

## Review on polypharmacy and oral health among the elderly

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### ABSTRACT

The increase in the elderly population is a factor that occurs worldwide. This fact can be explained by the improvement of living conditions of the populations, advances in medicine, improved sanitation and increase in the community and individual health care. The use of several drugs, self-medication, drug side effects, several drug interactions and decreased quality of life of the population has become an important public health issue. The gradual aging of the population and the increasing prevalence of chronic diseases has led to polypharmacy and the use of drugs that potentially are considered inappropriate for using among the elderly population. Oral diseases, such as periodontal disease, dental caries, lesions in the oral mucosa and xerostomia could be complications associated with polypharmacy among the elderly. It is crucial that the health professional, using his contemporary knowledge, is able to protect the elderly population from complications caused by polypharmacy. The purpose of this article was to highlight the importance of knowledge and recognition of the risks that polypharmacy may represent during dental treatment based on the international scientific literature.

**Key words:** Polypharmacy, Oral health, Quality of life, Xerostomia, Dental caries, Oral diseases.

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### INTRODUCTION

The concept of "elderly" varies according to the socioeconomic status of each culture and nation. Thus, in developing countries it is considered as elderly, each person aged 60 or more, whereas, in developed countries, people with 65 or more years are considered elderly (Dagli and Sharma, 2014). In clinical practice the dental professional has to lead with various systemic diseases and the complications that can appear and that may cause difficulties in the application of certain clinical procedures (Gil-Montoya et al., 2015; Dagli and Sharma, 2014). In line with the development of the health systems, there has been an increase in the quality of medical services provided, contributing to the apparent increase in the average life expectancy of the population associated with a high prevalence of chronic diseases (Eckardt et al., 2016).

Aging is characterized by the biological changes

regarding the homeostasis, such as the immune systems deficiency, which could lead to a greater susceptibility of many diseases. Pharmacological therapy is essential to maintain the quality of life among the elderly with various chronic diseases (Ramgoolie et al., 2015). However, it is necessary to take into account the pharmacokinetics and pharmacodynamics of drugs among the elderly and the increased risk of drug interactions (Cvecka et al., 2015; Ornstein et al., 2015). The purpose of this article was to highlight the importance of knowledge and recognition of the risks that polypharmacy may represent during dental treatment based on the international scientific literature.

### MATERIALS AND METHODS

To carry out the current review article the search

strategies included electronic databases and reference lists of articles (such as Pubmed, Cochrane, ScienceDirect and Web of Science). The scientific articles used in this study were mainly reached by using the following keywords: "polypharmacy", "elderly", "oral health", "quality of life", "xerostomia", "dental caries", "periodontal disease". Scientific articles before 2007 were excluded from the final selection. By the end of the research, from a total of 43 scientific articles, 18 were selected to explain the importance of knowledge about polypharmacy in dental treatment among the elderly.

## RESULTS AND DISCUSSION

One of the main side effects of prescription drugs to elderly patients is the qualitative and quantitative changes of saliva (xerostomia and salivary hypofunction) (Viljakainen et al., 2016).

Saliva plays a key role in the homeostasis of the oral cavity due to its protective and functional properties, including the assistance of speech and swallowing, buffering and neutralizing the intrinsic or extrinsic acid and maintaining healthy oral mucosa, preventing, this way, excessive growth of harmful microorganisms. With the presence of salivary hypofunction various complications may appear, such as dental caries, oral mucosa lesions and dry mouth, resulting in decreased quality of life (Viljakainen et al., 2016; Putten et al., 2014; Singh and Papas, 2014). In a study by Ischikawa et al. (2011), aimed to analyze drugs that are related to the decrease of saliva production in elderly patients and confirms that xerostomia is a side effect related with polypharmacy.

In a sample of 368 elderly aged 79 to 80 years, the study concluded that there are significant statistical differences between genders when comparing the saliva volume among the elderly, and that the saliva volume may be affected by the type of medication and the number of drugs prescribed (Ischikawa et al., 2011). Likewise, there are drugs that increase the probability of bleeding and infection, such as anticoagulants, antiplatelets, anti-histamines and antibiotics, which is very relevant for clinical procedures. In the study of Ischikawa et al. (2011), we may verify that the drugs most used by the patients who participated in this study where, by descending order: antihypertensive agents, 30.3%; antidepressive drugs, 13%; drugs used in arrhythmias, 11.3%; non-steroidal anti-inflammatories, 9.2%; non-opioid analgesics, 6.7%; antidiabetics, 6.3%; antibiotics (penicillins and cephalosporins), 6.3%; skeletal muscle relaxants 5.9% and sedative-hypnotic drugs, 5.5%. The study carried out by Moreira et al. (2015) confirms that hypertension is the most frequent pathology in 14.5% of patients with age above 60 years. In the same study, 56% reported were taken medication. Among these, the

five most commonly consumed drugs were antihypertensive agents (28.8%), drugs used in arrhythmias (11.9%), antidepressants (5.1%), antidiabetics (5.1%) and non-opioid pain relievers (5.1%). The results obtained by different studies are an important reason for concern since the vast majority of patients need various types of medications and the risk of occurrence of side effects is relatively high (Martins et al., 2015). According to Corte-Real et al. (2011), "Periodontal disease and dental caries are the main causes of tooth loss and lesions of the oral mucosa and the presence of xerostomia are the oral pathologies most frequently reported by the elderly. The presence of systemic diseases and frequent polypharmacy in this age group contribute significantly to the development of oral diseases." Antihypertensives, antidepressants and anticonvulsants are examples of drugs that may develop oral pathologies (Mortazavi et al., 2016; Moreira et al., 2007). There are several recorded and used classes of drugs that interfere with the dental prescription routine (Curkovic et al., 2016; Gregson and Romito, 2012; Heegaard et al., 2011; Greenwood et al., 2010). Therefore, the dental professional is responsible not only for the overview of oral health, but also for the general and systemic condition of patients (Putten et al., 2014; Greenwood et al., 2010). Considering the fact that the elderly population has better access to dental appointments, also new risks associated with systemic diseases and older age have appeared, forcing the health professional to take certain precautions before starting any medical/dental procedure (Mortazavi et al., 2016; Putten et al., 2014; Heegaard et al., 2011).

## CONCLUSION

The majority of the elderly over 60 years of age mention the use of drugs antihypertensive, antiarrhythmic, antidepressant and analgesic drugs. Periodontal disease, dental caries, oral mucosa lesions and xerostomia can be associated with complications often prescribed to elderly. Given this reality, it is crucial to train the health professional in order to conduct the dental appointment among the elderly patient to avoid the risk of complications during clinical procedures and post-operative recovery.

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