

COMPLETE TOOTHLESS AND ITS TREATMENT WITH PROSTHETIC APPLIANCES

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Abstract

The purpose of our study is to evaluate the complete edentulism and its prosthetically treatment according to gender, jaws, age group and material and type of prosthetic appliance. For this study, in period 2019-2022, in the specialized dental clinic "Protetika Ag" in Tetova were examined 1785 patients, 943 males and 842 females, aged from 13 to 82 years, with an average age of 48.2 years. The obtained data were entered into patient charts using the modified form of oral health assessment according to WHO, adapted and modified to the nature of our study. The distribution of data from the statistical processing is shown by means of percentages, while the comparison was made by means of the X²-test and the coefficient of probability (p). In complete prosthetically treated edentulism, the male gender dominates with 74% and the maxilla with 67%. The age group 50-59 years has a higher percentage of prosthetically treated complete edentulism (40%), while a higher percentage is occupied by complete removable acrylic dentures(28.07%). With advancing age, the demands for complete removable prostheses increase. Dental treatment should have an important place during the general and comprehensive rehabilitation of patients with complete edentulism. Therapy with complete dentures restores and maintains normal ratios in the stomatognathic system, which will enable comfortable and qualitative chewing, which is a condition for better nutrition.

Introduction

Loss of teeth in general, or loss of all teeth, known as complete edentulous, is the final stage of chronic oral diseases, including caries and periodontal disease¹, which impairs the quality of life and affects the way patients behave in society, disposition and understanding of care.^{2,3,4,5}

This pathology is classified as physical damage and disability, and is ranked as the second most frequent cause of disability in the elderly,^{6,7,8} while it represents the beginning of important changes in the orofacial system and is manifested by the lack of basic supports tissues in the upper and lower jaw.

With changes in the structure of the residual tissues of the orofacial system, the reduction of their biological values, the disorder of the normal proportions of the jaws, the disorder of the development of the basic functions of the orofacial system, the reduction of the vertical dimension of the face, changes in the expression and appearance of the face, as well as cause muscle spasm.^{9,10}

Rehabilitation of the stomatognathic system by means of prostheses is one of the oldest, most common and cost-effective methods of treatment for people who lose teeth¹¹, while complete removable prostheses are the most common restorative treatment for edentulism.¹

Replacing missing teeth with properly and correctly made prosthetic appliances will improve the patient's condition and chewing ability,¹² as well as the return to normality of the temporomandibular joints and their neuromuscular components.

However, the wrong prosthetic treatment of this pathology enables the creation of disharmony and damage to the stomatognathic system.¹³ By means of prosthetic appliances as a therapeutic intervention for the rehabilitation of the masticatory organ, an attempt is made to imitate the anatomical and physiological situation as much as possible, which would simultaneously enable the solution of two essential problems:

the mechanical and the biological problem. Failure to meet the mechanical or biological requirements will result not only in the failure of the restoration itself, but also in the damage to the supporting tissues, while as a result the preventive property of the prosthetic appliance will be lost.^{14,15}

Aim

The purpose of our study is, through data obtained from clinical examinations in the population of Tetova and its surroundings, to evaluate the complete prosthetically treated edentulism according to: gender, according to jaws, according to age group and according to material and type of prosthetic appliance.

Material and methods

For this study, the data obtained from patients of the city of Tetovo and its surroundings, examined at the specialist dental clinic "Protetika Ag" in Tetova, where 1785 patients were examined in the period 2019-2022, of which 52.83 %, were males and 47.17% were females, with an average age of 48.2 years.

