PARTIAL EDENTULISM IN DENTAL ARCHES BY PATIENTS WITH PERMANENT DENTITION

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ABSTRACT

Aim: The purpose of this study is to establish a relationship between the prevalence and types of tooth loss in different age groups of both genders and jaws and different jaw regions.

Material and methods: For this goal during the period 2015-2018, 1785 patients were examined who came to our clinic expressing their complaints regarding the stomatognatic system. The age of the examinees was 13 to 82, with an average age of 48.2 years. The obtained data are entered into patient records using the modified form of oral health assessment according to WHO. All of the selected data was analyzed by descriptive statistics and Chi square test.

Results: Partial edentulous is dominant by females with 55% versus males with 45%, mandible dominates with 62% versus maxilla with 38%, in both jaws trans-canine region dominate with 71%, followed by inter-canine region with 22% and inter and trans-canine region with 7%, meanwhile the highest percentage of partial edentulous in the dental arches is in the age group 50-59 years with 30.58%.

Conclusion: The high percentage of patients with partial tooth loss is due to inadequate oral health care. The condition of partial tooth loss was common among females than males. Maxillary partial tooth loss was low among the participants as compared to the mandible loss. The prevalence of partial edentulous by both jaws is more common in trans-canine region. The prevalence of partial tooth loss is predominant among participants of 50-59 years.

INTRODUCTION

Tooth loss is a terminal event in the life of a tooth and is a frequent episode in individuals with uncared and neglected oral cavity (Roessler DM 2003). It diminishes the quality of life, often substantially, and tooth loss is also related to poor general health (Omar R 2003). Tooth loss is also an important measure for assessing the standard, availability and utilization of both curative and preventive dental care in a given population (Tashkandi E 2003). The impacts of tooth loss include decreased functions of speech and mastication especially in the elderly (Al Quran F 2001; McGrath C 2003). It may affect their nutritional choices, their oral and ultimately systemic health and thereby diminish the quality of life (Pino A 2003). It also decreases self-esteem and psychological status of individuals (Shah N 2004; Shillinburg T, H 1997; Suvin M 1987).

Partial edentulous is a dental arch in which one or more but not all natural teeth are missing. Generally, it occurs by caries, periodontal problems, traumatic injuries, impactions, supernumerary teeth, neoplastic and cystic lesions (Mathur MN 1968; Burt BA 2005; Oremosu OA 2014; Mishellany-Dutour A 2008). Some studies have reported caries as the main causative agent for tooth loss (Musacchio E 2007; Akpata E 2011; Slade GD 2005). According to Zaigham et al.(2010), and Abdel Rahman et al.(2013), dental caries and periodontal disease were the major causes of tooth loss in early childhood and adolescence. Also, studies have documented that age correlates positively with partial edentulism (Mathur MN 1968; Oremosu OA 2014; Mishellany-Dutour A 2008).

Partial edentulous leads to several drawbacks to the subjects including clinical challenges and lifestyle compromises. Clinically, partial edentulous results in drifting and tilting of adjacent teeth, supra eruption of opposing teeth, altered speech, changes in facial appearance and temporomandibular disorders (Mathur MN 1968; Burt BA 2005; Omar R 2003; Muneeb A 2013). Also, the loss and continuing degradation of the alveolar bone, the adjacent teeth and also the supporting structures will...
influence the difficulty to achieve an adequate restoration in a partially edentulous patient (Zaigham AM 2010; Ehikhamenor EE 2019; Abdel-Rahman HK 2013). On the lifestyle compromises, partial edentulism restricts dietary options, which leads to weight loss. Further, it leads to lack of confidence and confined social activities, which may adversely affect the quality of life and lead to psychological dissatisfaction (Prabhu N 2009; Akinboboye B 2014; Abdurahiman VT 2013).

Tooth loss is identified by an edentulous space, which is a gap in the dental arch normally occupied by one tooth or more. It could be partial or complete. A person may lack a few teeth (partially edentulous) or all the teeth in one or both upper and lower jaws (completely edentulous) for various reasons. McGarry TJ (2002) and Bruce (2001) observed that the major reason for tooth loss across all the ages were due to dental caries (83%) followed by periodontal disease (17%). A simple estimate of the percentage of partially edentulous persons is a rough indication of the frequency of dental diseases and the success or failure of dental care. Observance of a pattern of tooth loss determines the treatment requirement among the population. The design of the prosthesis depends on the type of saddle area. A classification of partially edentulous arches helps to identify the relation of remaining teeth to edentulous ridges and facilitates communication, discussion, and comprehension of the suggested prosthetic treatment among dentists, students, and technicians.

Teeth as part of the masticatory system play an important role in the positive self-image conservation of each individual, while their loss results in significant disabilities which may hinder and have a profound negative impact on social activities. The loss of one or more teeth is quite traumatic and shocking and is considered a serious life event that requires significant social and psychological correction (Quran F 2001; Omar R 2003; Tashkandi E 2003; Roessler DM 2003).

