Importance of geriatric dentistry to elderly nutrition

Importância da Odontogeriatria no aspecto nutricional do idoso

Arthur Filipe Leal RIBEIRO[1]
Márcia Carréra Campos LEAL[2]
Ana Paula de Oliveira MARQUES[2]

ABSTRACT

The Brazilian population aging is increasing. Brazil is no longer a country of youths. According to population projections, there will be 32 million elderly in Brazil in 2025, representing 15% of the population. The elderly population has specific dental care requirements. Physiological age-related changes in the oral cavity may cause discomfort and dissatisfaction. Dental surgeons need to be aware of the special needs and particularities of the elderly because good oral health is essential to them. The objective of this review is to search the literature for the main oral cavity diseases that affect the elderly and their impact on nutrition.

Indexing terms*: Elderly nutrition. Geriatrics. Geriatric dentistry.*

RESUMO

O envelhecimento populacional brasileiro vem ocorrendo de forma acelerada. O Brasil deixou de ser um país de jovens e segundo as projeções estatísticas, a população de idosos em 2025 será de 32 milhões, correspondendo a 15% da população brasileira. Neste contexto, observamos na Odontologia, uma clientela idosa aportando nos serviços à procura de tratamentos específicos as suas necessidades. Nessa área, alterações fisiológicas inerentes ao envelhecimento da cavidade bucal podem acarretar situações de desconforto e insatisfação nos idosos. A conscientização e valorização dos cuidados especiais para com um paciente idoso, por parte dos cirurgiões-dentistas devem ser observadas diante do diferencial que este paciente necessita, bem como, o reconhecimento da saúde bucal como indispensável a uma boa qualidade de vida do idoso. O objetivo do nosso trabalho será apresentar uma revisão da literatura, retratando o envelhecimento populacional, as principais patologias da cavidade bucal e a sua relação e importância com a nutrição, considerando a interseção das áreas.

Termos de indexação: Nutrição do idoso. Gerontologia. Odontologia geriátrica.

INTRODUCTION

Like many countries, Brazil is ageing quickly. The elderly today is the population segment that has the greatest proportional growth. There are approximately 15 million people today aged 60 years or more and this number is expected to reach 32 million by 2025[1], representing 15% of the general population. This anticipation of increased life expectancy and significant changes in the population pyramid in a short period of time has boosted all sectors of the economy, including healthcare and specifically, geriatric dentistry.

Geriatric dentistry was recognized as a dental specialty by the Federal Council of Dentistry (CFO) in 2001. Contrary to previous belief, it is possible to have a beautiful smile in old age, and now the elderly have a great ally to prolong dental health: the geriatric dental surgeon, an expert who understands the ageing process and assesses the ways in which age-related changes affect oral health. The great differential of these professionals is their understanding of age-related problems.

Oral health is an inherent and inseparable part of general health. In old age, oral health consists of maintaining the teeth healthy and the ability to chew well; improving the sense of taste; ensuring clear speech; contributing to adequate nutrition; aiding the digestive process; and promoting socializing, wellbeing and quality of life[2]. The elderly require special care, one which materializes multidimensional care models with particular characteristics because of the various diseases that impose functional and psychosocial limitations.

[1] Universidade Federal de Pernambuco, Faculdade de Odontologia. Av. Prof. Moraes Rego, 1235, Cidade Universitária, 50670-901, Recife, PE, Brasil. Correspondência para / *Correspondence to*: AFL RIBEIRO. *E-mail*: <arthurleal@gmail.com>.
[2] Universidade Federal de Pernambuco, Faculdade de Odontologia, Departamento de Medicina Social. Recife, PE, Brasil.

Oral health status, nutritional status and general health are interrelated. Therefore, oral health and comfort in the oral cavity are needed for good mastication, proper food intake and nutritional wellbeing[3-4]. The amount, quality and consistency of the foods consumed may impact general health. Many oral conditions, such as painful mucous disorders, xerostomia, pain and the discomfort associated with periodontal disease and caries may hinder mastication[5].

The importance of this elderly clientele and their need of health services have encouraged a review of the literature and a discussion of the main oral cavity diseases and their impact on nutrition.

