

## Treated partial edentulous in patients with permanent dentition and frequency of partial mobile dentures

Authors:

SHERIF SHAQIRI<sup>1,2\*</sup>, KALTRINA BEQIRI<sup>1</sup>

<sup>1</sup>CLINIC FOR PROSTHODONTICS "PROTETIKA AG"- TETOVA

<sup>2</sup>STUDY PROGRAM FOR DENTISTRY, FACULTY OF MEDICAL SCIENCES, UNIVERSITY OF TETOVA

Corresponding Author:

Dr. Sherif I. SHAQIRI

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### ABSTRACT:

**Aim:** The purpose of our study was to determine the presence of mobile partial dentures by estimating their frequency: by gender, jaws, teeth regions and longevity. **Material and Methods:** The study material consists of 1785 patients who came to our clinic in the period 2015-2019 expressing their complaints regarding the stomatognathic system. The obtained data were entered into patient charts using the modified oral health assessment form according WHO, adapted and modified to the nature of our research. After elaboration and completion, the results obtained in our paper are presented with graphs and tables, and the comparison was made using Student's t-test and probability coefficient (p). **Results:** As for mobile partial dentures, the males participate with 60%, while the females with 40%. According to the jaws the maxilla participates with 60%, and the mandible with 40%. According to the tooth regions, 50% of them are located in the trans-canine region, 25% in the inter-canine region and 25% in the inter-trans canine region. The time period of 6-10 years has the highest percentage of prosthetic appliances (39.71%), while the lowest percentage of prosthetic appliances present is in the time period of 31 and more years (1.15%). **Conclusion:** 1. The high frequency of removable partial dentures and the misunderstandings regarding their provision impose improved oral health education. 2. Complications and failures can occur during treatment with removable partial dentures, so rigorous research is needed to examine the strengths and weaknesses of different models of removable partial dentures, as well as techniques and materials. 3. Proper dental condition evaluation, teeth positioning, preparation of retention teeth, adaptive structures within the removable partial denture, patient education, timely checks and maintenance are just some of the steps required for success. 4. Treatment with removable partial dentures should ideally result in improved overall oral health, patient satisfaction, and compliance.

**Keywords:** *Partial dentures, frequency, permanent dentition, patients*

### INTRODUCTION:

Teeth as part of the masticatory system play an important role in maintaining the positive self-image of any individual, while the loss of one or more teeth is quite traumatic and shocking and is considered a serious life event that requires a significant social and psychological correction.<sup>1,2,3,4</sup> Tooth loss is also classified as physical injury 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 application of diet and nutrition regime, compromising overall health.<sup>5,6,7</sup>

Tooth loss represents the onset of significant changes in the orofacial system and is manifested by a lack of basic supporting tissue in the upper and lower jaw. This tooth loss without a doubt leads to atrophy of the residual

ridge process which is irreversible, chronic and progressive.<sup>8</sup> The extent of atrophy varies greatly between different individuals<sup>9</sup> and even within the same person at different times, or in different regions within the jaw.<sup>8,10</sup>

Shaqiri et al., in their study concerning the Partial Edentulism in Dental Arches By Patients with Permanent Dentition notes that the female sex, mandible, and trans-canine dental region dominate with partial edentulism versus the male, maxilla, inter-canine and inter-trans canine region.<sup>11</sup>

According to the Centers for Disease Control and Prevention in the United States, adults over the age of 20 have an average of 24.9 remaining teeth, and 43.7% of all adults in the United States have had at least one tooth removed. Individuals over the age of 65 have an average of 18.9 remaining teeth, while 43.1% of them have 6 or

more teeth removed.<sup>12,13</sup> The causes of absence of permanent natural tooth are different: congenital that occupies about 2% and acquired that are present with about 90% of them, here not to mention the percentage of tooth loss that occurs as a result of various actions.<sup>14,15,16,17</sup> Direct causes are oral diseases, primarily caries and periodontitis, which are present and accompany man today.<sup>17,18</sup> Lack of one or more teeth causes difficulties in mastication, but over time we also have tooth displacement, inclination, elongation of antagonists and a number of long-term consequences such as temporo mandibular joint (ATM) disorder, known as Godon phenomenon.<sup>19,20</sup> Lack of certain teeth, a group of teeth or a complete dental system, in one or both jaws, brings complex disorders such as: aesthetic, phonetic, functional and topographic that are jointly reflected in the digestive system and human psyche, and force the patient seeks the help of the dentist for dental checkups. In this case, the prosthetic dentist is the one who through oral rehabilitation should do the treatment of the disordered stomatognathic system in these patients.<sup>17,18</sup> Rehabilitation in the broadest sense of the word encompasses in its entirety any kind of therapeutic activity, the purpose of which is to restore the disordered or lost function of particular organs, or of the organism in general. Oral rehabilitation means any type of dental intervention that is undertaken and which aims to restore the normal functioning of the stomatognathic system. In the narrow prosthetic aspect, oral rehabilitation represents the correction of simple or complicated anomalies of the stomatognathic system as the need for prosthetic restorations of damaged or missing masticatory units in patients with permanent dentition.<sup>20,21</sup> Prosthetic disciplines with their construction and reconstruction abilities not infrequently fully meet the treatment of oral rehabilitation, or in the therapy process itself act independently. A type of prosthetic compensation is also partial dentures which are also the subject of our study. Taking into account the above-mentioned facts, the purpose of our study is to, through the data obtained from clinical examinations, determine the presence of partial mobile prostheses in

