

# Oral Health and Physical and Mental Limitations among the Elderly

Nélio Veiga<sup>1,2\*</sup>, Ana Castro<sup>1</sup>, Joana Mendes<sup>1</sup>, Marina Marques<sup>1</sup>, Marlene Domingues<sup>1</sup>, Tânia Maravilha<sup>1</sup> and Carina Coelho<sup>1</sup>

<sup>1</sup>Health Sciences Institute - Universidade Católica Portuguesa, Viseu, Portugal

<sup>2</sup>Center for Interdisciplinary Research in Health, Universidade Católica Portuguesa, Portugal

\*Corresponding author: Nélio Veiga, Health Sciences Institute - Universidade Católica Portuguesa, Viseu, Portugal, Tel: +00351966454933; E-mail: [nelioveiga@gmail.com](mailto:nelioveiga@gmail.com)

Received date: 30 Mar 2016; Accepted date: 16 May 2016; Published date: 20 May 2016.

Citation: Veiga N, Castro A, Mendes J, Marques M, Domingues M, et al. (2016) Oral Health and Physical and Mental Limitations among the Elderly. *Int J Dent Oral Health* 2(6): doi <http://dx.doi.org/10.16966/2378-7090.203>

Copyright: © 2016 Veiga N, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

## Abstract

Aging corresponds to a stage with its own biological, psychological and social characteristics. During this phase pathophysiological changes appear that may affect the whole body, and, more specifically, the oral cavity. The physical and cognitive limitations are those that most affect the oral health, especially among the elderly. This study aims to conduct a literature review about oral health among the elderly with physical and mental limitations, in particular with Alzheimer's disease, Parkinson's disease and rheumatoid arthritis.

To carry out this review article the search strategies included electronic databases, reference lists of articles, and selected textbooks. Articles and textbooks used in this study were mainly reached by using the following keywords: "oral health", "elderly", and "stroke", "Parkinson's disease", "Alzheimer's disease", "musculoskeletal disorders. By the end of the research, 16 scientific articles were selected.

The prevalence of oral health diseases increase with age and is highly associated with neurological disease development. Therefore, the maintenance of the quality of life among the elderly should have in consideration the risk of neurological disease development and the influence that these outcomes may have in the oral health of the elderly. Dental health professionals must be highly aware of the limitations that these patients present in undergoing their own daily oral hygiene and the higher risk of oral disease development.

**Keywords:** Elderly; Physical limitations; Mental disorders; Oral health

## Introduction

Aging is a natural physiological process common to all living beings. According to the World Health Organization (WHO), a person is considered elderly from the age of 65 years old. In 2009 the Portuguese population aged over 65 accounted 16.9% of the total population versus 16.5% recorded in 2001, and this percentage tends to increase considering the exponential increase in the average life expectancy [1].

During aging, pathophysiological changes occur that affect the whole body, and changes in the oral cavity is no exception. The most common oral health problems in the elderly are in particular tooth loss, root caries, periodontal disease, lesions caused by dental prostheses such as stomatitis and changes in the major salivary glands. These problems can have repercussions at various levels, such as chewing, phonetics, aesthetic and general well-being [1]. With advancing age, there is a limitation in terms of locomotion, and in addition the mental capacity tends to decrease also. Therefore, personal hygiene tasks such as oral hygiene, become much more difficult to perform. Apart from the difficulty in hygiene, there is an aggravating factor: nutrition. The elderly mainly ingest pasty foods that may lead to an increase of dental caries [1].

This study aims to conduct a literature review about oral health among the elderly with physical and mental limitations, in particular with Alzheimer's disease, Parkinson's disease and rheumatoid arthritis.

## Materials and Methods

To carry out this review article the search strategies included electronic databases, reference lists of articles, and selected textbooks. Articles and textbooks used in this study were mainly reached by using the following

keywords: "oral health", "elderly", and "stroke", "Parkinson's disease", "Alzheimer's disease", "musculoskeletal disorders. By the end of the research, 16 scientific articles were selected. The articles and textbooks were selected according to the year of publication, in this case, from 2000 to 2016. The selection of the articles and textbooks was also based on the literature review presented in each reference.

## Results and Discussion

### Alzheimer's disease

Alzheimer's disease is one of the most common diseases among the elderly, characterized by a neuronal disorder that affects cholinergic synaptic transmission, responsible for processes of attention, learning and memory. This disease has a multifactorial etiology, namely genetic and environmental risk factors, aging, low educational level and cardiovascular diseases [2].

This dementia worsens over time, affecting the individual's cognitive function. During a mild to moderate stage the patient has memory loss, communication problems, disorientation and inability to learn new things and situations. These patients have limited mobility, which will impair the ability to accomplish oral hygiene, increasing the risk for oral disease development. In the severe phase the patient may have his/her cognitive abilities seriously affected with the loss of recent and past memory [2].

