Oral Health Conditions of Older People: Focus on the Balkan Countries

SUMMARY

Oral health plays a pivotal role in general health, especially in older people. Oral diseases may affect the development of systemic conditions, such as diabetes mellitus, cardiovascular disease, stroke and hypertension. The most important oral health conditions that have been recorded in dental literature for older population include tooth loss, dental caries, periodontal diseases, xerostomia (dry mouth) and oral cancer. Edentulism influences social life, either causing aesthetic problems or affecting functional abilities, such as speaking, chewing and eating. Dental caries in older people is similar to that in people in their thirties. Socio-economic status and living area play a key role in the development of dental caries. In addition, the accumulation of several risk factors, such as plaque or systemic diseases, acts synergistically in the onset of periodontal disease in seniors. Furthermore, older people, mainly due to their medications, exhibit a reduced amount of saliva. Xerostomia causes difficulties in chewing, speaking and swallowing, and it has a substantial impact on older people’s lives. The prevalence of oral cancer is 1-10 per 100,000 patients, and several factors (smoking, alcohol, education, economic status) play crucial role. Limited data exists today that evaluates oral health conditions of seniors in the Balkan countries. Aging and socio-economic status of seniors in the Balkans are significantly associated with oral health problems.

Keywords: Oral Health, Aging, Balkan Peninsula, Tooth Loss, Dental Caries, Periodontal Disease, Xerostomia, Oral Cancer

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Introduction

Oral health plays a pivotal role in general health, especially in older people. Oral diseases may also affect the onset of systemic conditions such as diabetes mellitus, cardiovascular disease, stroke and hypertension. On the other hand, there is abundant evidence supporting the idea that the improvement of oral health results in controlling systemic diseases such as diabetes mellitus. Periodontal disease is characterized as a multi-factorial inflammatory disease, which may share the same risk factors with various systemic diseases. Not only periodontal disease, but also dental caries and oral cancer, may exhibit an interplay role. The process of growing old increases the risk of chronic conditions that may influence the prevalence of oral conditions in older people.

Demographic transition is a phenomenon of modern society that has appeared in industrialized countries. Life expectancy has increased during the last decades, and birth rate has diminished as well. In the majority of western societies, lifespan increases raise in systemic diseases and oral health issues. Thus, increasing interest has been shown in all medical fields regarding older populations.

Geriatrics or geriatric medicine is the specialty that focuses on older people’s health care. According to the British Geriatrics Society, geriatrics is a branch of general medicine that is concerned with the clinical, preventative, remedial and social aspects of illness in old age. The unique characteristics of the elderly create the need of special care. Prevention and treatment for older adults are the major goals of such a specialty. In dental
medicine, gerodontontology is the field that is specialized in the dental treatment of older people, and it is also engaged in research about geriatric patients.

According to a United Nations’ report in 2013, the ratio of older people globally was 11.7%. A 2.5% increase was observed between 1990 and 2013, while the proportion of people aged 60 years or over will have increased extremely by 2050 (21.1%). In real terms, 841 million older people were recorded in 2013 and the number will be enlarged by 2050: more than 2 billion seniors. As the United Nations has reported, aging causes several significant social and economic problems, which will increase during subsequent years. It is important for dental clinicians to know and understand the risks for oral health problems in senior citizens. The aim of this study is to present the most prevalent oral conditions that affect older people.

**Main Oral Health Conditions**

The main oral health conditions that have been recorded in the literature for older people include tooth loss, dental caries, periodontal disease, dry mouth and cancer.

**Tooth Loss**

Tooth loss occurs as a consequence of 2 other oral diseases: periodontal disease or dental caries. The complete loss of a tooth is a common condition for older people. More specifically, the World Health Organization (WHO) reports that about 30% of the population aged 65-74 has a complete absence of natural teeth. Edentulism influences social life, either causing aesthetic problems or affecting functional abilities. The latter problem includes speaking, chewing and eating consequences that result in adopting poor diets and a low intake of nutritional ingredients. According to the literature, each person needs 20 teeth in order to have a functional dentition. Chewing using removable dentition reduces the chewing efficiency at least 30% or 40% compared to chewing with natural teeth.

