



ORIGINAL ARTICLE

Evaluation of the nutritional quality of patients receiving care at the dental unit of "Uniandes"

Evaluación de la calidad nutricional de los pacientes que reciben atención en la Unidad Odontológica "Uniandes"

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ABSTRACT

Introduction: a balanced and healthy diet guarantees considerable advantages for general health, and within this, it helps to prevent oral diseases, always accompanied by good oral hygiene.

Objective: to evaluate the nutritional quality of patients between 40 and 60 years of age treated at the "Uniandes" Dental Care Unit in Ambato, Ecuador.

Methods: an observational, descriptive and cross-sectional study was carried out in adult patients between 40 and 60 years of age seen at the "Uniandes" Dental Care Unit of Ambato during the period September-December 2023. The universe and the sample coincided since the patients met the inclusion criteria previously outlined. Thus, 170 patients were under study. The source of information used were surveys and absolute and relative values were used.

Results: through surveys conducted with 170 patients, it was found that 50 % consume meat daily, 41 % prefer fruit juice as an accompaniment to their meals, and 35 % include sweets in their diet, among them, chocolates. Sixty-six percent of the patients know that their diet influences their oral health, while 34 % were unaware of the impact of the type of diet on their teeth.

Conclusions: based on these results, an oral health promotion program has been proposed that aims to educate patients on the importance of maintaining a balanced diet, proper oral hygiene and the need to undergo regular dental check-ups.

Keywords: Diet; Tooth Diseases; Oral Health; Oral Hygiene.

RESUMEN

Introducción: la dieta balanceada y saludable garantiza ventajas considerables para la salud general, y dentro de esta, ayuda a prevenir enfermedades bucales, siempre acompañada de una buena higiene oral.

Objetivo: evaluar la calidad nutricional de pacientes entre 40 y 60 años atendidos en la Unidad de Atención Odontológica "Uniandes" de Ambato, Ecuador.

Métodos: se realizó un estudio observacional, descriptivo y transversal en pacientes adultos entre 40 y 60 años atendidos en la Unidad de Atención Odontológica "Uniandes" de Ambato durante el período septiembre-diciembre de 2023. El universo y la muestra coincidieron ya que los pacientes cumplieron con los criterios de inclusión trazados previamente. Por lo que quedaron bajo estudio 170 pacientes. La fuente de información utilizada fueron las encuestas y se utilizaron valores absolutos y relativos.

Resultados: a través de encuestas realizadas a 170 pacientes, se encontró que el 50 % consume carne diariamente, el 41 % prefiere jugo de frutas como acompañamiento en sus comidas, y el 35 % incluye dulces en su dieta, entre ellos, chocolates. El 66 % de los pacientes saben que la alimentación influye en su salud bucodental; mientras que un 34 % desconocían el impacto que genera el tipo de alimentación sobre los dientes.

Conclusiones: a partir de estos resultados, se ha propuesto un programa de promoción de la salud bucal que tiene como objetivo educar a los pacientes sobre la importancia de mantener una dieta equilibrada, una adecuada higiene oral y la necesidad de someterse a revisiones dentales regulares.

Palabras clave: Dieta; Enfermedades Dentales; Salud Bucal; Higiene Bucal.

INTRODUCTION

The function of the teeth is to reduce food into particles suitable for swallowing, which is known as masticatory efficiency. To achieve this, a larger occlusal contact area and a smaller food particle size are necessary. Tooth loss reduces this efficiency, resulting in shorter masticatory processes and a reduction in masticatory and muscular strength. There is a variation in food intake, with greater difficulty in chewing certain types of food such as fruits or vegetables, and a preference for softer foods, which favors a reduction in the consumption of certain nutrients necessary for the body.⁽¹⁾

Foods that can protect tooth enamel against bacteria have been observed. Foods high in protein, calcium, fluoride and fats. Some of these increase the salivary plug capacity, increase the pH and even remineralize the enamel with chewing which stimulates the salivary flow; such as sugar-free chewing gum that contains minerals and that its consumption after meals prevents dental caries by eliminating food debris.⁽²⁾

Quality nutrition is fundamental even from the moment of the formation of the new being, to guarantee good health and therefore good dental health, since the adequate mineralization of dental tissues will guarantee hard and healthy tissues, the opposite, i.e. the lack of vitamins mainly A, C and D on the other hand increases the possibility of developing carious processes at an early age, and if the frequent consumption of sugary products and drinks between meals is added, this possibility is potentiated.

