

Prevalence and pattern of partial edentulism among dental patients attending College of Dentistry, Aljouf University, Saudi Arabia

Mostafa I. Fayad, Mohamed N. Baig¹, Abdulrazaq M. Alrawaili²

Department of Removable Prosthodontics, Faculty of Dental Medicine, Al-Azhar University, Egypt, ¹Department of Preventive and Community Dentistry, College of Dentistry, Aljouf University, ²Dentist, Ministry of Health, Saudi Arabia

Corresponding author (email: <dr.mostafa.fayad@gmail.com>)

Dr. Mostafa I. Fayad, Department of Removable Prosthodontics, Faculty of Dental Medicine, Al-Azhar University, Egypt.

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Abstract

Objective: The current study aimed to determine the prevalence and pattern of partial edentulism among dental patients attending the College of Dentistry, Aljouf University, Saudi Arabia. **Patients and Methods:** A total of 142 patients were selected, and the prevalence of partial edentulism among the selected patient was recorded. Patients were grouped into three age groups; Group I: 21–30 years, Group II: 31–40 years, and Group III: 41–50 years. Kennedy's classification was used to determine the pattern of partially edentulous arches. Modification areas were not included in the assessment to avoid complexity. Data was analyzed using the Statistical Package for the Social Sciences version 20.0 for windows. **Results:** The results showed that the occurrence of Kennedy Class III partial edentulism was 67.2 % in the maxillary arch and 64.1% in the mandibular arch. Followed by Class II in both maxillary and mandibular arch with an average of 16.3 % in maxillary arch and 14.8% in the mandibular arch. Based on these results, class III has the highest prevalence in group II (31– 40 years). Class I and class II have the highest incidence among group III Patients (41-50 years). **Conclusions:** Among selected patients, Class III dental arch was the most prevalent pattern in maxillary and mandibular arches. Class IV being the least dominant pattern between all classes. There are a rise in Kennedy Class I and Kennedy Class II pattern and a decline in Class III and Class IV with an increase in age.

Key words: Kennedy's classification, partial edentulism pattern, partial denture, prevalence of partial edentulism

INTRODUCTION

Tooth loss has a major influence on biologic, social, and psychological levels of the oral health-related quality of life. The prevalence of tooth loss has declined considerably in various countries in last decades.^[1-3]

Bruce^[4] observed tooth loss across all ages; he found that the main reason for tooth loss was dental caries (83%) followed by periodontal disease (17%).

Decrease in edentulous patient number is considered to be a reflection of the improvement in the oral health of the population.^[5,6] It is also considered to be a sign of the success of preventive measures by the health care system.^[1,7]

With the recent trends in dental health care that favor natural dentition preservation, a decrease in edentulous patient's number is predicted.^[8]

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There are more than 65000 potential combinations of partial edentulism pattern in maxillary and mandibular arches, hence, it is logical to classify partially edentulous arches that have common characteristics and to facilitate communication among different dental professionals.^[9-12]

Several classifications have been suggested to classify partially edentulous arches to recognize possible combinations of teeth to ridges. At present, Kennedy's classification is considered the most broadly accepted classification for partially edentulous arches. Kennedy's classification offers immediate visualization, prosthesis support recognition, and assessment of removable partial denture design features.^[13-15]

The pattern of tooth loss has been assessed in different populations in various countries.^[14-19]

Hoover and McDermount^[20] found a higher incidence of edentulism in males than females whereas Marcus *et al.*^[21] reported that the edentulism prevalence had no relation with gender.

The epidemiological information on health care and its related concerns are essential for planning future health care.^[22]

As epidemiologic studies on edentulism and tooth loss vary considerably in prevalence between countries and between geographic regions within countries,^[23-25] and because there are no available studies (to our knowledge) that have investigated the prevalence of partial edentulism among subjects in Aljouf region, the objective of the current study was conducted to assess the incidence of Kennedy's classification among partially edentulous individuals along with its correlation with age. This would be of valuable information to oral health planners for proposing strategies helping in the development of dental health care management in Saudi Arabia.

PATIENTS AND METHODS

This study was carried out from December 2015 to April 2016 among dental patients attending the Outpatient Clinics, College of Dentistry, Aljouf University, Saudi Arabia. The inclusion criteria include both genders, aged between 21 years and 50 years with partially edentulous spaces. Patients with an only missing third molar, unerupted or congenitally missing teeth, root tips, and loose teeth that were indicated for extraction were not included in the study.

