



## Level of Familiarity of Eighth, Ninth and Tenth Semester Students Regarding the Risk of Periodontal Disease in Patients with Obesity Attending the Dental Care Unit of The Universidad Regional Autónoma De Los Andes, Ecuador

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Article History	Abstract
Received: 06 June 2023 Revised: 05 Sept 2023 Accepted: 11 Sept 2023	<p><b>Aim:</b> It is essential to establish the different criteria of knowledge presented by dental students regarding the risk of periodontal disease in obese patients who receive care at the Dental Care Unit of the Universidad de los Andes (UNIANDES). <b>Material and method:</b> The main objective of this study is to evaluate the level of knowledge of eighth, ninth and tenth semester students on this specific topic. To conduct the research efficiently, appropriate methods were used, and quantitative-qualitative approaches were employed, using bibliographic and documentary modalities. The level of research was classified as descriptive, with an applied research scope. Methods of analysis and synthesis were employed, as well as the inductive-deductive approach and the systematic approach. The study population consisted of 120 dental students, and the active and participatory technique of the survey was used by means of a questionnaire that allowed obtaining the necessary data for subsequent analysis, tabulation, and appropriate statistical analysis. <b>Statistics and Result:</b> The results obtained in this study reveal that people with obesity present a high risk of suffering periodontal disease, due to their compromised systemic health status.</p>
CC License CC-BY-NC-SA 4.0	<b>Keywords:</b> Periodontal Disease, Dentistry, Students

### 1. Introduction

Obesity is a chronic systemic disease of multifactorial origin considered one of the most common nutritional disorders in industrialized countries, its development is related to a genetic interaction, metabolism that are related to diet, in addition to the passivity of physical activity and consumption of highly caloric foods that contributes to overweight, that ends up affecting the human being by their bad eating habits among others (García et al., 2014).

Obesity is a significant risk factor for the development of other systemic diseases in adulthood, being the most common and most prevalent such as hypertension, atherosclerosis, cerebrovascular diseases, diabetes mellitus and cardiovascular diseases that appear due to obesity. These clinical pathologies over time end up bringing negative consequences on health (Farias, 2021).

The consequences of suffering from obesity have a lot of risk to health, because they present adverse metabolic effects over time, on blood pressure, triglycerides, cholesterol, as well as insulin resistance being a negative aspect. Leading with endothelial dysfunction, atherogenesis and increased platelet

adhesion, it has been shown that this disease is more prevalent in men than in women. It is meritorious to emphasize their biological relationship, as a result there is an increase in the secretion of inflammatory mediators; by modifying the behavior of periodontal tissues, such as a loss of periodontal support (Ferreira et al., 2013). The importance lies when evaluating patients with such a condition, to know the risk of obesity in each individual, take into account oral manifestations that occur, at the same time some side effects after bacterial proliferation so it is essential to educate once the disease is diagnosed so that it takes a much more rigorous oral hygiene and to be able to identify the necessary elements, how to prevent and necessarily establish a treatment for the type of periodontitis suffered by the individual and control periodontal disease (Mur et al., 2017) .

There are some risk factors presented by obese people, the most prominent being the bad eating habit and in turn the carelessness in their oral hygiene, thus generating the excessive accumulation of bacterial plaque that in more advanced stages already develops as such periodontal disease. Therefore, it is important to provide adequate treatment to stop the progression of the different existing periodontal diseases that are of concern in these systemically compromised people (Jaramillo et al., 2013). Chronic inflammatory periodontal disease, specifically in obese adult patients, afflicts certain structures of deep insertion of the tooth, determined by a bacterial exposure that encourages a destructive response of the host, this leads to the loss of periodontal insertion, bone, as well as the fall of the teeth. Gonzales and Bárbara<sup>3</sup> state that: Risk factors are periodontal disease, which make up dentobacterial plaque, tobacco, diabetes, stress and genetic factors; to identify the possible pathological association with others, such as obesity (Lara et al., 2017) Other factors that promote problems about the risk of acquiring periodontal disease in obese patients may be due to the low socioeconomic and educational level of people, limitations to access to dental service. Periodontal pathology is not only an oral health problem but also an inconvenience associated with the systemic health of the patient. This does not only affect the teeth, oral infections also occur through saliva, through the blood it can generate other conditions compromising other organs of the body, observing that the host response called periodontal pathogens represents a crucial determinant in the etiopathogenesis of the disease (Balarezo et a, 2017).

