Review Article

Medico-social aspects of dental care for geriatric patients

Abstract

Geriatric patients are a specific group because of their susceptibility to physiological, psychological, social, and health-related problems. Uncovering the modern character of a geriatric patient, the specifics of aging in a bio-psycho-social aspect, additional medical qualifications, and acquisition of competence bettering healthcare for these patients is necessary when taking into consideration the persisting tendency for demographic aging. The objective of this study is to outline the general medico-social aspects of dental care for geriatric patients. A comprehensive literature search was conducted, mainly using PubMed and Embase, which was limited to publications written in English over the past 10 years (2010–2020). Oral health is an essential topic in geriatric preventive medicine, with direct as well as indirect effects on the overall health and quality of life of the individual. Surveillance and improvement of the oral health of the elderly should be a key objective of the multidisciplinary team responsible for their care, including dentists, dental hygienists, geriatricians, and caregivers.

Key words: oral health, geriatric patients

Introduction:

The development of technology, the betterment of the standard of life, and the increase in the quality of healthcare allow more and more people to reach a more advanced age and at the same time keep their ability to lead an active healthy dynamic, and productive way of life. Aging and senility are biologically determined in the historical development of the Homo sapiens species end are affected by the interaction between various social-cultural and ecological factors. Aging is a genetically predetermined process and senility is a

consecutive step in the individual development of the human species. Demographic changes in the years to come will lead to an increase in the number of senior citizens [1] Increased lifespan of the human population is a significant medical and social success, but at the same time is a serious challenge requiring enormous efforts, devotion, and compassion from physicians and other medical and non-medical specialists when working with senior patients [2] Geriatric patients are a specific group because of their susceptibility to physiological, psychological, social, and health-related problems[3, 4]. Uncovering the modern character of a geriatric patient, the specifics of aging in a bio-psycho-social aspect, additional medical qualifications, and acquisition of competence bettering healthcare for these patients is necessary when taking into consideration the persisting tendency for demographic aging.

The objective of this study is to outline the general medico-social aspects of dental care for geriatric patients.

Materials and methods:

A systematic literature search was conducted, mainly using PubMed and Embase, which was limited to publications written in English over the past 11 years (2010–2021). To identify domains of importance for oral health and basic medico-social aspects of dental care for older persons, areas were recognised by the authors and discussed. As a consensus of the process, the following 10 domains were identified as covering the most important issues: “elderly, aged, geriatric or older”; “oral health or oral condition”; “oral health related quality of life”; “health related quality of life”; and “medico-social aspects”, **“**edentulism”, “dry mouth”, “periodontal diseases”, “oral infections”, “oral cancer”. Inclusion criteria used for the study: systematic reviews published in peer-reviewed journals addressing questions on any of the selected domains, population: frail older persons, defined as ≥65 years. The number of abstracts retrieved and articles included and excluded at each stage of the search process are presented in a flow chart (Figure 1). The quality (in terms of risk of bias) of all full text reviews was assessed using AMSTAR (a measurement tool to assess the methodological quality of systematic reviews).

