligibility parameters, articles on biosafety in dentistry, research on patients with HIV and management protocols for dental care and in-depth analysis of this topic were taken into account. In addition, published scientific articles had to be open access and available in English and Spanish. Finally, in terms of the date of publication, publications with a maximum age of 5 years were considered. The publication date was considered to be the period between January 2018 and May 2023. Research from past the year of publication was not taken into account.

Results and Discussion

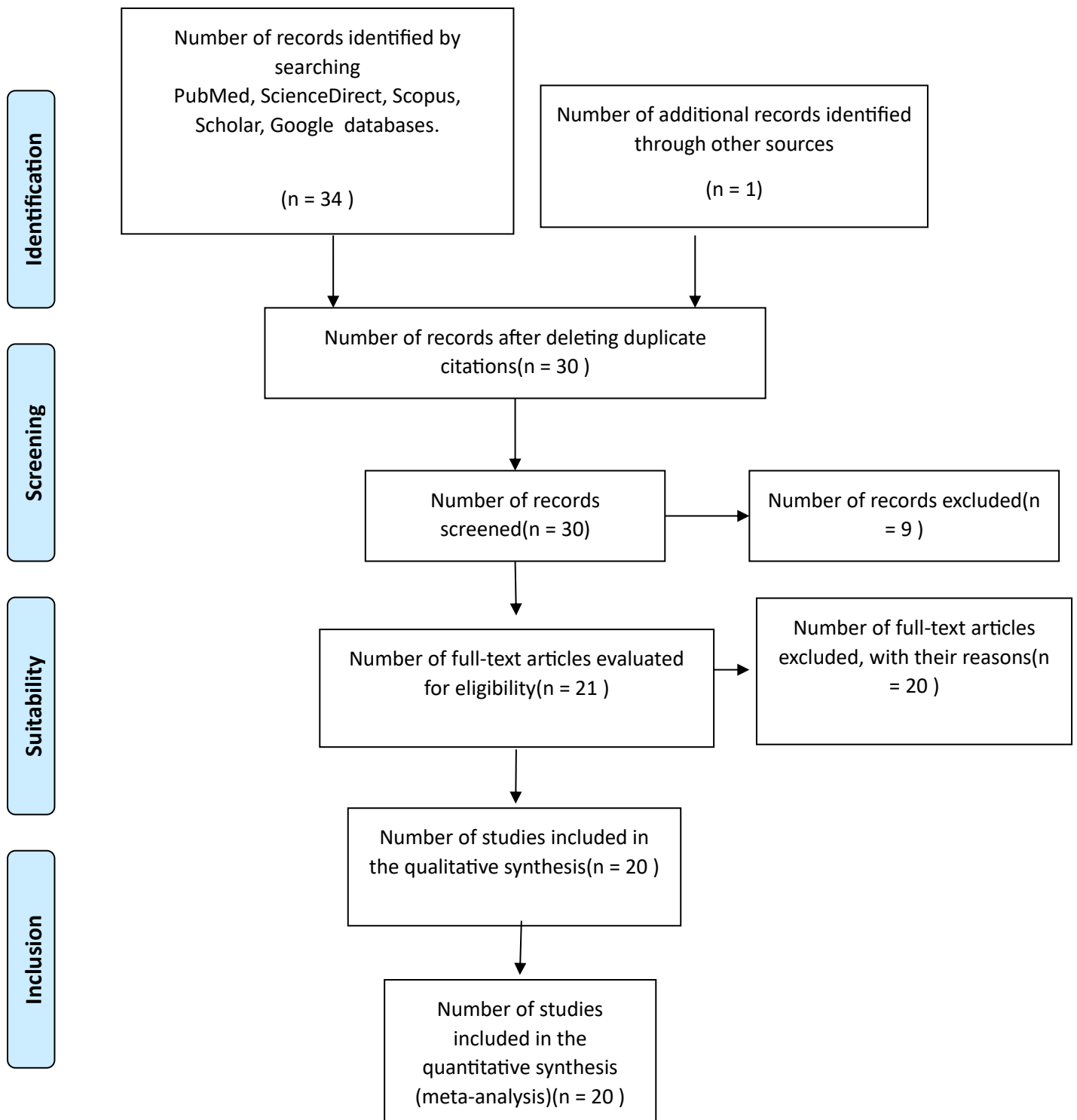


Figure 1: Prism Flowchart of Study Selection.