The treatment of dementia includes improving cognitive performance of the patient and the capacity to perform daily physical activities, in order to improve the quality of life. In relation to the oral cavity, the main goals are the preservation of natural teeth and the proper confection and use of dental prosthesis. The drastic decrease in the main capacities of these

patients also compromise the ability to accomplish their own oral hygiene. Moreover, usually the caregivers of these elderly are not sufficiently qualified to provide dental care support [2]. It is a fact that people with Alzheimer's disease suffer more of oral problems, which may include root caries, bleeding, tooth loss, periodontal disease, among other oral diseases that may even compromise oral rehabilitation [2].

Ribeiro et al. [2] assessed the oral health in patients with this dementia. This study demonstrates that the increase in age and the lower educational level are highly associated with the risk of acquiring Alzheimer's disease. An increase of oral health with oral disease progression is well present in individuals with Alzheimer's disease in a severe stage. These results are consistent with the loss of an individual's capacity in doing their own oral hygiene and the lack of knowledge related to oral health of their caregivers.

As for patients with removable prosthesis, the most common oral pathology is stomatitis, and this result may be related with xerostomia. The hyposalivation reduces lubrication and protection of the oral cavity, increasing the predisposition to oral infections.

### **Cognitive function, oral health and quality of life in the elderly**

The quality of oral health among the elderly is an important determinant of quality of life, which is a indicator of functional limitations related to mobility problems and limited daily activities. Another determining factor is the cognitive function in later stages of life [3].

Studies on this topic demonstrates that elderly people with dementia have poorer oral health mainly associated with a decrease in cognitive function which leads to a higher risk of dental carie and periodontal disease development [3].

A study conducted by Lee et al. [3] shows that individuals with mild to moderate cognitive impairment has a reasonable quality of life related to oral health and the same study demonstrates an association between cognitive ability and quality of life related with oral health. This study also pointed out the pain and discomfort related with oral health problems, which is a factor that oral health professionals should follow to be able to assess the degree of oral health of a patient with cognitive difficulties.

### **Parkinson's disease**

Parkinson's disease is a neurodegenerative disease with no cure and unknown etiology whose incidence and prevalence affects mainly the elderly [4]. This disease causes a variety of symptoms including bradykinesia and hypokinesia, weight loss, dysphagia, shivering, restricted mobility, inability to maintain a stable posture, among others [4-6]. Because of these symptoms, patients with Parkinson's disease present a higher limitation on accomplishing correctly their own oral hygiene becoming a high risk group for periodontal diseases and dental carie development [5].

In patients with Parkinson's disease, dental complications have been linked to the inability of patients to perform a daily routine of good oral hygiene, such as by dysfunctional changes in salivary flow and swallowing manifested as dysphagia and excessive salivation. The medication recommended in neurodegenerative diseases can produce xerostomia, and the decrease of saliva may increase the risk of oral disease development, mainly dental caries [6]. Thus it is essential that patients receive, by a oral health professional, the adequate dental care and advice on how to practice proper oral hygiene methods having into account the limitations caused by this neurological disease [5].

With the expected increase in the incidence of Parkinson's disease in the near future it is extremely important to find strategies that contradict this situation [5,6]. The main strategies should pass by providing various types of support including advice on oral hygiene methods that should be given to the patients family and caregivers, oral health care support given

at home of the patient with the disease and easier transport services of Parkinson's disease patients to a dental clinic.

Parkinson's disease patients need to maintain a good level of oral health in order to prevent other infectious diseases such as pneumonia for example that may be caused by oral remaining contents resulting from poor oral hygiene [5,6].

### **Musculoskeletal diseases**

People with musculoskeletal diseases (rheumatoid arthritis, osteoarthritis, osteoporosis, Paget's disease) have difficulty in practicing good oral hygiene, leading to the buildup of dental plaque and calculus and, consequently, to the development of dental caries and periodontal disease which can lead easily to the decrease in quality of life [7,8].

Various measures can help these individuals, including the teaching of adaptable oral hygiene methods and the administration of oral antiseptics [9].

A study conducted by Ishi et al. [10] consisted in the comparison of 2 groups: a test group (39 patients with rheumatoid arthritis) and a control group (22 subjects without any autoimmune disease). The data collection was performed by applying a questionnaire (questions about general and oral health) and an oral examination. It was found that individuals with the disease had fewer teeth, higher prevalence of local dental plaque and an increased frequency of locations with loss of attachment (equal or greater than 5 mm) [10].

Accordingly, rheumatoid arthritis can influence the pathogenesis of periodontitis. Studies have demonstrated that the reduction of muscular movement can limit the achievement of a more proper oral hygiene. The reduction in salivary flow due to medication or secondary Sjögren's syndrome can increase the formation of supragingival plaque in these individuals and increase the risk of oral disease development [10].

Therefore, it was concluded that people with rheumatoid arthritis (as well as other musculoskeletal diseases) require more periodontal control and monitorization including motivation towards adequate oral hygiene measures, taking into account the reduced movement capacity and psychological condition of these individuals [10].

### **Stroke**

Stroke is the leading cause of disability among adults. These patients demonstrate a higher vulnerability for the development of oral health problems, such as periodontal disease, xerostomia, oral ulcers and dental caries. All these problems can worsen when patients are admitted in a hospital during a certain period of time, which can lead to limitations in oral hygiene [11,12]. The prevalence of periodontal disease can later induce systemic health problems such as pneumonia and facilitate fungal and bacterial infections, mainly in the oral mucosa. The risk of proliferation of pathogenic *Staphylococcus aureus* or *Pseudomonas aeruginosa* may increase the possibility of pneumonia among hospitalized patients that present movement limitations [13,14].

