



Enhancing Dental Care for Aging Patients: Essential Clinical Guidelines for Geriatric Dentistry



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Abstract

Introduction: The number of older people is growing every day. Due to these demographic changes, the need for care for elders is growing. The objectives of this paper include the analysis of available literature on the treatment of oral medical challenges in elders. The paper was based on the systematization of changes in the orofacial area that occur with ageing and defining guidelines for clinical work with the elders to improve the clinical work of dentists.

Methods: The research was conducted at the School of Dental Medicine, University of Zagreb. It was approved by the Ethics Committee of the School of Dental Medicine, University of Zagreb. A literature search was conducted in PubMed, Scopus and Web of Science databases. The keywords were "elderly people", "gerodontology" and "oral health". The analysis included meta-analysis, randomized controlled trials and systematic reviews, in the last 5 years.

Results: The application of eligibility criteria in the aforementioned databases resulted in thirteen research studies, which comprise the empirical material of this paper and present the basis for the creation of guidelines for treating elders. The guidelines are divided into 4 major areas. They provide insight into changes and challenges in the elders and recommendations for treatment strategies.

Conclusion: The elderly population is one of the most challenging populations in dental medicine. Due to the unavailability of the application of standard decision-making algorithms and specific physiological changes and problems which occur in this population, clinical guidelines are needed.

Keywords: Older People; Oral Health; Gerodontology; Guidelines

Introduction

The elders represent a specific age group whose share in the population has been increasing over the last decades. The aforementioned demographic changes indicate the need of increasing the population's awareness of ageing as a public health problem. Considering the increase in health problems that occur with ageing and the connection between general and oral health, an increase in difficulties and therapeutic challenges related to oral health is to be expected [1,2].

Demographic data and definition of age

According to the World Health Organization (WHO), people over the age of 65 belong to the elderly population [3]. This population is divided into three groups. The first group consists of younger seniors aged 65 to 74 who are relatively healthy and active. The second group consists of seniors between the ages

of 75 and 84, who vary from those who are healthy and active to those who suffer from several chronic diseases, and the third group consists of those over 85 who are physically weakened or frail. The last group is the fastest-growing segment of the elderly population [4]. According to the United Nations (UN) data, in 2019 there were 703 million older people, which represented about 9% of the total population. It is predicted that by 2050, the number will double, which means that every sixth person in the world will be 65 years old or older [5]. Factors such as better living conditions, improvement of health care with immunization against infectious diseases, a better quality of water and food and hygiene are just some of the reasons for reducing mortality and extending the life expectancy of the elders [6]. Extending life expectancy following the effect on general health also significantly affects the function of the chewing system, the aesthetics of the orofacial area and

overall oral health. As a result of ageing, many changes in the orofacial system occur. The special feature of an older person as a dental patient is the direct and indirect links between the general condition of the oral cavity, the oral manifestation of systemic diseases and treatment, and the influence on the planning and implementation of therapy [7].

General medical changes due to ageing

The frailty of a person is defined as a clinical condition that characterizes the increased vulnerability of the organism to stressors, exposing individuals to negative health outcomes, caused by ageing. This means that the same stressor can cause different consequences in a fragile person compared to a healthy person. In fragile individuals, the stressor can cause severe and long-lasting functional disorders and a higher probability of incomplete recovery [8,9]. Frailty is a term that is mentioned more and more in the context of older people. Parisius et al. introduced a new term “the frailty of the oral cavity”. They define it as the functional decline of orofacial structures caused by ageing [10]. Older age brings a higher probability of the appearance of multiple, often chronic and interrelated disorders [11].

