Rev Estomatol. 2023; 31(1):e12400 DOI: 10.25100/re.v31i1.12400

ORIGINAL ARTICLE

Clinical profile of oral mucosa lesions in elderly patients: a 20-year retrospective study

Perfil clínico das lesões da mucosa oral em pacientes idosos: um estudo retrospectivo de 20 anos

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Citation:
De Almeida Lança M.L., Bagatini A.T., Moradin Ferrisse T., Fernandes D., de Oliveira Barbeiro C., Sgavioli Massucato E.M., Vilela Silva E., Navarro C.M., Albergoni Silveira H., Bufalino A. Clinical profile of oral mucosa lesions in elderly patients: a 20-year retrospective study. *Rev Estomatol.* 2023; 31(1):e12400. DOI: 10.25100/re.v31i1.12400

Received: August 09th 2022
Evaluated: October 29th 2023
Accepted: March 15th 2023
Published: April 10th 2023

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ABSTRACT

Background: Life expectancy has considerably increased resulting in population aging. Studies evaluating the outcomes of aging in oral health are scarce.
Objective: Evaluate retrospectively the profile of elderly patients from a public Oral Medicine Center during a period of 20 years.
Methods: A qualitative and quantitative retrospective observational study was conducted analyzing medical records from an oral medicine service from January 1994 to December 2014. Results were reported as mean ± standard deviation for quantitative variables and percentages for categorical variables. The Chi-square test and T-student test was applied with significance level of 5%.
Results: 2,690 medical records were retrieved, comprising of 61% women and 39% men with an average age of 68.8 ± 6.79 years. Xerostomia was significantly associated, hypoglycemic usage (p<0.0001), anticoagulant usage (p<0.0001), psychotropic usage (p<0.0001) and analgesics and anti-inflammatory usage (p<0.0001). For candidiasis, an association with age, xerostomía (p<0.0001), and use of complete dentures was found (p<0.0001**).** For oral squamous cell carcinoma and oral leukoplakia the tabacco (p<0.0001) and alcohol consumption (p<0.0001) were significant associated.
Conclusion: The elderly population was comprised mostly by women that use a large of drugs which were associated with xerostomia development. In addition, tabaco and alcohol consumption were associated with oral leukoplakia and OSCC being these two diseases more frequently in men. Dental care services should aim to prevent and treat these complications as way to improve the elderly's quality of life.

KEY WORDS
Dental care; quality of life; elderly; oral medicine; oral lesions.

Introdução: A expectativa de vida aumentou consideravelmente, resultando no envelhecimento da população. Estudos avaliando os desfechos do envelhecimento na saúde bucal são escassos.
Objetivo: Avaliar retrospectivamente o perfil dos pacientes idosos de um Centro de Medicina Oral público durante um período de 20 anos.
Materiais e métodos: Estudo observacional retrospectivo qualitativo e quantitativo, analisando os prontuários de um serviço de medicina bucal no período de janeiro de 1994 a dezembro de 2014. Os resultados foram expressos em média ± desvio padrão para variáveis quantitativas e percentuais para variáveis categóricas. Aplicou-se o teste Qui-quadrado e o teste T-student com nível de significância de 5%.
Resultados: Foram recuperados 2.690 prontuários, sendo 61% mulheres e 39% homens com idade média de 68,8 ± 6,79 anos. Xerostomia foi significativamente associada, uso de hipoglicemiantes (p<0,0001), uso de anticoagulantes (p<0,0001), uso de psicotrópicos (p<0,0001) e uso de analgésicos e anti-inflamatórios (p<0,0001). Para candidíase, foi encontrada associação com idade, xerostomia (p<0,0001) e uso de prótese total (p<0,0001). Para carcinoma espinocelular oral e leucoplasia oral, o uso de tabaco (p<0,0001) e consumo de álcool (p<0,0001) estiveram associados significativamente.
Conclusão: A população idosa foi composta em sua maioria por mulheres que fazem uso de grande quantidade de medicamentos associados ao desenvolvimento de xerostomia. Além disso, o consumo de tabaco e álcool foram associados com leucoplasia oral e OSCC sendo essas duas doenças mais frequentes em homens. Os serviços odontológicos devem ter como objetivo prevenir e tratar essas complicações como forma de melhorar a qualidade de vida dos idosos.