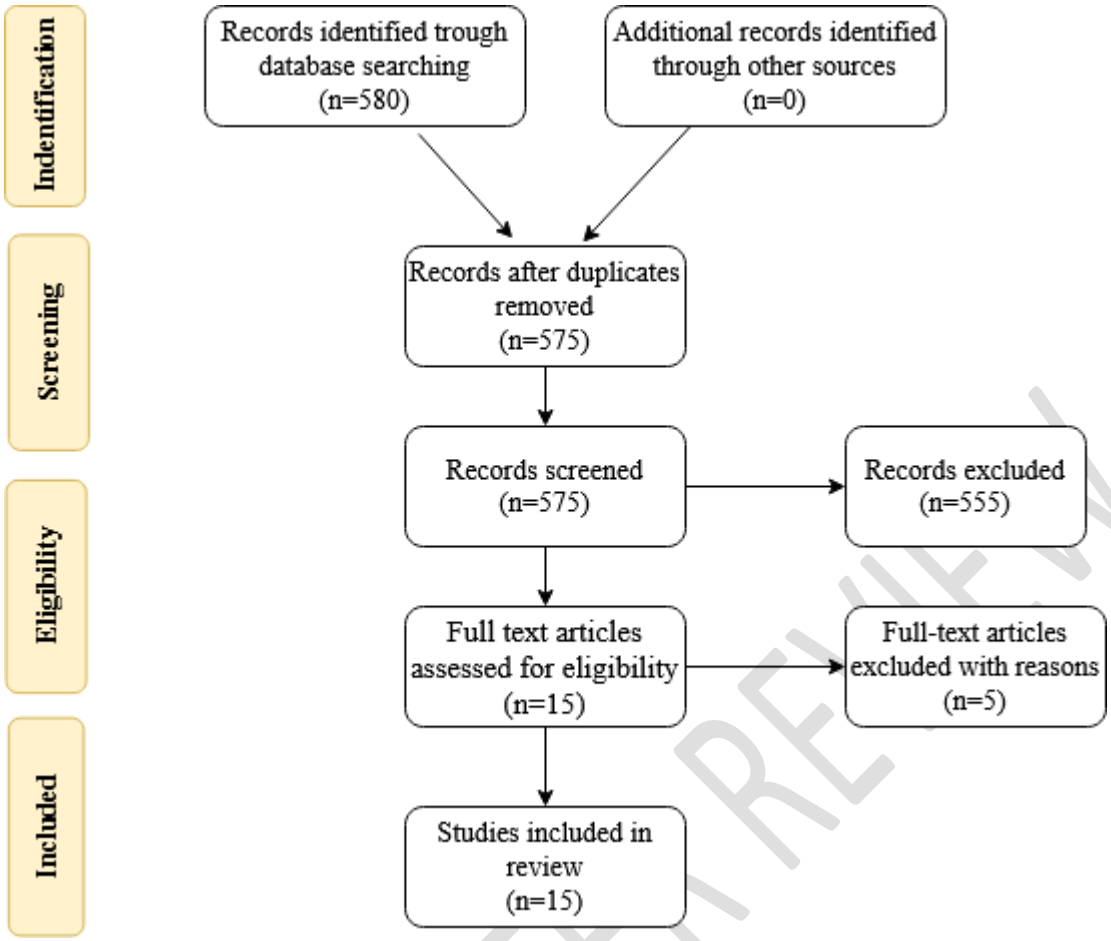

Fig. 1 Flow diagram for the design of research strategy

The aging of people in good health is the main prerequisite for the development of the positive aspects of demographic change and the possibilities which an aging society provides and more specifically a healthy aging society. The European commission's aging report from the year 2015 provides predictions that point to a sustainable increase of the expected lifespan when born and all EU countries [1]. The portion of the young people (aged 0-14 years) in the EU for the period until the year 2060 is expected to stay relatively persistent (around 15%), while the portion of persons age 15-64 years will significantly decrease and fall from 66% to 57%. The group of people age 65 and above will be a much more abundant part of the population and will grow from 18% to 28% of the total population. In Bulgaria the mature population aged 65 and above around the year 2060 is expected to increase percentage-wise with 12.3 percentage points (p.p.) reach 32%. The coefficient of age dependence will change in and negative way, as the ratio of the population age 65 and above to the population aged 15- 64 in the year 2016 will be less than 2 people in the workforce to one senior citizen. The rapid decline and aging of the population of the EU and Bulgaria, the deepening of the severe

demographic disbalances, and recollection of social inequalities between large social groups in recent decades are becoming a problem of the macro-fiscal stability and sustainability of all social systems- the labor market, pension system, system for social assistance and long-term care, health-care system, etc. Pressure over social systems, including the healthcare system, is not a result of the aging of the population as much as it is of the unhealthy aging. In order to decrease the negative influence of aging seniors must stay healthy and sufficient for their families and communities longer. With aging, chronic non-communicable diseases become the leading cause of morbidity, disability, and mortality. In order to better the quality of life and limit the severity of chronic diseases and disabilities, it is necessary to adopt an approach, which is aimed at the promotion of health, prevention of diseases, early diagnostics, and better health management through:

- implementation of programs for the promotion of health and prevention of diseases aiming to produce a healthier lifestyle beginning from childhood and continuing throughout the duration of the person's life;

- encouraging early detection of diseases based on evidence, economically effective and easily accessible programs and resources including screenings [2,3].