Chronic and degenerative diseases, such as hypertension, chronic obstructive pulmonary disease, diabetes, osteoporosis and arthritis are the most common diseases that occur in old age. Also, problems such as physical weakness, pain, cardiocirculatory diseases, increased frequency of tumours, dissatisfaction with life and social isolation, although not specific to elders, are one of the most common problems in old age. Chronic diseases significantly affect the physical and emotional dimensions of life, thereby limiting daily activities and reducing the quality of life [12]. The Katz Index of Independence in Activities of Daily Living is an

instrument for assessing the functional status and independent performance of activities of daily living [13]. Dentists use this tool to plan treatment and overall care of the elderly. The index assesses a person’s ability in six categories: bathing, dressing, personal hygiene, mobility, continence and feeding. Answers are marked “yes/no” in each of the six categories. A score of 6 indicates full function, 4 indicates moderate impairment, and 2 or less indicates severe functional impairment [13]. The clinical assessment of Katz’s ADL index significantly affects the planning of prosthetics. For people with lower ADL values, it is recommended to plan and make prosthetics that are not complex for function and maintenance. One of the significant problems related to ageing is polypharmacy, the use of several different medications due to numerous associated diseases. In addition to taking prescribed medications, it includes taking herbal preparations and over-the-counter medications.

Almost 30% of the elderly in developed countries take five or more medications [14]. Polypharmacy often results in the development and/or deterioration of cognitive functions, weight loss, incontinence, the development of delirium and the possibility of falls. It also contributes to a significant financial burden because it leads to an increase in health care costs for the patient and the care system [14,15]. The direct link between the application of various systemic medications and changes in the oral cavity significantly affects the possibilities, type and scope of dental care and reconstructive therapy.

Oral status of older people

Changes in the oral cavity in elders are a reflection of physiological changes, systemic diseases and/or the use of medications.

Table 1: Oral changes and related systemic diseases.

Oral change	Related systematic disease
Pallor and mucosal atrophy	Anaemia
Oral lesions [including ulcerative, erosive or white lesions; swelling; erythema]	Lichen planus
	Lupus erythematosus
	Benign mucosal pemphigoid
	Pemphigus Vulgaris
	Behcet’s disease
Changes in mucosal pigmentation	Crohn’s disease
	Addison’s disease
Periodontal bleeding and inflammation	Diabetes
	HIV infection
	Thrombocytopenia
Tooth erosion	Leukaemia
	Gastroesophageal reflux
	Bulimia and anorexia

Physiological changes in the oral cavity: Ageing causes physiological changes in the oral cavity such as the appearance and structure of the tooth. Due to long-term wear, there is a loss of surface structures and the surface of the enamel takes on a flat appearance with less detail. Due to these changes, there is an alteration in the reflection of light, which causes a change in the colour of the teeth. Due to the frequent thermal, mechanical and biological stimuli of the pulp, the formation of secondary and tertiary dentin occurs. As a result of dentin sclerosing, dentinal tubules are gradually blocked. Changes in the quantity and quality of dentin result in a loss of transparency, which significantly changes the colour of the teeth [4]. The dental pulp in the teeth of older people differs from the pulp of younger people in the number of fibres and cells. Pulp volume is reduced due to dentin deposition; hence the blood supply is reduced, including the plexus of capillary loops in the subodontogenic region. The mentioned changes are important because the pulp is not expected to have the same reparative capacity as the teeth of a younger person. It was also found that, over the years, pulp calcifications increase in frequency, number and size. The amount of cement gradually increases, and the total width almost triples between the ages of 10 and 75. Because cement is built mostly from an organic matrix, it is less resistant to factors such as sugar, acids from soft drinks and tobacco (Table 1).

With age, there is a physiological, uniform reduction of the acinus tissue in the salivary glands, which results in reduced saliva secretion, thus reducing the possibility of self-rinsing, coating and protection of hard dental tissues and mucous membranes [4,7]. In older people, there is a decrease in total muscle mass. Studies have shown that there is a loss of motor units with a consequent decrease in muscle strength, chewing forces and prolongation of the chewing process [16,17]. Also, there is a progressive decrease in bone mass, i.e., the development of osteoporosis. In edentulous patients, it can affect alveolar bone atrophy, although no clear connection has been established. Alveolar bone atrophy is most often associated with tooth loss [18]. The extent of atrophy increases over the years, resulting in a decrease in facial height with the upward and forward movement of the mandible. Alveolar bone loss is more extensive and occurs faster in the mandible than in the maxilla [16]. It is known that the sensitivity to taste and smell decreases during life. These changes can make food unpalatable resulting in decreased appetite. Such taste and smell dysfunctions can result from a variety of factors, including oral diseases, systemic conditions, and related therapies [16].

