Age-Related Dental Challenges

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- Compelling epidemiologic studies emphasize the increase in teeth retention and decrease in edentulism prevalence in elderly populations in Western societies. However, the oral health of care-dependent, frail older persons is reported to be generally poor with excessive treatment needs.[1–5] Oral pathologies found in younger–aged cohorts are often prevalent in older patients—caries (root variety in particular) and periodontitis—and in frail patients are often present in a way that requires especially scrupulous diagnosis and management. Tooth loss continues to be highest in older people and associated with variable oral functional compromise and increased prosthetic treatment needs.
- Planning the best possible oral health care for such patients is particularly challenging, given the complexity and comorbidity that often characterize such patients' physical and mental state, social context, and overall levels of frailty. Treatment focus on improvement of such patients' oral function and quality of life should target specific complaints and treatment outcome expectations. In addition, proposed interventions should seek to restore function, prevent predictable damage, and be feasible for any particular patient.
- Recognition of the compromised oral health predicament of frail older persons also underscores the need to optimize health care policy to improve access to appropriate professional oral health care. In this context, a recent Belgian study on oral health in patients with special needs confirmed the harsh reality of poor oral health and excessive treatment needs in care-dependent older persons from Belgium.
- Qualitative evaluations also revealed several bottlenecks to the provision of required care that included poor awareness of the importance of oral health and the extent of the oral health problems by both care providers and the patients themselves. In addition, protocols for daily oral health care appeared to be inadequate due to poor awareness, training, and time availability of the care providers as well as the lack of structural organization of daily oral health care within the daily care provided by the care institution.
- Access to professional oral health care was also reported to be poor in regard to both patient and dentist-related barriers. The major patient-related concern was impaired mobility, often accompanied by a negative attitude toward oral health care, dental treatment fears, and financial hardship. Care-dependent older persons often lost contact with their dentist along with their independent mobility; they found it difficult to determine where to go for appropriate oral health care. Dentists, as well, cited barriers such as communication difficulties, time-intensive treatment considerations, and lack of financial compensation for the additional efforts needed to address these patients' specific systemic health complexity and comorbidity concerns.
- Based on the defined barriers, several suggestions can be made concerning sensitization and education of all involved care providers and to improve organization of daily oral health care as well as access to professional health care. It needs to be asserted that the majority of the oral health problems in care-dependent persons can be avoided by good oral hygiene with an emphasis on prevention, which is integral to daily care protocols. The impressive therapeutic advances (eg, implant therapy) that are readily recruited to manage partial and complete edentulism in otherwise healthy older patients are far from automatically transferable to, let alone required for, this particular patient cohort. It is the examination and identification of barriers to good oral health care that remain essential steps for developing necessary strategies to improve and sustain oral health care in frail older persons. After all, simple, prudent, and time-proven treatment interventions can be readily employed with patience and particular care to manage most of these patients' essential dental needs.
- As clinical academics, we also have the responsibility to prepare and guide future dentists to provide care for patients with special needs, and to break down dentist-related barriers by improving their knowledge, competence, and attitude toward caring for this special patient cohort. In 2009, the European College of Gerodontology proposed undergraduate curriculum guidelines in gerodontology,[6] although studies reveal that increasing knowledge in gerodontology does not necessarily imply improved professional attitudes.[7] To facilitate the latter, intensive undergraduate clinical exposure is required, together with positive role models, good teacher-student relationships, and integration of a variety of basic, clinical, and humanistic sciences into the dental curriculum.[8]

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Teeth, Mastication, Cognition, and Health—The Impact of Edentulism

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- Industrialized economies appear to prioritize dental esthetics before function, with the media acting as a major influence on how bodily appearance is perceived and rewarded.[1] Nonindustrialized economies, on the other hand, tend to do the reverse, because function is often the driver of survival. Under these circumstances, esthetic objectives have more modest expectations.
- The primary goals of mastication and swallowing are enhanced health resulting from improved diet and nutrition. Optimal occlusal design optimizes functional force distribution and controls loading between teeth. Anterior teeth have a large population of periodontal receptors, which have higher sensitivity (at low forces) to both static and dynamic loads when compared with posterior teeth. The latter have lower static and dynamic sensitivity for management of faster and stronger forces developed during chewing. A stable functional occlusion optimizes oral function and contributes to the maintenance of higher-level cerebral function or cognition.[2] Impaired mastication is linked to executive function and is related to *(1)* general level of brain activity or arousal controlled through the reticular activating system, which is impaired to varying degrees in aging[3]; *(2)* episodic memory; and *(3)* learning new information.
- Function with complete dentures, especially mandibular ones, is markedly reduced and often associated with pain and discomfort, impaired diet, and compromised nutrition and psychosocial health. The ongoing demand for improved management of edentulism poses a major challenge for our profession, particularly given the context of an increased aging population.
- The availability of implant therapy, catalyzed by the introduction of the osseointegration technique, transformed treatment options for edentulous patients. It also encouraged consensus statements regarding a presumed better "standard of care" for implant-supported mandibular overdentures. Published reports using data from oral health–related quality of life (OHRQoL) indices and psychologic profile questionnaires indicate that both implant-retained overdentures and fixed implant-supported prostheses are often preferred by patients[4] because of associated benefits of enhanced implant retention and stability.
- The term "osseoperception" was first proposed by Brånemark to describe the physiologic feedback mechanism responsible for the enhanced function and, by implication, the enhanced OHRQoL outcomes expected with implant treatment. The implication that bone contains proprioceptive feedback capability has been considered for more than three decades, and a consensus statement[5] defined osseoperception on a more global basis and with a hierarchy of feedback from diverse tissues. It was also emphasized that osseointegration-linked osseoperception was the key to rehabilitation of function, with rigid fixation and functional forces transferred to bone and associated tissues to activate a range of mechanoreceptor feedback to the sensorimotor cortex to modulate function.
- Trulsson[6] reported that periodontal mechanoreceptors signaled detailed information to regulate manipulative and power aspects of jaw function. Their loss results in reduced sensory feedback and more variable bite forces with reduced capacity to modulate bite force to food hardness. Edentulous patients rehabilitated with fixed implant-supported prostheses in both jaws function with reduced capacity to manage foods of different hardness and