Of paramount importance is the support of actions for healthy aging and the solution of key problems such as unhealthy eating, low physical activity, consumption of alcohol, narcotics, and tobacco, the unfavorable effect of the environment, traffic, and domestic incidents. This implies a complex of activities in different areas of society and politics in which institutions and all interested parties, including health specialists and patients, social partners, media, and business entities should take part in.

The specific health problems of this age group are various forms of dementia, cognitive and behavioral impairments leading to progressive loss of independence of the ailing and chronic diseases. Oral health is an essential topic in geriatric preventive medicine, with direct as well as indirect effects on the overall health and quality of life of the individual [4]. Typical changes in the oral health of this group of patients include [4,5].

Table 1. Number and distribution of include systematic reviews

Domain	Number of included systematic reviews	Number of low or moderate risk of bias	Number of high risk of bias
Tooth loss	5	2	5
Xerostomia	1	1	1
Periodontitis	1	1	2
Caries	1	0	1
Strategies and barriers of delivering oral health care	5	0	2
Promotion of oral care	1		
Disphagia, swallowing difficulties	1		
Total	15	4	11

Edentulism or loss of teeth is widespread amongst the geriatric population of the entire world [4 ,6, 7, 8, 9]. It is known that socioeconomic factors affect the loss of dentition. Other factors influencing edentulousness are age, gender, smoking, diabetes, individual perception of the importance of oral healthcare. Losing teeth has a significant effect on mastication and quality of life of patients [9]. Restrictions in this function lead to changes in eating habits, diet [10, 11]. If dining becomes painful the interval between meals is increased which leads to malnutrition which can be the cause for the weakening of the immune system and development of different diseases [12, 13]. A study conducted on the modern problems of geriatric patients suggests that 47% of the respondents' report problems with mastication and when the ranking of the common physical problems of seniors was made it appeared to be the third most significant issue. The same study highlights that pain in the oral cavity and problems with the gums are spread in a substantial portion of the population 118 (28%) which coincides with data from foreign authors [14-17].

Dry mouth or xerostomia is another frequently encountered disturbance in the oral health of seniors [18-22]. Polymedication of this group of patients could be the reason for the

decreased production of saliva [18, 19]. Other reasons are different psychogenic factors, radiotherapy, chronic diseases. The decreased production of saliva can lead to lowering of its cleansing function, retention of food debris on the teeth, and bacteria which is the reason for the development of multiple caries, destruction of the teeth, fungal infections.

Oral infections with a viral, bacterial or fungal etiology. A typical viral infection is herpes HSV-1. It often affects the lips, the floor of the oral cavity and is the cause of pain and discomfort for patients. Acute atrophic (erythematous) candidiasis is common for patients wearing traditional dentures. Dental caries is a disease with a bacterial etiology. It often affects people over the age of 65, especially those who have retained their natural dentition [4, 23, 24].

Periodontal diseases. Chronic periodontitis is typical for geriatric patients [4,25]. Risk factors for the development of this disease are cardiovascular diseases, diabetes, the use of some medications, smoking tobacco, stress. Chronic periodontitis is one of the etiological factors for loss of dentition in this age group.

Oral and parapharyngeal cancer. This diagnosis often occurs in people between the ages of 55- 65. Etiological factors are smoking, alcohol, Human Papilloma Virus, etc [26,27].

It is known that aging occurs slowly, and people adapt to the changing conditions however when sudden changes of the biological background leading to rapid aging occur, this would lead to the shortening of the human lifespan. Prevention and optimal treatment make old age easier and help seniors` biosocial adaptation. This concept is especially relevant for oral diseases. Degenerative structural and functional changes in the masticatory apparatus occur early on and lead to premature aging. They also affect the general condition of the organism. For example, periodontal diseases cause loss of alveolar bone tooth mobility and loss which disrupt the function of the oral cavity and reflect on the digestive system [4,9,11]. Extraction of a permanent tooth leads to degenerative morphological changes of the bone, disrupts occlusal-articulation relationships, causes functional disruptions of the masticatory apparatus [6]. In this sense, according to academician Nikolay Popov “the battle for the preservation of every permanent tooth should be lead not only for the preservation of function and aesthetics but also to prevent premature aging”. Dental treatment for advanced edentulousness should prevent complete edentulousness and aging through optimal dental prosthetics, whereas complete edentulousness should have a treatment aimed at dental prosthetic rehabilitation of the masticatory apparatus and preservation from senile changes of

the maxillofacial region [13-17]. The battle with tooth loss is one against the aging of people, as a whole, and for providing an excellent quality of life.

