AN INVESTIGATION OF TOOTH LOSS IN GERIATRIC PATIENTS: A CROSS-SECTIONAL STUDY

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Abstract

In order to provide a profile of the elderly people assisted by the Naval Dental Center (Odontoclínica Central da Marinha), it was performed an epidemiological survey seeking to outline the oral conditions and reported changes in eating habits in this population. A cross-sectional study aimed to describe the prevalence of edentulism and functional dentition in a population of 675 elderly aged more than 60. The impact of functional dentition (FD) on quality of life of these people was assessed, and the association of FD with changes in eating habits was evaluated. The following variables were collected: number of full and partials removable dentures user, number of implants and natural teeth. The participants were inquired about changes on eating habits due to oral status. Data analysis has shown that the average number of natural teeth was 15.7 ± 7.9, 24.1 had severe dental loss, 64.0% did not present functional dentition and 23.5% reported changes in eating and chewing in the last 6 months. It was concluded that a large number of the elderly people evaluated presents several missing teeth which may negatively have impacted on their oral related quality of life.

Keywords: *Elderly. Tooth loss. Dentition. Quality of life.*

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INTRODUCTION

An aging population is a worldwide phenomenon; in Brazil alone, the elderly population has increased nine-fold in 30 years. This demographic transition requires changes to the organization of the health system. In this context, it is relevant to investigate the oral health conditions of the elderly because a significant part of this population faces difficult or inadequate access to dental care. Furthermore, there is an association for the elderly between poor oral health conditions dental care provided throughout their lives, historically focused on extraction and the acceptance of tooth loss as inherent to the aging process (1).

The naval community, as a representation of the Brazilian population, has also aged and adjustments have been made to fit this new reality, such as screenings and follow-ups to identify diseases prevalent amongst the ederly. The gathered information has been used to cater to the needs of the elderly and demonstrate that aging is not a synonymous with incapacity and dependability, but rather increased vulnerability. It is imperative to develop a sustainable culture of care, that attends the needs of this population, in respect to this generation's contributions to the present (2).

In December 27th, 2001, Geriatric Dentistry was recognized as a specialty given an increasing elderly population and the importance of adequate oral health for healthy aging and quality of live (3).

Based on this same understanding, in 1999, the Navy's Health System (Sistema de Saúde da Marina – SSM) innovated by creating a dental care department focused on the elderly in the Naval Dental Center (Odontoclínica Central da Marinha – OCM). In 2003, the growing demand of those individuals lead to the creation of the Geriatric Dentistry Clinic, which currently has more than twenty military personnel working in the specialties of Restorative Dentistry and Prosthodontics. This clinic has technical components and advanced technology to rehabilitate patients, minimizing the most common oral health condition for this population: edentulism (4).

Brazil's current demographic transition poses challenges to healthcare. Epidemiologists need to obtain more data, analyze information, apply new techniques, improve measurements and focus the analyses on the aging of the individual and the population. This perspective is called the Epidemiology of Aging (5).

In response, oral health epidemiologic research was undertaken on the elderly population assisted by the OCM , to establish the prevalence of important alterations and conditions associated with this population's oral health.

METHODS

Study design

This is a cross-sectional study that describes the distribution of edentulism and estimates the prevalence of functional dentition in a population of 675 patients seen at the OCM Geriatric Dentistry Clinic.

This study was approved by the Research Ethics Committee of the Marcílio Dias Naval Hospital (Hospital Naval Marcílio Dias - HNMD), approval number 3.399.461, and it conforms with the ethical principles of the Declaration of Helsinki.

Data collection

Epidemiologic data collection happened every semester at the OCM, first in March 2018, then in September 2018, and finally in March 2019.

The dentists responsible for prosthodontic treatment at the Geriatric Dentistry Clinic were in charge of registering patients who have complete and partial dentures, if dentures were upper, lower, or both, and the number of implants and natural teeth.