Tooth loss is classified as physical impairment and disability, and is ranked as the second most common cause of disability in the elderly. Poor oral health and tooth loss negatively affect the diet and nutrition regime, compromising overall health (McGrath C 2003; Pino A 2003; Shah N 2004). Lack of one or more teeth causes mastication difficulties, but over time, we also have tooth decay, their inclination, prolongation of antagonists, and a number of long-term consequences such as temporomandibular articulation (ATM) disorder, known as the phenomenon of Godon (Shillinburg T, H 1997; Suvin M 1987). Having into consideration all abovementioned facts we aimed in this study to evaluate the causes and extent of partially dentate arches and to establish a relationship between the prevalence and types of tooth loss in different age groups of both genders and jaws, and different jaw regions.

MATERIAL AND METHODS

For this study, the data obtained from the patients of the city of Tetova and its surroundings were examined continuously in the dental clinic “Protetika Ag” in Tetova.

For this goal during the period 2015-2018, 1785 patients were examined who came to our clinic expressing their complaints regarding the stomatognatic system.

The age of the examinees was 13 to 82, with an average age of 48.2 years.

The obtained data are entered into patient records using the modified form of oral health assessment according to WHO (1997), adapted and modified to the nature of our research. All of the selected data was analyzed by descriptive statistics and Chi square test.

RESULTS

After compiling, analyzing and elaborating data from patient records, as well as after statistical processing, the presentation of the results obtained we accessed the following:

Out of the total number of 1212 patients with partial edentulous, the results of graph 1 speak for a dominance of this pathology by females with 55% (615) cases versus males with 45% (510) cases.

![Figure 1](image1.png)

**Figure 1** Patients with partial lack of teeth in dental arches according gender

Likewise, out of the total number of 1815 partial toothless jaws, according to the results of graph 2, the mandible dominates with 62% (1125), versus maxilla with 38% (690) of cases.

![Figure 2](image2.png)

**Figure 2** Dental arches with partial lack of teeth according jaws

The results of graph 3 show that the localization of partial toothless in both jaws, in absolute percentage 71% (1288) is in the trans-canine region followed by the inter-canine region with 22% (391) and the inter-trans canine region with 7% (136).
According to age groups, in the results of Table 1, we saw that the largest and the highest percentage of partial edentulous in the dental arches was found in the age group 50-59 with 30.58%, followed by the age group 60-69 with 28.93%, age group 30-39 with 10.74%, age group 40-49, age group 70 and older, age group 20-29 and age group up to 19 years.

By males majority of partial edentulous we found age group 60-69 in 30.58%, followed by age group 50-59, age group 70 and older, age group 30-39, age group 20-29 years and age group up to 19 years old, while by females partially edentulous in high percentage was found by age group 50-59 years old, followed by age group 60-69, age group 30-39, age group 40-49 with 9.92%, age group 20-29 with 6.61%, age group 70 and over with 9.09%, and age group up to 19 years with 4.13%.

In a large Japanese study, Ide et al. (2006) found a strong correlation between the number of missing teeth and higher oral health impact profile scores suggesting impairment. Edentulous falls into a special category among the various disease of dental origin. Tooth loss is the dental equivalent to mortality. A simple estimation of the proportion of the partial edentulous case is a rough indication of the prevalence of dental diseases and the success or failure of dental care (Prabhu N 2009).

Out of the total number of 1125 patients with partial toothless, the results of graph 1 speak of a dominance of this pathology females, where we see that this gender suffers more from partial toothless than males. The results are close to the results of different authors. Thus Petritidis et al. (2010), in their research examining 488 patients found 123 (25.21%) patients with partial toothless, of whom 43.09% were males and 56.91% females. In their study of the consequences of partial edentulous of natural teeth, the author Lula et al.(1989), also examined 5299 patients, of whom 40.3% were male and 59.7% females. Chrysanthopoulos(2011), in his study on the causes of dental extraction in the adult Greek population has found results that the highest proportion of dental extracted teeth has been found in male by 58.35% versus females by 41.65%.

Madhankumar S. et al.(2015), In their study showed that more number of missing teeth was seen in the female population. In contrary to the above statement, the prevalence of the partial edentulous adults in Iasi (Murariu A 2010) was 66.5% and was estimated that the rate of tooth loss was higher in the rural area, and more number of missing teeth were found in the male population.

Out of a total of 1815 jaws with partial toothless, the results of graph 2 showed convincingly the dominance of the mandible versus the maxilla with 38% (690) of the cases. Various authors have also been involved with this issue. Of the 299 free-field analyzes, author Petridis et al (2010), found that 45.85% of them are at maxilla, while 54.15% are in mandible. The results of author Lula et al (1989), about partial toothless according jaws indicate that in the upper jaw these defects are present in 33.1% of cases, and in the lower jaw at 33.3% of cases. From his study Stubbs et al. (2002), point out that patients with non-remedial partial edentulous in the mandible participated with 80% of cases, while in maxilla at least partial remission was 49%.