Oral hygiene maintenance is absolutely necessary among hospitalized patients in the intensive care unit in order to reduce the risk of nosocomial infections as well as oral disease development [11,15,16].

Yoshida et al. [13] elaborated a study with 56 patients who had suffered stroke and were admitted to a hospital intensive care unit. Of the total sample, two groups were determined: 29 patients in the intervention group and 27 in the control group. In the intervention group, the patients practiced oral hygiene was made throwith the use of proper toothbrushes, interdental brushes, and chlorhexidine mouthwash. In both groups, the plaque index values, gingival index, tooth loss and colonization of *Candida albicans* were recorded. The results demonstrated a significant decrease in the treatment group in comparison with the control group.

It was concluded that this protocol related with oral hygiene in patients admitted to a hospital intensive care unit was very positive and improved the oral health condition in patients with stroke [13].

Many patients who have experienced a stroke present deficiencies in the physical and mental components which can cause difficulties in accomplishing their own oral hygiene independently. The medication prescribed in patients that have suffered a stroke can also cause problems in the oral cavity such as xerostomia and oral ulcers [13,14].

### Conclusion

With the increase of life expectancy, the elderly population is increasing in a worldwide level. The prevalence of oral health diseases increase with age and is highly associated with neurological disease development. Therefore, the maintenance of the quality of life among the elderly should have in consideration the risk of neurological disease development and the influence that these outcomes may have in the oral health of the elderly. Dental health professionals must be highly aware of the limitations that these patients present in undergoing their own daily oral hygiene and the higher risk of oral disease development.

### References

1. Razak PA, Richard KM, Thankachan RP, Hafiz KA, Kumar KN, et al. (2014) Geriatric Oral Health: A Review Article. *J Int Oral Health* 6: 110-116.
2. Ribeiro GR, Costa JL, Ambrosano GM, Garcia RC (2012) Oral health of the elderly with Alzheimer's disease. *Oral Surg Oral Med Oral Pathol Oral Radiol* 114: 338-343.
3. Lee KH, Wu B, Plassman BL (2013) Cognitive function and oral health-related quality of life in older adults. *J Am Geriatr Soc* 61: 1602-1607.
4. Barbosa C, Marchini A, Marchini L (2013) General and oral health-related quality of life among caregivers of Parkinson's disease patients. *Geriatr Gerontol Int* 13: 429-436.
5. Nakayama Y, Washio M, Mori M (2004) Oral health conditions in patients with Parkinson's disease. *J Epidemiol* 14: 143-150.
6. Fukayo S, Nonaka K, Shimizu T, Yano E (2003) Oral Health of Patients with Parkinson's Disease: Factors Related to Their Better Dental Status. *Tohoku J Exp Med* 201: 171-179.
7. Makhija SK, Gilbert GH, Clay OJ, Matthews JC, Sawyer P, et al (2011) Oral health-related quality of life and life-space mobility in community-dwelling older adults. *J Am Geriatr Soc* 59: 512-518.
8. Montandon AA, Pinelli LA, Fais LM (2006) Quality of life and oral hygiene in older people with manual functional limitations. *J Dent Educ* 70: 1261-1262.
9. Kelsey JL, Lamster IB (2008) Influence of musculoskeletal conditions on oral health among older adults. *Am J Public Health* 98: 1177-1183.
10. Ishi Ede P, Bertolo MB, Rossa C Jr, Kirkwood KL, Onofre MA (2008) Periodontal condition in patients with rheumatoid arthritis. *Braz Oral Res* 22: 72-77.
11. Kim EK, Jang SH, Choi YH, Lee KS, Kim YJ, et al (2014) Effect of an oral hygienic care program for stroke patients in the intensive care unit. *Yonsei Med J* 55: 240-246.
12. Nuttall NM, Bradnock G, White D, Morris J, Nunn J (2001) Adult dental health survey: dental attendance in 1998 and implications for the future. *Brit Dent J* 190: 177-182.
13. Yoshida M, Murakami T, Yoshimura O, Akagawa Y (2012) The evaluation of oral health in stroke patients. *Gerodontology* 29: e489-e493.
14. Janket SJ, Jones JA, Rich S, Meurman J, Garcia R, et al. (2003) Xerostomic medications and oral health: the Veterans Dental Study (part I). *Gerodontology* 20: 41-49.
15. Brady MC, Stott DJ, Norrie J, Chalmers C, St George B, et al. (2011) Developing and evaluating the implementation of a complex intervention: using mixed methods to inform the design of a randomised controlled trial of an oral healthcare intervention after stroke. *Trials* 12: 168.
16. Pedersen AM, Bardow A, Beier Jensen A, Nauntofte B (2002) Saliva and gastrointestinal functions of taste, mastication, swallowing and digestion. *Oral Dis* 8: 117-129.