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Vila-Sierra LA, Hernández-Fuentes MT. Perception of patients with HIV/AIDS about dental consultation at IPS in Santa Marta - Colombia. Univ Salud [Internet]. 2020 [cited 2023 June 13]; 22(2):120–6.

METHOD

A quantitative descriptive study was carried out with the participation of 64 patients with HIV/AIDS from an IPS in the city of Santa

CONCLUSION

There is a need to address this disease not only from the clinical aspect, but also from the social aspect, to educate both the health professional and the community, about scientific advances, the study

- Available in: <https://revistas.udenar.edu.co/index.php/usalud/article/view/3830> Marta, who were given a data collection instrument. of this pathology and the real risks of contracting it, to demystify this condition and eradicate discrimination against patients.
- Arboleda V, Gabriela J. Level of knowledge about biosafety in dental care for HIV/AIDS patients. National University of Chimborazo, 2019. National University of Chimborazo, 2019; 2019. Available in: <https://app.bibguru.com/p/3bc52b84-9ade-4366-b9fa-8b4ab082f413> The research was correlational, where it evaluated the level of knowledge of students in biosafety in a field HIV patient, descriptive and cross-sectional with a non-experimental research design since it did not involve intervention in the vulnerable sector. There is no adequate knowledge about what biosafety protocol to follow in the presence of an HIV patient.
- Acosta de Velásquez BL. HIV/AIDS Patient Care: Dental Legislation and Biosafety in Colombia. Acta Bioeth [Internet]. [cited 2023 June 10]; 12(1):23–8. Available in: https://www.scielo.cl/scielo.php?pid=S1726-569X2006000100003&script=sci_arttext&tlng=en This article is a systematic review that describes universal biosafety standards in dental care, particularly those related to the care of people infected with HIV/AIDS. Establishing the routine of evaluating, controlling and preventing occupational accidents and infections associated with dental practice guarantees better care and quality of life, both for patients and health personnel.
- Rodriguez Rodriguez LV, Bermudez Martinez LV. A quality dental practice with respect to biosafety, a review of the literature. University of Santo Tomas; 2021. Available in: <https://repository.usta.edu.co/handle/11634/33237> The type of study of this research is a review of the literature of a quality dental practice regarding biosafety, where it is based on the collection of certain research, scientific articles, publications, in order to select the specific articles of the subject and thus be able to critically analyze them with scientific information in relation to the knowledge and execution of biosafety in dental practice. It was conclusive since it is evidenced that despite the fact that professionals in the entire area of dentistry, including specialists, undergraduate students from different universities in Latin America and Europe, assistants and patients have knowledge on the subject of biosecurity, biosafety protocols themselves, sterilization and disinfection methods, They are not aware of its importance and therefore do not put into practice in the clinical area what they have learned. Resulting in the spread of

Bonilla Espinel EM, Salazar Pineda AA. Evaluation of compliance with biosafety standards by students in the last year of clinical studies at the Faculty of Dentistry at the University of the Americas. Quito: Universidad de las Américas. Available in: <https://dspace.udla.edu.ec/handle/33000/1862>

Guacho A, Paola S. Oral pathologies associated with HIV and its dental management: literature review. 2023. Available in: <https://app.bibguru.com/es-mx?style=vancouver>

Ortíz S, Alejandro M. Level of knowledge about the dental management of patients with HIV who come to the Uniandes dental care unit. 2020. Available in: <https://app.bibguru.com/es-mx?style=vancouver>

The research design corresponds to a descriptive observational cross-sectional study on compliance with biosafety standards used by students who completed the last year of clinical studies at the School of Dentistry at the University of the Americas.

Descriptive, bibliographic, through the use of specialized search platforms such as: Pubmed, Medscape, Google Scholar, SciELO, MDPI, among others. A total of 25 scientific articles obtained based on the selection criteria were worked on, this bibliographic review allowed us to substantiate, systematize and analyze the information to establish the conclusions of the study.

The methodology used was descriptive with a cross-sectional situational diagnosis, the study population was a total of 47 eighth-semester students who carry out their training practices at UNIANDES, especially in the subject of Stomatological Clinic II.

certain diseases and cross-contamination in general.