The results of graph 3 showed that the localization of partial edentulous in both jaws, in absolute percentage, is in the trans-canine region followed by the inter-canine region and the inter-trans canine region. Author Shaqiri et al. (2003), in their study noted that partial edentulous of both jaws had reached 15.39% in the inter-canine region, while trans-canine in 84.71% of cases. For the localization of partial edentulous by dental regions, Lula et al (1989) in, their study reveals the following results: In the inter-canine region with partial edentulous, there are 11.4% of cases, in the trans-canine region to 54% cases and in the inter-trans canine region in 34.6% of cases. Even Shigli et al(2009), from their study found that partial edentulous in the anterior frontal region was in 8% of cases, in the posterior to 14.5% of cases and in the anterior and posterior in 77.5% of the cases.

The distribution of partial edentulous of the dental systems by age group (in our results showed in Table 1), presents a comprehensive and worrying problematic and has therefore attracted the attention of many researchers who have provided a wide range of outcomes. Thus Roessler (2003), finds that the possibility of loss of teeth increases with age as a result of the

![Figure 3 The lack of teeth according dental regions by both jaws](image-url)
cumulative effects of caries, periodontal diseases and traumas. Koçi N(1999), in his study regarding partial edentulous of patients by both genders, has reached results from 58.6%, and according to the age group, the highest percentage indicates age group over 60 years old with 75.4% of cases, while the smallest percentage is in the age group 15-19 with 39.9% of cases.

Nadgere et al (2010), from the examination of 678 patients aged 13 and older found that 44.5% of the examinees were partially edentulous. Shigli et al (2009), from their study in patients aged 16 years and older, results in partial edentulous to 41.09% of cases. Even Qafnolla et al (2000), during the examination of 1462 patients in their study, for prosthetic treatment have selected 95 patients. Of these, 88.42% of the cases were with partial edentulous, 45.24% males and 54.76% females, dominated by partial edentulous of the 41-50 age group with 34.75% and age group 51-60 years with 29.47%.

Shaqiri (2005) in his study during the examination of 721 patients found partial edentulous in maxilla in 75.45% of cases and in mandible in 87.66% of cases. Also, author Abud et al (2011), in their study conducted in 400 patients aged 60 and older, achieved results about partial edentulous in 9.3% of cases. Lula et al (1989), partial edentulous in highest percentage (33%), in their examined patients found in the age group 21-30 years old, while the lowest percentage (12.1%) in the age group 50 and older.

Toti et al(1980), in their examined material, partial edentulous found in 64.7% of the cases, while Petridis et al(2010), in their study, achieved results for a higher percentage of partial edentulous in the age group 26-45 to 46.7%, while the smallest percentage found in the age group 10-18 years old only 9.2%.

CONCLUSION

Based on the pre-clinical and clinical data obtained from our study on prosthetic problems in patients with permanent dentition in the Tetova population and its surroundings, as well as on the basis of their analysis, processing and presentation we have come to the following conclusions:

The high percentage of patients with partial toothless is due to inadequate oral health care The conditions of partial toothless were common among females than males Maxillary partial toothless was low among the participants as compared to the mandible partial toothless The prevalence of partial edentulous by both jaws is more common in trans-canine region The prevalence of partial toothless is predominant among participants of age group 50-59 years old According to the value of the Chi square test ($X^2 = 32.9$, for the number of degrees of freedom $n = 6$ and for the value of the probability coefficient $p <0.001$, there is a high and significant statistical significance of the results between males and females concerning the partial toothless in dental arches by examined patients according age group

Recommendations

The fact that 4.13% of examined patients in the age group up to 19 years old including the pupils, as well as the fact that 6.61% of examined patients of the age group 20-29 years old including students have partial edentulous of their own dental systems and as a consequence needs prosthetic appliances, requires the assessment of the necessary interventions within their oral status and raising awareness on this issue. With this in the future, pressure on prosthetic rehabilitation and health care institutions may be reduced, as problems with occlusions and abnormalities of ATM will be prevented.

With preventive measures, the participation of dentist assistants in the education on the regular and correct oral hygiene of the patients, as well as the participation of the dentist in the continuing education, would enable the quality of dental health-care of the patients, as well as mitigate the consequences with the mouth cavity.

In order to preserve oral health and improve the quality of life, the patients should be better educated about the importance of the teeth in the stomatognatic system, the application of adequate oral hygiene and the regular controle by dentist.

It is more than necessary that prior to any prosthetic treatment be provided interdisciplinary doctrinal approaches.

Protesation of toothless jaws, whether partial or full should be done correctly and timely, always taking into account that the modification and regeneration of hard and soft tissues has been completed in order to prevent the possible negative consequences.

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