Including other aspects related to this issue, obesity tends to increase the development of poor oral hygiene habits by decreasing daily toothbrushing, this produces the appearance of diseases, such as gingivitis and periodontitis, but generally could be related to the development of periodontal alterations such as depth to probing and the level of clinical insertion that an obese person could increase the risk of developing periodontal disease reached even a chronic state (Khan et al., 2018). There is proven evidence of periodontal disease in relation to metabolic syndrome that encompasses some alterations such as abdominal obesity, abnormal fat metabolism, with chronic systemic diseases, consuming this metabolic alteration of fats being a contributing factor encapsulating the anaerobic infection that triggers periodontitis. But even the subject requires other research, because there are many controversial aspects and still to be established (Bascones, 2017).

Within the studies presented by most authors, they consider it very important to have the knowledge of why periodontal diseases could affect the body systemically, existing in many cases that are not detected or treated in time, becoming more complex situations such as periodontal disease; reaching a chronic stage irreversibly despite treatment, considering also essential to take into account the quality of life of patients in terms of poor eating habits and the lack of prevention when visiting the dentist (Hernandez, 2011; Jaramillo, et al., 2021; Sandoval et al., 2021). The case study has linked body weight with periodontal disease, some authors mention that obesity can be a risk factor for periodontitis. Adipose tissue participates in inflammation and immunity, through the production and release of anti-inflammatories, through adipokines, leptite and adiponectin, cytokines and chemokines. These clinical pictures are directly related to oral health, taking into account that they are associated with a hyperinflammatory response related to certain mechanisms of obesity (Merello, & Olivia, 2016).

Within the aspects that affect periodontal diseases there are certain environmental factors, determined that their progress is multifactorial because they can also influence the alterations of insulin sensitivity found in obese patients. Research determined that the highest prevalence of periodontal disease is

related to age range and gender, which are risk factors. It is necessary to take into account certain characteristics mentioned above that influence, being the cause of pathologies in the dental organs (Tamayo, 2019). Obesity worldwide borders 15% of the population, 13% corresponds to men, 17% belongs to women, reached epidemic proportions; Every year at least 2.8 million people die from obesity, this clinical picture affects not only industrialized countries, it is also prevalent in low- and middle-income nations, which causes a lot of concern. The data provided by the World Health Organization, through a study from 2016 to 2019, were alarming and worrying (Pineda , 2020; González et al., 2021; Leyva et al., 2023).

In Ecuador, according to the national survey of health and nutrition (ENSANUT) in the years 2012 and 2013 obesity and overweight has had an impact on all age groups, reaching levels of a true epidemic, yielding the following statistics, 29.9% corresponds to schoolchildren, 26% adolescents and 62.8% to the adult population, considering disturbing figures and assuming that it is a health problem that threatens an entire population that requires timely and preventive care (Kajioka et al., 2021). Recent research recognizes the importance of adequate nutrition in relation to periodontal disease and shows that obesity is a potential risk to develop this condition both in the dental organs and in the tissues of protection and support of the tooth. Obesity has an impact on metabolic and immune factors and these increase host susceptibility to periodontal disease. Therefore, the objective of the study was to evaluate the students' knowledge, through the available evidence about the relationship between obesity and periodontal disease and thus determine the risk that obese people have of presenting periodontal disease (Quishpe, 2021).

## **2. Materials And Methods**

It allowed to determine the methodology applied in the elaboration of the scientific article in an efficient way, relying on all the tools, methods, techniques and instruments that contribute to its development. All research work must have an approach, in which the study was supported, so we sought to evaluate the level of knowledge about the risk of periodontal disease in obese patients between an age of 40-60 years who come to the UNIANDES dental care unit. When reviewing scientific articles in the repository, Martínez and Herrera<sup>16</sup> mention that: Obesity and periodontal disease have a certain relationship, allowing to determine the possible mechanisms that affect the different dental pathologies. The studies allowed to observe and identify periodontal parameters and body composition that is produced by inadequate nutrition.