At the end of each appointment, the patient responded to the following question adapted from the Geriatric Oral Health Assessment Index (GOHAI): "In the past 6 months, have you reduced the amount of food intake or changed the type of food you eat because of your teeth?". The answer generated a dichotomous variable, given the value of '0' if the answer was "no" and '1' if the answer was "yes".

Data analysis

First, a demographic analysis of the participants was done: age, gender, and "type" according to their connection to the Brazilian Navy (Marinha do Brasil - MB) – active, veteran, dependent or pensioner.

The numerical variables obtained in clinical examination with mean and standard deviations were: age, number of natural teeth, and percentage of implants. The categorical variables were: gender, type of user (connection to the MB), type of prosthesis used (complete or partial), and the answer about quality of life related to oral health.

For the purpose of data analyses, functional

dentition was considered present if the patient had at least 20 natural teeth (7). It was considered severe tooth loss when 9 or less natural teeth were present.

Frequencies were obtained through the categorical variables. The chi-square test was used to verify if changes in eating habits were related to loss of functional dentition.

The significance was established at 5%. All statistical analyses were done using a commercially available software (Statistical Package for the Social Sciences, SPSS Inc., Chicago, USA, version 21.0)

RESULTS

Sample demographics are presented in Table 1. uso de próteses parciais removíveis.

The mean teeth number of the 675 elderly patients assessed was 15.7 ± 7.9, with 24.1% presenting severe tooth loss, and 64.0% considered lacking functional dentition.

Among the 675 patients, 473 used some type of prosthesis: complete or partial, with 16.1% of patients using upper complete denture and 21.9% using upper and lower complete denture.

Table 1 - OVERALL DESCRIPTION OF THE SAMPLE

VARIABLES	Total n = 675
Gender	
Male	300 (44,4%)
Female	375 (55,6%)
User	
Active	5 (0,7%)
Veteran	290 (43,0%)
Dependent	317 (47,0%)
Pensioner	63 (9,3%)
Age	69,71 ± 6,9

Categorical data expressed in absolute numbers followed by the percentages (%)
Numerical data expressed in mean ± standard deviation
n: number

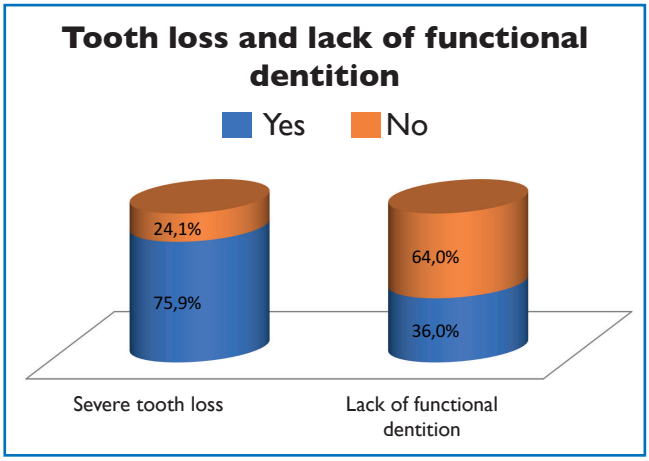

Figure 1 - Prevalence of severe tooth loss and lack of functional dentition

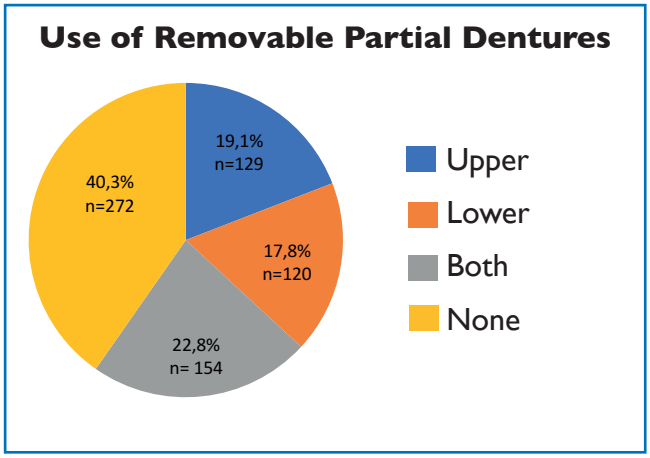

Figure 2 - Use of removable partial denture among the 675 patients assessed.