PALAVRAS CHAVE
Cuidado dental; qualidade de vida; idoso; medicina oral; lesões orais.

CLINICAL RELEVANCE

It is important to highlight and understand the clinical profile of diagnostic oral lesions in elderly patients, so that the dental surgeon can identify, manage and treat the main lesions that affect this group of patients. With this, to provide a specialized service, as well as to provide an improvement in the quality of life.

INTRODUCTION

In 1984, the World Health Organization (WHO) stablished that the population in developed and developing countries aged 60 years or over should be regarded as elderly. Important to highlight, this portion of society is still increasing worldwide, especially in developed countries.[1]The current elderly population in Brazil accounts for approximately 25 million people. In 2025 will represent 2025, a 15 times increase is expected in this group, representing 24% of the whole Brazilian population. Furthermore, a significant change in elderly dental care services demand was observed in Brazil due to the growth of life expectancy in the past 30 years.[2] Higher numbers of edentulous aged patients in addition to lack of special programs focused on senior citizens point out the poor oral health condition those patients present. Hence, becoming an important public health matter.[3]

Physical, mental and social changes related to the aging process are usually associated to debilitating effects caused by acute and chronic illnesses, as well as to an increase of oral diseases' prevalence, since the oral mucosa comes to be more sensitive to mechanical injuries.[4] As a consequence of cellular senescence, the oral epithelium becomes atrophic while the collagen synthesis in the connective tissue decreases sharply. Therefore, reducing the oral mucosa's protective function, regeneration and resistance to diseases. Moreover, this mucosa gets more permeable to harmful substances and more vulnerable to extrinsic carcinogens and pathogenic organisms.[5] Alterations found in aged patients' oral mucosa not only are explained by the aging process, but also by a long interaction period among other factors, such as systemic condition, metabolic alterations, nutrition factors, medication and dentures usage, psychobiological habits, and alcohol and tobacco consumption.[6-9] It is important to clarify that these changes are not completely related to partial or complete edentulism. As these alterations are scarcely studied by the specialized literature, although having high prevalence rates, more information about them is needed in order to supply and contribute to this dentistry field development.[4]

Moreover, aged populations, chiefly those in developing countries, will experience greater incidence of cancer and its side effects.[10] In Brazil, oral cancer represents the fifth and twelfth most common malignant neoplasm in men and women, respectively. Only for 2018, 14.700 new oral cases occurred in Brazil.[11]

Studies concerning oral health and dental conditions in the Brazilian elderly population are scarce. Two previous studies evaluated oral mucosa lesions associated to removable dentures and oral health in elderly Brazilians.[12-13] Candidiasis, inflammatory fibrous hyperplasia, traumatic ulcer, and angular cheilitis were the most prevalent lesions. Similar studies assessed this subgroup's oral health condition through oral examination only. Additionally, other articles based on histopathologic diagnosis of oral lesions showed a significant incidence of potentially malignant disorders, radicular cysts, and epulis fissuratum when compared to groups aged less than 60 years old.[14] However, there was no statistically significant difference between groups when evaluating lichen planus lesions, proliferative lesions, soft tissue cysts, and other diseases.[14]

Nonetheless, until nowadays, a relationship between higher life expectancy and oral health profile changes in the Brazilian elderly population or in developing countries could not be established. It is also believed that systemic diseases and frequent medication protocols can cause or augment the incidence of some oral diseases. Currently, there is not a specific dental protocol, which takes into consideration common systemic aspects in this stage of life, to attend aged patients. Thus, the aim of this study was evaluate retrospectively the profile of elderly patients from a public Oral Medicine Center over a period of 20 years.