The literature search to obtain information was performed using biomedical literature searches on obese patients with periodontal problems. The search was filtered using the methodological criteria for this the following databases and search engines were used: The conchrane Central Register of contrlled trials (CENTRAL), Medline (through Pubmed). To carry out the following study, one of the tools used and applied was the survey carried out virtually online on the Google Drive platform; for this it was necessary to obtain the number of students who met the inclusion and exclusion criteria; those of inclusion includes those students who provided their care in the Dental Care Unit of Uniandes, those who wish to participate in the survey and of course those students enrolled in the eighth, ninth and tenth semester of the career and those of exclusion; Those students who did not provide their care in the clinic or did not agree to participate in the study, taking into account these criteria, a total population and sample of 120 students was obtained. With these data for the established population, a bank of questions was elaborated based on truthful and above all updated information from journals, books and scientific articles.

The questionnaire was carried out and supervised together with the tutors, which consisted of 10 questions whose answers were only to choose a single option according to their knowledge, such questions specifically had key words such as what is periodontal disease and obesity. Then, in order to apply this survey to the students, a request was made to the career management in order to continue with the study and to be able to reach the students and share the link. After the collection of the information, we proceeded with the respective analysis using the methodology proposed for this study, which was both quantitative and qualitative, in order to know the level of knowledge of the students, as a next step the graphs were made with the data obtained from the survey in Microsoft Excel and each of the questions and answers was entered.

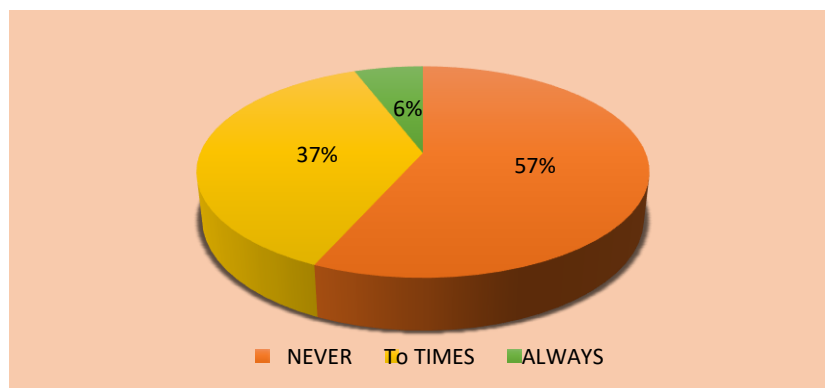
### 3. Results and Discussion

With the research carried out it is intended to publicize or show the level of knowledge of the students of eighth, ninth and tenth level of the career of Dentistry on the risk of suffering periodontal disease of obese patients who come to the UNIANDES dental care unit, in order to determine this study students must make a correct diagnosis, treatment and a protocol to follow in case of caring for patients with such a systemic condition.

Gender	Student numbers	Percentage
Female	70	62%
Male	50	38%
Total	120	100%

After tabulating the results according to the number of students taken from both eighth, ninth and tenth of the 120 students 70 are women and 50 men, we can realize that 62% corresponds to women and 38% are men, who contributed with criteria on the level of knowledge of eighth grade students, ninth and tenth semester, on the risk of periodontal disease in obese patients, who come to the UNIANDES Dental Care Unit, the data found will serve to improve certain activities of oral health professionals during personal exercise. Then, percentages that they present by question after tabulating the results found with the students of Eighth, ninth and tenth semester of Dentistry of UNIANDES, will be able to issue the criteria through the survey, to know something more about the study in an adequate way.

