



TYPES OF PARTIAL EDENTULISM

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ABSTRACT

Considering the advancement of curative and preventive dentistry, edentulism is still a challenging problem for healthcare providers all over the world. Dental caries and periodontal diseases are the main causative factors to teeth loss and eventually, if untreated, lead to edentulism. The socioeconomical factors also contribute to the edentulism as it has an association with education and income status. This literature review will put some highlights in the epidemiology and etiology of edentulism, its prevalence, and the association with the social-economical factors.

Introduction.

Edentulism is the state of being edentulous, or without natural teeth. Complete edentulism is an oral cavity without any teeth. Adequate dentition is quite essential for well-being and life quality. Edentulism is one of the public health burdens for elderly people and affects clearly the practice of primary care. Edentulism is a devastating and irreversible condition and is described as the “final marker of disease burden for oral health.” Patients who are suffering from edentulism exhibit a wide range of physical variations and health conditions. Teeth loss affects mastication, speech, and may result in poor esthetics which in turn affect the quality of life.

Partial edentulism, the condition characterized by the absence of some teeth within the dental arch, is a common dental issue affecting millions worldwide. It can result from various factors including dental decay, trauma, or congenital absence. The understanding of partial edentulism is crucial for dental professionals to provide effective treatment and restore oral function and aesthetics. Partial edentulism is categorized into several types based on the location and extent of tooth loss, each requiring tailored treatment approaches.

The most common classification system used to describe partial edentulism is the Kennedy Classification. Developed by Dr. Edward Kennedy in the mid-20th century, this system categorizes partial edentulism based on the location of the edentulous spaces and the presence or absence of natural teeth adjacent to them. Kennedy Classification divides partial edentulism into four main classes:



Class I: This class involves bilateral edentulous areas located posterior to the remaining natural teeth. In other words, there are missing teeth in one quadrant of the mouth, and the edentulous space is located posterior to the remaining natural teeth. For example, if a person is missing teeth on the left side of the upper jaw and the right side of the lower jaw, it would be classified as Class I partial edentulism.

Class II: Class II partial edentulism involves unilateral edentulous areas located posterior to the remaining natural teeth. In this case, there are missing teeth on only one side of the mouth, with the edentulous space located posterior to the remaining natural teeth. For instance, if a person is missing teeth on the right side of the upper jaw and the lower jaw remains intact, it would be classified as Class II partial edentulism.

Class III: This class involves a unilateral edentulous area located anterior to the remaining natural teeth. In Class III partial edentulism, the edentulous space is located anteriorly (towards the front) of the remaining natural teeth. For example, if a person is missing teeth in the front of the mouth on one side, it would be classified as Class III partial edentulism.

Class IV: Class IV partial edentulism involves a single, but bilateral (crossing the midline) edentulous area located anterior to the remaining natural teeth. This class is relatively less common compared to the others. For instance, if a person is missing teeth in the front of both the upper and lower jaws, it would be classified as Class IV partial edentulism.

Understanding the Kennedy Classification system is essential for dental professionals as it guides treatment planning for partial edentulism. Treatment options may include removable partial dentures, fixed partial dentures (bridges), or dental implants, depending on the patient's specific situation and preferences.

In addition to the Kennedy Classification, partial edentulism can also be classified based on the extent of tooth loss, such as single-tooth loss, multiple-tooth loss, or the number of edentulous spaces present. This comprehensive understanding enables dentists to provide individualized care and achieve optimal outcomes for patients with partial edentulism.

The Prevalence of Edentulism.

Edentulism is an irreversible and debilitating condition and is termed as the “final marker of disease burden for oral health.” While the prevalence of complete edentulism has reduced over the last decade, tooth loss remains a significant disease worldwide, mainly among the elderly population. However, the prevalence of complete edentulism varies from country to another country and from region to another region, and comparing between national samples is challenging because of the impact of several factors like lifestyle, economic circumstances, education, oral health knowledge and beliefs, and attitudes toward dental care.