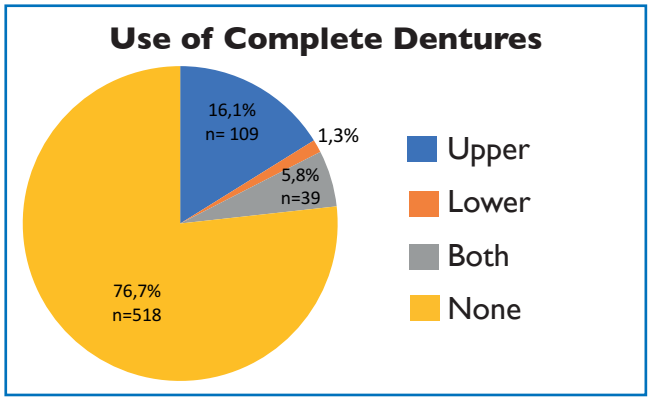

Figure 3 - Use of complete denture among the 675 patients assessed.

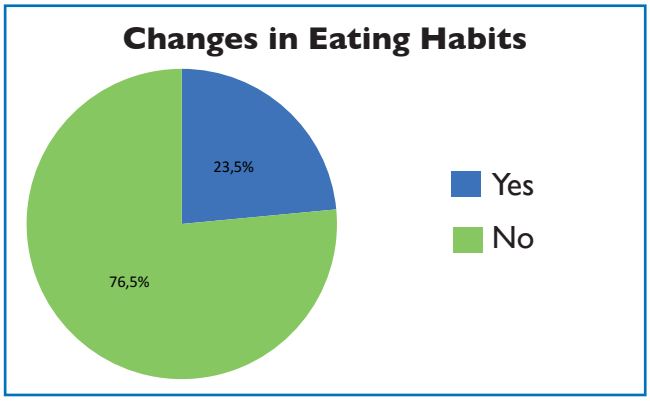

Figure 4 - Frequency of patients that reported changes in eating habits due to dentition.

Figure 2 shows the distribution of removable partial denture use.

Figure 3 shows the distribution in complete denture use

Figure 4 shows the frequency of patients that replied "yes" to the question about quality of life related to oral health.

Table 2 shows that among patients that reported changes in eating habits due to their teeth, 77.1% did not have functional dentition, almost four times more in comparison to the ones that had functional dentition. The loss of 20 or more teeth showed a highly significant association with changes in eating habits.

Besides the previously listed variables, the study also analyzed if individuals had implants replacing missing teeth. On average, 2.6% ± 10.0 of the teeth were replaced by implants, and 13.5% of the elderly patients assessed had 1 or more implants.

Table 2 - ASSOCIATION BETWEEN FUNCTIONAL DENTITION AND CHANGE IN EATING HABITS.

FUNCTIONAL DENTITION	CHANGE IN EATING HABITS N=157	P
Absent	121 (77,1%)	≤ 0,001*
Present	36 (22,9%)	

Data expressed in numbers (N) and percentage (%)
* p-value: significance level ≤ 0.05; Chi-square test

DISCUSSION

This study highlights the large elderly population with severe teeth loss and lack of functional dentition. These conditions have clear impacts on the quality of life of those assessed, as the majority associated oral conditions to changes in eating habits.

Tooth loss directly impacts chewing ability, digestion, taste, phonetics and esthetics, contributing to the reduction in quality of life and self-esteem of seniors. Missing teeth results in food restrictions and can cause discomfort at mealtimes with friends and family. This negatively impacts social activity, and, in many cases, can force them to remain at home and refrain from social interaction (8). Oral health also represents an important factor when it comes to nutrition. A compromised chewing ability can affect a person's overall health and may lead to the selection of softer foods, which are known to be poorer in nutrients (9). This can cause nutritional deficits, as well as impact the ability to socialize (10). Proper oral health conditions associated with proper nutrition are factors that can interfere in the general health of the elderly (11).