Brazilian population aging: demographics and epidemiology

The population pyramid of developed and some developing countries, such as Brazil, has changed over the years from a pyramid to a trapezoid. This means that the base of the pyramid has become narrower and the top wider, reflecting a higher life expectancy in these countries[6].

Although fertility is the main component of the Brazilian population dynamics, longevity has been playing an ever-growing role. Another phenomenon seen worldwide has also begun in Brazil, which is the proportional growth of older age groups, especially people over 75 years of age. From 1991 to 2000, the elderly population grew 36.5%, while the group over 75 years of age grew 49.3%. The 1991 census counted approximately 13,000 centenarians, and the 2000 census counted around 24,000[7-8].

The demographic transition in Brazil, as well as in most developing countries, is slightly different from that of developed countries, and is happening much faster. What took almost one century to happen in Europe, happened in Brazil in 30 years, that is, the elderly proportion of the population doubled from 7% to 14%. According to the projections, in 2020 Brazil should have the sixth highest proportion of elderly in the world[9].

The epidemiological transition changes the health profile of the population. Instead of acute processes and fast resolution through cure or death, non-communicable chronic diseases become prevalent, causing more disability and healthcare spending. Some examples are stroke and bone fracture sequelae, limitations caused by heart failure and chronic obstructive pulmonary disease, amputations and blindness secondary to diabetes, and dependence caused by Alzheimer's disease[10].

Higher elderly population entails more chronic problems that usually require expensive interventions and advanced technology[11]. In less than 40 years, Brazil has transitioned from a mortality profile typical of a young population to one characterized by complex diseases and expensive treatments, typical of older populations[12]. This increases healthcare spending and presents a challenge to the sanitary authorities, especially with regard to the implementation of new planning models and methods.

Traffic, urban violence, non-communicable chronic diseases, stress, unhealthy diet, inactivity, alcohol and licit and illicit drug abuse, and the isolation experienced in large cities are all directly associated with the so-called diseases of modernity[13].

Historical trajectory of geriatric dentistry

Geriatric dentistry is a relatively young specialty in dentistry but its precursors are very important specialties with important advances and success in the scientific universe. Therefore, the definition and history of geriatrics and gerontology cannot be omitted.

In current and simple terms, gerontology studies the phenomena associated with the ageing process, covering its biopsychosocial, spiritual and historical aspects. Geriatrics is the area of medicine that studies the prevention and treatment of chronic and acute age-related diseases and elderly rehabilitation and socializing[14].

Geriatrics and gerontology became medical specialties during the second half of the Twentieth Century and, following by this trend, the first dental studies with institutionalized elderly were done during the 1950's by Dr. Saul Kamen, known today as the father of geriatric dentistry. In the 1960's, Dr. Ronald Ettinger gains prominence as one of the greatest names in geriatric dentistry. Many Brazilian dental surgeons have studied and study old age, ageing and the elderly in search of the perfect dental care for this group[15].

Resolution CFO 12/2001 adds to Section IX from Article 29 the following definition for this new specialty: geriatric dentistry is the specialty that focuses on age-related phenomena that affect the mouth and related structures, and promotes health, diagnoses, prevents and treats oral and stomatognathic system diseases of the elderly[16]."

Resolution CFO 63/2005, Chapter VIII, Section IX on Geriatric Dentistry lists, in Article 66, the competences of the geriatric dental surgeon: a) studies the impact of social and demographic factors on the oral health of the elderly; b) studies the ageing of the stomatognathic system and its consequences; c) studies, diagnoses and treats oral diseases of elderly patients, including those stemming from pharmacological and irradiation therapies,

and oral cancer; and d) is capable of making a complete multidisciplinary plan of the oral care systems and models for elderly patients[16].

Examining the elderly oral cavity

According to Brunetti et al.[17] and Taminato[18], aging is a continuous and inevitable process that should be as pleasant as possible. Disabling symptoms must be prevented or minimized. Geriatric dental surgeons must be capable of meeting the needs of the elderly, bearing in mind their general health status. In old age, systemic problems, such as hypertension and diabetes, are common and may have severe complications. Hence, medicine and dentistry must work together to improve the wellbeing of the elderly population[19].