MATERIALS AND METHODS

Sample collection and variables of interest

In this qualitative and quantitative retrospective observational study, analyzed data was retrieved from clinical records of patients aged 60 years old or over who attended the Oral Medicine Center in Araraquara city (São Paulo state, Brazil) from January 1994 to December 2014. From 10280 medical charts, 2690 of them were selected to be part of the study. The following selection criteria were used to select the records: (i) patient's age at first consultation equal to or greater than 60 years and (ii) presence of intraoral lesion/complication confirmed by clinical examination. The medical records of patients younger than 60 years old, incomplete information in the medical records and patients who did not have confirmation of intraoral lesion/complication were exclu -

ded. After selection of medical records, information about demographic data (age, gender, skin color, and occupation), medication use, alcohol and tobacco consumption, denture usage, and oral lesions presence were collected from the records.

The variable age was measured in years and the variables gender (female or male), race (white or non-white), and occupation (working or not working) were dichotomized. The variable drugs were dichotomized (yes or no) for the subsequent types of medication: hypoglycemic, antihypertensive, anticoagulant, psychotropic, analgesic, and anti-inflammatory, and others. Alcohol and tobacco consumption were dichotomized (yes or no) regardless its type and intake. The usage of removable denture (yes or no) was measured by its type: maxillary and mandibular complete denture or maxillary and mandibular partial denture. Presence of lesions were considered just after diagnosis confirmation by clinical examination and complimentary exams when needed.

Statistical analysis

Collected data was inserted into Microsoft Excel 2010 tables for further descriptive statistics (absolute and percentage values). Results were presented in trend graphs to assess the alterations found over the period from 1994 to 2014 in the elderly profile. Chi-square tests were used to access association between the following outcomes: prevalence of gender in elderly population; smoking habit and oral squamous cell carcinoma (OSCC); drinking-alcohol habit and OSCC; smoking habit and oral leukoplakia; drinking-alcohol habit and leucoplakia; xerostomia and oral candidiasis and xerostomia with drugs (anti-psychiatric, hypoglycemic, antihypertensive, analgesic/anti-inflammatory and anticoagulants).Lastly, T-student test was used to evaluated the mean-difference of gender by each year. Statistical analysis was done using the IBM Statistical Package for the Social Sciences (SPSS) software, version 20.0 (SPSS Inc., Chicago, Illinois, United States).to a significant level of 5% ($p < 0.05$).

Ethical aspects

This study complied with the ethical principles set out in *Ruling n.* 466.12 and was approved by the Ethics and Research Committee of the School of Dentistry, Araraquara, Sao Paulo, Brazil (CAAE protocol: 23399413.3.0000.5416).

RESULTS

Variations of the elderly's profile during the period of 1994 to 2014

From 1994 to 2014, 10,280 patients were attended at the stomatology center of FOAr – Unesp. Of those, 2,690 patients were 60 years old or over. Moreover, 1,640 (61%) were females and 1,050 (39%) were males (p=0.0001). The