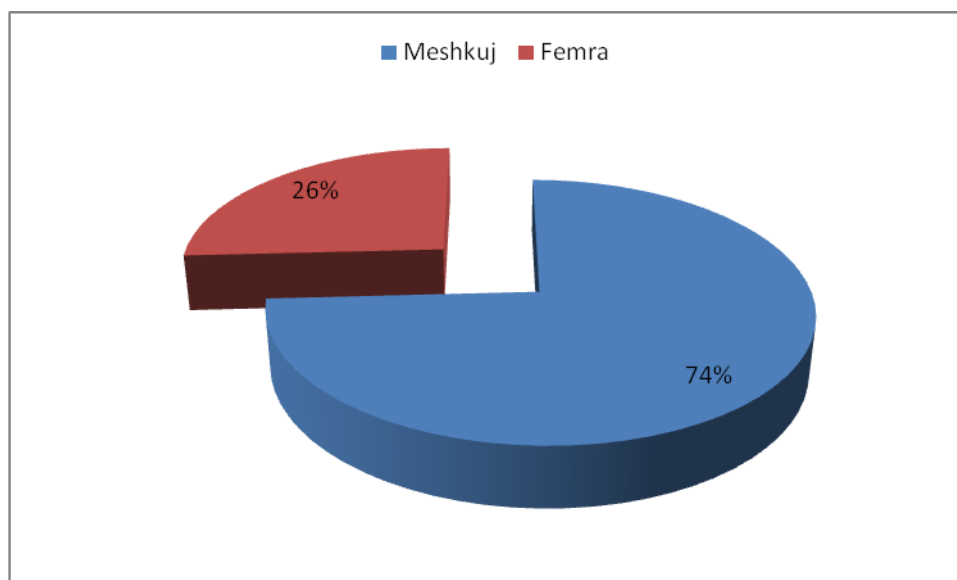
The methodology of the work was carried out through the basic protocol followed that was applied in our study and which, among others, included anamnesis and intra-oral clinical examination.

Through the anamnesis, among other things, the data on the gender and age of the patients were provided, while through the intra-oral clinical examination, which was performed by means of a dental mirror and a probe in optimal conditions of natural light, the type was determined and material of existing prosthetic appliances.

The obtained data were entered into patient records using the modified form of oral health assessment according to WHO,¹⁶ adapted and modified to the nature of our study. The description of the results obtained in percentage was carried out by means of descriptive statistics by means of graphs and tables, while the comparison of the data was shown by means of the X²-test and the coefficient of probability (p).

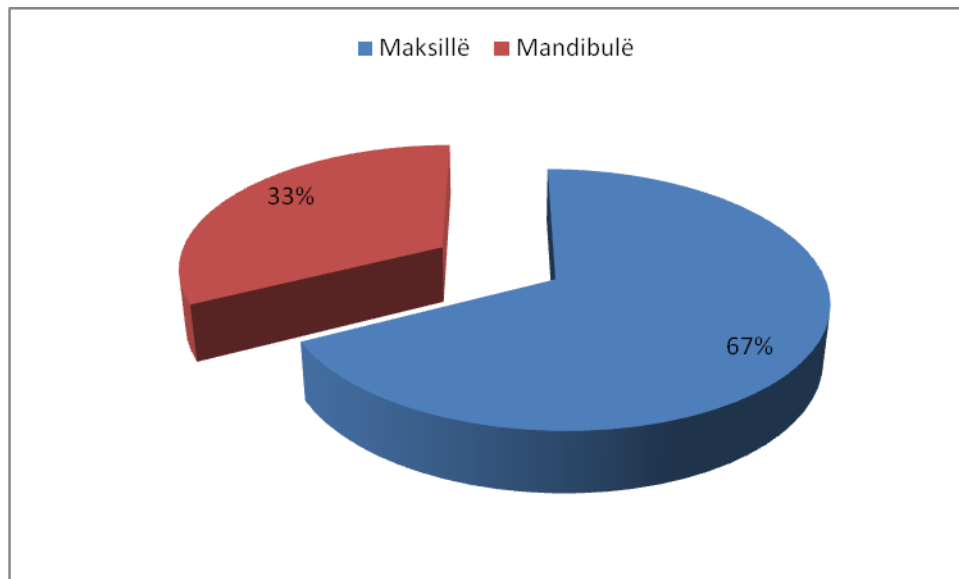
Results

In complete prosthetically treated edentulism, the results of graph 1 show that in the male sex, the correction reaches 74% (178), against the female sex with only 26% (62).



Graph 1. Complete edentulism prosthetically treated according gender

Concerning the prosthodontics treatment of complete edentulism, the results of graph 2 show that in the maxilla it reaches 67% (162), against the mandible with 33% (78).



Graph 2. Complete edentulism prosthetically treated according jaws

The results for prosthetically treatment of complete edentulism according to age group, gender and jaws are shown in Table 1.

These results show that the 50-59-year-old age group has a greater number and a higher percentage of prosthetically treated complete edentulism, with 150 (40%) cases; men 119 (79.33%) and women 31 (20.67%); maxilla 77 (51.33%) and mandible 73 (48.67%), followed by the age group 60-69 years old with 92 (24.53%) cases; men 59 (64.13%) and women 33 (35.87%); maxilla 47 (51.09%) and mandible 45 (48.91%); age group 70 and over 88 (23.47%); 60 men (68.18%) and 28 women (31.82%); maxilla 42 (47.73%) and mandible 46 (52.27%), while we have a smaller number and lower percentage of prosthetically treated complete edentulism in the 40-49-year-old age group, only 45 (12%) cases; men 28 (62.22%) and women 17 (37.78%); maxilla 31 (68.89%) and mandible 14 (31.11%). In the age group: up to 19 years old, 20-29 years old and 30-39 years old, it turns out that the number and percentage of complete prosthetically treated edentulism is 0 (0%).