Based on information from previous studies, it was found that 140 cases would be enough for conducting the research at power 0.80, confidence interval of 0.95, and alpha level of 0.05.^[1,12,24,26]

A total of 146 partially edentulous patients were clinically examined after obtaining written consent. Four patient were excluded after panoramic radiograph was obtained. The study has been approved by a research ethics committee at Aljouf University.

Selected patients were grouped into three age groups.

Group I: 21–30 years.

Group II: 31–40 years.

Group III: 41–50 years.

Patients were clinically examined intraorally by two prosthodontist in the outpatients clinic Department. Kennedy's classification^[27] was used to determine the pattern of partially edentulous arches. Modification areas were not included in the assessment to avoid complexity. Data was analyzed using the Statistical Package for the Social Sciences version 20.0 for windows.

RESULTS

Prevalence and pattern of partial edentulism among dental patients attending College of Dentistry, Aljouf University were studied. The mean age of the selected patients was 35.5 years.

The results showed that the occurrence of Kennedy Class III partial edentulism was 67.2% in the maxillary arch and 64.1% in the mandibular arch. Followed by Class II in both the maxillary and mandibular arch with an average of 16.3% in the maxillary arch and 14.8% in the mandibular arch. Based on these results, Kennedy's Class III was the most prevalent partially edentulous pattern 65.4% among the maxillary and the mandibular arch. Table 1 and Figure 1 show the incidence of different patterns according to Kennedy's classification for the maxillary arch and mandibular arch.

Distribution of different classes in the age groups is shown in Table 2 and Figure 2. The results reveal that class III has the highest prevalence in group II (31–40 years) and group I (21–30 years) patients. With increasing age, a transition of bounded saddles into free end saddles was found. Classes I and II have the highest incidence among group III patients (41–50 years), as shown in Figure 3.

DISCUSSION

The main aim in using a classification for RPDs is to facilitate the description of partially edentulous cases. In the current study, Kennedy classification was selected because it simplifies the description of partially edentulous cases, permits immediate visualization of the partially edentulous arch, provides a logical way to display the problems of design, and to simplify the application of basic principles of partial denture design.^[14]

The present study was initiated to assess the prevalence and pattern of partial edentulism among dental patients attending the College of Dentistry, Aljouf University, Saudi Arabia. The findings of the present study showed that the frequency of partial edentulism in the mandibular arch was higher than the partial maxillary edentulism among the study population. Curtis *et al.* reported that mandibular removable partial dentures are more common than maxillary removable partial dentures, and that the class I mandibular RPD is the most prevalent type of RPD for either dental arch.^[9]

Kennedy Class III was reported to be the most common pattern (57.14%) in a sample of the Iraqi population in a study carried out by Hatim *et al.*^[28] In Benin, Ehikhamenor, *et al.*^[29] found that the most commonly restored edentulous area was Kennedy's class III (57.3%). In this study Kennedy's Class III was found to be the most prevalent pattern of partial edentulism both in the maxillary arch (67.2%) and the mandibular arch

Table 1: Incidence of different Kennedy's classes among the maxillary arch and the mandibular arch

Class arch	Maxillary arch	Mandibular arch	Total
Class I	8 (13.1%)	11 (13.5%)	19 (13.3%)
Class II	10 (16.3%)	12 (14.8%)	22 (15.4%)
Class III	41 (67.2%)	52 (64.1%)	93 (65.4%)
Class IV	2 (3.2%)	6 (7.4%)	8 (5.6%)
Total	61	81	142

*Numbers refer to the number of patients in each group

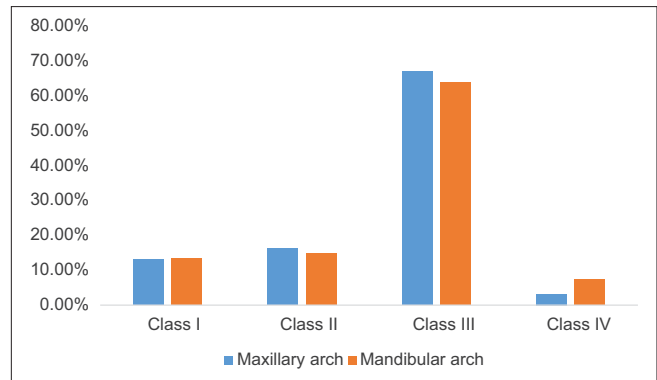


Figure 1: Incidence of different Kennedy's classes among the maxillary and mandibular arches

