

# DENTAL PROBLEMS IN SENIORS

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## Abstract

**Introduction.** According to the data of the Central Statistical Office, during the last quarter of the century, large changes in the age structure of Polish population have been observed. It is forecasted that the population aged 60+ will increase by 2050 by about 19%, as a result of which the share of older people in the population of the country will reach more than 40%.

**Aim.** The goal of this work is to draw the reader's attention to the progressive development of the healthcare needs of older people.

**Materials and method.** The conducted studies have shown that the oral health and the level of senior self-protection in Poland is abnormally low. At the same time, in recent decades, with the increase in the number of seniors, dynamic development of treatment methods and medical care, including therapy and dental prophylaxis, has been observed. Special consideration of the needs of older people in this area, as well as broadening the knowledge of physiology and aging factors can help to solve many problems related to maintaining oral health and general health in the elderly. An important problem here is the comprehensive scope of the dentist's care over patients.

**Conclusions.** Comprehensive care should include integrated preventive and control activities as well as individualized treatment and reconstruction of missing teeth. Due to current advances in implant-prosthetics and new reconstructive materials, it is possible to improve the condition of the teeth of seniors.

**Keywords:** gerostomatology, oral care, dental treatment needs.

## Introduction

According to the WHO estimates, by 2050, the world population of people aged 60 and over will have grown to two billion. The problem of aging societies affects all countries. This demographic change is going to have a considerable impact on public health globally. In the case of older adults, maintaining good health is extremely important as it allows them to remain independent and active members of their families and communities [1]. Also in Poland, according to data published by the Central Statistical Office, large changes in the age structure of inhabitants have been observed in the last twenty five years. Since the beginning of the 1990s, the average inhabitant of Poland was over 7 years older. In 2014, the median age for the entire Polish population was 39 years (41 years for women and 38 years for men). The aging of the Polish population is the result of a longer life expectancy and a low birth rate. An additional factor are the fairly large rates

of labour migration among young people. It is being forecast that by 2050 the growth of the population of Polish citizens aged 60 years old and older will have increased by almost 19 percentage points. As a result, the share of the elderly in the country's population will have reached 40.4% during that time [1,2].

In the elderly population, there are many health problems that become more severe with age. Deteriorating health causes limitations in everyday life, generates the need for support from others and the need for more frequent use of professional medical care. That is why good insight into the health problems of seniors is a prerequisite for taking active steps to maintain their good health and ensure a good quality of their life.

The World Health Organization considers oral health to be one of the most important components of "active aging" [1]. Loss of teeth and other oral cavity pathologies affect a person's general health and well-being. Considerable tooth losses, advanced caries, periodontal diseases, xerostomia and pre-cancerous lesions in the oral cavity are strongly associated with age [2,3]. Known risk factors for oral cavity diseases include, among others: poor general health, poor social conditions, poor hygiene, and insufficient dental care. There are large differences in the prevalence of oral diseases and edentulism among countries, among different regions of one country, and among social groups [1]. However, in many European countries, including Poland, there is still a scarcity of comprehensive epidemiological data on the problem of tooth loss and oral health in the elderly. Mehr *et al.* showed that the prevalence rates of partial and complete edentulism in the Polish population of seniors aged 65+ were 45.7% and 47.1%, respectively. In the group of 4524 subjects they studied, only 75.6% reported having prostheses, while 24.4% had no prostheses, of which 3.51% were people with complete edentulism and 7.59% with partial tooth loss [4].

Insight into the physiology of aging and factors involved in this process can explain many problems connected with maintaining oral health and general health in older adults. The focus of this article are the growing health care needs of the elderly in Poland.

### **Age-related progression of tooth wear and degradation of periodontal tissues**

The aging of human teeth involves physiological degradation of the resistance of oral tissues and the mechanical and biological wear of teeth associated with mastication and ingestion. The most frequent tooth wear lesions in the population of geriatric patients are carious lesions in the enamel, dentine and root, as well as physico-mechanical (non-bacterial) lesions.

Studies estimated increases in the prevalence rate of pathological wear (degradation) of conservatively treated teeth as a function of the time of use of composite restorations in a cohort of 451 patients. The following criteria were taken into account: the presence of secondary caries, surface smoothness,

and colour retention. Caries was found in about 6.5% of the patients at two years after treatment, and in about 12% at five years after treatment. Unacceptable changes in surface smoothness of composite restorations were found after 2 years of use in approximately 3%, after three years in 10%, after four years in 18%, and after five years in 56% of the subjects. Unacceptable changes in colour were observed after two years of use in approximately 4% of patients, and after five years in 55% of patients. It was found that changes in colour and surface smoothness occurred earlier than caries and were more prevalent. The prevalence of caries increased directly proportionally to time, whereas the growth of aesthetic failures was exponential [5,6].