Functional dentition is defined by the World Health Organization (WHO) as the presence/retention of a natural, esthetic, functional dentition of no less than 20 teeth through life, with no need

for tooth replacement (12). Keeping a functional dentition with at least 20 teeth is a global oral health goal established in 1982 by the WHO and the International Dental Federation (IDF) and was projected to be achieved by 2000 (7).

Although a significant reduction of tooth loss has been observed in teenagers and adults, it is not so for the elderly. There is still a great need for prosthetic oral rehabilitation in this population, which affected the WHO projection for the year 2000, when the goal was that at least 50% of the people between 65 and 74 years old had functional dentition (13). A previous study by the OCM Service of Preventive Dentistry showed that 57.9% of the patients 60 years or older did not have functional dentition, similar to the result of this study (14).

In the past fifty years, research in Dentistry has been mainly focused on the discovery of prevention techniques and treatment of caries in kids until 12 years old. The projects that were implemented were towards adding fluoride therapy and educational activities in oral health (15,16). However, the results of these investments are still not seen in the elderly population, which is far from the WHO goal (7). If actions are not taken to continue this preventive work, the oral health situation of these patients may not significantly improve over time (17).

The oral health of the elderly population has been neglected and forgotten for too long in Brazil. The most apparent consequence is tooth loss, many times irreversible. Although edentulism may be understood and accepted as a natural consequence of aging, in reality it is a pressing question public health that can be addressed through preventive care and rehabilitation (18). Dentists must be more knowledgeable of oral health conditions affecting the elderly and how these conditions can affect systemic health (19).

The standard dental treatment of the past, which was focused on curative care and extractions, left behind many challenges to deal with, and its negative impact can be seen in the elderly population of today. Past standard dental treatment focused on curative care and extractions has resulted in challenges and negative health impacts on today's elderly. This is clearly identified in the epidemiology data collected by the Department of Health in 2010, in comparison to 2003 data, which showed important reduction in tooth loss in teenagers and adults, but not in the elderly (20). This is a reflection of decades of oral health programs and policies towards younger age groups in detriment of the elderly population (21).

The data collected by the OCM Geriatric Dentistry Clinic shows many patients use at least one prosthesis to rehabilitate tooth loss, and the majority have removable partial dentures. Although implant rehabilitation exists as an alternative, the minority of patients were treated in this manner. Furthermore, there are many seniors that do not have any dental prosthesis despite edentate areas in need of rehabilitation.

It is difficult to estimate the future oral health needs of the elderly using epidemiologic data obtained from today's seniors given changes to fluoride exposure in drinking water and toothpaste. However, more knowledge about the oral health conditions of seniors and the collection of more epidemiologic data are still relevant for the development of senior-focused programs, which are still nearly inexistent in Brazil (18,21,22).

The relevance of creating oral health programs focused on the senior population is better understood when considering tooth loss due to periodontitis. Periodontal disease could be managed by primary care and prevention and is considered to be a predictor of reduced longevity due its consequences in overall health. Senior patients are more than 22.5% of the SSM users (23), and this population presents a significant reduction in mean number of teeth. Consequently, they need more complex dental treatments, like rehabilitation procedures. Planning and creating oral health programs for this population and increasing focus on prevention and oral health education, can result in better oral conditions and quality of life (14). Preventive care is also an investment, as it is expected that these patients would have less need for complex treatment later on.

This study reports the oral conditions of the elderly naval community and shows that this population is representative of the national population (1,17,24). Although remedial efforts are underway, the consequences are observed in the smiles of the elderly, negatively impacting oral health and nutrition. Senior-focused program show that the SSM is familiar with the reality of the aging population and is advancing in the right direction.

CONCLUSION

This study describes oral health conditions of the elderly patients seen at the OCM, tooth loss being the most prevalent. The absence of functional dentition impacted the quality of life related to the oral health of this population.

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