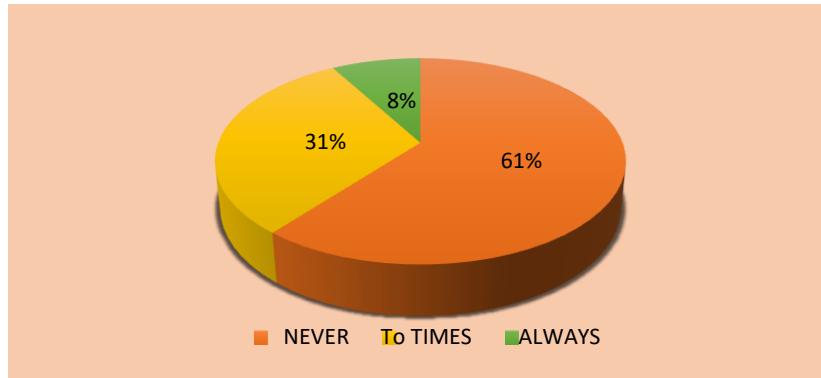
**Question 1.** As a dental student, have you heard about what periodontal disease is?



**Figure No. 1:** Percentage of student survey

After reviewing the data of the survey applied to the group of students of eighth, ninth, tenth semester of the career of Dentistry a greater percentage that corresponds to 57% answers that they have always heard about periodontal disease, 37% answer that sometimes they have heard about periodontal disease, while 6% answer that they have never heard about what periodontal disease is.

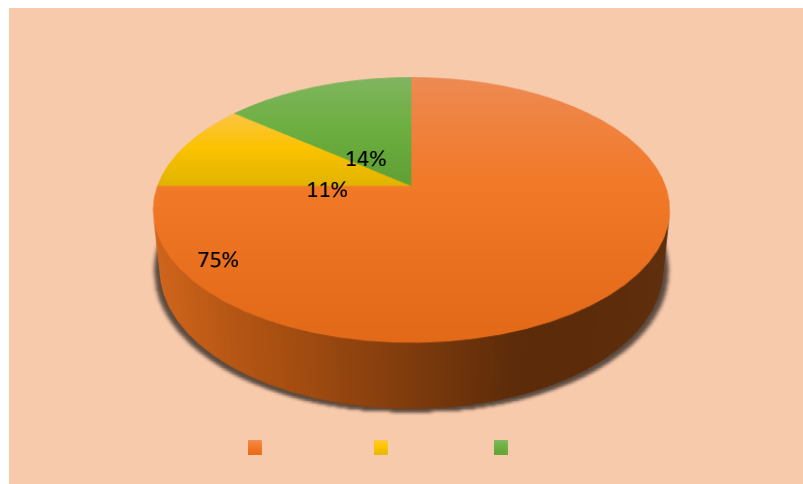
**Question 2.** Do you recognize the presence of periodontal disease in patients who come to the UNIANDES Care Unit?



**Figure No. 2:** Percentage of student survey

After reviewing the data of the survey applied to the group of students of eighth, ninth, tenth semester of the Dentistry career, a higher percentage corresponding to 61% answered that they always recognize the presence of periodontal disease in patients who come to the UNIANDES Care Unit, 31% answered that sometimes they recognize periodontal disease in patients who come to the UNIANDES Care Unit and 8% answered who have never been able to recognize periodontal disease in patients who come to the UNIANDES Care Unit.

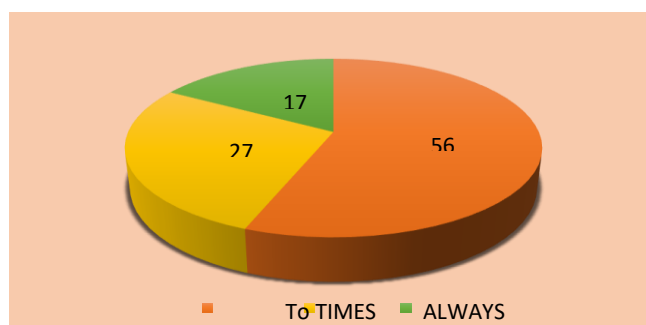
**Question 3.** Do you think you need to know more about the various types of Periodontal Diseases?



