

The Necessity of Determining the Oral Health Status of Geriatric Patients Worldwide and the Main Challenges for Future Dentists

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Abstract

Background: Over the past decades, the growing number of the population 65 years and above in the world and in Georgia, and their health status, including the prevalence of dental diseases, necessitates the data tracking of elderly patients, assessment of their health status, and development of prevention and problem-solving methods at various institutional levels.

Aim: The aim of this article is to highlight the significance of the problem, recommend to study the oral health status of elderly patients living in Georgia in order to determine specific characteristics, as is done in many countries around the world, to develop healthcare schemes aimed at retraining doctors, the population awareness rising, and establishing gerontodontics as a separate dental specialty. Demographic studies show that gerontodontics will be one of the leading and most actual directions in future dentistry

Methods: More than 45 international sociological studies and articles on this topic were analyzed, and information on the dental status of the population with respect to 65+ age group was summarized.

Results: General world data analysis show that the dental status of the elderly needs specific management, which is relatively important for Georgia as well. A holistic approach to monitor, evaluate and improve the quality of oral health of elderly patients is having a significance, since elderly patients represent one of the vulnerable groups of the society

Conclusions: Despite the achievements globally in the field of oral health, dental diseases in the elderly, such as: xerostomia, multiple secondary caries, severe periodontitis, and edentulism remain relevant and acute problems. Therefore, effective management of oral health is important, with due regard of age specificities. (TCM-GMJ June 2025; 10 (1): P18-P21)

Keywords: Elderly patient, oral cavity, periodontitis, xerostomia, edentulism.

Introduction

Studies show that from by 2030 the world population will increase by 56%, from 901 million to 1.4 billion [1]. The aging process is mostly noticeable in high-income countries [2]. For example, Japan leads with 33% of its population over 60 years in 2015, followed by Italy (28.6%), Germany (27.3%), and Bulgaria (27.1%) [3]. Similarly to other countries, the percentage of elderly in Georgia is also increasing annually and the aging population growing rapidly. For example, in 1995 it was 10.9%, in 2000 - 12.7%, in 2005 - 14.4%, in 2010 - 14.2%, in 2015 - 14.3%, in 2020 - 15.1%, in 2021 - 15.2%, in 2022 - 15.5%, in 2023 - 15.6%, and as

of 2024, approximately 16.2% of the population is 65 years old or older [4].

The World Health Organization defines health as a multidimensional construct: "complete physical, psychological, and social well-being, and not merely the absence of disease or infirmity [5]." Aging is a biological process that does not necessarily imply a sharp decline in health, but it is important to consider that health status may deteriorate due to the influence of risk factors. Simultaneously several factors determine a person's healthy lifestyle and affect their health as well as oral condition [6]. See also Figure 1: Social Determinants of Health.

Currently, the dental status of people aged 65 and older is extremely important [7]. The condition of elderly patients can be complicated by various systemic changes (hormonal imbalance in the elderly, hypertension, diabetes, cardiovascular diseases, etc.), which can lead to a sharp deterioration in health. It is important to consider age-related changes, for example, in the gastrointestinal system, which include reduced intestinal blood circulation

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and decreased stomach pH. Moreover, the function of the central nervous system, glomerular filtration in the kidneys, and the respiratory system decrease. All these factors affect an individual's sensitivity to taking certain medications[8]. According to the National Health and Nutrition Examination Survey (NHANES), 39% of the population takes five prescription medications daily for 30 days a year [9]. An elderly person might regularly take 2 or 3 types of medications, that makes them more vulnerable to other medications due to drug interactions or side effects.

Xerostomia in Elderly Patients

One of the dental diseases in the elderly is xerostomia (dry mouth). Symptoms of xerostomia range from simple discomfort to serious oral disease that can lead to significant health damage[10]. Xerostomia in elderly patients is often a side effect of medications; however, it is noteworthy that one of the causes of xerostomia in female patients is menopause and a sharp decrease in the hormone estrogen. The decrease in estrogen levels in postmenopausal women can lead to a decrease in saliva production [11], which in turn causes dry mouth, burning sensations, gingivitis, and periodontitis. Additionally, the decrease in estrogen levels is a leading cause of osteoporosis, which can lead to decreased bone density and the development of severe periodontitis [12].

Moreover, Studies have shown that most women in the postmenopausal period had severe periodontitis. A study was conducted in the western region of Maharashtra, where 90 patients aged 60-70 were observed. 76.6% of the patients noted that they had certain changes in the mucous membrane, of which 20.2% had xerostomia, 15.9% had periodontitis, 13% had taste disturbances, 8.6% had lichen planus, and 7.2% had candidiasis and various bacterial infections [13].

Periodontal Disease in the Elderly

Periodontitis is one of the common complications in elderly patients. A study on the prevalence of periodontal disease in elderly patients was conducted from January 2010 to January 2022 in the dental department of the Chinese Medicine Hospital in the Fuyang district of Hangzhou (China). Out of 521 patients, 176 were aged 34-44, 175 were aged 45-64, and 170 were aged 65-74. The results showed that in the 35-44 age group, bleeding was observed in 165 (93.75%) cases, and the presence of supragingival and subgingival calculus in 176 (100%) cases; in the 45-64 age group, bleeding from the gums was observed in 163 (93.14%) cases, and the presence of mineralized plaque in 161 (92.00%) cases; in the 65-74 age group, bleeding was observed in 150 (88.24%) cases, and the presence of mineralized plaque in 162 (95.29%) cases. Also, there were statistically significant differences in the depths of periodontal pockets.

The analysis showed that the prevalence of periodontal disease varied by gender, age, place of residence, smoking, alcohol consumption, and the quality of individual oral hygiene, which undoubtedly indicates that periodontal disease is more progressive and widespread in the age group over 65. This, in turn, indicates that the severity and prevalence of periodontitis increase in elderly patients due to

general systemic and physiological age-related characteristics[14].