The most common diseases of the oral cavity in older people: One of the most common diseases that occur in older people is periodontitis. Periodontitis occurs when inflammation of the gingiva causes an occurrence of gingival pockets, mobility and eventually tooth loss. Feres et al. indicate the association of periodontitis with elevated levels of systemic pro-inflammatory biomarkers [19]. Changes in diet and the secretion of salivary

glands and poor oral hygiene changes can affect the growth of microorganisms. The occurrence and course of periodontitis are associated with chronic diseases such as diabetes, cardiovascular and respiratory diseases. Periodontitis is the most common cause of receding gingival soft tissue, along with mechanical damage from prolonged rough brushing. Failure to treat periodontitis can lead to tooth loss [7,20]. Xerostomia is a subjective sensation of mouth dryness caused by reduced saliva production and affects 29% to 57% of elders [7]. Saliva, as a very important factor in the homeostasis of the oral cavity, ensures smooth chewing, speaking and swallowing, and with its buffering effect, it neutralizes acids and enables the remineralization of hard dental tissues, protecting against caries. A decrease in the amount or a change in the composition of saliva leads to xerostomia, the consequent impairment of the quality of life and the development of numerous pathological conditions of the organism [20]. In addition to dry mouth, clinical manifestations of xerostomia include a burning sensation, changes in taste, and difficulty swallowing and speaking [7]. Medications that affect the quality and/or quantity of saliva are antihypertensives, antihistamines, decongestants, antidepressants, antitumor therapy, anticholinergics, antipsychotics and others [21,22].

Oral candidiasis can cause problems in elders as most of the local and/or systemic predisposing factors are related to the specificities of older people. Local factors include dentures, impaired salivary gland function and poor oral health. Systemic factors include the use of antibiotics and numerous other drugs, malnutrition, diabetes, immunosuppression, and malignant diseases [23]. In the elders, caries is a common phenomenon and most often affects the root of the tooth, while caries of the occlusal surface is less common compared to other age groups. This can be explained by anatomical and physiological changes. As a result of ageing, the gums recede and the tooth roots are exposed. Furthermore, due to physiological wear, the depth of fissures decreases and the interdental contact is modified. For this reason, biofilm and food residues are no longer retained on the occlusal surface but accumulate in the interdental spaces. Modification of saliva flow, local conditions (presence of dentures, gingival recession), changes in eating habits and insufficient oral hygiene are factors that encourage the formation of bacterial plaque and increase the risk of caries.

The most significant predisposing factor of tooth decay is a decrease in the flow of saliva. There are two clinical forms of root caries. Active caries, which is soft, chalky and yellow to light brown, located near the marginal gingiva and is often covered with bacterial plaque. Cavitation may or may not be present. Inactive caries is hard, smooth when probed, shiny and dark brown to black. It is located at a certain distance from the marginal gingiva [24]. When left untreated, the final stage of caries and periodontal disease is tooth loss and eventually edentulism. Complete edentulism is very common and represents a significant

challenge for reconstructing the function and aesthetics of the orofacial area [25]. Cancer of the oral cavity is a major threat to the health of adults and elders. It includes cancer of the lip, oral cavity and pharynx and is the eighth most common cancer in the world. Incidence and mortality are higher in men than in women. Prevalence increases with age and oral cavity cancer are of particular concern among people over 65 years [25].

Oral changes as a reflection of systemic diseases: A clinical examination of the oral cavity can indicate changes in general health and thereby enable early diagnosis and treatment of the disease. The examination should include an assessment of changes in the mucous membrane, the state of the periodontium and bleeding on probing, and the general condition of the teeth. (Table 2) shows the conditions in the oral cavity and the diseases they can indicate [26].

Table 2: Evaluation of 13 selected papers using the GRADE system.