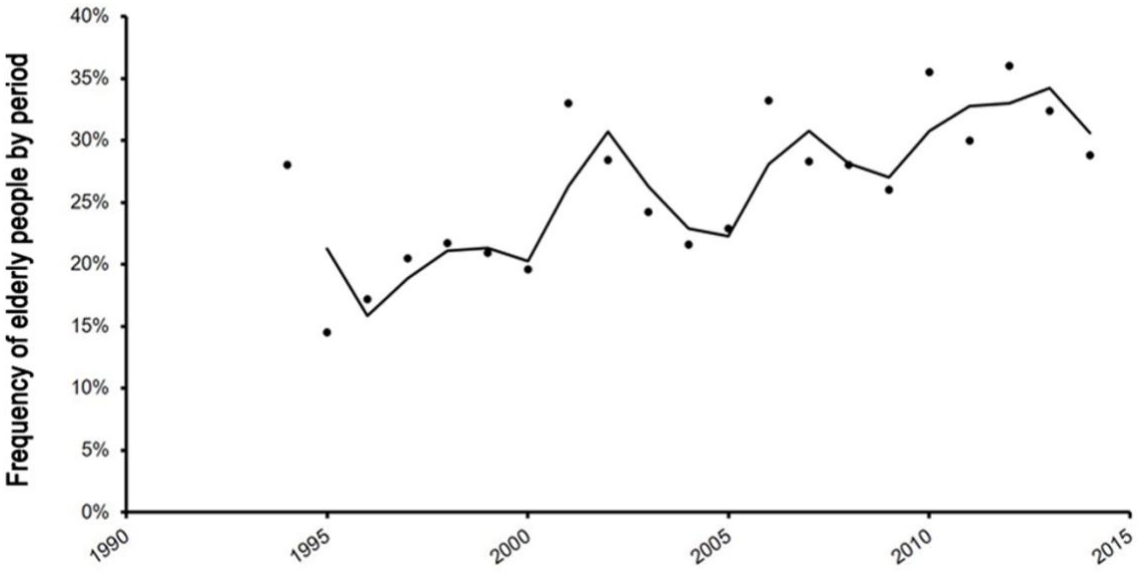

Figure 1. The upward trend of the people over 60 years old in relation to the total number of individuals who sought service care at the oral medicine center during the period from 1994 to 2014.

group age varied from 60 to 100 years old, with a mean age of 68.8 ± 6.79 years. 83.3% of the patients were white and 80.9% had no occupation at all. When analyzing the proportion of people who attended the stomatology center throughout the 20 years, elderly patients showed a higher proportion to younger subjects. The percentage of people over 60 years old in relation to the total number of individuals who sought service care at the oral medicine center during the period from 1994 to 2014 is seen in Figure 1. In the Figure 2A we noticed a slight rise in the number of male patients along the years, whereas for women, there was a small decrease. Figure 2B shows a trend of higher alcohol and tobacco consumption in the elderly population was noticed until 2010.

Over the 20 years studied, it was observed that the usage of maxillary and mandibular removable complete dentures had a small reduction. However, for removal partial dentures on both arches there was a minimal variation as shown in Figure 2C.

Consumption of drugs such as antihypertensives, psychotropics (especially antidepressants and anxiolytics), analgesics and anti-inflammatories, hypoglycemics and anticoagulants has grown during analyzed time.An average of two prescribed drugs per patient was found, ranging from zero up to seven drugs consumed by a singular person. In the Figure 2D, it is possible to observe a trend graph illustrating the elderly profile's change with reference to medication intake.

The most frequent oral lesions among the studied individuals were candidiasis, inflammatory fibrous hyperplasia, xerostomia (associated or not with hyposalivation), actinic cheilitis, leukoplasia, and oral squamous cell carcinoma. A summary of these findings is in figure 3. A detailed analysis revealed a drop of candidiasis cases, while xerostomia and actinic cheilitis had a considerable rise. No significant alterations changes were noticed for inflammatory fibrous hyperplasia, leukoplakia, and squamous cell carcinoma.