Caries in Elderly Patients

As age increases, the thickness of tooth enamel decreases, and cracks and fissures appear on the surface of the teeth [15]. According to the CDC's Oral Health Report (October 9, 2024), the prevalence of caries and tooth loss in elderly patients (65+ years) is common regardless of gender, ethnic group, various geographical locations, and education level [16]. As an example, see also Figure 2: Dental Caries, Tooth Retention, and Edentulism, United States 2007 - March 2020.

To study the spreading of caries, a research was conducted among elderly patients in the Rajdevi municipality of the Hautahan district in Nepal. A descriptive cross-sectional research was conducted, collecting data at a specific point in time. The data showed that the prevalence of caries in the research population was 88.57%, with 28 participants (11.4%) having caries-free teeth, and 218 (88.6%) having carious teeth [17].

Edentulism in Elderly Patients

Oral health plays a crucial role in the physical, social and economic well-being of the population [18] and tooth loss is one of the problems that significantly affects the quality of life of elderly patients. Most elderly patients have complete or partial tooth loss - edentulism (the absence of natural teeth in the oral cavity) [19]. As an example, see also Figure 3: Estimated prevalence of edentulism in people aged 60 years or older per country in the Region of the Americas (2019).

A research study by the National Health and Nutrition Examination Survey (NHANES) examined the prevalence of untreated teeth and dental diseases in the age groups 50-64, 65-74, and 75+ from 2005 to 2008. The study collected information on general health and oral health status across all ethnic and racial groups. The highest rate of tooth loss was in the 75+ age group. When comparing this group to the 50-64 age group, it was found that the tooth loss rate in patients aged 75 and older was three times higher (32% vs. 10%) than in the group under 75 years old (18 vs. 22). A significant number of patients had untreated carious diseases. Approximately 50% of patients aged 75 and older had untreated root caries compared to patients in the 50-64 age group (16% vs. 11%). [20]

According to the 2021 article "Oral Health of Patients Aged 65 and Older in Israel" published in the Israel Journal of Health Policy Research, a telephone survey was conducted with 512 elderly people aged 65+ from February to April 2020. About two-thirds of the respondents rated their oral health as good or very good, but 24% no longer had natural teeth, while the rest had an average of 19 teeth. Only 10% had not lost any teeth. In the 65-74 age group, 19% had no natural teeth, while the rest had an average of 20 teeth. In contrast, in the 85+ age group, 38% were edentulous, almost twice as many, and 19% managed to visit a dentist. In the 65+ age group, 44% had dentures (65-74 age group), and 66% in the 85+ age group. About 40% of the 65+ age group visited a dentist, while the rest of the population showed less awareness of oral care and health

maintenance.[21]

A recent study based on NHANES data analyzed oral health data of patients aged 50 and older from 1999-2002 and 2009-2014 and concluded that patients aged 50 and older had a lower frequency of tooth loss in 2009-2014 compared to the same age group in 1999-2002 (11%-17%), indicating an improvement in oral health over time. However, this improvement was not observed in poor and socially disadvantaged populations. The rate of tooth retention improved over time, from 14% to 21% in 1999-2002 and 2009-2014 for patients aged 50 and older. Tooth retention was dependent on effective public health measures and public awareness over the past decades. This study and evidence suggest that social determinants of health, including inadequate lifestyle, lack of public awareness, and education, can significantly impact changes related to tooth loss with age and cause edentulism in elderly patients [22]. As an example, see also Figure 4: Frequency of tooth damage according to age groups.

Other studies have shown that one of the important factors is patient awareness and education. A study conducted with a group of 308 people aged 65 and older showed that those with education levels up to high school had fewer teeth than their urban coevals.[23]

Besides, the researches show that there is a lack of information on the importance of oral health for healthy aging, tooth retention, and maintaining oral functions, and that good hygiene can turn years of life into healthy years of life. [24]

Methods

More than 45 international sociological studies and articles on this topic were analyzed, and information on the dental status of the population with respect to 65+ age group was summarized.

Results and discussion

General world data analysis show that the dental status of the elderly needs specific management, which is relatively important for Georgia as well. A holistic approach to monitor, evaluate and improve the quality of oral health of elderly patients is having a significance, since elderly patients represent one of the vulnerable groups of the society.

Conclusion

According to the analysis of the global situation, it is evident that the main challenges are complex and related to various factors. For example, oral health is influenced by naturally occurring processes in the body, which in turn may largely be associated with aging (whether it be hormonal changes or a higher risk of developing various diseases).

Consequently, dental diseases such as xerostomia, severe periodontitis, multiple secondary caries, and edentulism are particularly common among the elderly. Additionally, studies mentioned in the article have shown that significant factors also include the level of patient awareness, education, and sociological factors (e.g., low income).

Therefore, it is important to study the oral health status of elderly patients living in Georgia in order to determine

specific characteristics, as is done in many countries around the world. [25]

To adequately meet the oral health needs of the elderly, it is recommended to:

- Strengthen the focus on the specific needs of the elderly (by age group);
- Ensure that adequate dental services are as accessible as possible for elderly patients (through funding, territorial coverage, etc.);
- Develop guidelines and recommendations in geriatric dentistry that take into account the specific health conditions of elderly patients;
- Specialized training, funding, and access to education for relevant medical personnel;
- Ensure a sufficient number of adequately trained personnel;
- Continuous training of healthcare workers in oral care knowledge, especially in home and long-term care settings;
- Strengthen collaboration between other healthcare professionals and dentists;
- Conduct research on elderly patients;

Develop evidence-based guidelines and recommendations.

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