In the United States, according to Slade et al. surveyed 432,519 adults; among adults over 15 years of age and above, the prevalence of edentulism was 4.9%. In Canada, the overall rate of edentulism in 2010 was 6.4% - 21.7% among adults between 60 and 79 years of age. The rate of edentulism tends to be different from a region to another region within a country. A wide variation has been found between provinces in Canada, from 14% (Quebec) to 5% (Northwest Regions) due to related factors such as access to fluoridated water and smoking. In Brazil, the more industrialized states and wealthier places tend to have lower rates than other parts of the country.



Peltzer et al. surveyed complete edentulism among older adults (50 years) and above in all of China, Ghana, India, Mexico, Russia, and South Africa. They found that the overall prevalence of edentulism was 16.3% in India and 9% in China. Mexico was the higher prevalence rate at 21.7%, Russia comes at second place in prevalence at rates of 18%, and the prevalence in South Africa was 8.5%. The least prevalence rate was Ghana at a rate of 3%.

In Europe, many studies have demonstrated the prevalence of complete edentulism, in Sweden did five cross-sectional interviews from 1975 to 1997 and interviewed 11,582 individuals. They reported that in the age group 25–74 years, the prevalence decreased from 19% in 1975 to 3% in 1997, and the proportion of dentate persons increased from 75% in 1975 to 97% in 1997 in the age group 45–64 years with similar ways in the other age groups.

Zitzmann et al. in Switzerland, in their Swiss Health Survey interview and questionnaires, the sample size was 14,326 in population-based stratified samples among the population age from 15 to 74. They concluded that the total rate of complete edentulism was 5.7% knowing that the significant rate of edentulism in a group of age between 65 to 74 years.

In a more recent study in 2018, Pengpid and Peltzer reported that the overall prevalence of edentulism in Indonesia was 7.2%, while it was 29.8% among 80 years and older individuals.

The Etiology of Edentulism.

The reasons for edentulism are many. While primarily it's the result of microbial or genetic diseases that have strong individual and behavioral impacts, edentulism can be the result of iatrogenic, traumatic, or therapeutic causes. Lower income and education level, poorer oral health, and reduced general health correlated with the incidence of tooth loss. Higher periodontal disease marks perceived poor dental health, the perceived need for extractions, history of smoking, and low ascorbic acid intake.

In modern ages and civilized countries where people have access to dental care, the most significant reason for tooth loss is caries followed by periodontal diseases. Hull et al. [21] reported in a cohort study of 389 extracted teeth that caries is the most dominant cause for teeth extraction by 37% followed by periodontal diseases 29%, other reasons 33%, trauma is 12%, and wisdom teeth extraction accounts for 6%.

On the other hand, Chrysanthakopoulos in his survey in Greece concluded that periodontal diseases were the most common cause for teeth loss (38.09%), especially in the older population (66.17%), while dental caries was the primary cause of tooth extraction in the youngest population (56.12%).

Locally in Saudi Arabia, Almadina, Al Hamdan and Fahmy did a cross-sectional study investigating the primary reasons for teeth extraction. They found that the most common causes for extraction of permanent teeth were caries (89.8%) followed by trauma (4.1%), the third common cause was an orthodontic treatment (1.9%). Extraction due to periodontal disease was (1.7%). The least cause for teeth extraction was prosthodontic treatment reasons (1.2%).



Edentulism (Toothlessness): Causes, Treatment, Prevention

Socioeconomic Reasons Correlated with Edentulism.

Socioeconomic factors play a massive role when speaking about edentulism, such as low income, low education level, and limited social support, especially in elderly people. Edentulism can also be the primary concern of younger society and may be related to cultural factors, private care access, and socioeconomic factors. These factors impact the spreading and prevalence of complete and partial tooth loss between developed and less-developed countries.

Eklund and Burt reported that regardless of the overall decline in edentulism, the less-educated and poor of all ages continued to be much more likely to become edentulous. The study showed the relationship between edentulism and socioeconomic factors; they stated that socioeconomic variables are a significant predictor of edentulism when the number of remaining teeth.

Some studies stated the incidence of edentulism associated with education and income status with those in the lower levels showing higher risks of becoming edentulous. Individuals within a given society who have full access to dental care clinics have a lesser rate of edentulism, on the contrary, a society who have no access to dental care exhibit a higher rate of edentulism.

