Pattern, incidence and causes of partial edentulism in a group of patients attending dental school of Sulaimani university

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Abstract

Objectives: The aim of this study was to determine the pattern of partial edentulism and its relationship with age, gender and etiological factors in group of patients attending prosthodontic department, School of dentistry, University of Sulaimani-Iraq.

Materials and methods: The study sample consisted of 274 patients attending prosthodontic department, the partial edentulism was recorded by visual examination using Kennedy's Classification. The source of data was patient's case sheets and the patients were informed that the recorded informations were required for a research purpose and their consent and agreements were taken verbally. Data was analyzed using SPSS version 16 and presented as a simple frequency table and figures.

Results: The study results showed that 170 of the patients were female (62.1%) and 104 of the patient were male (37.9%). The most frequently occurred Kennedy class was Kennedy Class I (39.2%) followed by Kennedy Class III and II (31.9%), (27.6%) respectively and the least frequent was Kennedy Class IV (1.3%). The highest percentage of Kennedy class I arch was seen in the mandible (49.4%), while the most frequently seen Kennedy class in the maxilla was class III arch (40.9%), with an increase in age, there is an increase in class I and class II dental arches and a decrease in class III arch both in maxilla and in mandible. Finally, the results revealed that the most frequent reason of exodontias stand out to be caries in both male and female (81.7%), (85.2%) respectively.

Conclusions: It was concluded that the most common pattern of partial edentulism in examined sample was found to be class I in mandible then class III in maxilla and class IV being the least common in both jaws. The mandibular arches are more partially edentulous than maxillary arches and female patients more demanding Prosthodontic treatments than male patients. With an increase in age there is a transition of bounded saddle to free end saddles and the principle cause of tooth loss was dental caries.

Keywords: *partial edentulism, Kennedy's classification, caries.*

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Introduction:

Adverse oral health has been found to affect general health and quality of life; edentulism is a key indicator of the oral health of a populace. Teeth are the key components of the stomatognathic system. Their loss effects speech, masticatory difficulties and may result in poor aesthetics which in turn impact the quality of life. Partial prosthodontic replacement is usually required to restore these functions. The design of the prosthetic replacement depends upon the pattern of partial edentulism(1).

A classification of partially edentulous arches helps to identify relation of remaining teeth to edentulous ridges; and facilitates communication, discussion, and comprehension of the suggested prosthetic treatment among dentists, students and technicians. The most widely used classification was postulated by Kennedy in 1923. Kennedy classified all partial edentulism into four basic groups:

Class I: Bilateral edentulous areas located posterior to the remaining natural teeth

Class II: Unilateral edentulous areas located posterior the natural teeth

Class III: Unilateral edentulous area that natural teeth located both anterior and posterior to the area

Class IV: A single bilateral (crossing the midline) edentulous area located anterior to the remaining natural teeth1.

It has been documented that age and tooth loss shows a positive relation. According to the literature

reviews partial edentulism is more common in maxilla than in the mandible, and anterior tooth loss following posterior tooth loss[2]. According to Hoover and McDermount the prevalence of edentulism is higher in males than females[3].

Tooth loss has been reported to be mainly due to dental caries and periodontal disease. The various causes and patterns of tooth loss in the population aid in indicating the levels of oral hygiene, dental health awareness and the management of exodontias[4]. In a number of studies the main reasons for loss of tooth reported were: caries, periodontal disease, caries and periodontitis, some reported caries as the main reason for tooth loss in all ages[5].

This study was undertaken to determine the pattern of tooth loss in association with age, gender and etiological factors in group of patients attending the clinic of prothodontic department, School of dentistry, University of Sulaimani-Iraq.

Materials and Methods:

The present study was carried out from October 2013 to June 2014 at the prothodontic department, School of dentistry, University of Sulaimani-Iraq. All patients were examined in the diagnosis department and then forwarded to the prothodontic department for appropriate treatments in accordance with their complaints; dental students under faculty supervision treated the patients. Convenience sampling technique was utilized for sample collection of 274 patients. Kennedy's Classification with or without modifications was recorded. Modifications were not included. Inclusion criteria consist of patients from both genders, above the age of 24 years, having partially edentulous areas in either or both jaws. Diagnosis department send a patient ready for prosthetic treatment and any extraction or filling should be done before referring the patients to Prosthodontic department. The selected patients were divided into six age groups; (25-35) year, (36-45) year, (46-55) year, (56-65) year, (66-75) year and (76-85) year.

Table 1: Distribution of patients % according to age and gender.