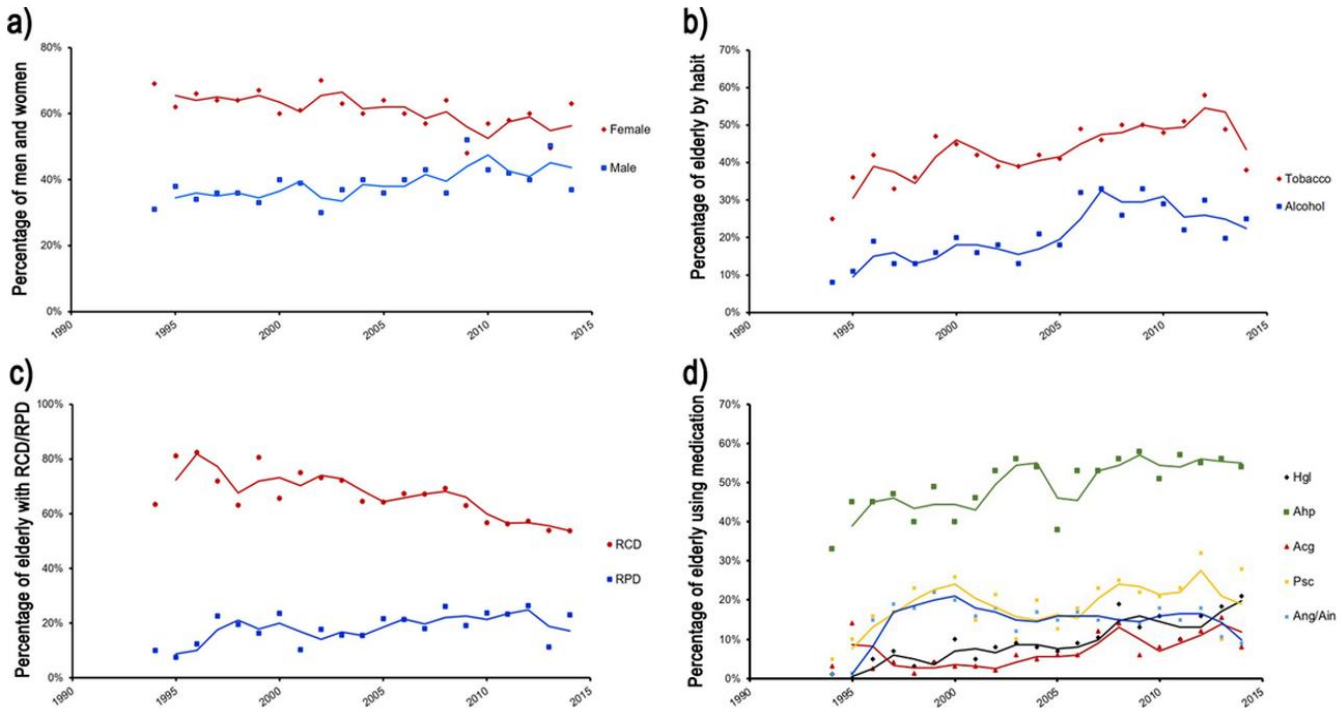

Figure 2. Graphic percentage trends of female and male (A), alcohol and tobacco consumption (B), removable denture usage (C), and medications usage (D); during the period from 1994 to 2014.