Paper	Risk of bias	Directness	Consistency of results	Precision	Publication bias	Overall score
Antoniadou [37]	1	4	4	4	1	4
Ástvaldsdóttir et al. [1]	2	4	4	4	1	3
Gomez-Rossi et al. [34]	2	3	3	4	1	3
Pina et al. [12]	1	4	4	4	1	4
Amagai et al. [29]	1	4	4	4	1	4
Hakeem et al. [4]	1	4	4	3	1	4
León et al. [26]	1	4	4	4	1	4
Ruiz-Roca et al. [2]	2	4	3	3	2	3
Slashcheva et al. [3]	2	3	2	2	1	2
Roberto et al. [30]	1	4	3	4	1	4
Parisius et al. [5]	2	3	3	3	2	3
León et al. [27]	1	4	3	4	1	4
Wallace et al. [31]	1	4	4	4	1	4

Objectives

The objectives of this work include:

- i. Literature analysis on treatment of oral medical problems of elders,
- ii. Defining changes in the orofacial area that occur with ageing,
- iii. Defining guidelines for clinical workflow with elders.

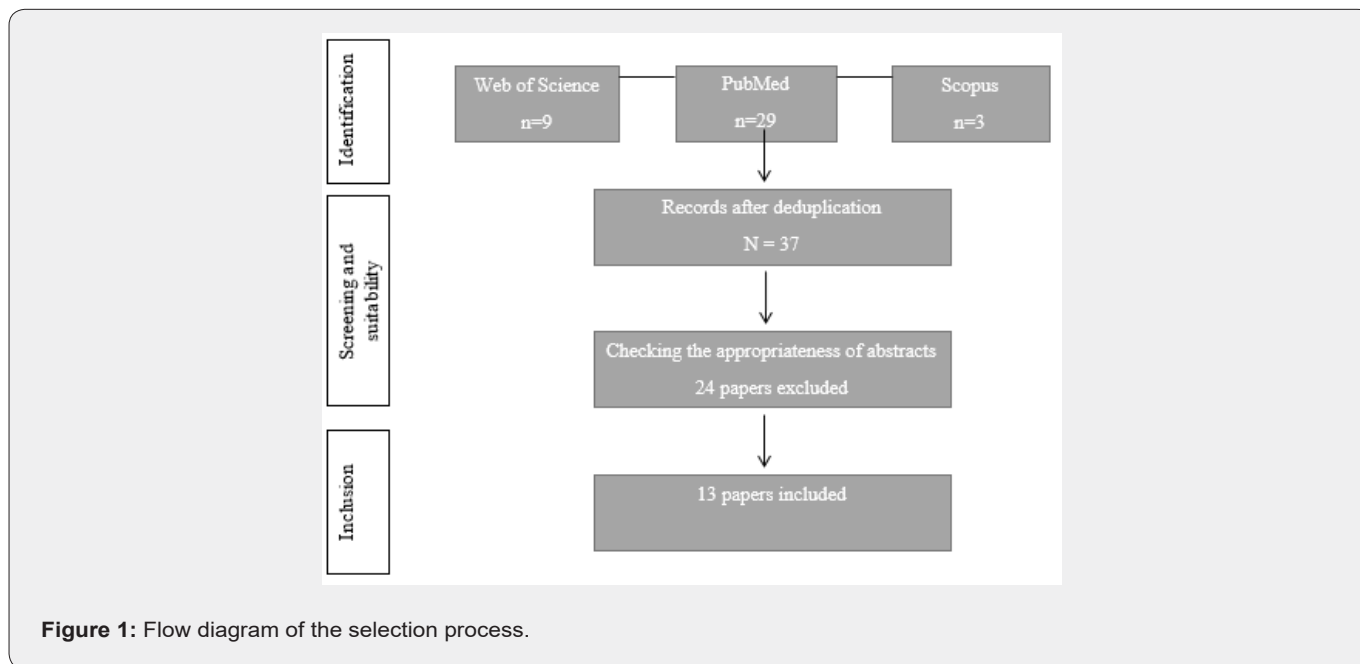
Materials & Methods

The research was conducted at the Department of Fixed Prosthodontics, School of Dental Medicine, University of Zagreb, following the fundamental principles and ethical standards of the Declaration of Helsinki [27]. It was approved by the Ethics Committee of the School of Dental Medicine in Zagreb (number: 20220128091301571). A literature search was conducted in PubMed, Scopus and Web of Science databases. Studies that reported on problems and changes that occur with ageing were considered [28]. The keywords used for the search were “older people”, “gerodontology” and “oral health”. Inclusion criteria were meta-analysis, randomized controlled trials and systematic review papers published in the last five years [29] articles were found on PubMed, three on Scopus, and nine on Web of Science.