A characteristic phenomenon in the elderly are increased rates of tooth root decay caused, among others, by gum recession. An article describes a study of the influence of patients' age on the intensity of wear and the prevalence of dentine exposure in the general population of patients aged from 18 to 75 years. Tooth wear was measured on a 6-point scale. Linear regression models of tooth wear as a function of patients' age were determined. Mean tooth wear in all age groups was 2.9, and the prevalence of teeth with exposed dentin was 23.4%. The participants' age was correlated with mean tooth wear scores. It was found that occlusal wear and dentine exposure increased with age [7]. However, it is generally known that the progression of the carious process is slower in the elderly [8]. People at an advanced age have been observed to show high resistance to cariogenic factors. Acute caries is rarely an issue in this age group [8,9], and so are acute pulpitis and/or acute periapical periodontitis. Seniors are more likely to suffer from chronic processes with an oligosymptomatic course.

In addition to carious lesions, the following types of non-cariious lesions are often encountered in geriatric patients:

- tooth fractures,
- enamel erosions,
- abrasion of teeth at different sites.

This last type is associated with physiological wear of the tooth surface in the process of mastication or with pathological processes of various etiology, among others, with the individual sensitivity of dental tissues, the type of food consumed, the intensity of chewing, missing teeth, bruxism, and occlusal overload.

Typical non-cariious tooth wear processes in seniors include attrition, abrasion, abfraction, and erosion. Attrition is the abrasive wear of contacting opposing tooth surfaces without the involvement of external factors. It is estimated that the physiological process of attrition causes enamel loss of 20-30  $\mu\text{m}$  per year [10]. Abrasion is caused by mechanical wear of tooth tissues, with the participation of external factors. Literature data show that abrasion processes intensify with age [8,10,11]. Abfraction is fatigue wear caused, among others, by prolonged lateral flexure of the crown of the tooth. It produces wedge-shaped cavities with a sharp angle and a smooth, shiny surface on the vestibular surfaces of teeth [12]. Erosion is progressive loss of hard dental tissues as a result of a chemical process without

the participation of bacteria; it is caused by the destructive action of endogenous or exogenous acids [12].

Age-related physiological changes in the human body are also accompanied by periodontal lesions. List of the following most common aging-associated oral diseases [4,10]:

- xerostomia,
- burning mouth syndrome,
- prosthetic stomatopathy,
- oral candidiasis.

Xerostomia is a reduction in salivation or lack of saliva which causes difficulties in speaking, eating, swallowing, and taste perception. It often results in a lack of appetite. In the oral cavity, xerostomia leads to increased caries, mucous membrane diseases, and chronic periodontitis [8,9].

The burning mouth syndrome (BMS) is a subjective sensation of burning, stinging, or numbness in the oral mucosa, with no underlying pathological changes in the mucous membrane in clinical examination findings. Patients with BMS symptoms usually change their eating habits and eliminate some foods from their diet. They become nervous and prone to depression. In addition, they may suffer from such ailments as fatigue, anxiety, joint and muscle pains, and loss of appetite [8,9].

Prosthetic stomatopathies are lesions in the mucous membrane, which are associated with the use of acrylic dental prostheses. Cases of prosthetic mucositis are estimated to occur in 40-45% of users of dental prostheses [13].

Oral candidiasis is an infection caused by *Candida* yeast. Elderly people who wear dental prostheses most commonly suffer from chronic atrophic candidiasis, angular cheilitis, chronic hyperplastic candidiasis, and pseudomembranous candidiasis. It is estimated that angular cheilitis affects 10-20% of denture users [13].

## **Treatment and oral care in elderly patients**

The aging of society observed in the recent decades has been accompanied by systematic development of treatment methods and medical care for the elderly, including dental therapy and prophylaxis [7,12]. Particularly dynamic progress has been observed in prosthetic dentistry. This progress has encompassed not only full and partial removable dentures, but most of all innovative prosthetic restorations supported on intraosseous implants. The literature offers many publications documenting the achievements of implant prosthodontic treatment in geriatric patients, in particular novel applications of permanent mandibular and maxillary prostheses in cases of partial and complete edentulism [13]. A separate problem is the rationalization of oral hygiene practices. Many authors draw attention to the, so far underestimated, problem of neglect of oral and dental self-care (with regard to patients' natural and reconstructed teeth) in the elderly. Studies show that dental neglect increases with age [14,15] and that geriatric patients often do not know how to properly care for their dentures [16].

An important issue is also comprehensive dental care for this group of patients. Comprehensive care should include integrated prophylactic and monitoring measures as well as treatment of caries, periodontal diseases, diseases of the oral mucosa, and reconstruction of missing teeth including implant-supported prostheses [8].

### Conclusions

1. The aging of society in Poland and worldwide is a progressive process. It creates new challenges and needs in geriatric dental care. Research shows that in Poland, the levels of oral health and dental self-care among elderly people are alarmingly low.
2. Dental health can be improved and the prevalence of periodontal diseases in seniors can be significantly reduced owing to current advances in implant prosthodontics and the use of new reconstructive materials, as well as gradual implementation of comprehensive (medical and dental) care including education, systematic diagnosis, and specialized individualized therapy.

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