According to Cormack[20], age promotes numerous changes in the oral cavity, such as atresia of the root canals due to continuous deposition of dentin in the internal walls of the pulpal chamber; recession of periodontal tissues due to reduced cell count; and higher cell density in the oral mucosa, suggesting progressive tissue dehydration due to loss of intracellular water. The primary structures and surface of the tongue also change, and the loss of filiform and vallate papillae is common.

According to Boraks[21], the extraction of dental elements and/or tooth abrasion causes loss of oral cavity height. The skin becomes thinner and drier, with loss of muscle tone. The production of saliva and size of salivary glands decrease, possibly causing xerostomia. Dryness causes traumatic erosions and ulcers, burning sensation, fibrosis and loss of mucous elasticity. Histologically, there is an increase in attached gingiva and decrease in its characteristic outline, and low keratinization and cell number in gingival connective tissue[22].

The enamel undergoes structural changes, cement thickens, and periodontal fiber and ligament shrink or disappear, reducing tooth mobility and increasing susceptibility to fractures. The healing ability of the pulp decreases because of the low number of cells and blood vessels, making elderly individuals more vulnerable to irreversible pulpal damage caused by cavity preparations and dentures[23].

One of the most common changes seen in the elderly during clinical examination is gingival recession, more likely due to vigorous brushing than to age or even periodontal disease[24], reinforcing the need of teaching proper oral hygiene and tooth brushing techniques.

According to Brunetti & Montenegro[15], the loss of dental elements affects all body organs and social activities, since poor appearance may cause social exclusion.

Most common diseases in the oral cavity of the elderly

According to the literature, the most common diseases in the oral cavity of the elderly are radicular caries, periodontal disease, edentulism, xerostomia and poor-fitting dentures.

Treatment planning for highly complex cases in elderly patients requires an analysis of the general status of the teeth, that is, checking for loss of supporting structure, risk of cusp fracture, migration, abrasion, caries, pulpal changes with periapical repercussions, root perforation, fractures and loss of height. Only after thorough examination should a treatment be proposed to a patient. The availability of the patient, his/her interest in keeping and restoring the dental elements and oral hygiene habits must be taken into consideration[15].

The two main causes of tooth loss are caries and periodontal disease. Individuals with increasing tooth loss will eventually need dentures. Moreover, xerostomia increases susceptibility to caries, periodontal disease, pain and poor fitting dentures, especially full dentures[21].

According to Cormack[20], an effective program for preventing these problems begins by removing cariogenic foods from the diet; implementing proper oral hygiene; eliminating cariogenic microorganisms with antimicrobial mouthwashes; promoting remineralization of decalcified dentinal surfaces with fluorides that reduce demineralization and induce remineralization; and protecting specific parts of the more vulnerable radicular surfaces with restorative materials.

Plaque control, careful use of pharmaceutical substances, preferably those with fewer interactions and/or side effects, and proper brushing and flossing are enough for good gingival health. Proper hygiene and denture use preserves the oral mucosa[25].

Xerostomia, also known as dry mouth, can be caused by age, hypertension, smoking, dialysis, chemotherapy, radiotherapy, Sjögren syndrome and AIDS, among others. It affects many elderly not only because of ageing, but also because of xerostomic drugs[2].

Salivary replacement substances may be used for reducing the effects of dry mouth. These substances relieve the discomfort associated with dry mouth by stimulating salivary flow or replacing it. These products are available as gels, dental creams, mouthwashes, sprays and gums that improve intraoral moisture and texture of the tongue and mucosae. Fluoride, antibacterial substances and excellent oral hygiene, including the use of a tongue cleaner, reduce xerostomia-related risks[26].

Since oral health is never a priority in governmental health policies, more than 60% of the elderly are edentulous[18]. This reality reflects many decades of mutilating dental practices since society and dental surgeons saw tooth loss and use of full dentures as natural and a normal part of ageing.

Edentulous individuals require dentures. It is important to make a biologically-oriented prosthetic treatment that meets the individual's real needs, promoting comfort and proper mastication. Bone resorption may cause poor fitting, and abrasion of the false teeth may cause loss of facial height[15].

People are keener to replace teeth when their appearance is affected than when the dental function is affected. The last survey on the oral health of the Brazilian population found that the use of upper dentures is much more common than that of lower dentures[27].