Age Group	Gender		Total
	Male no (%)	Female no (%)	
25-35	14 (32.5)	29 (67.5)	43 (15.7)
36-45	27 (36.5)	47 (63.5)	74 (27.1)
46-55	25 (35.3)	46 (64.7)	71 (25.9)
56-65	27 (38.1)	44 (61.9)	71 (25.9)
66-75	10 (76.9)	3 (23.1)	13 (4.7)
76-85	1 (50.0)	1 (50.0)	2 (0.7)
Total	104 (37.9)	170 (62.1)	274 (100)

Both dental arches of each patient were examined clinically, interviewed and self-reported data were documented onto a proforma (case sheet). The proforma documented patient's age, gender, arch involved Kennedy's class with or without modification and the reasons for tooth/teeth loss (caries, periodontal diseases and trauma). Data was analyzed using Descriptive statistics by SPSS version 16 and presented as a simple frequency table and figures.

Results:

Out of (274) patients were examined, total number of females were 170 (62.1%); and males were 104 (37.9%). The majority of the patients were from age group of (36-45) followed by (46-55) and (56-65) as shown in Table 1 and Figure 1.

Distribution of different Kennedys' classes in relation to age, gender, and type of arch was demonstrated in Table 2. The total number of partially edentulous arches involved in this study was 471 arches.

In general, the most frequently occurred Kennedy class was Kennedy's class I (39.2%) followed by class III and class II (31.9%), (27.6%) respectively and the least frequent was Kennedy class IV (0.8%). Most of the class I arches (61.2%) were seen in age group (56-65), while class III and II arches were seen more frequently in age group (36-45); (39.0%), (28.4%) respectively. With an increase in age there is transition of bounded saddles into free end saddles, this transition is quite evident in line graph shown in Figure 2.

The results revealed that the number of partially edentulous arches in females was higher than male and the most frequent class was Kennedy's class I in both genders, Table 2. In regard to the type of dental arches, the frequency of partial edentulism is higher in the mandible than in the maxilla and the highest percentage of Kennedy's class I arch was seen in the mandible (49.4%), while the most frequently seen Kennedy's class in the maxilla was class III (40.9%).

According to the results of the present study; the most frequent reasons for exodontias stand out to be

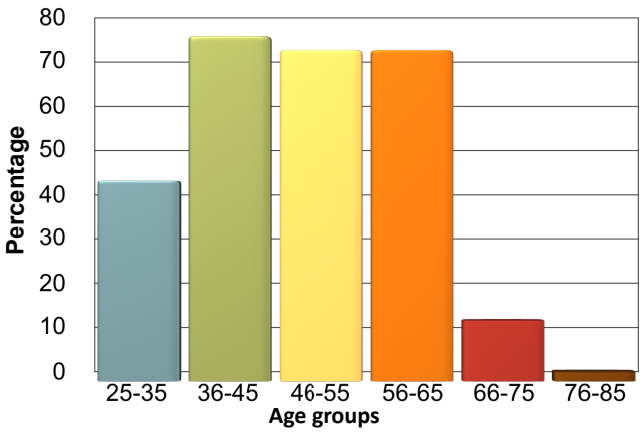

Figure 1: Distribution of patients % by age groups.

Table 2: Distribution of partially % edentulous Kennedy Classes by Age, gender, and dental arches.

	Kennedy Classification				
	I no (%)	II no (%)	III no (%)	IV no (%)	Total
Age groups (years)					
25-35 y	12 (17.7)	17 (25.0)	37 (54.4)	2 (2.9)	68
36-45 y	46 (38.6)	40 (28.4)	55 (39.0)	0 (0.0)	141
46-55 y	49 (38.6)	36 (28.3)	40 (31.5)	2 (1.6)	127
56-65 y	71 (61.2)	31 (26.8)	14 (12.0)	0 (0.0)	116
66-75 y	6 (35.2)	5 (29.4)	4 (23.6)	2 (11.8)	17
76-85 y	1 (50.0)	1 (50.0)	0 (0.0)	0 (0.0)	2
Total n (%)	185(39.2)	130 (27.6)	150 (31.9)	6(0.8)	471(100%)
Gender					
Male	78 (37.7)	55 (26.6)	70 (33.8)	4 (1.9)	207
Female	107 (40.5)	75 (28.4)	80 (30.3)	2 (0.8)	264
Total n (%)	185(39.2)	130 (27.6)	150 (31.9)	6(0.8)	471(100%)
Dental arches					
Maxilla	61 (27.7)	65 (29.6)	90 (40.9)	4 (1.8)	220
Mandible	124 (49.4)	65 (25.9)	60 (23.9)	2 (0.8)	251
Total n (%)	185(39.2)	130 (27.6)	150 (31.9)	6(0.8)	471(100%)