One paper was found in all three databases, and another paper was in two databases (both in Scopus and PubMed). There were no additional matches between Scopus and Web of Science. After excluding duplicate papers, 37 papers remained. Then, after reading the abstracts, 24 papers were not satisfactory due to the specificity of the topic covered. Finally, 13 papers were included in the final analysis. The flow chart of the selection process is shown in (Figure 1).

The quality of the papers and the strength of the evidence were evaluated using the GRADE system (Grading of Recommendations, Assessment, Development and Evaluation). This system is used to rate the quality of evidence in the health literature and evidence-based research. There are several different systems used in healthcare to evaluate the literature. The GRADE system uses consistent and reliable criteria for papers. Evidence quality criteria for papers include:

- a) Risk of bias/limitations of the study
- b) Directness
- c) Consistency of results
- d) Precision
- e) Publication bias



Based on the above criteria, the overall quality of evidence for each important outcome was assessed using GRADE four ranking points: (4) High; (3) Moderate; (2) Low; (1) Very low [Table 3] [27].

Table 3: OSCAR System.

O – Oral	Assessment of the condition of the oral cavity - teeth, periodontium, dentures, pulp, oral mucosa, occlusion and saliva
S – Systematic	Assessment of age changes, medical diagnoses and pharmacotherapy
C – Capability	Assessment of functional ability such as the ability to perform oral hygiene, the need for a caregiver and transportation, and mobility
A – Autonomy	Assessment of the ability to give informed consent
R – Reality	Assessment of the importance of oral health care, financial limitations and life expectancy

Results

Due to the mentioned pathophysiological changes that occur in older people and the consequent challenges in clinical work, the guidelines for clinical work include recommendations intended to improve the dental care of patients.

Based on the analysis of the selected literature, the guidelines are divided into four basic groups, namely:

- a) Availability of dental services,
- b) Medical history,
- c) Oral status and treatment plan,
- d) Prevention.

To ensure adequate care for the elders, it is necessary to ensure the availability of dental services with easy access to the office, adapt treatment to financial possibilities, facilitate visits with a personal approach, and ensure access to care for those

who are unable to get to the office on their own. Before starting the treatment, it is necessary to find out the main reason for the visit and the general medical and dental history by talking to the patient. Then it is necessary to make an examination, define problems and oral status, and devise a treatment plan adapted to the patient’s capabilities. After addressing the problem, it is necessary to compensate for the loss of teeth. Finally, prevention through educating the patient about proper oral hygiene, hygiene of prosthodontic appliances and the importance of proper nutrition is equally important.

Discussion

Availability of dental services

Availability of dental care is the first step in working with older people. Easy access to the dentist’s office, adaptation to financial possibilities, the pattern of behaviour towards patients and the availability of care to those who are unable to get to the dentist’s office are the basic components that should be ensured.

A physical approach to dental care: At the age of 40, the function of several physiological systems deteriorates with associated anatomical changes. Skeletal muscles gradually atrophy and become progressively weaker, and bone density decreases, leading to osteopenia and osteoporosis. Progressive regressions of physiological function and posture, which usually occur during later decades, are associated with slower walking, maintaining balance and difficulty getting up from a sitting position [28]. Older people need to be provided with appropriate access to the dental office, similar to access for people with disabilities. It is also possible to adapt the dental unit to their capabilities [29]. Patients who are unable to get to the dentist's office pose a special challenge. In such situations, it is possible to provide a mobile dental team for home visits with basic dental examinations and procedures within the scope of technical possibilities, and in case of need for more complex treatment transportation to the dental practice would be provided [29].