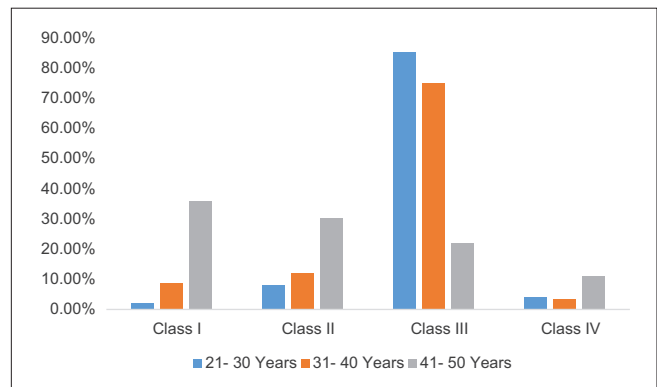


Figure 2: Distribution of the various classes Kennedy's classifications

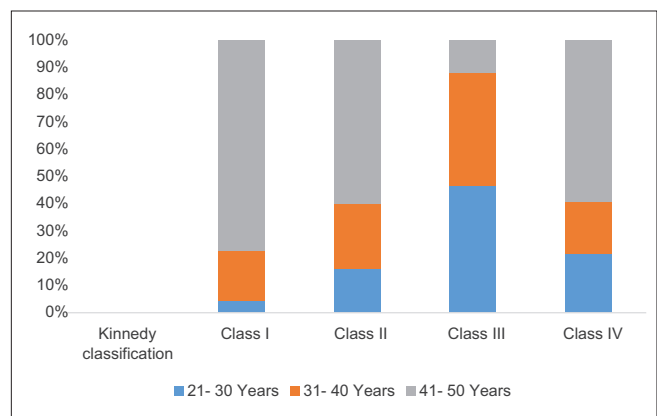


Figure 3: The age-wise distribution of the different classes of Kennedy's classifications

Table 2: The age-wise distribution of the various Kennedy's classes.

Patient age Kennedy class	Group I (21-30 Years)	Group II (31-40 Years)	Group III (41-50 Years)	Total
Class I	1 (2.04%)	5 (8.7%)	13 (36.1%)	19 (13.3%)
Class II	4 (8.1%)	7 (12.2%)	11 (30.5%)	22 (15.4%)
Class III	42 (85.7%)	43 (75.4%)	8 (22.2%)	93 (65.4%)
Class IV	2 (4.08%)	2 (3.5%)	4 (11.1%)	8 (5.6%)
Total	49	57	36	142

*Numbers refer to the number of patients in each group.

(64.1%). The present study was in accordance to the study of Madhankumar^[1] and partially in accordance with Curtis *et al.*^[9] who found that the Kennedy's Class III was only common in the maxillary arches, whereas in the mandibular arches, Kennedy's Class I was the most dominant pattern.

Pun *et al.* investigated the patterns of tooth loss in patients receiving removable partial dentures (RPDs) in Eastern Wisconsin, and reported that Kennedy Class I was the most common RPD with a frequency of 38.4%.^[24]

This variation may be due to difference in the mean of patients' age as the mean age in Curtis' study was 55 years, whereas in the current study, the mean age of the patients was 35.5 years.

The limitation of the present study includes small, nonprobability sample of convenience. The size and homogeneity of the sample limit this study, and hence additional studies are recommended.

CONCLUSION

The present study showed that, among dental patients attending outpatient clinics, College of Dentistry, Aljouf University, there is an increase in Classes I and II Kennedy classification and a decrease in Classes III and IV with an increase in age, The prevalence of Class III was predominant among younger population of 21–30 year and 31–40 years, whereas in group III between 41 and 50 years Class I was predominant. It can be stated that the need for prosthodontics care is expected to increase with age, and hence, more efforts should be made for improving dental education and motivation among patients in Aljouf region.

Recommendation

Further evaluation of long-term dental care outcomes and analysis of the type of prostheses required may clarify more information about partially edentulous patients.

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Conflicts of interest

There are no conflicts of interest.

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