



## Original Article

# Analysis of the Frequency of Partial Prosthesis According to Kennedy's Classification in Dental Prosthesis

Alireza Pournasrollah<sup>1</sup>, Ramin Negahdari<sup>1</sup>, Ghasem Rezaii<sup>2</sup> and Ali Zarandi\*<sup>3</sup>

<sup>1</sup>Assistant Professor, Department of Prosthodontics, Faculty of Dentistry, Tabriz University of Medical Sciences, Tabriz, Iran

<sup>2</sup>Doctor of dentist, Faculty of Dentistry, Tabriz University of Medical Sciences, Tabriz, Iran

<sup>3</sup>Assistant professor, Department of Periodontics, Faculty of Dentistry, Tabriz University of Medical Sciences, Tabriz, IR Iran

### ARTICLE INFO

Received 10 May 2016  
Received in revised form 06 June 2016  
Accepted 13 June 2016

#### Keywords:

Removable partial prosthesis,  
Kenedy's classification,  
Prevalence.

#### Corresponding author:

Assistant Professor, Department of Prosthodontics, Faculty of Dentistry, Tabriz University of Medical Sciences, Tabriz, Iran

E-mail address: [dr.alizarandi@gmail.com](mailto:dr.alizarandi@gmail.com)

### ABSTRACT

**Intoduction:** Having knowledge on the edentoulism pattern would assist us in the theoretical and practival educational planning and in this regard, we could come to a better conclusion on society's immense issues related to the health, prevention, and treatment.

**Objectives:** This study intended to evaluate the prevalence of different classes of removable partial prosthesis based on Kenedy's classification in dental prosthesis, in Tabriz Faculty of Dentistry.

**Materials and methods:** Two-hundred fourty four patients were randomly selected and went under removable oartial prosthesis therapy. Patients' information was recorded at pre-prepared forms. The collected data were analyzed either independently or as dependant on the age, gender, and educational level variable using SPSS version 16.0. The level of significance was considered  $P < 0.05$  in this study.

**Results:** In all treated patients, class I partial prosthesis was the most prevelant class (40.6%) and class II mod IV were the least ones (0.4%). Pearson correlation test displayed that there is no significant association between the classification of partial prosthesis and the age, gender, and educational level variables ( $P > 0.05$ ).

**Conclusions:** Based on the findings of this study, class I removable partial prosthesis was the most prevalent treated prosthesis among all groups regarding the age, gender, and educational level.

## Introduction

According to scientific progresses and increasing life expectancy in the population, which is the main goal of the public health, and also considering that

human nutrition oriented towards soft foods, probability of edentulous has increased<sup>4</sup>. Some countries use modern treatments like implants, however in some developing



countries due to the economic, cultural, and hygienic problems, classical and convectional methods including fixed and removable prosthesis are preferred. The tooth could affect the quality of chewing, speaking, and beauty of the individuals<sup>16</sup>. Some mental health problems could also be created after losing the tooth. In addition, lack of proper chewing of foods would cause indigestion and general diseases. Using the partial prosthesis assists in good chewing, which indicates the normal function of tooth and mouth muscles<sup>16</sup>. While if the edentulous space was not renovated, any activity of the mouth muscles would lead the food into the empty space resulting from the extraction of teeth. In fact, denture changed a passive mechanical complex into a dynamic complex<sup>12,19</sup>. The studies showed that 50 % of the population older than 60 years of age were treated with a fixed or partial prosthesis, of which frequency of females was high in comparison with males<sup>5</sup>. Furthermore, 75% of examined jaws were in one of the classes I, II, class I mod 2 and mod 1II and the rest were in other classes<sup>5</sup>. Zaigham et al. investigated the pattern of partial edentulism and its relation with the age and gender in Lahore city. The Class III dental arch was the most prevalent pattern in the maxilla and class IV was the least prevalent in number. By increasing the age, Class I and Class II dental arch trends were increased and Class III and class IV both in maxilla mandible were found to be decreased. Moreover, no significant differences were found between genders according to the distribution of edentulism classification<sup>20</sup>. Being informed on the edentulism pattern would be of help in the theoretical and practical educational planning and in this regard, dentist could come to a better conclusion on society's immense issues related to health, prevention, and treatment. The successful therapy of edentulous and partially dentate location

with dental implant has been well known in the recent years. Some times implants failure is expected. Dental implant linked complication can be create significant problems because of the difficulty in removing the fractured implant and the subsequent ridge defects<sup>17</sup>. This paper provides an overview on various techniques available to remove failed dental implant. Therefore, this study intended to evaluate the prevalence of different classes of removable partial prosthesis based on Kennedy's classification in dental prosthesis, in Tabriz Faculty of Dentistry.