Financial access to dental care: Several studies have shown that older people have poor access to dental services, especially those with low socioeconomic status [25,29,30]. In several countries, dental services for the elderly are provided by private individuals who often operate in a market with competition and free pricing. Since the treatment of older patients is often not profitable, dentists may decide not to provide care to such patients. To reduce this problem, Grytten and Holst recommend that a list of older patients is organized for which the responsible dentist would receive appropriate compensation [31]. This can be combined with responsibility at the dental practice level so that part of the budget is allocated to work with patients with the greatest need. This system would allow dentists to provide appropriate care to the listed patients. This would strengthen the connection between the dentist and the patient and make both preventive and medical services more accessible to the elders [31]. If it is not possible to create the mentioned system, it is necessary to provide the patient with clear information about the costs of treatment and ensure the possibility of agreement. It is necessary to adjust the arrival time to reduce indirect costs [29].

Individual approach and communication: Older people appreciate a polite and friendly approach. It is necessary to take enough time to explain the course of treatment to them [29]. The method that stands out most often in the literature is the Tell-Show-Do method. The Tell-Show-Do method is an excellent way to establish a relationship because it is an interactive and communicative approach. It is useful because it reduces the fear of lack of control - one of the most common dental fears. The "Tell" phase includes a verbal explanation of the procedure appropriate to the patient. In the "Show" phase, the procedure is demonstrated in a defined, non-threatening way, and finally, in the "Do" phase, the dentist begins the treatment without deviating from the explanation and demonstration during the procedure. Communication between dentist and patient is essential for a productive relationship that results in competent clinical care

[32,33]. Furthermore, removing stressful factors such as the noise of dental devices by providing earplugs or using therapeutic procedures without noisy devices and reducing waiting time improve the pleasantness of visiting a dentist [31].

Anamnesis

Before starting the therapy, it is necessary to find out the main reason for the visit and the general medical and dental history through a conversation with the patient.

Establishing communication and defining the reason for the visit: Communication between the dentist and the patient is important for the success of the treatment. It is important to take an appropriate and targeted medical history to establish the main reason for coming to the office. As an example, we can adduce pain. Pain is one of the main symptoms that bring patients to the dental office, and therefore it is important to establish all its characteristics, including localization, quality, intensity, and factors that lead to improvement or worsening of pain. The patient needs to be provided with information and an explanation about the cause of his/her pain as well as a therapeutic approach [34].

General medical history: Adequate anamnestic data enables monitoring of the patient's state of general health, assessment of the riskiness of the dental procedure and the possible influence of the patient's general condition on the health of the oral cavity. Upon arrival at the office, the patient can be given a health questionnaire as recommended by the World Dental Federation (FDI) to simplify history taking. The medical history consists of several parts that include the state of the cardiocirculatory, respiratory, endocrine, urinary and nervous systems (neurological and psychiatric diseases), the length of treatment, the type of therapy and the method of taking medication. Important questions relate to blood clotting disorders, malignant, immunological and infectious diseases. Habits (smoking, alcohol, drugs) and information on allergies are indispensable parts of medical history [34,35]. Besides information about allergies and reactions to medications, also nutritional and inhalation allergens are important because they indicate an increased tendency to allergic reactions. Patients allergic to latex, which can be found in gloves and rubber dam sheets, and antiseptic agents containing iodine, require special caution, as they can be the cause of life-threatening allergic reactions.

During medical history taking, it is necessary to write down the names of all medications that the patient is using. This can help to detect other diseases that the patient did not mention and observe changes in the oral cavity that may be caused by the mentioned medications and avoid unwanted interactions [35]. In some patients, certain dental procedures will have to be temporarily or permanently postponed due to medical reasons.