For the test value $\chi^2 = 5.76$, with the number of the degree of freedom $n=6$ and for the value of the probability coefficient $p < 0.001$, in the results of table 1 that relate to complete prosthetically treated edentulism according to the age group, there is high difference of statistical significance between male and female gender in the examined patients.

Table 1. The number of jaws with complete edentulism prosthetically treated according age-groups, gender and jaws

Age-groups	No.	Percent	Male		Femsle		Macilla		Mandible	
			No.	%	No.	%	No.	%	No.	%
Up to 19year	0	0%	0	0	0	0	0	0	0	0
20-29 year	0	0%	0	0	0	0	0	0	0	0
30-39 year	0	0%	0	0	0	0	0	0	0	0
40-49 year	45	12%	28	62.22	17	37.78	31	68.89	14	31.11
50-59 year	150	40%	119	79.33	31	20.67	77	51.33	73	48.67
60-69 year	92	24.53%	59	64.13	33	35.87	47	51.09	45	48.91
70+ year	88	23.47%	60	68.18	28	31.82	42	47.73	46	52.27
Total	375	100%	266	70.93	109	29.07	197	52.53	178	47.47
			$\chi^2 = 5.76$				$p < 0.5$			

The results of our study on the material and type of prosthetic appliances present in the jaws of the examined patients are presented in table 2.

From the total of 1500 prosthetic appliances, the largest number and the highest percentage are complete removable prostheses made of acrylic 421 (28.07%), followed by fixed metal-composite bridges 269 (17.93%), fixed metal-ceramic bridges 256 (17.07%), removable partial acrylic prostheses 224 (14.93%) and fixed metal-ceramic crowns 135 (9%), while with a smaller number and a lower percentage are cast fixed crowns from gold 59 (3.93%), followed by fixed metal-composite resin crowns 61 (4.07%) and cast removable partial dentures 75 (5%).

Table 2. Present prosthetic appliance according material and type

Prosthodontic appliance	No.	Percent
Total acrylic mobile dentures	421	28.07%
Partial acrylic mobile dentures	224	14.93%
Partial cast mobile dentures	75	5%
Fied metal-ceramic crowns	135	9%
Metal-ceramic bridges	256	17.07%
Metal-composite fixed crowns	61	4.07%
Metal-composite dental bridges	269	17.93%
Fixed gold casting crowns	59	3.93%
Total	1500	100%

Discussion

Treatment with complete removable prostheses is still the first choice for replacing teeth in individuals with complete edentulism,^{17,18} where the results of graph 1 showed that in the male gender the healing reaches 74% (178), compared to the female gender with a percentage of sanitation only 26% (62).

As for the prosthetic treatment of complete toothless according to the jaws, the results of graph 2 showed that in the maxilla it reaches 67% (162), against the mandible with 33% (78).

Author Catović et al.,¹⁹ for complete prosthetically treated toothless according to gender, after the examination of 350 geriatric patients, they also give results for the male gender 8.28%, while for the female gender 18%. Stubbs et al.,²⁰ in their study emphasize that 94% of the examinees with complete edentulism in the upper jaw wear complete dentures, while 85% wear complete dentures in the mandible.

The results for prosthetically treated complete edentulism according to age group, gender and jaws presented in table 1, showed that the 50-59 age group has a greater number and a higher percentage of prosthetically treated complete edentulism, even that 150 (40%) cases; males 119 (79.33%) and females 31 (20.67%); maxilla 77 (51.33%) and mandible 73 (48.67%), while a smaller number and a lower percentage of prosthetically treated complete edentulous age group 40-49 years old with 45 (12%) cases; males 28 (62.22%) and females 17 (37.78%); maxilla 31 (68.89%) and mandible 14 (31.11%). In the age group: up to 19 years old, 20-29 years old and 30-39 years old, it results that the number and percentage of complete prosthetically treated toothless is 0(0%).