On the other hand, tooth loss may display advantages for patients. Extraction of damaged teeth drops the concentration of bacteria in a human body and offers a full clearance in the oral cavity. Furthermore, the risk of dental or gum pain disappears, and older people have lower dental treatment needs and needs for dental care than in the past when having natural teeth. The option of prosthetic treatment is also a valuable advantage. Although the prevalence of edentulism in developed countries diminishes, developing countries face the reverse situation. The prevalence of periodontal disease and dental caries is a characteristic of such circumstances.

**Dental Caries**

Dental caries is the most common dental problem globally. Worldwide, 100% of adults have experienced dental cavities and been faced with pain and discomfort. As dental caries is an infection of the teeth, an untreated decay may cause pain and tooth loss as well. Generally, dental caries is 1 of the 2 major reasons of tooth loss.

Griffin et al concluded that older people present active formation of dental cavities about 1 surface per year. Similar activity was observed also in people during the early thirties by another group of researchers. In a sample group of 438 older individuals in Chile aged 65-74 years, the prevalence of dental caries was 99.8%. Dental caries and tooth loss are also significantly associated with the education level and living areas (urban/rural) of older people. Individuals living in rural areas exhibited more tooth loss, whereas seniors in urban areas displayed more dental caries. In addition, highly educated individuals demonstrated less dental caries.

**Periodontal Disease**

Periodontal diseases, or gum diseases, are infections of periodontal tissues. Periodontal tissues support the structures of the teeth and in the case of destruction may lead to tooth loss. The prevalence of periodontal diseases increases with age, as epidemiological studies have shown. Although age is not a risk factor for periodontal diseases, and older people are not susceptible to periodontal diseases, bone destruction or gingival recession are ordinary conditions. The accumulation of several risk factors through the years, such as plaque or systemic diseases, acts synergistically in the onset of periodontal diseases.

In the United States 70.1% of adults aged 65 years and over is estimated to suffer from periodontal diseases. Griffin et al also concluded that periodontal disease is observed more frequently in males than in females. Furthermore, Mexican-Americans had the highest likelihood of a diagnosis with such a disease compared to other racial groups. Smoking habits and socio-economic status were also important. Smokers and low educated individuals with low social status exhibited higher percentages of periodontal disease.

**Dry Mouth**

Saliva is required not only for function, but also for protection of the oral cavity and contiguous gastrointestinal epithelium. According to a systematic review, the prevalence of self-reported xerostomia in population ranged from 0.9% to 64.8%. Another study found that 30% of a sample population aged 65 years and over experienced this disorder. Older people receive a great number of medications that may have an important role in oral health. It is common that 1 of these drugs may affect the salivary glands and reduce the amount of saliva. Tricyclic antidepressants, antihistamines,
antimuscarinic medicines, some anti-epileptic medicines, some antipsychotics, beta-blockers and diuretics may have a key role in causing dry mouth.

Dry mouth has a substantial impact on older people’s lives. The reduction of saliva causes difficulties in chewing, speaking and swallowing as well. Tissue problems, dental caries and problems with dentures constitute consequences of xerostomia. The term xerostomia refers to the subjective feeling, while the term “salivary gland hypofunction” refers to a low salivary flow. This oral condition has an important negative effect on older people’s lives. Therefore, its association with quality of life is clear.

Oral Cancer

Oral pre-cancer includes leukoplakia, lichen planus and erythroleukoplaia, while oral cancer mainly refers to oral squamous cell carcinoma. The prevalence of oral cancer, according to WHO, is 1-10 per 100,000 people. Statistically significant differences were recorded in males, seniors, and low-educated individuals with low-income. Also, smoking habits and alcohol consumption play a crucial role in the development of oral cancer. Petersen and Yamamoto concluded that older people were more prone to oral cancer and especially people that lived in less developed countries compared to more developed ones.

Oral cancer demonstrates catastrophic consequences in human life. The death ratio of oral cancer is extremely high, similar to breast cancer, and higher than the generally known melanoma.