The concept of healthy aging requires a special approach and care for oral health. It is no coincidence that the World Dental Federation came up with a special declaration (FDI Policy Statement, adopted by FDI Assembly – 2017), addressed to the governments, non-government organizations, dental associations, as well as separate individuals for the insurance of a safe environment and limiting the risk factors, where the main objective is the maintenance of lifelong oral health (Lifelong Oral Health), which would guarantee the optimal quality of life to geriatric patients [28-31]. What are the thresholds for achieving this?

- Compromised oral care due to physical limitations- many senior patients are inhibited from or are not capable of performing their daily oral hygiene due to cognitive illness, musculoskeletal disease, inflammatory diseases of ligaments and tendons, neuromuscular changes, etc. This results in a decline in oral hygiene, which worsens their oral health [32-34].
- Difficulty in understanding and perceiving the provided medical information, especially from patients with dementia and cognitive disorders, communication difficulties.
- The effect of different socio-economical factors and limited access to dental services. In the time of the global economic crisis, the leading causes, with the most significant effect on the number of dental visits, are the financial and social limitations of patients. This is most clearly reflected in the patient's ability to purchase the medications they require, appropriate food, to afford high-quality dental care.
- The use of many and different medications, which can cause symptoms pertaining to the oral cavity, as their unwanted side effects and toxicity.
- Lack of specific training modules for the specific needs of geriatric patients in the programs for the education of dentists. This group of patients requires a lot more time for the performance of routine dental manipulations, making them a group that is not preferred by dentists. The creation of new dental care modules for geriatric patients is required.

How can the listed obstacles and challenges overcome so that better oral healthcare and quality of life of seniors be provided? Tomar and Cohen suggest a vision for an ideal healthcare system aimed at oral healthcare (which they call Oral healthcare system) –

- it should be integrated into the general healthcare system;
- aimed at the promotion of health and prevention of oral diseases;
- based on evidence;
- economically effective;
- considering cultural differences;
- implementing the monitoring of the oral health conditions and needs of the population etc.

Regarding oral healthcare, the healthcare system should take into consideration that elderly people have differences, not only in their socio-economic status, but they also have varying degrees of dependency on an outside source [35, 36]. The sanitary and hygienic requirements for dental offices, which provide care to elderly patients must take into consideration their specific needs- providing easy and free access from the street, having wheelchair-accessible ramps, a spacious waiting room, wide doors for patience with walkers, crutches, and wheelchairs, a non-slip floor cover, chair on the dental unit which is large enough and has stable arm-rests for support, the appropriate light intensity which does not disorient and does not cause nerves breakdowns in elderly patients, mobile tool tray for patients on a wheelchair, etc. What criteria should the education of dentists in oral care for geriatric patients fulfill and what should it be aimed at? The answer to this question is given by research of Kress and Vidmar, conducted among 50 leading specialists in the field of geriatric dental medicine [37]. According to that research, there can be three main areas of expertise with corresponding categories of expertise.

<u>Knowledge of:</u>

- Psychology of aging
- Specific illnesses linked to old age
- Pharmacology and drug interactions
- Biology and Physiology of aging
- General medicine.

<u>Ability to:</u>

- Communicate well
- Adapt the treatment plan to the needs of the elderly
- Diagnose and assess the exact needs of these patients

- Provide specialized treatment especially prosthetic, which restores the dentition [38-40]
- Management of oral healthcare.

Predilection towards:

- Empathy/understanding
- Care/compassion
- A positive attitude towards working with elderly people
- Respect
- Realistic prognosis of the treatment.