**Figure No. 3:** Percentage of student survey

After reviewing the data of the survey applied to the group of students of eighth, ninth, tenth semester of the Dentistry career, a greater percentage that corresponds to 75% answers that they always think that they need to know more about the various types of Periodontal Diseases, 11% answer that sometimes they consider that it is necessary to know more about Periodontal Diseases and 14% answer that they never think they need to know more about periodontal diseases.

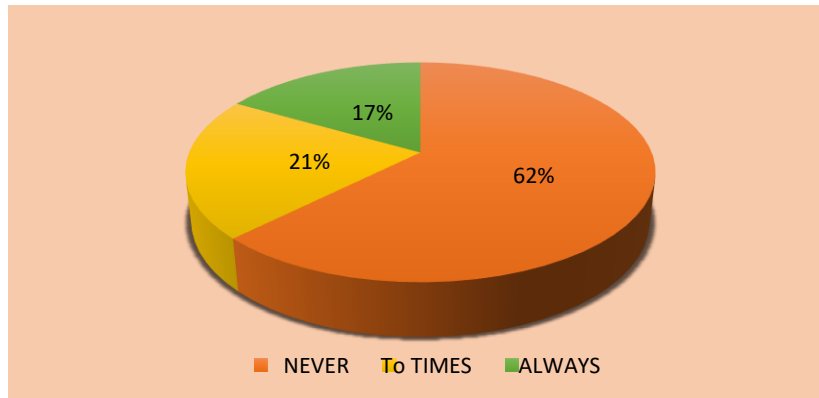
**Question 4.** Are there periodontal diseases that afflict obese people?



**Figure No. 4:** Percentage of student survey

After reviewing the data of the survey applied to the group of students of eighth, ninth, tenth semester of the career of Dentistry a greater percentage that corresponds to 56% answers that there are always periodontal diseases that suffer from obese people, 27% answers that sometimes there are periodontal diseases that suffer from obese people and 17% answer that there are never periodontal diseases that suffer from obese people

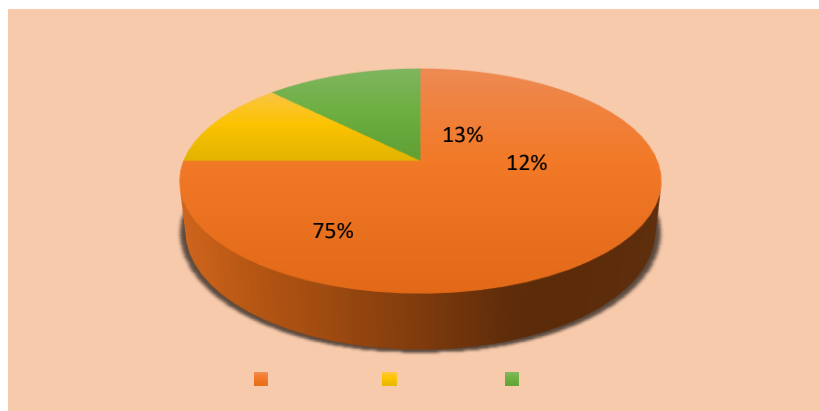
**Question 5.** Do you recognize the risk that obese people have of suffering from Periodontal Disease?



**Figure No. 5:** Percentage of student survey

After reviewing the data of the survey applied to the group of students of eighth, ninth, tenth semester of the career of Dentistry a greater percentage that corresponds to 62% answers that they always recognize the risk that obese people can suffer from periodontal disease, 21% answer that sometimes they recognize the risk that obese people present of suffering from periodontal disease and 17% answer that they never or never recognize the risk that Obese people tend to suffer from periodontal disease.