Individuals with vitamin A deficiency are more prone to suffer from various forms of cancer, heart disease and rheumatoid arthritis. Lack of vitamin E is also associated with various types of cancer, heart disease and Parkinson's disease. Vitamin C deficiency can lead to decreased immune system function, cardiovascular disease, myocardial infarction and hypertension. Lack of vitamin B1, also known as thiamine, found in (whole-grain, enriched and fortified products such as bread, cereals, rice, pasta, flour, beef and pork, among others), can cause nausea, constipation, loss of appetite and weight loss.⁽¹⁾

Dental caries is one of the most common diseases, it requires certain etiological factors for it to start and develop; According to the Keyes triad, the first factor involved is the characteristics of the host (the state of the teeth, the regularity of saliva secretion and the pH of the saliva), the consumption of an unhealthy diet (rich in sugars and carbohydrates), the presence of cariogenic microorganisms (*Streptococcus Mutans*, *Lactobacilli*, among others); to this has been added another very important factor which is the time in which all these interact to develop caries.

There is a relationship between obesity and dental caries specifically associated to the intake of foods with high sugar content, ingested in short intervals of time as a risk factor that contributes in common which is nutrition, a relevant and important problem in Public Health.⁽³⁾

During old age the dental organs are more vulnerable to caries in the dental necks, bone resorption, taste perception may be affected, dry mouth, and associated with harmful habits more frequently oral cancer. In the short term, oral diseases can alter the diet of the subject, due to early loss of teeth and thus decrease the nutritional status.⁽⁴⁾

The functions of saliva, among others, are: to protect, clean and disinfect the oral cavity; the amount of saliva secreted by the salivary glands is related to the type of nutrition, among others; insufficient production of saliva reduces the enzymatic protection of the structures of the oral cavity. As we age the salivary flow decreases, producing xerostomia, for which the consumption of foods such as fruits with high water content should be recommended to stimulate the salivary flow.⁽⁵⁾

The non-cariious dental lesions such as attrition, abrasion, erosion and abfraction which sometimes develop silently but aggressively in the dental tissue, caused by variable factors such as chemical or mechanical, adding to this: a frequent consumption of carbonated and acidified beverages, stress, bulimia and what gastrointestinal reflux causes in the dental enamel, anorexia; in combination with a careless oral hygiene and even ignorance of a correct brushing, helps the prevalence of these lesions due to their multifactorial origin.⁽⁶⁾

The present research work was carried out on patients attending at Uniandes Dental Care Unit (UAO); who are generally people of low economic resources, with a deficient education on oral hygiene, accompanied by systemic diseases, among others. This research will contribute to collect information on the type of food and oral hygiene that patients have and how it affects their oral health.

Therefore, the objective of this research was to evaluate the nutritional quality of patients between 40 and 60 years of age who attend at Uniandes Dental Care Unit and the impact it has on oral health.

For this purpose, two activities were developed: to evaluate through surveys the quality of nutrition of the patients and, according to the results obtained, to design a program on healthy food and oral health for the patients at Uniandes Dental Care Unit.

METHODS

The research, according to the approach used, is defined as qualitative and quantitative. With this research we determined the diet of the patients attending the UAO and its relationship with oral diseases. Statistical evidence of the nutritional status of patients attending the UAO will be obtained through surveys.

Because of its scope, the research is observational, descriptive and transversal, patients from 40 to 60 years of age attending the UAO "Uniandes" were studied. The study period was from September to December 2023, the universe and the sample coincided since the patients met the inclusion criteria previously outlined. Therefore, 170 patients were under study.

The study variables were: sex, age, geographic location, educational level, type of diet, frequency of toothbrushing, level of knowledge about diet and its influence on oral health.