patients with permanent dentition, assessing their frequency:

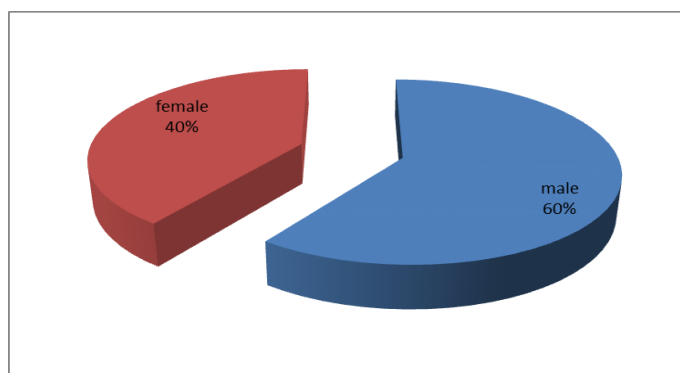
- By gender,
- According to the jaw
- By dental regions and
- according to the longevity

### **MATERIALS AND METHODS:**

For this study were continuously followed the data obtained from 1785 patients of the city of Tetova and its surroundings examined at the specialized dental clinic "Protetika AG" in Tetova, who in the period 2015-2019 have come to our clinic expressing their complaints concerning the stomatognathic system. Of this group, 943 (52.83%) were male and 842 (47.17%) were female. The age of the examinees was 13 to 82 years old, with an average age of 48.2 years. The working methodology was realized through the basic follow-up protocol that was applied in our study and which includes the anamnesis and intraoral clinical examination. Through the anamnesis were obtained the data on the patient's generalities and the duration of the present partial mobile device, while through the intra-oral clinical examination which was performed by the dental mirror and the probe in optimal conditions of natural light, the type of existing mobile partial dentures as well as their localization by gender, jaws and dental regions. The obtained data were entered into the patient's cards using the modified form of oral health assessment according to the WHO, adapted and modified to the nature of our research. After elaboration and completion, we presented the results obtained in our paper by means of graphs and tables through descriptive statistical method, while the comparison was done by Student Fisher Test (T-test) and coefficient of probability (p)

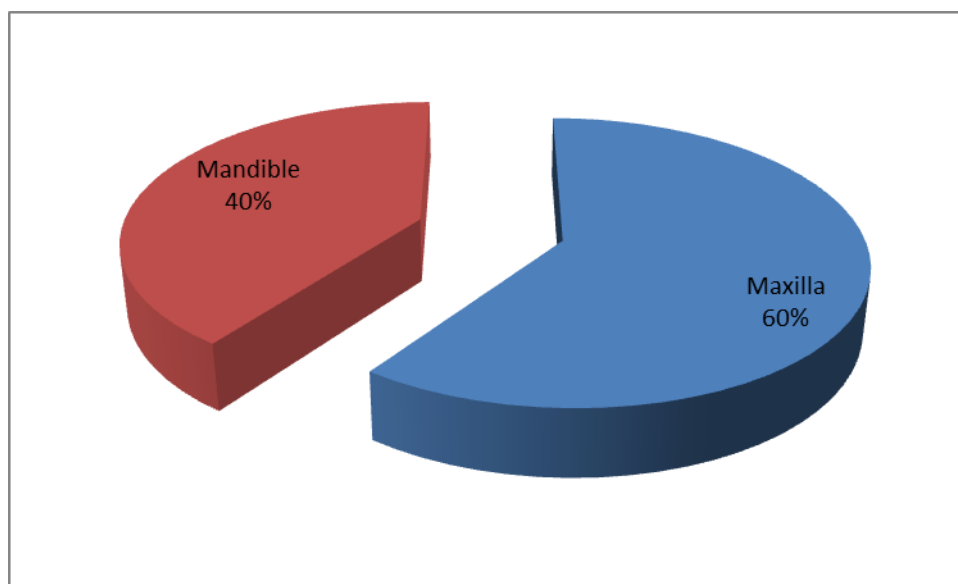
### **RESULTS:**

Of the total number of patients (915) with partial prosthetic appliances present, the results of figure 1 show that the males participates with 60%, while the females with 40%.