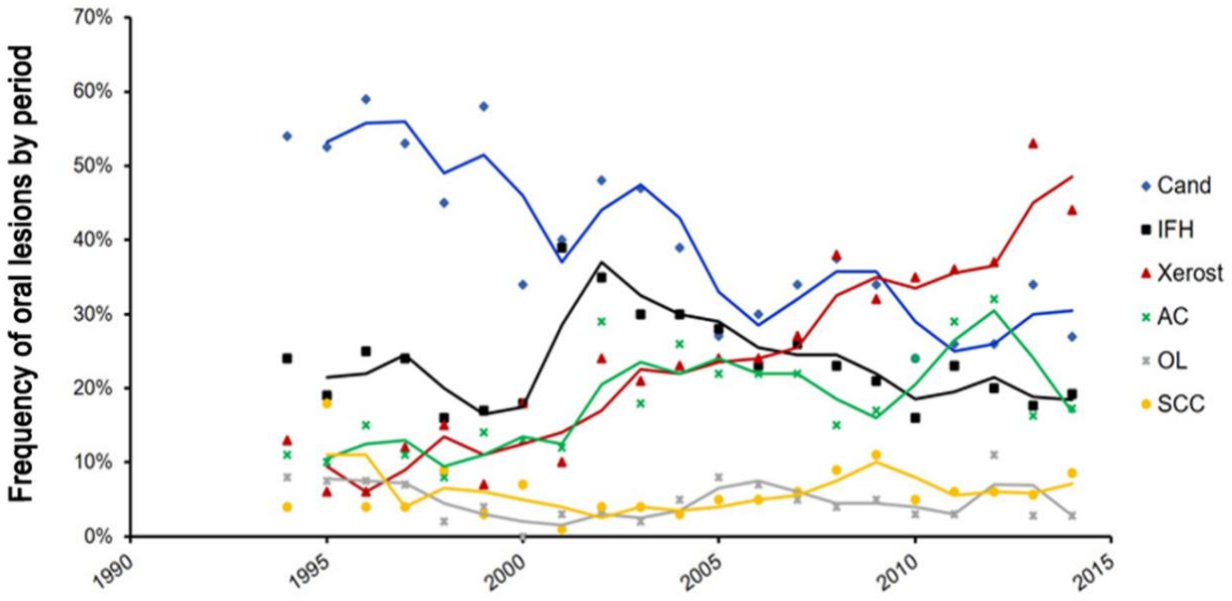

Figure 3. The variance of frequency of oral lesions in elderly patients during the period from 1994 to 2014.

Analysis of factors associated with the development of oral lesions in the elderly.

A remarkable decrease and growth of oral candidiasis and xerostomia cases, respectively, was observed during the period studied. In this context, it was noted a significant association between presence of xerostomia and oral candidiasis (p<0.0001). For OSCC, the association of smoking habits (p<0.0001) and drinking alcoholic beverages (p<0.0001) was significant.

These factors, smoking (p<0.0001) and drinking alcoholic (p<0.0001) was also significant associated with oral leucoplakia. Furthermore, for xerostomia, a significant association was detected by use of the following drugs: anti-psychiatric (p<0.0001), hypoglycemic (p<0.0001), analgesic/anti-inflammatory (p<0.0001 and anticoagulants (p<0001). There was only a non-significant association between xerostomia and antihypertensive drugs (p=0.5786) (Table 1).

Table 1. Association between outcomes in elderly population attended the Oral Medicine Center.

Association (prevalence in elderly population)		p-value
OSCC (5.30%)	Smoking-habits (44.21%)	p<0.0001
	Drinking alcohol habits (21.80%)	p<0.0001
Oral leucoplakia (4.88%)	Smoking-habits (44.21%)	p<0.0001
	Drinking alcohol habits (21.80%)	p<0.0001
Xerostomia (22.41%)	Oral candidisis (35.37%)	p<0.0001
	Anti-psychiatric (17.49%)	p<0.0001
	Hypoglycemic (9.79%)	p<0.0001
	Analgesic/anti-inflammatory (14.90%)	p<0.0001
	Anticoagulants (6.94%)	p<0.0001
	Antihypertensive (52.13%)	p=0.5786

OSCC = oral squamous cell carcinoma; the percentage values shows the prevalence of each outcome in elderly population. P-values were archiving by Chi-square tests (p<0.05 = significant association)

DISCUSSION

Life expectancy has considerably increased as a consequence of advances in the medical field and other social-economic factors, resulting in population aging.[15] This process gradually reduces physiological activities and compromises functions and structures of oral cavity.[16] Studies evaluating the outcomes of aging in oral health, specifically regarding soft tissue lesions development, are scarce. Our results showed that the number of patients aged 60 years old or older who attended on the Oral Medicine Center has risen during the considered period. This progressive increase probably represents a direct reflection of a higher life expectancy in Brazil in the last decades.[2] In fact, since 1991 the proportion of adults (20 to 59 years old) and elderly (60 years old or older) has progressively grown according to the latest Census published by The Brazilian Institute of Geography and Statistics.[17]

This progressive growth may represent an important impact on the elderly's oral health situation. However, limited studies regarding dental and oral mucosa conditions in Brazilian aged patients were done. None of them have performed a temporal evaluation of changes occurred in this population's profile. In this study, the most frequent oral lesions were xerostomia, inflammatory fibrous hyperplasia, candidiasis, actinic cheilitis, leukoplakia and OSCC. These three latter were also observed with high incidence in a Brazilian study regarding oral lesion in elderly population through histopathological records.[18] Interestingly, these oral potentially malignant disorders and malignant neoplasm represented 7.96% and 11.55% of all 2250 analyzed cases.[18] On the other hand, in the present study the prevalence of OSCC (5.30%) was more than oral leukoplakia (4.88%). Thus, we can hypothesize that some OSCC cases, in the present sample, might have not originated from oral leukoplakia even sharing the same risk factors.