Research technique

Survey: by means of this research tool, relevant and necessary information was obtained to assess the nutrition of patients attending the UAO.

An informed consent form prepared for the study was used with the patients who decided to take part in the research, they were informed about the characteristics of the process and their willingness was considered.

The exploration was approved by the research group of the care unit and the consent of the examinees was taken into account. The principles and elements dictated in the Declaration of Helsinki were complied with.

RESULTS

Sixty-one percent were female and 39% were male. The age group most frequently consulted was 40-49 of the female sex (Table 1).

Table 1. Distribution according to age group and sex. UAO "Uniandes", 2023.

Age Group	Male		Female		Total	
	No.	%	No.	%	No.	%
40-49	26	15	71	42	97	57
50-60	41	24	32	19	73	43
Total	67	39	103	61	170	100

The survey showed that 52 % live in rural areas and 48% in urban areas (Table 2).

Table 2. Distribution according to geographic location.

Geographic location	No.	%
Rural area	88	52
Urban Zone	82	48
Total	170	100

52 % brush their teeth twice a day, while the percentage of patients who brush three or four times is 34 %; and 14 % brush their teeth once a day. (Table 3).

Table 3. Frequency of tooth brushing during the day.

Frequency of brushing	No.	%
Once a day	25	14
Twice a day	88	52
Three times a day	30	18
Four times a day	27	16

Forty percent of the patients consume meats most frequently, while 20 % of the patients eat fruits and vegetables; and 40 % of the patients consume junk food, sodas and candy, 28 % with sugary foods and 12 % with energy drinks (Table 4).

Table 4. Distribution of patients according to type of food.

Food	No.	%
Meat and carbohydrates	68	40
Fruits and vegetables	34	20
Sugary foods	48	28
Energy drinks	20	12

66 % of the patients were unaware of the impact of the type of food on the teeth, while the remaining 34 % knew about the importance of a diet low in sugars and carbohydrates (Table 5).

Table 5. Distribution of the sample according to level of knowledge.

Level	No.	%
Knowledge	58	34
Lack of knowledge	112	66

71 % went to the dentist only when there was discomfort or pain, while 17 % of the patients went to the dentist every year, and 12 % went for check-ups every six months. The level of schooling was: 43 % had a high school education, 41 % had only a primary school education, while 16 % had a university degree.

With these results, the following was developed: "Implementation of an oral health prevention and promotion program, imparting knowledge about a balanced diet and oral hygiene habits that reduce the rate of oral diseases in patients attending the UAO". This program had the following activities:

Talk about healthy foods and the consequences of an inadequate diet that has an impact on oral health, through the explanation of a triptych handed out.

Oral hygiene:

- Bass brushing technique with the help of the phantom and a toothbrush.
- Frequency of brushing: after each meal.
- Use of dental floss in conjunction with brushing.
- Use of mouthwash: two or three times a week.
- Recommendation: periodic visits to the dentist.

DISCUSSION

The WHO defines oral health as: a state free of oral or facial pain, oral cancer, oral infections, dental caries, gum and bone diseases, tooth loss, among others; which reduces the efficiency of the main functions: chewing, phonation, swallowing, esthetics, etc.⁽⁷⁾ There are several factors that determine one of them is the quality of nutrition of the person which is directly related since a good diet will make both hard and soft tissues stronger and more resistant.

The intake of healthy food provides in a fundamental way the elements of promotion and maintenance of optimal health during the life cycle. An unhealthy diet, on the other hand, leads to the risk of developing a number of oral diseases, or systemic diseases such as cancer, diabetes mellitus or cardiovascular disorders, with the risk of high mortality. Therefore, a healthy eating program contributes to an ideal state of nutrition and improves the lifestyle of the population.⁽⁸⁾

According to Arredondo JL,⁽⁹⁾ there are oral diseases such as caries and gingivitis that are more likely to occur with poor nutrition.