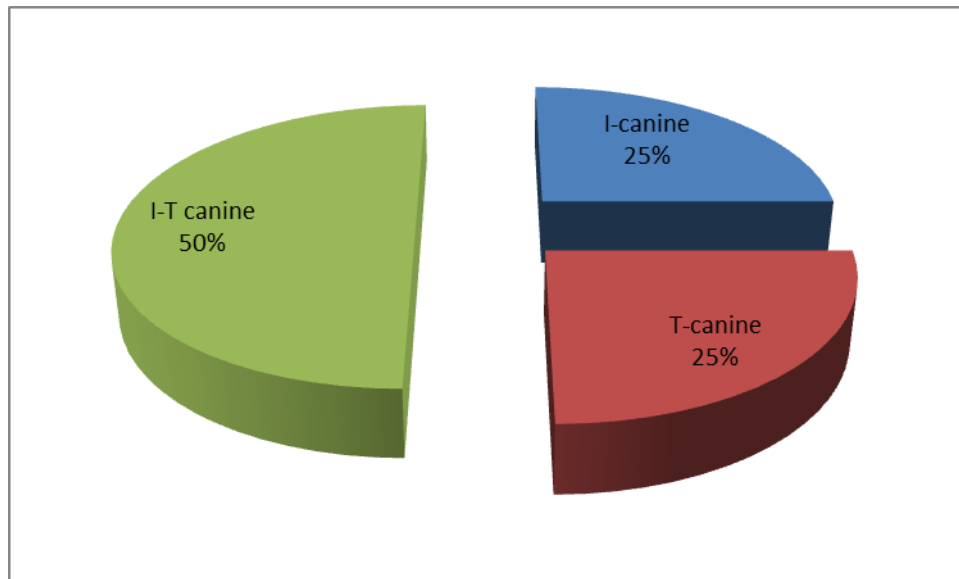
**Figure 1. Number of patients with partial prosthetic appliances by gender**

Figure 2 shows that from the total number of jaws (1440) with partial prosthetic appliances, the maxilla participates with 60%, while the mandible with 40%.



**Figure 2. Number of patients with partial prosthetic appliances by jaw**

In figure 3 are presented the results for the localization of partial prosthetic appliances according to the dental regions, where it is clear that from the total number (1200) of the partial prosthetic appliances present, 50% of them are localized in the trans-canine region, while in the inter-canine region, and in the inter-trans canine region we have equal percentage 25% versus 25%.



**Figure 3. Localization of partial prosthetic appliances according to dental regions**

The results of table 1 speak to the number and percentage of prosthetic appliances present according time period. From this it is clear that the time period 6-10 years has a higher percentage of prosthetic appliances 39.71% of cases, followed by time period 11-15 years with 20.36% of cases, time period 1-5 years with 18.21% of cases, and time period 16-20 years with 10.68% of cases. Whereas the lowest percentage of prosthetic appliances present according longevity we have by time period 31 years and more with 1.15% of cases, followed by the time period 26-30 years with 2.22% of cases, up to 1 year with 3.30 % of cases, and the time period 20-25 years with 4.37% of cases.

Time period	Numberri	Percentage
Up to 1 year	46	3.30%
1-5 years	254	18.21%
6-10 years	554	39.71%
11-15 years	284	20.36%
16-20 years	149	10.68%
21-25 years	61	4.37%
26-30 years	31	2.22%
31 year and over	16	1.15%
Total	1395	100%
T= 8.36		p<0.01

**Table 1. Prosthetic appliances present according time period**

**DISCUSSION:**

The percentage of adults with partial edentulous is increasing, in part as a result of increased life expectancy, increasing the number of older individuals within the population and a shift from total tooth loss to partial edentulous.<sup>22,23,24</sup> According to Cooper, in some regions of the United States the prevalence of partial edentulous is estimated at more than 20%<sup>25</sup>, while according to the American College of Prosthetics in the United States alone the number of individuals with partial edentulous can increase to more than 200 million only in the next 15 years.<sup>26</sup>

As we saw from the results of our study of the total number of patients (915) with partial prosthetic appliances present, the results of figure 1 show that the male gender participates with 553 (60%) cases versus female gender with 362 (40%) cases. The results of different authors are diverse. Thus, Koçi B. et al.,<sup>31</sup> out of 244 examined patients found partial prosthetic appliance in males in 87.29% and in females in 68.85% of cases. Also, the author Shaqiri<sup>21</sup> during the examination of 151 patients with partial prosthetic appliances, in his study has reached the result that 61.48% of the examined belonged to the male gender, while 38.52% of the examined belonged to the female gender. Even Akar et al.,<sup>32</sup> in their study on the clinical evaluation of prosthetic appliances, in the contingent of examined patients have found partial prosthetic appliances in 87.3% of cases.