While Al Hamdan and Fahmy surveyed the correlation between Socioeconomic factors and complete edentulism for female patients in Saudi Arabia and concluded that age, educational level, and socioeconomic status play a vital role in edentulism and denture demand. Makhviladze in Georgia studied the relationship of education level, family financial status, and edentulism. He found that money shortage and low medical education background can remarkably influence teeth loss.

Pengpid and Peltzer, who found the overall prevalence to be 7.2% in Indonesia, concluded that the prevalence is well linked to education as they found that the prevalence to be 11.8% among those with no formal education.

Treatment of Partial Edentulism.

Partial edentulism, the condition characterized by the absence of some teeth within the dental arch, poses significant challenges to oral health and overall well-being. Fortunately, advancements in dental science and technology have provided a range of effective treatment options to restore function, aesthetics, and confidence for individuals affected by partial tooth loss. This essay provides a comprehensive overview of the treatment modalities available for partial edentulism, addressing the diverse needs and preferences of patients.

1. Removable Partial Dentures (RPDs):

Removable partial dentures are one of the most traditional and widely used treatment options for partial edentulism. These prosthetic devices consist of artificial teeth set in a gum-

colored acrylic base, which is supported by clasps or attachments that anchor onto the remaining natural teeth. RPDs offer several advantages, including affordability, ease of fabrication, and adjustability. They can effectively restore aesthetics and chewing function, providing a functional solution for patients with limited budgets or extensive tooth loss.

2. Fixed Partial Dentures (Bridges):

Fixed partial dentures, commonly known as bridges, are another popular treatment modality for partial edentulism. Unlike removable dentures, bridges are permanently cemented onto the natural teeth adjacent to the edentulous space. They consist of artificial teeth (pontics) attached to crowns, which are fitted over the prepared abutment teeth. Bridges offer superior stability and aesthetics compared to removable dentures, making them an ideal choice for patients seeking a more permanent solution for tooth replacement. Additionally, bridges help prevent the shifting of adjacent teeth and preserve the integrity of the dental arch.

3. Dental Implants:

Dental implants represent a revolutionary advancement in the field of restorative dentistry, offering a long-term solution for partial edentulism that closely mimics the natural dentition. Implants are titanium posts surgically placed into the jawbone to serve as artificial tooth roots. Once integrated with the surrounding bone through a process called osseointegration, implants can support various prosthetic restorations, including single crowns, bridges, or implant-supported dentures. Dental implants provide unparalleled stability, functionality, and aesthetics, allowing patients to enjoy a natural-looking smile and restored chewing ability. While implants require a more invasive surgical procedure and longer treatment timeline compared to other options, they offer superior longevity and oral health benefits, making them a preferred choice for many patients.



4. Combination Therapy:

In some cases of partial edentulism, a combination of treatment modalities may be recommended to achieve optimal outcomes. For instance, patients with multiple missing teeth and compromised remaining dentition may benefit from a combination of dental implants and fixed or removable prostheses. This approach allows for the customization of treatment to address the unique needs and anatomical considerations of each patient, maximizing functional and aesthetic outcomes.

The treatment of partial edentulism has evolved significantly in recent years, offering a range of effective options to restore oral health and quality of life for affected individuals. From



traditional removable dentures to state-of-the-art dental implants, patients now have access to a diverse array of treatment modalities tailored to their specific needs and preferences. By working closely with their dental care providers to explore the available options and develop personalized treatment plans, individuals with partial edentulism can regain confidence in their smiles and enjoy improved oral function for years to come.

In conclusion, partial edentulism encompasses a range of conditions characterized by the absence of some teeth within the dental arch. The Kennedy Classification system offers a standardized approach to categorize partial edentulism based on the location and extent of tooth loss, facilitating effective treatment planning and restoration of oral function and aesthetics. By understanding the types of partial edentulism and their implications, dental professionals can deliver personalized care tailored to each patient's needs, ultimately improving their oral health and quality of life. Despite the development of curative and preventive dental care in the last decades, edentulism continues to be a challenging problem to healthcare provider.

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