Studies from Some Balkan Countries

A relatively high number of tooth loss was recorded in a Turkish population aged 65 years and over. Mean tooth loss for 215 patients participating in the study was 17.1 ± 10.1, while females exhibited a higher prevalence of tooth loss. Maxillary posterior teeth were extracted more frequently than the other tooth types. Educational level and age were associated with tooth loss. In the same study, the mean number of carious teeth was 1.7 ± 1.9, where the educational level of the individuals played a crucial role. Both the number of carious teeth and the number of teeth with furcation lesions and infra-bony defects were negatively associated with educational level.

The oral health status of hospitalized psychiatric patients was reported in a Greek study by Kossioni et al. 111 patients were diagnosed with mood disorders, psychotic disorders, dementia and other. The mean age of the individuals was 73 years. 39.6% of the examined patients were completely edentulous, while the dentate seniors exhibited 12.9 teeth on average. 26.7% had fillings, 50.7% had at least one decayed tooth, and 44.8% needed at least 1 extraction. Dental plaque or calculus was recorded in 83.6% of psychiatric patients. Mental disorders did not influence significantly dental conditions. However, the number of remaining teeth was associated with age, and the duration of hospitalisation demonstrated a positive association with the increased rate of caries and need of extractions. In a sample group of the previous population, mean aged 73 years, the same research group showed that the most common complaint of psychiatric patients was xerostomia (44.9%).

In a retrospective study of Baderca et al. in Romania, oral cavity melanomas were found in high incidence (25%). Mucosal melanomas were associated with age and had a poor prognosis. The male/female ratio in this study was 10:6 and the age of the patients included ranges from 53 to 94 years. The most frequent localization of these 17 cases was in the nasal cavity, but also mucosal melanomas were diagnosed in the oropharynx, right mandibular gum, right palatine tonsil, left maxillary mucosa, lower lip, anus, rectum, etc.

316 patients attending 12 randomly selected community centres located in Athens participated in another study. The mean age of the study population was 78 years and the age ranged between 65 and 99 years. The majority of the study patients (79%) were edentulous, while 14.6% of them suffered from dry mouth. Although 27 oral conditions were recorded, no cases were found with malignant lesions. In another study from Greece, 43% of an older institutionalised population, with a mean age of 83.7 years, complained about xerostomia. Almost all of these (95%) suffering from xerostomia were under medication, and the mean number of consumed drugs was 3.3 ± 2.0. 62% of seniors were completely edentulous. Socio-economic status and the presence of various psychiatric disorders (personality disorders, schizophrenia and delusional disorders, depression) influenced significantly the number of remaining teeth. This number was not associated with the functional quality of dentition. The authors deduced that approximately 2 to 4 posterior tooth contacts were adequate for chewing ability. Patients suffering from mental disorders were also included in a study conducted by the same group in Greece. Kossioni et al. discovered that xerostomia and some other complaints, such as burning mouth, dysgeusia, and oral malodour, were more prevalent in seniors diagnosed with mental disorders than older people without mental disease.

231 free-living individuals aged 65 years and over from Bosnia and Herzegovina were included in a study measuring the validity and reliability of the OIDP (oral impacts on daily performance) scale. 19.9% of the...
participants demonstrated complete absence of natural teeth, while 10.7% of the dentate sample needed tooth extraction. 20.3% of the total population exhibited 21 teeth and over. Restorative needs of at least 1 filling were exhibited by 27.9%52.5% of the participants in another study in Ankara, Turkey, were edentulous, and tooth loss was more frequent in females compared to males28. A possible reason for this observation is that women are more prone to develop osteoporosis, which may have an effect in tooth loss. In addition, a high edentulism rate was observed in patients over 75 years28.