Other less frequent lesions noticed in our study included development defects of the oral and maxillofacial region, such as varicosities and vascular malformations, torus palatinus and mandibularis, exostosis, migratory glossitis, Fordyce granules, and fissured tongue. Mucocutaneous and infectious diseases, benign neoplasms, and soft tissues tumors (pyogenic and peripheral giant cell granuloma) were found with a frequency inferior to 5%. Inflammatory/reactive lesions were predominantly diagnosed in aged Brazilians especially when correlated to complete and partial denture usage.[12-13-38] Not only did our group include cases that presented a definitive diagnosis, but those who needed complementary tests to confirm it. Oral candidiasis related to dentures is one of the most prevalent lesions with rates ranging from 37.1% to 45.6%.[8-37] However, lower rates were also found, ranging from 22.3% to 1.9%.[1-23] This mycosis is associated to inadequate denture hygiene, nocturnal usage, and prosthetic misfit. In conjunction to a wide coverage of prosthetic treatments provided by the public health system, these factors are probably responsible for a higher prevalence of candidiasis in the elderly.[5] Interestingly, our study showed a high frequency of this disease for the first 12 years. Nonetheless, in the subsequent years, a significant reduction was seen. Our data also revealed that xerostomia is significantly associated with candidiasis. When analyzing changes that occurred from 1994 to 2014, no relevant alterations in the average age of the attended population and in the alcohol consumption were noticed. Furthermore, the reduction of complete removable denture usage is probably a reflection of poor dental assistance by the public health care in the area included in our study since it is responsible for providing prosthetic treatment for the elderly. Thus, we suggest that the candidiasis reduction rates found in this study is a direct result of a decrease in the prosthetic usage.

Xerostomia, with or without hyposalivation, also demonstrated a temporal variation throughout the studied period. In the trend graph and in chi-square tests, a progressive increase of this condition was significantly associated to hypoglycemic, psychotropic, anticoagulant, analgesic and anti-inflammatory drugs used. This increase was also noted in drug consumption, especially in those associated to xerostomia. Therefore, we propose that the drug intake hike among the elderly was a determinant factor to a higher frequency of xerostomia. Studies have demonstrated the association between xerostomia and drug intake, an important finding since aged patients are often using drugs for systemic conditions, which present this side effect. A study showed that elderly patients who had not taken any medications exhibited higher salivary flows, whereas those who took more than four drugs daily presented a reduced flow.[25] In addition to this finding, another study demonstrated that 76.67% of the elderly subjects were taking four or more medications per day, with a median xerostomia index of 32.77 ± 9.11. This index indicates an intermediate dry mouth sensation.[26] This same research revealed that higher xerostomia indexes were significantly associated to a poor quality of life. Hence, an adequate oral health in aged patients is essential for a better life quality.

A longer life expectancy leads to population aging; therefore, situations related to the elderly will be increasingly common in subsequent years. For instance, a higher xerostomia frequency identified in this study is probably associated to the effect of multiple drugs consumed by them. On the other hand, a lower oral candidiasis occurrence is attributed to a reduction of

removable prosthesis usage. Measures to improve oral and prosthetic services provided by the public health care system are needed, particularly in the area in which our study was held. Dental care services should establish goals regarding xerostomia prevention and treatment in order to improve the elderly's quality of life.

Finally, this study showed that most elderly population who sought care at an oral medicine service were women that use a large of drugs which were associated with xerostomia development. In addition, tabaco and alcohol consumption by this population were associated with oral leukoplakia and OSCC being these two diseases more frequently in men.

DECLARATION OF CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

SOURCES OF FUNDING

This work was supported by grants from State of São Paulo Research Foundation (FAPESP) (2015/22415-3) Coordenação de Aperfeiçoamento de Pessoal de Nível Superior – Brasil (CAPES) [Finance Code 001]

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