According to Gázquez J et al.,⁽¹⁰⁾ the term malnutrition can be called an eating disorder that refers to a risk to the health of the person. Malnutrition contributes to high rates of both infant and adult deaths, as well as an increase in obesity and overweight worldwide. This can occur in two directions; the first is due to lack of food, known as primary, given by a food and nutritional deficit, more frequent in underdeveloped countries. The other direction given by an excessive food intake, which is secondary, associated with overweight and diabetes, occurs mostly in industrialized countries. The authors demonstrated in the research that 52 % of the population lives in rural areas and 41 % have only completed primary education.

The frequent consumption of sugary foods, generate a harmful effect on health, because they provide unnecessary calories for our body; when consuming sugar, immediately occurs the reduction of the pH of the plaque; this causes the demineralization of the enamel and gives way to the development of caries,⁽²⁾ data that is corroborated with the results obtained in surveys where 100 % of the population consumed sweets and chocolates to a greater or lesser extent, affecting their oral health.

The nutritional intake that we get throughout our lives is important to lead a healthy life, in addition to this, hydration is essential and very necessary; next, we will talk about an indispensable element: water.⁽⁷⁾

Water as the most abundant component of the human body; it should be considered as an important and habitual nutrient, sometimes it is of little or no importance in the training of health professionals in charge of educating patients, since water intake is vital for the consequences that could occur such as: chronic dehydration, increased risk of certain types of cancer (urinary tract, breast and colon), as well as salivary dysfunction, which leads to the presence of oral and dental conditions, and even obesity.⁽⁸⁾

Water, being a vital component, offers benefits such as:⁽¹¹⁾

- It contributes to regulate body temperature changes in both cold and warm environments.
- It favors the elimination of waste through perspiration, urination and bowel movements.
- Helps in the formation of lubricating fluids (saliva, gastrointestinal mucus, airway mucus and genitourinary tract mucus).
- Maintains vascular volume, adequate circulation to organs and tissues.
- Acts as a medium for all transport systems (cellular, fluid, interstitial and capillary).
- Transports nutrients to the cells and removes their wastes.
- It helps the effective functioning of the cardiovascular, respiratory, digestive tract, liver, kidneys, brain, reproductive system and peripheral nervous system.
- There is a bidirectional relationship between Diet and Dental Health, because a good diet contributes to have healthy and strong teeth, able to fight the attack of bacteria; on the other hand, strong teeth allow chewing food correctly for the formation of the food bolus and thus achieve a healthy digestion.

Diseases of the oral cavity can be prevented with healthy habits such as:⁽¹⁰⁾

- Brushing teeth three times a day.
- Flossing every day.
- Using fluoride mouthwash.
- Regular dental check-ups, both adults and children.
- Avoid carbonated beverages, artificial juices and energy drinks.
- Avoid sweets and candies.
- Avoid junk food.
- Avoid tobacco and alcohol consumption, among others.
- An adequate diet helps to have an optimal general health, favoring in turn the oral health: the development of healthy teeth and gums. It is advisable to eat five healthy meals a day, since eating only three times a day encourages the consumption of more fat and junk food. After each meal it is necessary to have an efficient oral hygiene, drink water frequently and avoid harmful habits such as smoking or drinking alcohol.

CONCLUSIONS

A balanced diet is essential to maintain optimal health, since it provides the nutrients necessary for the proper functioning of the body. On the other hand, poor nutrition carries a high risk of developing a number of oral problems and serious systemic diseases, such as cancer, diabetes mellitus and cardiovascular disorders, which in many cases can lead to death. In summary, the nutritional status of patients appears to be fair according to surveys. Although most do not show excessive consumption of cariogenic foods, lack of knowledge or neglect of oral hygiene are contributing factors to a number of oral problems that require attention at the UAO. It is essential to continue working on education and promotion of a balanced diet and good oral hygiene to improve the oral health of the population.

Conflicts of Interest

There are no conflicts of interest

Authorship contribution

FRL: conceptualization, research, administration, draft-writing, methodological review, approval of final manuscript.

VASO: conceptualization, research, administration, draft-writing, methodological review, approval of final manuscript.

RGLT: conceptualization, research, administration, draft-writing, methodological review, approval of final manuscript.

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