### Materials and Methods

The inclusion criteria were: aged between 20 years and 80 years, having partially edentulous region. The exclusion criteria involved the patients who had completely edentulous or only missed maxillary and mandibular third molars.

According to the patients referred to Faculty of Dentistry for partial prosthesis in 2010, 576 documents were recorded, however incomplete records were excluded from the study.

The study was approved by the research Ethics Committee of Tabriz University of Medical Sciences. The sample size was calculated using Cochran's formulas and 244 documents were randomly selected and hence went under removable partial prosthesis therapy. Patients' information was recorded at pre-prepared forms. The collected data were about the age, gender, educational level, jaw treated, case of losing the teeth, which were analysed using SPSS 16.0 by independent-sample t-test. The level of significance was considered  $P < 0.05$  in this study.

### Results

According to the results, gender distribution was 35.7% (n= 87 male) and

64.3% (n=157 female). Mean (SD) of age was 45.71 (10.27) (20 to 76 years old) which frequency of 25 % was found in each age group (< 30 , 30- 50, 50-60 and > 60 years old). Distribution of treated jaws was 32 % (n= 78) and 68% (n=166) for maxilla and mandible, respectively. In addition, 57.4% ( n= 140), 24.2 % ( n = 59) and 18.4% ( n= 45) of patients had primary school, high school, and diploma educational level.

Distribution of treated jaws, according to Kennedy classes was shown in Fig. 1. The most frequency was related to class 1 (40.6%) and the least to class 2 mod 4 (0.4%).

Distribution of partial prosthesis in maxilla and mandible according to the age and gender was shown in Figs. 2-5. The most partial denture in maxilla and mandible was related to the class 1 (n =13, n= 86, respectively). The statistical difference was found between the frequency of partial denture in both maxilla and mandible jaws, according to the Pearson coefficient (P = 0.000). While, the frequency of partial denture was not correlated with the male and female groups (P= 0.739), the educational level of patients (P = 0.153), and age groups (P =0.051). The most distributions were linked to 39-57 and 58-76 age groups.

## Discussion

One of the most important requirements of mouth health care is replacement of missing tissue, particularly teeth by dental prosthesis which provide proper chewing, speaking, and beauty for patients. In this study, prevalence of classes of partial prosthesis was investigated in two genders. The most frequency was related to class 1 and the lowest frequency was found in class 2 mode 4. The significant difference was determined in both maxilla and mandibular jaw about classes of partial prosthesis in two genders. However, the

difference was not significant between age groups and their educational level.

Numerous methods of sorting of partially edentulous arches was suggested, however in this study, Kennedy's classification was used<sup>5,6,11</sup>. This classification could provide fast visualization, identification of prosthesis support, and calculation of the designed features of removable partial denture .

The type of tooth loosening was assessed in several selected people in many countries<sup>1,2,7,15, 18</sup>. Hoover and McDermont described that edentulism was more prevalent in males compared to females<sup>9</sup>. Marcus et al detected that the frequency of edentulism had no association with gender<sup>14</sup>.

In addition, other reports showed a significant link between age, educational level, smoking, low oral hygiene, dental treatment and periodontal and hearth diseases, status of economic, diabetes with edentulism<sup>8,10</sup>. Jeyapalan et al. review showed that no gender correlation was found for partial edentulism. Frequency of partial edentulism is more usual in lower jaw arch than in upper jaw arch. Younger adults had most Class III and IV removable partial dentures while the elders had a high distal extension of removable partial dentures classes I and II<sup>11</sup>. In the other studies, the results showed that the Kennedy's Class III had the most frequency and concluded that it was more predominant in the younger patients<sup>3,13</sup>.

## Conclusion

Based on the findings of this study, class I removable partial prosthesis was the most prevalent treated prosthesis among all groups regarding the age, gender, and educational level.

## Acknowledgement

The authors sincerely are thankful to sincere cooperation of all staff of Tabriz Faculty of Dentistry.

## Conflict of interest

The authors have no conflict of interest to declare.