The elderly must be made aware of the importance of periodical checkups for assessing denture stability and retention, and of the possibility of poor fitting dentures injuring the soft and hard tissues of the oral cavity.

Interface between oral health and nutrition in the elderly

The oral cavity mediates many essential human activities, such as speech, deglutition and mastication, and impact nutritional status not only in the ability to eat and choose foods, but also in the pleasure of eating. Therefore, the efficiency of the masticatory apparatus has an essential role. In the elderly, the masticatory efficiency is closely related to the nutritional status, which in turn is related to the general health, impacting quality of life[15].

When dentition is compromised or dentures do not fit properly, mastication is inefficient, stressing the stomach, liver and kidneys. Digestion begins in the mouth through proper mastication, grinding the food and mixing it with saliva to facilitate its transit through the digestive system. If food is not chewed properly, nutrient assimilation will be compromised, delaying one's recovery from disease[18].

Missing teeth and/or poor fitting dentures reduce masticatory efficiency by 50% to 85%, reducing the absorption of essential nutrients and causing nutritional changes; they also force individuals to avoid certain foods, especially those rich in fiber, protein and vitamins, essential for good health[2].

Missing teeth and low salivary flow in the elderly reduce their ability to chew and swallow food properly, compromising their general health and wellbeing. They transition from a healthy diet to one high in carbohydrates, which do not always have all the nutrients to meet their biological needs, and cause anemia and apathy in more susceptible individuals. Additionally, soft diets may cause atrophy of the masticatory muscles, changing the face and lowering self-esteem[15,28].

For Salgado[29] and Catão et al.[30], the absence of dental elements forces people to make different food choices, reducing their consumption of meats, fruits, vegetables, greens and grains, foods that require well-aligned and functioning teeth. Such changes will have a negative impact on nutritional quality.

The number of gustatory papillae also falls with ageing. When associated with poor oral hygiene and use of polypharmacy, commonly seen in the elderly, it may change the perception of primary tastes, making it difficult to implement low-sugar and low-sodium diets[31].

According to Touger-Decker[32], many oral conditions are associated with inadequate food or nutrient intake and have a detrimental effect on nutritional status. Some of these conditions are missing teeth, xerostomia, pain and discomfort associated with caries, periodontal disease, poor fitting dentures and painful disorders of the oral mucosa or tongue.

DISCUSSION

Knowledge on gerontology and geriatrics is essential for professionals who provide healthcare to the elderly. Therefore, geriatric dentistry, an emerging specialty, has a relevant role in elderly healthcare.

The most common problems in the oral cavity of the elderly are radicular caries, periodontal disease, edentulism, xerostomia and poor fitting dentures[27]. In old age, some systemic problems, such as high blood pressure and diabetes, may have severe complications, so dental and medical care need to go hand in hand[15,19].

The oral cavity mediates many essential human activities, such as speech, deglutition and mastication. Oral health, nutritional status and general health are interrelated. Therefore, oral health and comfort in the oral cavity are necessary for efficient mastication and may impact food intake and nutritional wellbeing[3-4].

Geriatric dentistry is a very important specialty and deserves to be honored with new studies to confirm the projections, follow future trends and changes, improve knowledge, disseminate information, educate the population and, especially, provide quality care for the elderly.

CONCLUSION

The increase in the elderly population is an irreversible process that generates new demands in many areas, including dentistry and nutrition. The elderly need special treatment, one that considers the particularities of old age, such as physical, psychological and individual limitations.

The specialty geriatric dentistry is a new ally for maintaining the oral health of the elderly. Additionally, modern dental practice is no longer exclusively curative, but increasingly preventive and educational.

This article discussed the main physiological and pathological oral changes that directly or indirectly affect the elderly, those that have a negative impact not only on aesthetics but also on mastication. Poor oral health culminates with the loss of appetite, need of soft foods and inability to eat produce freely. Produce are rich in fibers and essential for a healthy and nutritious diet, so low produce consumption will have a negative impact on their health.

Collaborators

AFL RIBEIRO helped with the literature search and writing of the manuscript. MCC LEAL helped to outline the manuscript, reviewed the manuscript and helped with the final text. APO MARQUES supervised the literature review on nutritional aspects and writing of the manuscript.

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