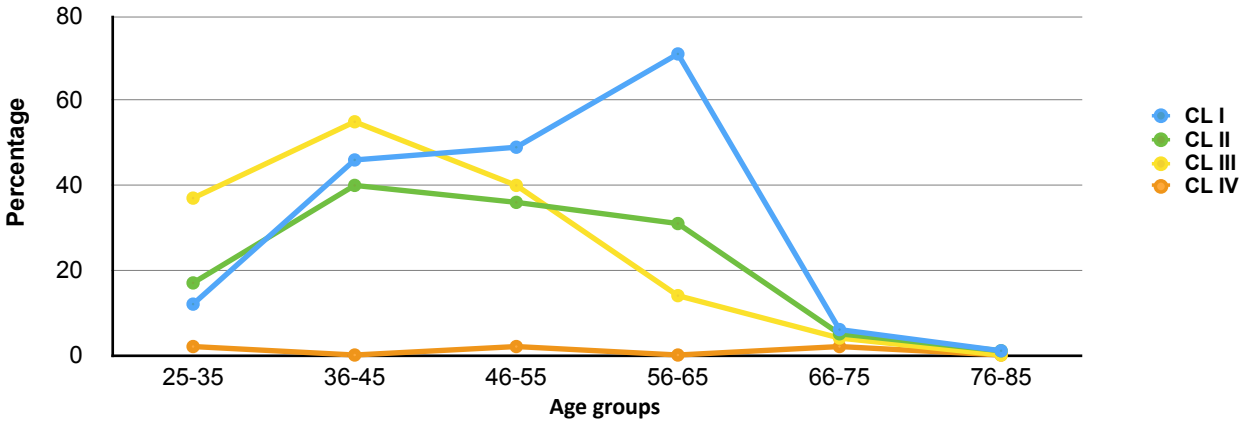

Figure 2: Pattern of partial edentulism in various age groups.

caries in both male (81.7%) and in female (85.2%) as shown in Table 3.

Discussion:

The variation in number and location of the edentulous space and its relation to the remaining natural teeth necessitates classifying the partial edentulous arches.6 In this study; Kennedy's classification was used as its providing immediate visualization of the edentulous space, and easy description of the potential combination between ridge and teeth (Nallaswamy)[7].

Among our population female patients (62.1%) were attending more than males (37.9%) to the Prosthodontic department, school of dentistry-university of Sulaimani. So it appears that female patients taking more care than males, this result is in harmony with studies done by 4, 8, and 9. However some studies show higher proportion of edentulism in male than female[10]. These may be due to various socioeconomic factors, psychological factors, use of more sugars and smoking.

In this study the most demanding prosthodontic treatment were by age group of (36-45) then followed by age groups (46-55) and (56-65), this may be due to

Table 3: Distribution of reasons of exodontias in relation to gender.

Gender	Etiology			Total
	Caries no (%)	Periodontal disease no (%)	Trauma no (%)	
Male	85 (81.7)	15(14.4)	4 (3.8)	104
Female	145 (85.2)	22 (12.9)	3 (1.7)	170
Total	230	37	7	274

that keeping oral awareness is more in younger patients and they needed to restore their teeth for aesthetics and functions.

In general according to results the occurrence of partial edentulism in the Mandibular arch is higher than maxilla, and it is accordance with the results of 1, 11. It may be due to more food accumulation and salivary glands in the maxilla having more watery effects than the Mandibular salivary glands.

In this study out of 471 partially dentate arches examined, the most commonly Kennedy classes occurred was Kennedy class I followed by Kennedy class III then Kennedy class II and the least common was class IV, this may be due to that the posterior teeth have greater surface area for carries, these results are similar to that of (12), who reported that Class I to be the commonest, but in contrast to the result of 2 who reported that Kennedy's Class III as the most common classification, however Class IV was reported to be the secon d highest among all the age groups.

In this study caries is the most common cause of tooth loss followed by periodontitis and trauma, This is in accordance with results of (5,13 and14).

Conclusions:

It was concluded that the most common pattern of partial edentulism in examined sample was found to be class I in mandible then class III in maxilla and class IV being the least common. The mandibular arches are more partially edentulous than maxillary arches. The results showed that female patients more demanding Prosthodontic treatments than male patients. With an increase in age there is a transition of bounded saddle to free end saddles and the principle cause of tooth loss was dental caries.

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