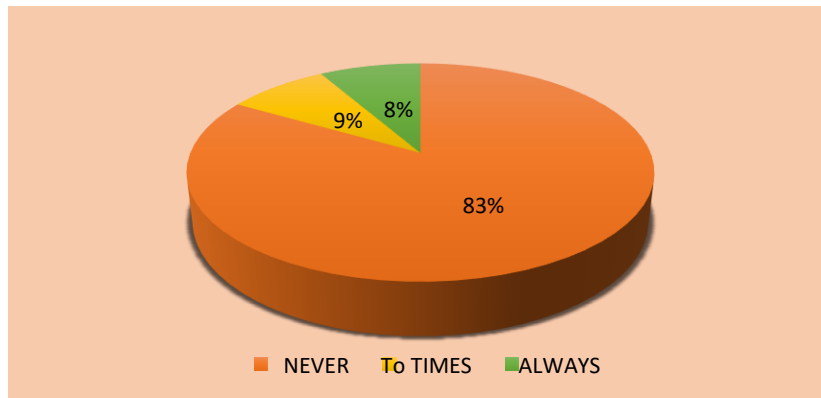
**Question 6.** You have introduced your obese patients to some oral health information



**Figure No. 6:** Percentage of student survey

After reviewing the data of the survey applied to the group of students of eighth, ninth, tenth semester of the Dentistry career, a greater percentage that corresponds to 75% answers that they have always provided oral health information to obese people, 12% answers that sometimes they have provided oral health information to obese people and 13% answers that they have never provided oral health information to obese people.

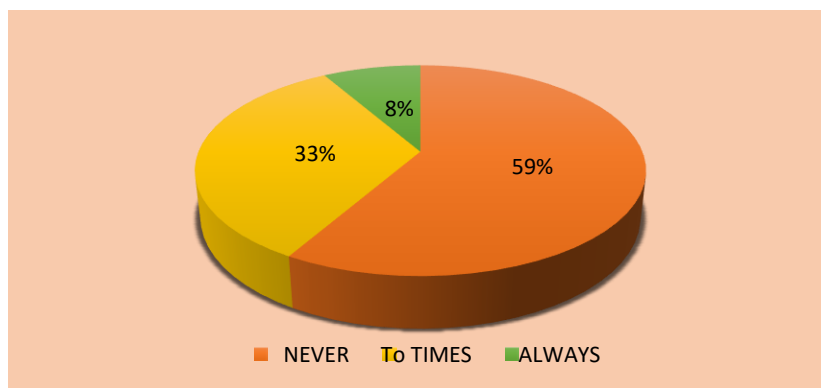
**Question 7.** As a dental student do you think about whether periodontal disease is related to obesity?



**Figure No. 7:** Percentage of student survey

After reviewing the data of the survey applied to the group of students of eighth, ninth, tenth semester of the career of Dentistry a greater percentage that corresponds to 83% answers that they always think that periodontal disease is related to obesity, 9% answer that sometimes they think that periodontal disease is related to obesity, and 8% answer that they never think periodontal disease is related to obesity

**Question 8.** Among the common diseases that obese people present are mild and moderate periodontitis?



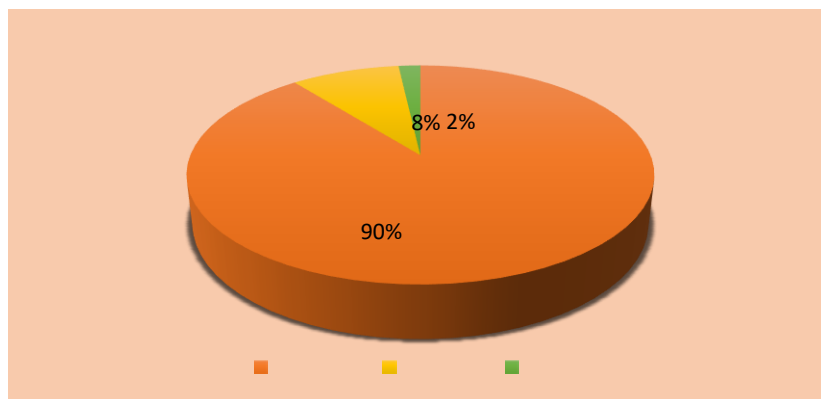
**Figure No. 8:** Percentage of student survey

After reviewing the data of the survey applied to the group of students of eighth, ninth, tenth semester of the career of Dentistry a greater percentage that corresponds to 59% answers that obese people are always prone to mild and moderate periodontitis, 33% answers that sometimes obese people can present mild and moderate periodontitis and 8% answers that obese people can never present mild and moderate periodontitis.

