ISSN Print: 2394-7489
ISSN Online: 2394-7497
IJADS 2022; 8(4): 207-210

www.oraljournal.com
Received: 07-11-2022
Accepted: 12-12-2022

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Prosthodontic management of geriatric patients

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DOI: https://doi.org/10.22271/oral.2022.v8.i4c.1765

Abstract
Aging is a natural part of becoming older. The need for dental care does not usually increase with age. In addition to working to extend people's lives, healthcare workers should focus on improving the quality of life in their golden years. The loss of a tooth may have a devastating effect on your ability to chew, as well as your self-esteem and oral health. Age, illness, trauma, metabolic problems, and dietary inadequacies are only few of the causes of excessive bone resorption. Focal infections in the mouth and systemic disorders are the main causes of alveolar bone resorption, particularly in medically impaired individuals. Dental treatment for elderly patients who are coping with several medical conditions, including those that are long-term and severe, and include pharmacological and psychological side effects, is known as geriatric dentistry. The purpose of this article is to give a summary of the many factors that must be considered while providing dental care to an elderly patient, as well as strategies for cultivating the appropriate mentality toward dental care for this population.

Keywords: Geriatric, prosthodontist, dental treatment

Introduction
Due to the fact that not everyone ages at the same pace, we may distinguish between a person's "biologic age," or the age of his tissues, and his "chronologic age," or the amount of time that has passed since his birth. Traditionally, those 65 and higher have been considered part of the senior population; however, due to significant individual differences in physical, mental, and medical health, this chronological age criteria has limited use in the field of dentistry. The key factors that determine the quality of life for a senior citizen are that person's physical and mental health [1]. Chronic sickness in the elderly may wreak havoc on the patient's ability to enjoy the finer things in life, such as socializing, getting out and about, and, of course, eating. Therefore, the dentist plays a crucial role in geriatric care by ensuring or enhancing the oral health of patients.

Terminologies [2]
Geriatric Dentistry: Adults who suffer from a serious mental or physical condition and have accompanying psychosocial issues are given access to dental treatment. (1989 January D.C.N.A.)
Geriatrics: The medical or dental specialty concerned with the care of elderly patients, including the diagnosis and management of age-related conditions including senescence and senility. (D.C.N.A., January 1989)

Classification
Rowe and khan classified aging into
1. Successful aging: Persons appear younger and more vigorous then their stated age.
2. Usual aging: Person without clinical disease show physiologic changes approximating the mean.

Etting and Beck divided the elderly into three groups: [3]
1. The new elderly (between 60 and 64 years of age)
2. Transition group (between 65 and 75 years of age)

3. The older elderly (75 years of age and old)

Ettinger and Beck also classified according to functional needs [4]

1. Functionally independent elderly
2. Frail elderly
3. Functionally dependent elderly

Janet Yellowitz and Michele J Saunders classification [5]

1. Well elderly
2. Frail elderly
3. Functionally dependent elderly
4. Severely disabled, medically compromised elderly

Biological basis of aging

Criteria of biological aging: Universality, Time dependence, Intrinsically, Deleteriousness [6]. The basis of these biological processes are Changes in various macromolecules, The inability to maintain homeostasis as we age is the last and most crucial stage in the cascade of biological changes associated with aging; this eventually results in the death of the person and cannot be reversed. [7].

Immunology and aging

Illnesses with a late-life peak incidence, such as neoplasia, infectious illnesses, autoimmune disorders, and immunological complex diseases, may have a role for age-related immune activities in their etiology. B cell reactivity to activation with certain T cell-dependent antigens dramatically declines with increasing age. In whole saliva of older adults, there appear to be a tendency for levels of all three antibodies (IgG, IgA, IgM) to decrease gradually. Autoimmunity to type I collagen increases in periodontal disease. The age-related imbalance in T cell subsets may contribute to periodontal disease in the elderly. [8, 9].

Physiology of aging

Gillian Hoad-Reddick detailed the difficulties the elderly encounter, including mobility issues, anxiety, and health concerns including deafness, impaired eyesight, blindness, incontinence, and diabetes. Conditions (such as those involving the heart, which may increase anxiety or extend the time needed for dental treatments, or both. An understanding of these changes can help the dental staff to modify patient management and treatment facilities to create an enhanced dental office environment that will more satisfactorily accommodate the older patient [10].

Age changes in the masticatory apparatus

The teeth, gums, tongue, and cheeks make up the masticatory apparatus. salivary glands, nerves and muscles, jaws, and TMJ. The enamel on your teeth may become more impermeable and brittle as you become older. Secondary dentin formation: when secondary dentin develops, the pulp's radial diameter gradually decreases. It may be considered an appropriate host response to prevent pulp reactions or pulp exposure in association with caries or heavy tooth wear, which may also lead to a reduction in sensitivity [11, 12, 13]. An inflammatory response often results in pulp necrosis and infection at the apex and the surrounding bone, and the pulp in the elderly has low resistance. An inflammatory response often results in pulp necrosis and infection at the apex and the surrounding bone, and the pulp in the elderly has low resistance [14]. Victor J. Miller found that the vertical condylar asymmetry index decreased with patient age in a group of people with craniomandibular disorders of arthrogenous etiology [15]. Anatomic, metabolic, and mechanical factors are hypothesized to all have a role in the development of RRR, making it a multifactorial, biomechanical illness.

Pharmacologic considerations in geriatric dentistry

The cautionary axiom, “Go low, go slow” is often quoted in the management of geriatric health care. Drug administration in the dentist office for elderly patients calls for extra caution. Physiological changes with age, as well as pharmacokinetic and pharmacodynamic abnormalities, may drastically reduce the margin of safety, or therapeutic window, in which the medicine is safely effective. Safe and effective medication prescription may be achieved by consultation with the patient's physician [16].