Abud et al.,<sup>30</sup> in their study on the correlation between prosthetic status and Gohai and Tmd indices, in 23669 patients examined aged 60 years and over found that 1.8% of the examinees had partially fixed prosthetic appliances, while 3.5 % of them had partially removable prosthetic appliances. According to authors Steele J and O'Sullivan I.<sup>29</sup> In the UK, the 2009 Dental Health Survey found that almost one in five adults wore removable dentures, whether partial or complete.<sup>8</sup> This includes 13 % of people who use partial dentures

The results of figure 2 show that from the total number of jaws (1440), with partial prosthetic appliances, the maxilla participates with 869 (60%) cases versus

mandible with 571 (40%) cases. Koçi B. et al.,<sup>31</sup> giving results for 260 upper jaws and 121 lower jaws. While according to the author Akar et al.,<sup>32</sup> in the maxilla were found 67% of partial prosthetic appliances and in the mandible 48% of them.

The results for the localization of partial prosthetic appliances according to the dental regions presented in figure 3, clearly showed that out of the total (1200) number of partial prosthetic appliances present, in 597 (50%) cases are located in the trans-canine region, while in the inter-canine region, and in the inter-trans canine region the percentage of partial prosthetic appliances is equal 25% versus 25%. Author Shaqiri et al.,<sup>17</sup> in the study of the contingent of 128 patients with partial prosthetic appliances, have come to the results for the existence of prosthetic appliances in the inter-canine dental region in 45.51% of cases and the trans-canine dental region in 55.39 % of cases. Even Akar et al.,<sup>32</sup> from their research giving the following results: in 11.3% of cases partial prosthetic appliances are located in the anterior region, in 72.2% of cases partial prosthetic appliances located in the posterior region, and in 16.5% of cases the partial prosthetic appliances are located in the anterior-posterior region.

The results of table 1 speak to the number and percentage of prosthetic appliances present according time period. From this it is clear that the time period of 6-10 years has a higher number and higher percentage of prosthetic appliances, even 554 (39.71%) cases, while the lowest number and percentage of prosthetic appliances present is in the age group 30 years old et over, 16 (1.15%). According to the author Milward et al.,<sup>28</sup> in terms of the longevity of partial prosthesis use by patients, 35.7% of prostheses were used between one and four years; 12.2% have been used for ten years, and 0.2% have been used for at least 20 years. Navalainen<sup>33</sup> speaks of 8% of full prostheses older than 50 years, while most prostheses 75%, were less than 20 years old. Author Keraj et al.,<sup>34</sup> from their study report that in 57.5% of the examined cases they encountered prosthetic appliances lasting up to one year, while in 42.5% of cases with prosthetic works lasting more than one year.

## **CONCLUSION:**

1. High frequency of prostheses and misunderstandings about their supply call for improvement in oral health education.
2. Complications and failures can occur during treatment with partial removable dentures, so rigorous research is more than necessary to examine the strengths and weaknesses of different models of partial removable dentures as well as techniques, and new materials.
3. Proper assessment of dental condition, tooth position, preparation of retention teeth, adaptive structures within the partial removable denture, patient education, timely check-ups and maintenance are just some of the steps required for success.
4. Treatment with partial removable dentures should ideally result in improved overall oral health, patient satisfaction, and compliance.
5. Based on the test value-  $T = 8.36$  and the probability coefficient value  $p < 0.01$ , the statistical significance of the results related to the percentage of prosthetic appliances present according to time period is important and not random.

## **Recomandation:**

Prothesation of toothless jaws whether partial or complete dentures should be done regularly and on time, always keeping in mind that the alteration and regeneration of hard and soft tissue has been completed, in order to prevent possible negative consequences. Patients with removable dentures (*partial or complete*), due to problems and injuries that may occur as a result of gingival and dental follow-up of chewing forces, should undergo a check-up by a dentist at least twice a year. Removable prosthetic appliances (*partial and complete*) although of high quality, due to the action of biological and mechanical forces as a result of damage to the prosthetic appliances, the negative action of the prosthetic appliances on the teeth and the supporting apparatus, as well as the surrounding soft tissues and the cervical ridges, should be repeated every 5 years.

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