**Question 9.** Do you think it is important to evaluate obese patients and identify the necessary elements to prevent and treat periodontal disease?



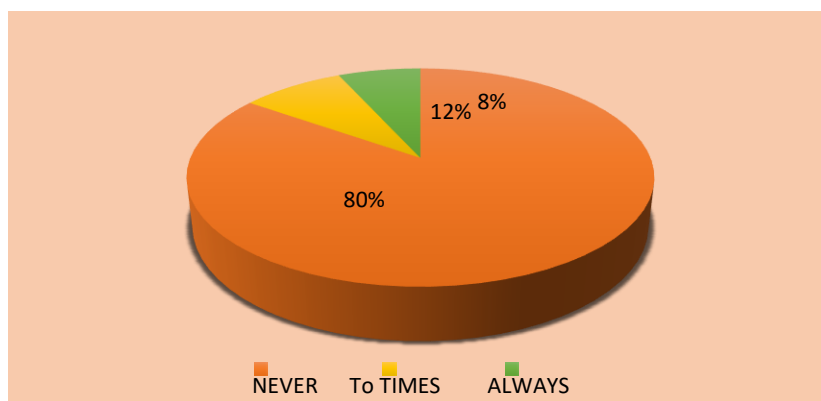
Level of Level of Familiarity of Eighth, Ninth and Tenth Semester Students Regarding The Risk of Periodontal Disease In Patients With Obesity Attending The Dental Care Unit of The Universidad Regiona Autónoma De Los Andes, Ecuador



**Figure No. 9:** Percentage of student survey

After reviewing the data of the survey applied to the group of students of eighth, ninth, tenth semester of the career of Dentistry a greater percentage that corresponds to 90% answers that it is always important to evaluate obese patients and identify the necessary elements to prevent and treat periodontal disease, 8% answers that sometimes important to evaluate obese patients and identify the necessary elements to prevent and treat the disease periodontal and 2% answer that it is never important to evaluate obese patients and identify the necessary elements to prevent and treat periodontal disease.

**Question 10.** As a dental student, have you considered obesity to be a health problem for the population?



**Figure No. 10:** Percentage of student survey

After reviewing the data of the survey applied to the group of students of eighth, ninth, tenth semester of the career of Dentistry a greater percentage that corresponds to 80% answers that they have always considered that obesity is a health problem for the population, 12% answers that sometimes they have considered that obesity is a health problem for the population and 8% answer that they have never considered that obesity Obesity is a health problem for the population.

Reviewing other research has shown that the prevalence of periodontal disease in obese individuals between 18 and 34 years is 76% higher than in individuals with normal weight. For Al-Zahrani.<sup>17</sup> mentions that: It has been found that the prevalence of periodontal disease according to BMI in obese and non-obese, which was significantly ( $p = 0.03$ ) more in obese (88%) than in non-obese (74.4%). There is a significant association between periodontal disease and obesity among young adults.

When analyzing the statistical data obtained through the application of the survey, we can say that most students have heard about what periodontal disease is, this question could also be sustained based on the knowledge obtained from the learning treated during the educational activities taught by teachers, what it has contributed in the preparation for the professional field at the time of putting it into practice in the UNIANDÉS Dental Care Unit.



The students surveyed in the eighth, ninth and tenth semester, with a higher percentage of them, mention that they can always recognize periodontal diseases in patients, specifically those who come to the UNIANDES Care Unit, visualizing that it presents an efficient level of knowledge about the different diseases that obese people may have.

After reviewing the data in the third question survey that students of the eighth, ninth and tenth semester Dentistry career, with a higher percentage refer to the fact that it is always necessary to know more about Periodontal Disease, due to the different manifestations or clinical characteristics that can be observed in obese people specifically in their dental organs, Not all obese patients can suffer from a single type of periodontal disease, being very important that learners demonstrate or obtain more relevant information about periodontal diseases.