Finally, greater discipline is recommended when complying with the established biosafety standards, either by proposing a manual of biosafety standards or by giving a grade to the final grade of the clinical chair.

It was determined that zero positive patients have pathologies with difficult scenarios of the oral cavity, that is, if there is a difference in individuals with detectable and undetectable viral load and therefore, the identification and evaluation of oral lesions would be an important biomarker for the identification of diseases such as HIV. Therefore, dental practice should be carried out with caution, always following the biosafety standards established by the WHO for the approach to each patient in the dental consultation, as well as the management protocols established for the treatment of each oral pathology if present.

Among the main findings, the level of knowledge is valued as average in 53%; In relation to the level of practical performance, it was low with 36% and the students surveyed expressed the need for training and coaching in 52%. For this reason, it is essential to strengthen the knowledge in the management of patients with

HIV/AIDS in the dental students of UNIANDES.

In the results of the research, it was possible to appreciate an exhaustive analysis of an adequate protocol for dental care in the presence of an HIV patient, managing to obtain scientific sources of great recognition, in such a way as to provide optimal information, according to the research of Costa V, Silveira M, Silva M. Oral procedures prior to the procedure to reduce the number of microorganisms, thus lowering the bacterial load in the patient, however, the author Wei J in his research realized that the area route is the close contact for a possible contagion because it is highlighted that both the use of mouthwashes acting as mouthwashes and the use of masks are optimal biosecurity measures. Comments (18) (19)

Acosta B determines that while not specific to people with HIV, it is important to recognize that the mouth harbors numerous microorganisms, and any procedure, whether routine or not, creates a pathway into the bloodstream and normally sterile areas of the mouth. The researchers note that there is no scientific evidence to suggest that using antimicrobial mouthwashes or brushing with products such as chlorhexidine or povidone iodine prevent infections before dental procedures. However, it is known that these products can reduce the amount of microorganisms present in sprays or splashes during treatment. This reduction benefits both the patient by reducing the number of microorganisms that can enter the bloodstream and the risk of superinfection, especially in immunocompromised patients, which is why our author Tovar B highlights the importance of usefulness in the implementation of a routine to evaluate, control and prevent work accidents and infections related to dental practice. together with comprehensive patient management involving the health team, it guarantees better care and quality of life not only for people with HIV/AIDS but for all patients. Comments (20) (21)

Moran L in his research highlights that the practice of dentistry exposes dental health professionals and patients to infectious disease agents, that is why the necessary use of optimal biosecurity measures before consultation, he also highlights that in patients with infectious diseases the care protocol is precise and optimal to comply with, author Martinez C emphasizes that dental care personnel should limit clinical care to 1 patient at a time. Guest Houses (22) (23) (24)

Clinics should be configured so that only the clean and sterile supplies necessary for the procedure are easily accessible in special care with biosafety protocols for patients with HIV, however in such a way the dentist will always have the obligation to approach people living with HIV/AIDS who seek dental care with a humanistic perspective, recognizing that health must be considered as a fundamental right that underpins respect for human dignity and all other rights. Guest Houses (22) (23) (24)

Despite the fact that all the information previously obtained has shown that it is important to obtain biosafety in dentistry and follow an adequate protocol for an HIV patient, studies carried out by the author Barrera S, establishes the great benefit of biosecurity since it aims to reduce the risk of transmission of infectious diseases through blood. oral and/or respiratory secretions from the patient to professionals and collaborators, from these to the patient and between patients of the dental service. (25) (26) (27)

Conclusion

Within the analysis presented, as a result of the research, the use of biosecurity prior to dental care in an HIV patient was established, reminding the ideal protection and safety barriers for its implementation will reduce contagion.

To minimize or eliminate the chances of infection, such as HIV and other diseases, it has been specified that employing universal precautions and refraining from directly treating patients

when the operator has skin lesions or suppurative dermatitis can reduce the risk of contamination.

Finally, it is important to socialize dentists about the implementation of biosecurity measures in the treatment of patients with HIV. This is because it is essential to recognize that the oral cavity is home to a multitude of microorganisms, and any dental procedure, whether routine or not, creates a pathway into the bloodstream and typically sterile regions. Therefore, establishing a strict routine with comprehensive biosecurity measures in dental practice ensures better care and quality of life, not only for people living with HIV/AIDS, but for all patients in general.

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