## References

1. ZN Al-Dwairi, 'Partial Edentulism and Removable Denture Construction: A Frequency Study in Jordanians', *The European journal of prosthodontics and restorative dentistry*, 14 (2006), 13-17.
2. Alice Anagnou-Varelzides, Manto Komboli, Anta Tsami, and Fotis Mitsis, 'Pattern of Tooth Loss in a Selected Population in Greece', *Community dentistry and oral epidemiology*, 14 (1986), 349-52.
3. M. Bharathi, K. R. Babu, G. Reddy, N. Gupta, A. Misuriya, and V. Vinod, 'Partial Edentulism Based on Kennedy's Classification: An Epidemiological Study', *J Contemp Dent Pract*, 15 (2014), 229-31.
4. Carl O Boucher, Judson C Hickey, George Albert Zarb, and Merrill Gustaf Swenson, *Prosthodontic Treatment for Edentulous Patients* (CV Mosby, 1975).
5. Alan B Carr, and David T Brown, *Mccracken's Removable Partial Prosthodontics* (Elsevier Health Sciences, 2010).
6. Donald A Curtis, Thomas A Curtis, Galen W Wagnild, and Frederick C Finzen, 'Incidence of Various Classes of Removable Partial Dentures', *The Journal of prosthetic dentistry*, 67 (1992), 664-67.
7. Ayodeji Temitope Esan, Adeyemi Olusile, Adetokunbo Patricia Akeredolu, and Ayodeji Esan, 'Socio-Demographic Factors and Edentulism: The Nigerian Experience', *BMC Oral Health*, 4 (2004), 1.
8. T. A. Esan, A. O. Olusile, P. A. Akeredolu, and A. O. Esan, 'Socio-Demographic Factors and Edentulism: The Nigerian Experience', *BMC Oral Health*, 4 (2004), 3.
9. JN Hoover, and RE McDermott, 'Edentulousness in Patients Attending a University Dental Clinic', *Journal (Canadian Dental Association)*, 55 (1989), 139-40.
10. Shabnam Khaje Hosseini, Abolfazl Bagheri, Firouz Amani, and Omid Deljoo, 'Prevalence of Complete Edentulism and Associated Factors in Ardabil City, 2013', *J Res Med Den Sci*, 3 (2015), 17-21.
11. V. Jeyapalan, and C. S. Krishnan, 'Partial Edentulism and Its Correlation to Age, Gender, Socio-Economic Status and Incidence of Various Kennedy's Classes- a Literature Review', *J Clin Diagn Res*, 9 (2015), ZE14-7.
12. Dubravka Knezovic Zlataric, Asja Celebic, and Melita Valentic-Peruzovic, 'The Effect of Removable Partial Dentures on Periodontal Health of Abutment and Non-Abutment Teeth', *Journal of periodontology*, 73 (2002), 137-44.
13. S. Madhankumar, K. Mohamed, S. Natarajan, V. A. Kumar, I. Athiban, and T. V. Padmanabhan, 'Prevalence of Partial Edentulousness among the Patients Reporting to the Department of Prosthodontics Sri Ramachandra University Chennai, India: An Epidemiological Study', *J Pharm Bioallied Sci*, 7 (2015), S643-7.
14. Philip A Marcus, Anil Joshi, Judith A Jones, and Steven M Morgano, 'Complete Edentulism and Denture Use for Elders in New England', *The Journal of prosthetic dentistry*, 76 (1996), 260-66.
15. Stephen E Marcus, Linda M Kaste, and L Jackson Brown, 'Prevalence and Demographic Correlates of Tooth Loss among the Elderly in the United States', *Special Care in Dentistry*, 14 (1994), 123-27.

16. Carl E Misch, *Contemporary Implant Dentistry* (Elsevier Health Sciences, 2007).
17. Manu Rathee, Mohaneesh Bhorla, and Shashikala Jain, 'An Insight into Dental Implant Removal: An Overview', *British Biomedical Bulletin*, 3 (2015), 124-27.
18. Walid M Sadig, and Ayodeji T Idowu, 'Removable Partial Denture Design: A Study of a Selected Population in Saudi Arabia', *J Contemp Dent Pract*, 3 (2002), 40-53.
19. Irena Sailer, Aurel Feher, Frank Filser, H Luthy, Ludwig J Gauckler, P Scharer, and CH Franz Hammerle, 'Prospective Clinical Study of Zirconia Posterior Fixed Partial Dentures: 3-Year Follow-Up', *QUINTESSENCE INTERNATIONAL-ENGLISH EDITION*-, 37 (2006), 685.
20. ABDUL MUEED ZAIGHAM, and Muhammad Usman Muneer, 'Pattern of Partial Edentulism and Its Association with Age and Gender', *Pakistan Oral & Dental Journal*, 30 (2010).