When discussing the data found, it can be deduced that a higher percentage of students of the Dentistry career when measuring the level of knowledge they present about the different diseases that obese patients have, who come to the UNIANDES Dentistry Care Unit, stated in the survey that there will always be different types of periodontal diseases that obese people suffer, and as such they need the specific and appropriate treatment to treat the type of periodontal disease.

Within the information collected we can mention that, with a higher percentage, the students of eighth, ninth and tenth semester of the Dentistry career within the level of knowledge of the different diseases of the patients who come to the UNIANDES Care Unit, stated that they always recognize the risk that obese people have of suffering from Periodontal Diseases, where they will put into functionality all the knowledge and learning acquired (Ricardo et al., 2023; Gomez et al., 2022).

Obesity is a pathology that is increasing worldwide and has become one of the most common causes of health problems, due to lack of food control. For Saito<sup>18</sup> He mentions that: This disease has been described as a global epidemic since 2000 by the WHO, in addition the trends show that the prevalence is increasing due to the lack of personal control and ignorance in the dental diseases they produce.

It is also important to note that the students of eighth, ninth and tenth semester of the career of Dentistry, within their level of knowledge in the different diseases presented by obese people, said they will always consider important, to provide information to their obese patients about oral health in order to improve their quality of life and that such systemic condition does not worsen with the appearance of any type of periodontal disease (Arroba et al., 2021; Gomez et al., 2022; Room & River, 2021).

When reviewing the data provided by the students of eighth, ninth and tenth semester of the Dentistry career, it emerges based on the level of knowledge about the different diseases of obese patients, responding with a higher percentage mentioned that always, it is important to correctly evaluate an obese patient and in turn identify the necessary elements to prevent and treat periodontal disease being necessary to provide the appropriate treatment to avoid loss of dental organs.

When analyzing the data provided through the survey to eighth, ninth and tenth students of the Dentistry career, to establish the level of knowledge about periodontal diseases in obese people, a large percentage presented their criteria, that obesity if it constitutes a health problem for the population, all these data obtained will contribute to other research work; that guarantee above all quality of care to patients who are systemically compromised by obtaining all the necessary and updated knowledge.

Obesity is a chronic, multifactorial disease characterized by the hypertrophy of adipose tissue in the body and develops from an interaction between genotypic and environmental According to Merello<sup>19</sup> states that: it is commonly defined as a complex, chronic and multifactorial metabolic disorder, mainly due to the eating disorder that people have. According to Saito<sup>20</sup> He explains that there is an increase in the prevalence of diseases such as type 2 diabetes mellitus and cardiovascular diseases, dental pathologies that are directly related to the pathology of obesity.

When reviewing other research in relation to the survey questions, assuming that periodontal disease in these systemically compromised people has been constituted as a global health problem, which not

only covers a certain region but an entire world. For Scannapieco<sup>21</sup> He explains that: there is an increase in the presence of different types of periodontal disease in obese people, and refers to the fact that in all developed and underdeveloped countries they have high morbidity rates in relation to obesity.

#### 4. Conclusion

It is concluded that the level of knowledge of eighth, ninth and tenth semester students about the risk presented by obese patients suffering from certain periodontal diseases is extremely relevant taking into account all the information collected from various bibliographic sources to appreciate that there is such a risk that obese patients present periodontal diseases, that many times they do not know and for the same reason do not go continuously to the Dentist. It follows that the students of eighth, ninth and tenth semester of Dentistry established the relationship of periodontal disease with obesity according to the results obtained during the research, concluding that the level of knowledge they present are the most appropriate about the different pathologies of obese patients receiving treatment at the UNIANDES Dental Care Unit. It was determined, according to the study, that periodontal disease in obese patients constitutes a serious health problem, indicating that periodontal pathology is more prevalent in obese patients compared to individuals with normal weight. It is important to make people aware that being overweight does not mean being in good health, but on the contrary it is synonymous with multiple diseases. In addition, it is concluded that most obese people are unaware of the multiple diseases that occur in relation to the oral cavity, being a problem that requires greater attention to be able to provide adequate treatment to the oral structures, due to the multiple oral diseases that systemically compromised people can suffer.

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