With advancing age, the demands for complete removable prostheses increase and the older age groups are positively more inclined to use complete removable prostheses than the younger age groups. Different authors in their studies about prosthetically treated complete edentulism give results of a wide and varied range. Thus, the results of the author Nevalainen,²¹ show that 94% of patients with complete edentulism were prosthetically treated. Angelillo et al.,²² during their studies found that 44.3% of patients with complete edentulism in both jaws were completely prosthetically treated. While Cardoso et al.,²³ in their study conducted on the elderly population of the city of Manaus encountered a high percentage of patients

(79.2%) with complete dentures in the maxilla and a low percentage of complete dentures in the mandible (37.1 %).

Koçi N.,²⁴ from the study of 1608 cases of both sexes, with complete dentures, the highest percentage shows for the age group over 60 years 28%, while the lowest percentage of prosthetics with complete dentures is found in the age group 15 - 19 years old in 3% of cases. The percentage of patients with complete prostheses in the age group of 60 and over, according to the study of the author Abud et al.,²⁵ reaches 47.5%. Toti et al.,²⁶ from their study give results for complete prosthetically treated toothless at the level of 14% of cases. Bukleta et al.,²⁷ in their study on the frequency of treatment with partial and full removable prostheses in primary health centers in three different regions of Kosova from 2002 to 2013, found full removable prostheses in 64,7% of cases.

Dental treatment should have an important place during the general and comprehensive rehabilitation of patients with complete edentulism, therefore those of old age, as it would affect the improvement of their quality of life. This in particular has to do with the part of the therapy that attempts to establish and maintain normal ratios in the stomatognathic system, which will enable comfortable and qualitative chewing, which is a condition for better nutrition.

From the results of table 2, we saw that from the total of 1500 prosthetic appliances present in the examined patients, the largest number and the highest percentage are complete acrylic removable prostheses 421 (28.07%), while the smallest number and the lowest percentage occupy fixed cast gold with 59 (3.93%). Regarding the type and material of the prosthetic appliances found in the examined patients, the results of the studies of many authors are of a wide and varied range. Thus the author Koçi N.,² in his study on the stability of the complete prosthesis depending on the surface of the prosthetic field and the techniques of its preparation, from the examination of 2400 patients, the presence of removable complete prostheses was found in 7.78% of cases. Palmqvist et al.,²⁸ at the age of 45-69 found that 23% of the subjects are served with removable prostheses. Shigli et al.,²⁹ states that during his study he encountered 34.25% of patients who used prosthetic appliances of any kind. Whelton et al.,³⁰ in their study on the oral health of Irish adults found that 75% of the examinees had removable acrylic partial dentures.

Moimaz et al.,³¹ in their study on the connection between dental prostheses and periodontal diseases in the rural community of Brazil argument that, of the total number of patients included in the study, 40.5% wore fixed or removable dental prostheses, while 59.5 % were not users of prostheses. Shrivastav et al.,³² in their study carried out in nursing homes and related to the prosthetic appliances present in the examined patients, reached the following results: dental bridges were found in 2.5% of cases, partial dentures removable in the maxilla 5.9% and in the mandible 3.4%, complete dentures were found in 4.2% of cases, while in 86.3% of the cases in the maxilla and 88% of the cases in the mandible there were no prosthetic appliances. Hawkins et al.,³³ report that in 80% of cases they encountered at least one prosthetic appliance.

Author Abud et al.,³⁴ in their study found that out of a total of 400 examined patients, fixed bridges were found in 1.8% of cases, while partial removable prostheses were found in 3.5% of cases. Keraj et al.,³⁵ during the examination of 160 patients aged 17 to 60 years, encountered 58.75% of cases with metal-resin crowns and 41.25% of cases with metal-ceramic crowns and bridges.

The results evidenced by the studies of different authors can be explained by different factors, such as: contingents of the heterogeneous examined population, differences in the examinees' attitudes towards oral health and regularity during visits to the dentist, as well as different criteria of examiners involved in data collection.

Conclusion

On the basis of preclinical and clinical data, obtained from our study on prosthetic problems in patients with permanent dentition in the population of Tetova and its surroundings, as well as on the basis of their analysis, processing and presentation, we have reached these conclusions:

1. With advancing age, the requirements for complete removable prostheses increase.
2. Timely fitting of complete removable dentures is necessary to maintain oral health and function.
3. Therapy with complete prostheses restores and maintains normal ratios in the stomatognathic system, which will enable comfortable and qualitative chewing, which is a condition for better nutrition.
4. Dental treatment should have an important place during the rehabilitation of general and comprehensive in patients with complete edentulism.
5. The frequency of treatment with complete removable prostheses has increased linearly, while professional guidelines for treatment should be taken into consideration as much as possible, especially in elderly individuals.

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