Dental History: The dental part of the anamnesis tries to obtain information about the damage and loss of teeth (causes and time of the first and last damage or loss), the frequency of

visits to the dental office and the types of dental treatments performed so far, including surgical and periodontal procedures, orthodontic therapy, prosthodontic treatments as well as to the patient's satisfaction with the same. Also, an important factor in treatment planning is hygiene habits, which include information about the means, frequency and technique of brushing teeth, the use of additional hygiene products and possible problems with their application. It is useful to ask the patient to bring his or her oral hygiene kit and possibly ask the patient to demonstrate the way they brush their teeth and/or existing dentures.

Oral status and treatment plan

After recording the general medical and dental anamnesis, an examination of the oral cavity and facial area follows. Only after defining the orofacial status and the state of oral health, it is possible to devise a treatment plan.

Identification and definition of the problem: The examination begins as soon as the patient enters the office. The dentist is obliged to observe the patient to notice deviations from normality. Mobility, awareness, attitude, the way the patient communicates and asymmetries in the face and posture are the first steps in the examination. After taking the medical history, a thorough intraoral and extraoral examination begins. An examination should be a routine part of any dental evaluation. It consists of checking and recording the presence or absence of any abnormalities. During the extraoral examination, it is necessary to check the face, head and neck and check for swelling, discoloration or asymmetry. The intraoral examination is divided into examinations of soft and hard tissues [36]. Changes and problems in the oral cavity in elders are the result of physiological changes, systemic diseases or the use of medications. The problems that require attention are listed in the introductory part of the text. A clinical examination of the oral cavity is extremely important because it can indicate changes in general health and thereby enable early diagnosis and treatment of the disease.

Creating a treatment plan: For the elders, it is important to consider how they function in their environment, what type of social support systems they have, how oral health care fits into their lives and whether they can maintain the care they are receiving. There is a systematic approach called OSCAR for therapy planning. This system takes into account all factors that could potentially affect the course of treatment of an older person and outlines the dental, medical, functional, ethical and financial factors that dentists should analyse when planning the treatment for an older person (Table 3) [37].

Repair of current issues in the oral cavity: The main goal for the elders, when possible, is to achieve a painless, healthy condition in the oral cavity and to solve aesthetic problems while keeping an eye on the risk of current and future systemic diseases. Treatments for older people must be adapted to the health status and abilities of the patient. It is important to recognize the need

for frequent updates of medical history and medications and to consider the potential risks of complications. In planning the treatment of the elders, procedures should be less invasive. Root caries is the most common form of caries in older people. Criteria for selecting the technique and material for root caries restoration are similar to caries in the younger population and include the size and shape of the lesion and the overall health and functional abilities of the patient [38]. Root caries therapy is a demanding restorative procedure due to a large amount of moisture and its inaccessibility. Leon et al. proved that treating root caries exclusively with high concentrations of fluoride without invasive procedures is an effective method of treatment and has proven to be a method that increases the quality of life [39,40]. Also, periodontal therapy in older patients must be adapted to the overall health, as well as the ability to perform adequate oral hygiene [41]. It is essential to recognize patients with xerostomia and provide them with adequate protection, in the form of education, recommendations and possible preparations.

Compensation for tooth loss: Missing one or more teeth can have a significant impact on the quality of life. Many studies have confirmed the connection of missing teeth with the development of dementia, a reduction in the quality of life and mortality [42-46]. Prosthodontic treatment in older people should be carefully planned, taking into account possible rapid changes in overall health. It is possible to replace teeth with bridges, crowns or implant-borne prosthodontic appliances, but the focus should be on simple, stable and solid prosthodontic solutions. The choice of a type of appliance must be determined based on the patient's capabilities and wishes, using the Katz index of independence in activities of daily living and/or the OSCAR system, as well as an insight into the general medical and dental anamnesis. Close collaboration with general practitioners can also be helpful in decision-making. It is recommended to construct prosthodontic appliances in such a way that they can be modified in case of tooth loss or other complications and that enables simple maintenance.

Prevention

A preventive approach to oral health consists of education and implementation of oral hygiene and proper nutrition.