Aging and tooth loss were associated also in another study in Turkey39. Edentulism increased with increasing age, and tooth loss was also correlated with age. In particular, in a study conducted by Dogan and Gokalp29, almost half (48%) of the participants were edentulous. Seniors aged 70-74 years exhibited a significantly higher complete absence of teeth in contrast with the population aged between 65 and 69. DMFT scores were also associated significantly with age and living area: higher DMFT scores were measured in older aged seniors whose residency was in rural areas. The DMFT scores of another older population in Istanbul, Turkey were 19.60 (± 7.56) for individuals aged 55-64 years, and 22.17 (± 6.71) for seniors over 65 years30.

The relationship between oral and systemic diseases of older adults was evaluated in a study conducted by Ozcaka et al31. The older population of the study had a mean age of 62.5 years, and the periodontal measurements were the following: mean CPTIN (community periodontal treatment needs) was 1.62 (± 1.12), PI (plaque index) 1.57 (± 1.48), GI (gingival index) 1.55 (± 1.31). The average tooth loss for this sample was 7.38 teeth, with a range from 0 to 2531.

Discussion

Poor oral health and oral health problems are preventable. However, the huge majority of the older population is characterized by extensive tooth loss, periodontal destruction and untreated caries. One of the main reasons for the higher prevalence of oral diseases in older people is inequalities in dental care access. Apart from the older population, minorities or low-educated individuals with low socio-economic status report rare dental visits.

Older people have difficulties in accessing preventive dental care and dental treatment. A crucial reason is lack of insurance. Dental insurance plays an important role in the selection of the dental treatment that older people select. Each country adopts different coverage for dental procedures. In particular, in Turkey, cavity fillings, periodontal therapy and tooth extractions are free of charge for insured older people. However, 50% of the cost of prosthodontic treatments must be paid by the patients. Another option is private insurance. Both Medicare and Medicaid in the United States offer limited access to dental care. Particularly, Medicare provides older people with only necessary dental procedures. Therefore, the majority of the older population must cover the expenses of their dental treatment by themselves. Unfortunately, a significant proportion of the older population confronts economic problems. According to Eurostat, 22% of the older population in Greece were at risk of depression in 200832.

Treatment needs of an elderly population are high as a result of missing teeth, caries, periodontal diseases, restorations and edentulism. However, this lack of insurance coverage limits the treatment options for some patients. They usually prefer to extract a tooth instead of attending an endodontist and a prosthodontist for performing a root canal therapy and constructing a crown or a bridge respectively. No treatment is also a viable choice for a group of patients who cannot afford any dental treatment under any circumstances.

The ability of chewing, apart from social impacts and oral health problems, is also an important parameter of general health. Older people with increased tooth loss may perforce change their diet. Therefore, a big question arises as far as nutritional intake is concerned, and the possible effects of such dietary choices. Yet studies in Greece have shown that seniors with an increased tooth loss did not avoid food types. Greek individuals reported continuing to eat hard foods even if they had difficulties in chewing. They preferred to change cooking strategies and consume softer food types, such as chicken, grains or dairy commodities. Meat, vegetables and fruits consumption was not related to dental status or to the number of posterior occluding teeth contacts33,34.

Conclusion

Oral health is essential to general health and quality of life. Oral conditions such as tooth loss, dental caries, periodontal diseases, dry mouth or oral cancer limit patients’ ability to smile, chew and speak, which influences their social life. Oral diseases are more prevalent among poor, low-educated individuals and smokers with low socio-economic status. Governments have the responsibility for providing an adequate dental care system for minorities, as well as powerless, disabled and impoverished people. The aim for the future is to diminish oral health problems in geriatric patients by developing community-based projects for oral health promotion and prevention of oral diseases.
Limited data exists today that evaluate oral health conditions of seniors in the Balkan countries. Researchers from Greece and Turkey have mainly studied oral health problems in older population, but the majority were focused on tooth loss and periodontal diseases. There are also studies examining DMFT scores in older Balkan populations. Almost all of the studies concluded that aging and the socio-economic status of seniors are significantly associated with oral health problems. Therefore, the dental community and society should contribute to improve oral health of the older population by retaining more natural teeth in the oral cavity. Further studies are needed to record oral health problems of older populations in Balkan countries, in order to compare them with records from Western countries. Seniors should have equal access to appropriate dental health care with children, adolescents and adults.

References


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