Table 1: Drugs prescribed by dentist and Condition precipitated or exacerbated

Drugs prescribed by dentist	Condition precipitated or exacerbated
Pilocarpine	Asthama
NSAID	Congestive heart failure, Hypertension, Peptic ulcer
Glucocorticoids	Diabetes mellitus, Osteoporosis
Benzodiazepines Barbiturates, Anticholinergic agents	Organic brain syndrome
Aspirin	Gout, peptic ulcer

Psychological considerations for geriatric patients

Meet the patient's thoughts before you meet their lips," De Van said. Therefore, we realize that the patient's perspective and beliefs might affect the result of the therapy. Both the disengagement theory and the activist theory of aging are prominent in social gerontology [17]

In 1950, Dr. MM House divided patients' mental states into four categories [18].

Class I: Philosophical

Class II: Exacting

Class III: Hysterical

Class IV: Indifferent

Sharry classification [19].

1. **Tolbuds:** Patients who were able to adapt to wearing their prosthesis in any orientation.
2. **Tolad:** Patients who, with certain alterations, could be able to live with a prosthetic.
3. **Toln:** Chronically ill patients who were able to take absolutely nothing in.

Nutrition for geriatric denture patients

In every era, the reward has been the same: the achievement of perfect health. Substrates from food are required for the expression of inherited traits.

The revised food pyramid [20]: People aged 70 and above now have access to a revised food pyramid that takes into account their specific nutritional requirements.

Treatment planning in older adults

The main objective of prosthetic treatment and care is the maintenance of existing natural functional tooth contacts for

life. In treatment planning for frail and dependent residents, it is a challenge to respond to changes in their behavior and decreased cooperation by improving the effectiveness of collaboration with the health care team.

- Treatment with removable partial dentures is one of the possible restoration options for partially edentulous patients. The essential design principles for removable partial dentures are proper support, minimal gingival coverage, use of rigid connectors, and simplicity [21].
- Overdentures have become more popular as a replacement for traditional complete dentures in individuals with insufficient tooth structure left to support either fixed or removable partial dentures. [22, 23].

Principles of overdenture support [24]

Table 2: Principles of overdenture support

Overdenture with support of natural roots	Overdenture supported by implants
Prevent resorption of alveolar bone Maintain sensory feedback	Arrest resorption of bone
Provide for stability (and retention)	Provide for retention of denture

Caries and the advancement of periodontal disease next to the abutment are the primary hazards associated with treatment with overdentures. Therefore, if treatment with fixed or removable partial dentures is available, overdentures should not be considered.

For the prosthetic restoration of the edentulous patient, the clinician has a wide range of treatment modalities available, ranging from relining or reparation of existing dentures, to copying or transforming existing dentures, to constructing conventional complete dentures, implant-supported complete dentures, or metal-ceramic fixed prostheses. Patients' demands for treatment are often based on their previous experience, self-esteem, and socioeconomic situation.

Stanley Fellman classified geriatric complete denture patients according to treatment needs [25]

1. Patients who should not receive prosthodontic treatment.
2. Patients who should receive minimal treatment.
3. Patients who should receive intermediate care.
4. Patients who should receive maximum prosthodontic care.

- The capacity of the practitioner to assess the true state of the dentition and the surrounding oral tissues is crucial to the success of fixed prosthodontic therapy for older persons. Towards biomechanically sound fixed prosthodontics for the geriatric patient:

1. Strengthen the structure of your teeth that is still there
2. Get rid of the gaps between dentin and enamel
3. Create uniform emergence profiles for your teeth and gums
4. Reestablish interproximal contact morphology.
5. Maintain the status quo of your teeth and bite.
6. Make sure that any repairs blend in with the existing building's aesthetic [26].

- Osseointegrated implants can and should be prescribed for elderly patients; osseointegration can be maintained as patients age despite physical and medical frailty; the principles of osseointegration can be reconciled with various prosthodontic techniques to help make this treatment accessible to older adults [27].

There are three major purposes for implant therapy

1. So that the patient has an easier time chewing.
2. In order to protect the remaining tooth structure or an existing restoration.
3. The aim is to switch out certain key abutments.

Preventive measures & maintenance care after treatment

Maintenance of masticatory system health and function without excessive therapeutic intervention is the objective of dental and prosthetic care for the elderly. After prosthetic treatment, a patient recall program with emphasis on oral hygiene preventive measures must be organized. Recall visits should be set up at regular intervals, such as every 6 to 12 months [28].

- **A maintenance and recall plan should be established based on:**

1. The patient's oral hygiene performance.
2. Gingival recession and the area of exposed root surface.
3. Caries and periodontal disease activity.
4. The rate of residual ridge resorption. The design of the removable denture.

Conclusion

The global geriatric population is growing as development in an increase of lifestyle difference.

Given the importance of health and, more specifically, oral health, patient education is crucial, and dentists should ordinarily decline to treat complex situations with good prognoses. Major dental therapy can certainly enhance function, esthetics, and comfort as well as eradicate signif-icant pathology and increases quality of life. But case selection is very important in order to minimize dental treatment failures and the tendency to blame the patient or others for negative outcomes.

Conflict of Interest

Not available

Financial Support

Not available

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How to Cite This Article
Shinde SL, Kulkarni MM, Shivajirao SD, Amrita PB. Prosthodontic management of geriatric patients. International Journal of Applied Dental Sciences. 2022;8(4):207-210.