Patient education on proper oral hygiene and hygiene of prosthodontic appliances: Proper oral hygiene can be challenging for the elders due to their limited motor skills. The ability to perform oral hygiene is assessed by the Katz index of independence in activities of daily living. Depending on the result, it is necessary to adapt the education and implementation of hygiene to the patient. Each patient needs to get an explanation in detail and be shown every step of performing oral hygiene. This also refers to the education of the caregiver of a less mobile or immobile person [47]. Using a toothbrush is the most important step in maintaining oral hygiene. For people who need help, electric toothbrushes are recommended, but manual toothbrushes with an individually enlarged handle can also be used. The handle

can be enlarged by adding rubber from the handlebars of a bicycle, insulating foam or grip tape for tennis rackets to make it easier to grip and hold the brush. Interdental spaces, which make up 40% of the tooth surface, are difficult to reach with a toothbrush. As a result, bacteria multiply, which leads to the appearance and development of caries in the proximal areas of the teeth, gingivitis and periodontitis. Various aids are suitable for interdental cleaning, although their use should be adapted to the individual. Patients should be taught how to use them.

The most common aids used are interdental brushes and dental floss. For people with limited motor skills, there are attachments for interdental cleaning that can be inserted as an addition to the electric toothbrush. The vibration of the interdental extension simplifies the cleaning of interdental spaces, although improper use carries a certain risk of injury. Using fluoride toothpaste is imperative for daily oral hygiene. Fluorides inhibit mineral loss, remineralize tooth enamel and reduce plaque formation, which helps prevent caries. Finally, mouthwashes can be used as an addition to oral hygiene. Mouthwashes reduce the number of bacteria in the mouth, inhibit the growth of bacteria and plaque and thereby prevent gingivitis and periodontitis. Chlorhexidine, amine fluoride, zinc fluoride and triclosan are ingredients that have clinically proven positive effects [48]. However, it is extremely important to emphasize to the patient that rinsing water does not replace mechanical washing and cleaning, but only complements it. Older people who have prostheses or some other form of prosthodontic appliances should be taught about the proper oral hygiene of both the prosthodontic appliances and the tissues on which they rest, as well as the need for continuous professional care. Dentures must be removed from the mouth in the evening and cleaned with a brush [4]. It is important to use suitable toothpaste without abrasives because those containing

abrasive particles can mechanically damage the dentures. In optimal conditions, the prosthesis is kept in a humidifier during the night, but a plastic box with wet tissue will also do.

Education about the importance of proper nutrition:

Nutrition and health, in general, are among the main concerns for the elders. The most common nutritional disorder observed in the elderly population is malnutrition, which is associated with increased mortality, susceptibility to infections, and impaired quality of life [49,50]. Dietary changes such as reduced salt and fat intake and regular exercise are effective ways to prevent oral and systemic diseases [51]. One of the most common causes of insufficient eating and low-quality food intake is the lack of teeth. Amagai et al. in their research proved that simple nutritional advice combined with prosthodontic rehabilitation can improve food intake in edentulous older people. The patients were given a brochure that stated the amount and type of food that should be consumed daily. The result of this research expands the possibilities of nutritional counselling in the daily life of clinical practice [42].

Conclusion

The elderly population is one of the most demanding populations in dental medicine. Due to the unavailability of the application of standard decision-making algorithms and the specific physiological changes and challenges that occur in this population, guidelines for daily clinical work are necessary. After the remediation of acute problems, it is necessary to compensate for the loss of teeth, which can have a significant impact on the quality of life. Finally, it is important to educate the patient about proper oral hygiene, as well as the importance of proper nutrition (Table 4).

Table 4: Overview of guidelines.

Availability of dental services
A physical approach to dental care
Financial access to dental care
Individual approach and communication
Anamnesis
Establishing communication and defining the reason for the visit
General medical history
Dental history
Oral status and treatment plan
Identification and definition of the problem
Creating a treatment plan
Repair of current issues in the oral cavity
Compensation for tooth loss
Prevention
Patient education on proper oral hygiene and hygiene of prosthodontic appliances
Education about the importance of proper nutrition

Authorship and Acknowledgements

M.A. and A.C. have substantial contributions to the conception and design of, or acquisition of data or analysis and interpretation of data, drafting the article and revising it critically for important intellectual content and final approval of the version to be published..

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