For elderly people is very important the participation in the economic and social life in the community [37,38]. The Active Aging Index. is devised in collaboration with the Economic Committee for Europe of The United Nations and the European Commission as a fundamental tool for monitoring and supplying the evidential basis for creating policies in response to challenges presented by the aging of the population. The thematic range of the Index corresponds with the main components of the Guiding principles for promoting active aging adopted by the European Employment and Social Policy Council in December of the year 2012 as a conclusion to The European Year of Active Aging and Intergenerational Solidarity- 2012. The Active Aging Index (AAI) is based on four separate domains [41]:

1st domain: Employment

2nd domain: Participation in society

3rd domain: Independent healthy and secure living

4th domain: Capacity and enabling environment for active aging

The first three domains refer to the "actual situation" concerning active aging and reflect different activities that the elderly take part in, as well as the situation regarding their independent, self-sufficient and secure living. The fourth domain represents the capacity and enabling environment for active aging, based on the individual characteristics of the elderly which can facilitate or impede active agents. The four domains consist of 22 indicators compiled mainly from the four large European household surveys. Domain 3, in particular, includes the indicator for "Access to health and dental care: Percentage of people aged 55 years and older who report no unmet need for medical or dental examination". After

monitoring by the Ministry of Labor and Social Policy was conducted it was concluded that 87.6% of the respondents have no such unmet needs, which is commendable for our country.

The World Health Organization (Global Oral Health Programme) defines different strategies for approval of the oral health of geriatric patients through the incorporation of special policies for oral healthcare, education of specialists in this direction, etc. Unfortunately, not many countries have outlined clear and specific goals towards the promotion and providing care for the oral health of the elderly. One such country is Japan. The declaration of Tokyo, called “Dental care and oral health for healthy longevity” is a document the main goal of which is promoting exactly those types of care [38]. It emphasizes the recognition of common risk factors for oral and non-communicable diseases, as well as the inclusion of oral health programs in public health programs for the prevention of cancer, diabetes, dementia, etc. the main goal of which is to prolong life expectancy with better quality [36,37] . The American Society of Gerontology has launched an initiative to improve the oral health of elderly patients through interprofessional cooperation and training in oral care, increasing the coverage of dental health insurance for this group of the population, the application of good practices based on evidence. The importance of interdisciplinary collaboration for good oral health for geriatric patients is also emphasized in Prayoonwong's model, called the "Public-Based Oral Health Care Model" [42]. This model is designed to increase the quality of life of the elderly which have varying degrees of limitations and are dependent on foreign aid by improving the quality of oral health services provided to them. This model can be successfully used and laid down as a basis for the development of the concept of healthy aging.

Currently, the dental needs of elderly patients have increased. Thus, for managing elderly patient clinician requires knowledge and understanding of both dental and medical aspects of ageing. For this reason, the World Health Organization (WHO) has adopted measures to improve the health of the oral cavity in the elderly and has admitted educational impact of learning ageing in dental courses. Understanding the prevalence of medical conditions specifically in aged population will help dental students to capture skills required for safe practice [43]. The dental teams therefore need to be equipped with specific knowledge and skills to provide the appropriate dental care. However, studies conducted on dentists in different parts of the world have indicated that their knowledge is usually unsatisfactory [44, 45].

The need for geriatric dental education began to be considered as early as the 1970 s. Gerodontics can also be defined as the delivery of dental care to older adults involving the diagnosis, prevention and treatment of problems associated with normal ageing and age-related diseases as part of an interdisciplinary team with other health care professionals. Over the years, the question of how to train dental students to treat the elderly has been much debated. Gerodontology is well developed in many developed countries such as the United States, Britain, Australia, and in others such as Switzerland, Germany is taught as part of the program of other specialties. In some training programs, only psychosocial problems and difficulties in the dental treatment of the elderly are covered. Others include training in geriatric medicine, specific diagnosis, treatment and prevention of oral diseases, gerontopsychiatry, and communication skills. Student learning faces many challenges, especially when it comes to caring for elderly patients. Special attention is needed and targeted strategies need to be developed for this vulnerable group of patients [46-52].

Conclusions:

Oral health is an essential topic in geriatric preventive medicine, with direct as well as indirect effects on the overall health and quality of life of the individual. Surveillance and improvement of the oral health of the elderly should be a key objective of the multidisciplinary team responsible for their care, including dentists, dental hygienists, geriatricians, and caregivers.

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